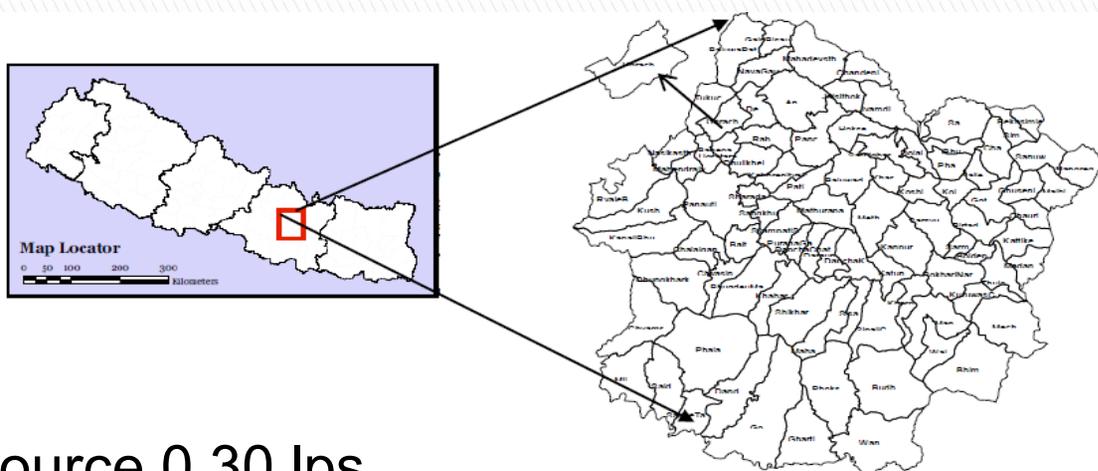


# **Multiple Dimensions of Community Water Supply and Sanitation Systems in Ugrachandinala VDC of Kavrepalanchok District, Nepal**

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# Kodarthulichour Drinking Water, Health and Sanitation Scheme (KDWHSS)

- ▶ located in ward 6 and 7 of Ugrachandinala VDC in Kavrepalanchowk district.
- ▶ a gravity flow system; taps **Purnimakanlo**, a local perennial spring water source
- ▶ successfully completed in 2004 with the support of NEWAH
- ▶ Serves 65 households; 335 beneficiaries
- ▶ estimated safe yield of source 0.30 lps
- ▶ tapped yield is 0.26 lps, estimated total supply 22464 lpd.
- ▶ designed for 15 years scheme at population growth rate of 1.73% to serve a total population size of 517.
- ▶ total water demand prior to the project: 17,955 lpd and 15075 lpd estimated for 2018



# Changing water and social systems with KDWHSS

- ▶ Social discrimination prevalent in the traditional water source allocation system

Ethnicity	Allocated Water Source
Brahmins	Hiti Dharo, Simla Kuwa, Mayalko pandhero, Bangaicha Majhpandhero
Janajatis	Simla Kuwa, Thulo Khola Pandhera
Dalits	Kami Damaiko Dhara

- ▶ **after KDWHSS** water consumption increased from **17 lpcd to 40 lpcd**
- ▶ excess of water and grey water used in kitchen garden
- ▶ grey water drained into conventional pits or a conventional drain and used for irrigating kitchen garden.

## Direct and indirect socio-economic contributions

- ▶ Time per trip for water fetching reduced drastically.
- ▶ saved time used in care of family and in income generating activities like poultry farming, goat and cow rearing, seasonal and off seasonal vegetable farming.
- ▶ Seasonal vegetable farming for self- consumption, while off season farming as an income source

	Prior to the scheme	A f t e r scheme
Number of households	62	65
Population (Number)	399	335
Average number of trips per HH per day	7.14	13.56
Time taken per trip per HH (minute)	<b>55.10</b>	<b>5.58</b>
Per trip capacity (litre)	15.0	15.0
Litres per capita per day (lpcd)	17.37	40.16
Average HH consumption per day (litre)	<b>111.77</b>	<b>207.00</b>

