

Centre for Rural Technology, Nepal

Towards Action for Development.....Since 1989



Centre for Rural Technology, Nepal (CRT/N) established in the year 1989 is a professional non-governmental organization engaged in developing and promoting appropriate technologies for rural Nepal effective in meeting the basic needs of the rural communities and improving their living standard. CRT/N has been implementing Renewable Energy Technology (RET) related various programs and projects to support the rural communities.

CRT/N is actively engaged in upgrading traditional technologies as well as developing new technologies with diversified and versatile applications to meet rural needs.

CRT/N has extensive experience and expertise in

development and promotion of appropriate rural and Renewable Energy Technologies (RETs) such as households and institutional improved cook stoves, improved water mill for agro-processing and electrification, solar cookers, solar dryers, bio-briquette, hydraulic ram pump (hydram) and other appropriate technologies. CRT/N has also emphasized in promotion of micro-enterprises based on RETs along with development and strengthening of local/community organizations. Besides its involvement in technology implementation and development in micro-enterprises, CRT/N in its program/project has always made effort to address

cross-cutting issues such as gender mainstreaming, poverty reduction, climate change and indoor air pollution.



Hydram System



Hydrum: A Brief Description

The hydrum is an automatic pumping device powered by falling water. The hydrum uses.....

A large amount of water falling through a small height, to lift a small amount of that water to a much greater height.

Water from a spring or stream in a valley can be pumped to a village or irrigation scheme located at higher grounds. Wherever a fall of water can be obtained, the hydrum can be used as a comparatively cheap, simple and reliable means of lifting water to considerable heights.

Hydrum is powered by the water itself - no other external power source is required. Two simple valves function in stages to pump the water. This makes the hydrum very reliable, inexpensive and easy to maintain technology. It is renewable energy with no associated greenhouse gas emissions during its operation.

The Hydraulic Ram Pump is a mature renewable energy technology – existing since the 18th century. The technology was invented in the year 1971 in France.



MAJOR PARTS OF HYDRAULIC RAM PUMP



Hydrum System Specification

Drive Head Range: 1-6 meters

Drive Pipe Length Range : 1-30 meters

Drive Flow Range : 10-800 liters/min

Size of Pump: 1" - 4"

Delivery Head Range: 30-80 meters for Micro

Irrigation and Up to 150 meters for Drinking Water Supply

Application of Water

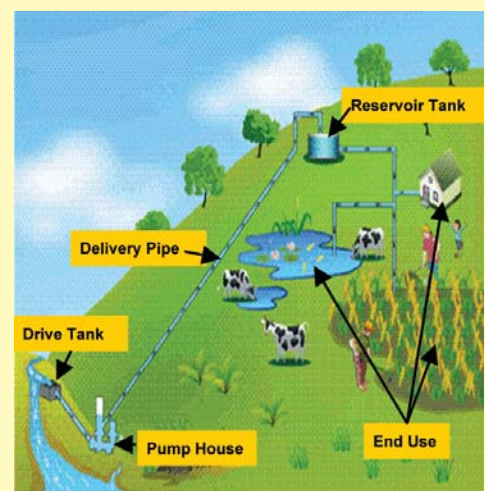
1. Community potable water
2. Community sanitation
3. Irrigation (small – medium scale)
4. Drinking water for cattle
5. Supporting livelihoods (Ex. Fishponds, lemongrass tea production, etc.)

Potential Impacts

1. Reduced drudgery
2. Time Saving-Devote to Livelihoods and study
3. Improve Hygiene and Sanitation
4. Increase in crop yield (Able to increase number of cropping or plant in previously unused land and diversified plant)

The main parts of a Hydrum System and their functions are:

1. **Intake** : structure at source that diverts flow of water to the Hydrum system;
2. **Feed pipe or canal** : Delivers water from the source to the drive tank;
3. **Drive tank** : Provides storage to ensure a constant flow to the Hydrum and removes sediment from the water;
4. **Drive pipe** : Feeds water to the Hydrum;
5. **Hydrum** : Pump unit that delivers a small amount of the drive flow to the delivery pipe;
6. **Pump house** : To protect the pump and fittings from accidental damage or theft;
7. **Delivery pipe** : Delivers water from the Hydrum to the delivery tank;
8. **Delivery tank or pond** : Stores the water pumped by the Hydrum. Can be a cement based structure or a lined pond;
9. **Distribution system** : Distributes water to the users. Piping can take water to households, tap-stands or fields.



