

Celebrating 60 years towards a better NEPAL

जलओत व्यवस्थापन कार्यज्ञम Water Resources Management Programme, WARM-P

### Soil-ferro cement water retention pond for individual households



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### Introduction: the programme





- WARM-P HELVETAS working for water resources planning & management at local level.
- Introduce soilcement pond for individual HH in 2011

#### **Programme Objectives:**

- Increased Access to Use of Water Supply, Sanitation and Hygiene (WASH) Services
- Strengthened Capacity at Local Level
- Advocacy and Policy Development



### Context



- Attention need for efficient and effective use of scare water
- Large masonry or RCC tanks costly (labor intensive); Masonry tanks also have problem of leakage due to earth movement
- Plastic Pond: Cost effective but less durability & High risk when water is empty in pond. Not easily repairable
- Complication on equitable use of water : user right dispute
- Lack of ownership : problem on sustainability and functionality specially large community pond
- Need of sustainable water service : Access to water for household income and nutrition
- HELVETAS Nepal developing & adopting soil ferro cement pond as an alternative low-cost techniques



### Soil-ferro cement ponds



Soil-ferro cement ponds with ferro-cement lining:

- Complement rooftop rainwater harvesting (RWH) jars at the household level by adding low cost storage facilities for MUS
- Complements gravity water supply scheme by providing additional low cost storage facility for MUS





### Introduction to Soil Ferro Cement Pond



- Pond with Ferro Cement Lining Soil-cement and sand plastering one layer chicken wire as an impervious layer
- thin layer of plaster by mixture of Portland cement and sand





## Type & size



- Square or rectangular in plan with trapezoidal cross-sections.
- The side slope :
  - 1:2.5 to 1:3 depending on soil type and site



Description of Pond Detail		3 cum	6cum	10cum
Length(cm)	Α	150	300	390
	В	210	360	450
	С	260	410	500
BreathWidth	D	150	175	250
	E	210	235	310
	F	260	285	360
Height (cm)		90	90	90





- **Planning**: WUMP- identify the MUS schemes of different type
- Implementation: Assessment of low cost technique & construction by household/community
- **Post Construction** : Follow-up after two years of scheme completion.



### **Construction Procedure**



- Site selection and clearance.
- Excavation and furnish side slope
- Soling in floor
- Plastering with cement sand and soil (CSS) mortar
- Laying chicken wire mesh
- Plastering by mortar reinforce with sand in cement above chicken wire mesh
- Stone masonry wall at top with mud mortar
- (Install roof catchment, gutter and conveyance system to the pond- For RWH)



Achievement



# Nos. of scheme constructed with Soil ferro cement pond



### Achievement





## Cost Analysis:





### Post construction Follow-up Kev Findings



Overall functionality of pond					
during follow up(2015)					
total	Pond	Need	Need		
nos. of	in very	minor	major		
pond	good	repair	repair		
followed	cond				
94	89	5	0		



- Follow up conducted in 94 pond constructed during 2011-2013
- Questionnaire with field observation
- Conducted in scheme of Daillekh & Jajarkot
- Year of follow up -2015



### Conclusion

- The technology is appropriate for small farmers having small land and hill top and it supports the government announcement towards 'one village one pond'
- Simple and Low cost technology; system can be developed by using local skill & material.
- High ownership support long term sustainability and functionality
- Storage of additional water reduces the labor required for water collection (particularly for women) which improves sanitation and hygiene & nutrition practices







- Up scaling of soil ferro cement pond for individual household is necessary for household nutrition and income generation.
- As there is growing water demand for both domestic and productive use and diminishing or fluctuating water supply due to climate change, such technology complement adaptation to local community.
- It can be implemented standalone tapping water directly from spring sources for micro irrigation at community level.
- Systematic study is necessary to assess sustainability and functionality of the technology.

### Reference



Annual Report: WARM-P/HELVETAS Outcome Monitoring Report : LILI/HELVETAS WOCAT database WARM-P Standardization 2003,Revised 2015

## Thank you