## Multiple water use and the multiple benefits perceived

- ▶ Vegetables used for daily consumption and for commercial supply.
- ▶ Improved income generation, reduced social discrimination and diseases
- ▶ health assistant reported improvement in the nutritional status of children

Table: Change in practice of keeping kitchen garden

	2003		2014	
	With	Without	With	Without
Brahmin	42	2	45	0
Janajatis	3	4	10	0
Dalits	3	9	8	2

## Direct and indirect socio-economic contributions

- ▶ Access to improved water and sanitation and hygienic behaviour
- ▶ drastic decline in the water borne disease and health expense

Table: Diseases incidences reported prior and post project implementation

Year	Diarrhoea	Viral fever	Typhoid	Jaundice	Worm	Pneumonia	Total
1998	20	22	1	1	3	2	49
1999	18	20	0	0	2	1	41
2000	15	16	0	0	2	1	34
2001	13	14	0	0	2	2	31
2002	12	11	0	0	3	4	30
2003	2	3	0	0	1	1	7
2004	2	2	0	1	0	1	6
2005	2	4	0	0	1	0	7
2006	2	2	1	0	0	0	5
2007	1	1	0	0	2	0	4

*Source: based on Nala health post records*

## Social issues incorporated with water and sanitation issues

- ▶ active efforts for empowering women and disadvantaged groups through an inclusive development process.
- ▶ at least 30% representation of women, socially excluded and indigenous communities with their productive participation from its initial phase
- ▶ girls' enrollment in the schools increased
- ▶ role of reduced work load in fetching water due to the nearness of water source acknowledged.

Education Level	2003	2014
Primary level	79	34
Lower secondary level	32	23
Secondary level	77	54
Higher secondary level	37	87
Literate	90	114
Illiterate	84	23
Total	399	335

Source: NEWAH, 2003 and field survey March, 2014

# Institutional networking and Stakeholder Participation

- ▶ collaboration between all stakeholders: implementers, regulators, operators and users from the initial phase.
- ▶ construction committee dissolved after completing construction in 2003
- ▶ In 2004 new project management committee formed for future operation and maintenance
- ▶ consulted construction committee and organized general body meeting of all water users
- ▶ Invitees: guest as chairman of Nepal Red Cross Society (NRCS) of Kavre branch, guest from urban development office, different political party members, Ex-VDC chairman, and outgoing chairman of Kodarthulichour.
- ▶ celebrated successful completion of 10 years in 2013
- ▶ participation of representatives from different organizations

## Integrated approach for operation and maintenance

- ▶ institutional mechanism considered managerial, social, financial and institutional issues and not merely technical issues
- ▶ in 2004, 9 membered O&M management committee formed with unanimous decision from water users ; included chairman, vice-chairman, secretary, treasurer and members
- ▶ Involved 3 females including 1 female from socially excluded group in executive body for decision making roles.
- ▶ tenure of 3 years, new committee members elected in 2007; certain disturbance in 2010, the institutional process resumed in 2013.
- ▶ O &M training provided by NEWAH, 2 care takers appointed 1 in construction and 1 social motivator.
- ▶ Responsible for operation, monitoring and maintenance of transmission pipe, distribution network, intake, water quality,
- ▶ inform O& M committee of the immediate needs and every month about needs of major repairs
- ▶ O & M committee mobilize water users to assist for labour work; and also fittings provided by O & M committee.
- ▶ committee stores pipes and fittings for timely repair and effective functioning

# Community Sanitation and Tap Stand Management

- ▶ From tap stand via side drains excess water discharged into the local stream Kankekholo.
- ▶ managed garden around some of the tap stands.
- ▶ tap stands and drainage canals cleaned on a rotational basis.
- ▶ chief of tap stand responsible to monitor tap stand cleanliness during construction phase, but the tap stand committees no more active; currently done by O&M management committee.
- ▶ several trainings by NEWAH for community members during construction period,
- ▶ WSUC functional to promote community awareness about general cleanliness, general personnel hygiene and also keeping toilet clean of every house hold.
- ▶ Currently O&M management committee responsible to monitor and maintain general cleanliness.
- ▶ the committee members walk through clusters and monitor and sensitize to maintain cleanliness within the community.