Livelihood Enhancement through Hydraulic Ram Pump Project in Kavrepalanchowk District, Nepal” Project”

The project supported by UNDP (GEF/SGP) has been implemented since November 2013 to December 2014. CRT/N in association with Local Partner Organization, Community Members, Rural Energy and Technology Service Centre (RETSC), DDC Kavrepalanchowk and project site VDCs has facilitated to install 4 units of Hydraulic Ram Pumps in various project sites in Kavrepalanchowk District for drinking water supply, micro-irrigation and sanitation.

The objectives of project are as follows:

1. Based upon community demand the project has aimed to install 4 units of Hydraulic Ram Pump to lift water in community for micro irrigation, drinking water supply and sanitation to serve 124 house hold.
2. Construct 64 toilet within all communities for better sanitation and improve health condition of community people.
3. Provide capacity building training to the beneficiaries of the project on various topics like micro-irrigation system, modern agro-practices, repair and maintenance of hydram, etc.
4. Develop the project sites as research and demonstration center in future days.

Project Duration:

November 2013-December 2014

Project site:

1. Balthali VDC-5, Nepane Sanogau- Micro Irrigation
2. Dhunkharka VDC-2, Chanaute Sikatar– Micro Irrigation
3. Dhunkharka VDC-9, Ladkhu - Multi Use System (Drinking water Supply and Micro Irrigation)
4. Sankhu-3, Chaap Pattichaur - Multi Use System (Drinking Water Supply and Sanitation)

Project Activities

A. District Stakeholders’ Meeting

Date: March 26, 2014

Total participants : 40 (Male-36, Female-4)



B. Community Capacity Building Training

Date: June 19-20, 2014

Total Participants : 36 (Male-22, Female-14)



C. Training for Trainers

Date: September 21-22, 2014

Total Participants: 33 (Male-20, Female-13)



D. Repair and Maintenance Training and Potential Users 'Visit

Date : November 6-7, 2014

Total Participants : 12 (Male-10, Female-2)-R & M

Total Participants : 16 (Male-15, Female-1)- Visit



E. District Level Experience Sharing Workshop

Date : November 30, 2014

Total Participants : 45 (Male– 33, Female-12)



F. Stakeholder’s Visit Program

Date : December, 01, 2014

Total Participants : 18 (Male-18)



Project Outcome in Brief

S.N.	INTENDED OUTPUT	STATUS OF PROJECT ACTIVITIES
1.	Balthali-5, Nepane Sanogau	4" Hydraulic Ram Pump Delivery Flow-28 lit/min
2.	Dhunkharka –2, Chanaute Sikatar	4' Hydraulic Ram Pump Delivery Flow-45 lit/min
3.	Dhunkharka– 9, Ladkhu	4" Hydraulic Ram Pump Delivery Flow– 12 lit/min
4.	Sankhu-3,Chaap, Pattichaur	3" Hydraulic Ram Pump Delivery Flow- 12 lit/min.
5.	Community Training on Various Subjects	Financial Management, Repair and Maintenance, Water Management and Conservation, Hygiene and Sanitation, Climate Change and Adaptation Measures for water resources and agriculture, Micro Irrigation and Modern Agro-practices
6.	Construction of Toilet	Total Numbers of Toilet-64, New Construction– 46, Repair and Maintenance– 18
7.	Sprinkler Unit	Total No. of Sprinkler Units– 124 units
8.	Field Visit	(1) 4 Potential User group Field Visit (2) Stakeholder's Field Visit (Government, Development Institution officials and News Reporter)
9.	Video Documentary and Case Studies	(1) Junkiri Interactive Video time duration-22 min (2) Case Studies of each site.

