Technology Fact Sheet for Adaptation

Restoration of minor tank networks [i]

5. **Sector** – Water
6. **Technology characteristics**

6.1 Introduction

Ancient tanks “wewa” are rainwater harvesting systems. These tanks get water from surface water bodies, runoff and from direct rainfall. Area of a minor tank is less than 80 ha. and at present 12,120 are in working order and the total irrigation potential is about 100,00 ha. In addition to that, minor tanks provide water for domestic needs, aquaculture and livestock needs(1). There are dilapidated and / or silted tanks also. Restoration of silted or damaged cascade minor tank systems in vulnerable areas is important.(2). This technology contributes to adaptation for climate change in following ways(3).

- Diversification of water supply
- Storm water control and capture
- Groundwater recharge

6.2 Technology characteristics/Highlights

- High-cost
- High technology

6.3 Institutional/ organisational requirements

- Planning, implementation etc. should be handled by experts.

7. **Operations and maintenance**

7.1 Endorsement by experts

7.1.1 (i) Operations(3)

The adaptation technology on restoration of cascade tank systems involves:

- Identification of location, condition and need for rehabilitation etc. of minor tanks.
- Preparation of planning maps showing water shed boundaries, microcatchment areas, cascade boundaries and predominant land use etc.
- Studies on hydrological potential of the tank, location in the cascade system, cultivation pattern etc.
- Steps for preservation, rehabilitation and modernisation of those tank systems (excavating soil, desiltination the tank bed, construction of new sluice gates, new spills, primary outlets etc.)
- Plant trees to cool waterways in order to minimise evaporation and also to minimise erosion. It would also facilitate the removal of pollutants.
- Water quality monitoring programs

Compacting the bund[5]

Sloping the bund[5]

Turfing against erosion[5]

(ii) Maintenance

Minor tanks are managed by farming community or farmer organisations with the technical support of the line agency as required

7.2 Adequacy for current climate

Negative consequences of the adaption option in the current climate:

Variations in normal rainfall pattern

7.3 Size of beneficiaries groups

About 3000 farmer families[1].

8. Costs

8.1 Cost to implement adaptation options

$ 932,500 for 50 minor tanks[1]

Additional costs to implement adaptation option, compared to "business as usual"

Additional cost is required:

- If the capacity of the tank will be increased
- Water quality testings

9. Development impacts , indirect benefits

9.1 Economic benefits

- **Employment** – Medium
- **Investment -** High; restoration of tank networks

9.2 Social benefits :

- **Income**
  - High; through agriculture, aquaculture etc.
- **Education**
  - Medium; Awareness programs should be given by experts.
  - Technical advice should be given whenever necessary by experts.
  - School education and research on this subject - medium
- **Health**
  - Medium effect; Decrease in diseases due to better sanitation because of the availability of water

9.3 Environmental benefits

- Impact on ground water quality and quantity –High; positive
- Impact on surface water quality and quantity – Medium
- Impact on flood control –High impact
- Release of GHG – high, due to the use of machines

10. Local context

10.1 (i) Opportunities

- Government has identified the importance of accelerating the development of irrigation and drinking water infrastructure and have taken steps to implement many irrigation development projects. It is planned to restore 100 small tanks per 5 years
- When other water sources are far away from home or when the quality of water is degraded
- Save time and cost

(ii) Barriers

- High cost
- High evaporation loss due to high ration of surface area to volume
- Seepage of tank volume and percolation losses from minor tanks is about 20%[(2)].

10.2 Status

- Tanks in various conditions can be seen in North Central, North, South and North of Sri Lanka.

10.3 Acceptability to local stake holders

- This will be acceptable to majority of local stakeholders as it would provide water during droughts, act as buffer reservoirs during floods and help in agriculture.

11. References

(1) Adaptation Fund: Proposal for Sri Lanka, AFB/PPRC. 14/11; Project and programme review committee, Bonn, June 2011

(2) Runoff rainwater harvesting interventions in Sri Lanka, M.A.C.S. Bandara and M.M.M. Aheeyar; (ISBN 978-955-612-116-2; 2010)

(3) Sri Lanka : Water Development Report:2010 ; K.A.U.S. Imbulana, N.T.S. Wijesekera, B.R.Neupane, M.M.M. Abeeyar and V.K. Nanayakkara, (ISBN 978-955-8395-02-8)

(4) Technologies for climate change adaptation-The water sector; Mark Elliot, Andrew Armstrong, Josep Lobuglio and Jamie Bartram, UNEP, (ISBN 978-87-550-3902-5); 2011

(5) 75 Minor tank development, Tec paper 21, 2002, Inventory, planning and mapping programme; Integrated Food Security Programme, Trincomalee

(6) Small village tank systems of Sri Lanka; Their evolution, setting, distribution and essential functions; P.R.Panabooke (2009)

[i] **This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Sir Lanka. You can access the complete report from the TNA project website http://tech-action.org/**