# Reservoirs and Intake cleaning and Catchment protection

- ▶ has two ferro-cement reservoirs of volume 7 m<sup>3</sup> and 2m<sup>3</sup>.
- ▶ sedimentation in the reservoir following rainfall major problem
- ▶ care takers mobilized to clean storage and distribution reservoirs as required; However disinfection like chlorination not yet done,
- ▶ Purniakanlo, the water source located in public place surrounded by private land.
- ▶ an agreement between the land owners and users committee to avoid disturbances within 10m radial distance around the source.
- ▶ no forest during implementation period; at present forest developed; private land owners also planted trees; moisture content maintained.
- ▶ Respondents perceived, water contamination during its transfer from source to household used to be a major problem.
- ▶ cleaning of reservoirs, cleanliness of tap stand and community helping to prevent water contamination.
- ▶ perceived increase in the source yield; During dry season (April-June), distribution as per schedule; In wet season 24 hours uninterrupted water service.

# Wastewater Management

- ▶ From 39 households (56%) with toilet to toilet access available to all households by 2004; supported by NEWAH;
- ▶ community-based sewerage treatment plant; size of toilet and roofing materials depended on the area available but collection chamber and a soak pit made mandatory.
- ▶ black water slowly released into the ground for gradual aerobic digestion.
- ▶ a minimum 7.0 meters distance maintained from water points to prevent water contamination; no spilled out from collection chambers and soak pits until 2014
- ▶ VDC declared ODF in 2012;
- ▶ ***Ugrachandinala VDC selected as a model in showcasing total sanitation through local involvement (SACOSAN, 2013).***
- ▶ overflow of the reservoir and intake discharged into the nearby canal.

# Financial Management

- ▶ Financial management one of fundamental challenge for rural DWSS (Carter, 2009 ; Singh et al. 1993)
- ▶ In KDWHSS water tariff rate defined during the beginning of implementation phase;
- ▶ NRs 15/month for economically active households (44 HHs) while NRs 10/month for economically marginalized households (18 HHs)
- ▶ WSUC meeting held on every second day of Nepali month and tariff collected on third day of month
- ▶ chairman, treasurer and secretary deputed for tariff collection.
- ▶ All the households paying the water tariff regularly.
- ▶ If not paid the household system of additional NRs 10 in the following month as penalty, no such situation occurred so far.
- ▶ 3rd general meeting in 2013 raised tariff to NRs 30 per month; in the interest of ethnic groups removed the subsidised tariff; accepted by all the households.
- ▶ Rs 6000 awarded by NEWAH planned to be reinvested at the rate of 12% as a micro-credit within the user groups.
- ▶ Care takers remuneration increased from Rs 300 to Rs 600/month since 2012

## Lessons to learn from achievements and weaknesses

- ▶ O& M a prioritized issue in rural water and sanitation projects in Nepal (WB, 2013; UNDP, 2010; RWSSP-WN, 2013; CETS, 2009).
- ▶ Many handed over rural water schemes not functioning properly.
- ▶ In KDWHSS substantial socio-economic contributions, awarded the **best functioning** rural water supply scheme supported by NEWAH in 2013.
- ▶ But, contingency planning and effective implementation of institutional decisions lacking
- ▶ Management of surface runoff, fencing around intake, repair of sluice valve and wash out chamber, GI pipe anchoring, water quality concerns need to be addressed.
- ▶ farmers illicitly broke transmission main to irrigate their fields, especially during wheat farming causing water scarcity.
- ▶ Operation and maintenance management committee decided to charge penalty of NRs 300 however, no one panelized yet.
- ▶ lack of financial and technical capacity for major repair is an issue.

# Some glimpses about KDWHSS



Catchment area of Purnimakanlo source



Protected Ferro cement RVT (7.0m3)



Meeting with Mothertap stand groups



ODF Zone Ugrachandinala VDC

# Some glimpses of MUS in KDWHSS



Poultry farming after time saving



Seasonal vegetables



Using saved time in goat rearing



Grey water irrigated vegetables in kitchen garden

**Thank you**