CRT/N Hydraulic Ram Pump Project Status

S.N.	Project Site Location	Size of Pump	Beneficiaries Households	End Use	Funded By	Remarks
1.	Tallobeshi, Sunaulabazzar, Dhading	1"	35 HHs	Drinking Water Supply	Renewable World (RW)	
2.	Talti, Mahadevsthan, Dhading	1 1/2"	31 HHs and School	Sanitation for School	Renewable World (RW)	
3.	Birtabeshi, Muralibhanjyang, Dhading	4"	7 HHs (7 Ropani)	Micro Irrigation	Renewable World (RW)	
4.	Darai Gaon, Sunaulabazzar, Dhading	1 1/2"	22 HHs	Drinking Water Supply	Renewable World (RW)	
5.	Haldwari, Sirsha-5, Dadeldhura	1"	7 HHs (7 Ropani)	Drinking Water Supply and Home gardening	Finnish Consulting Group (FCG)	Improved Water Mill -1
6.	Rajauta-4, Sirsha, Dadeldhura	4"	15 HHs (20 Ropani)	Micro Irrigation	Finnish Consulting Group (FCG)	
7.	Thalakanda-3, Baitadi	1 1/2"	School, VDC, Health Post & Government Offices	Drinking Water Supply and Sanitation	Finnish Consulting Group (FCG)	
8.	Dhakari-9, Naule Achham	1"	15 HHs	Drinking Water Supply	Finnish Consulting Group (FCG)	2 units in series
9.	Simalta-4, Sirsha Dadeldhura	2"	22 HHs	Drinking Water Supply	Finnish Consulting Group (FCG)	
10.	Mahankal-1, Shera Sindhupalchowk	4"	12 HHs (25 Ropani)	Micro Irrigation	Poverty Alleviation Fund (PAF)	
11.	Bhimtar-1, Neupanetar Sindupalchowk	1"	29 HHs	Drinking Water Supply	Poverty Alleviation Fund (PAF)	
12.	Mahadevsthan-1, Aadmara Dhading	4"	22 HHs (5 tap stand & 22 Ropani)	Multi Use System (MUS)	Renewable World(RW)	
13.	Kalleri-2, Dhading	3"	30 HHs (30 Ropani)	Micro Irrigation	Renewable World(RW)	
14.	Sunaulabazzar-1, Kusunde Dhading	4"	30 HHs (30 Ropani)	Micro Irrigation	Renewable World(RW)	
15.	Balthali-5, Nepane Sanogau Kavrepalanchowk	4"	35 HHs (65 Ropani)	Micro Irrigation	UNDP (GEF/SGP)	35-Toilet & 35 Sprinkler units
16.	Dhunkharka-2, Chanaute Sikatar Kavrepalanchowk	4"	27 HHs (46 Ropani)	Micro Irrigation	UNDP (GEF/SGP)	11-Toilet & 27 Sprinkler Units
17.	Dhunkharka-9, Ladkhu Kavrepalanchowk	4'	17 HHs (45 Ropani)	Multi Use System (MUS)	UNDP (GEF/SGP)	9-Toilet & 17 Units of Sprinkler Units
18.	Sankhu-3,Chaap Pattichaur Kavrepalanchowk	3'	45 HHs	Drinking Water Supply and Sanitation	UNDP (GEF/SGP)	10-Toilet and 45 units of sprinkler units

On Going Projects

19.	Danku-8, Achham	2"	School and 12 HHs	Multi Use System (MUS)	UNICEF and Renewable World (RW)	1 Bag Digester
20.	Jagatbhyanganj-2, Dipka Syangja	3"	25 HHs (50 Ropani)	Micro Irrigation	NCell and Renewable World (RW)	



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