

## Technology Fact Sheet for Adaptation

### Rain Water Harvesting <sup>i</sup>

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| 1. <b>Sector:</b> <i>To be written by sector expert.</i>                         | Food                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 2. <b>Technology Characteristics:</b>                                            | Adaptation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 2.1 <b>Technology Name:</b>                                                      | <b>5. Rain water harvesting</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| 2.2 <b>Introduction:</b><br><i>low/high Brief introduction to the technology</i> | <p>Irregular nature of the rains and droughts makes raising crops difficult due to the unavailability of water at correct time in required quantities. Increase water availability and efficient water use for crop production would be one of the most important adaptations for the country. Rainwater harvesting (RWH) is a valuable potential resource for agricultural production. Rainwater harvesting is a method of inducing, collecting, storing and conserving local surface runoff for agricultural production. Storage tanks include water pans, dugouts, tanks, reservoirs and dams. During the 3-6<sup>th</sup> century, the dry zone was studded with thousands of tanks of varying capacities to collect rain water. There are around 35,000 minor irrigation tanks distributed across the country and 12,000 tanks distributed across the undulating landscape in the dry zone. These tanks are not randomly located but occur in the form of distinct cascades each made up of 4-10 small tanks situated within a single small catchments (meso-catchment) varying in extent from 100-1000 ha, and impound surface relief water of a watershed for irrigation and domestic purposes. These small tanks were an integral part of the eco-system and played a dominant role in the socio-economic and cultural aspects of the village leading to a prosperous rural sector by providing irrigation to about 185,000 ha. However, cultivable extents from these small tanks have decreased gradually with siltation.</p> <p>CC is projected to increase the variability and intensity of rainfall with occurrence of extreme events becoming more frequent. Therefore storage and use of rain water reduces the risk and uncertainty due to water shortage for production and it also encourages farmer to diversify their enterprises, such as increasing production, selection of new hybrid</p> |

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|                                                                                                                                                                                                                                                       | varieties, purchasing larger livestock.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>2.3 Technology</b><br><b>Characteristics/Highlights:</b><br><i>Few bullet points, ie. low/high cost; advance technology; low technology.</i>                                                                                                       | High cost involvement<br>Hard Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>2.4 Institutional and Organizational Requirements:</b> <i>How much additional capacity building and knowledge transfer is required for the adaptation option to be implemented.</i>                                                                | <p>Sri Lanka has a rich tradition of practicing RWH technology in the dry zone with the help of an intricate network of small and large reservoirs and adoption of community water management principles. The expansion of technology to harvest water is relatively uncomplicated, but the institutional arrangements for water extraction have to be modified to match changing demands and modified community structure. Operation and maintenance of water conveyance and delivery structures have been very challenging to carry out. Improved technology such as water-control structures and institutional arrangements such as water-users' association to manage and operate large irrigation systems have to be put in place, supported by enabling legislation.</p> <p>There are also potential negative consequences and rising of conflicts as downstream communities may be affected adversely by diversion of water flows. Large dams also increase the risk of safety to installations located downstream. Increased local capacity to assess and manage risks from such events must be built up.</p> |
| <b><u>3. Operations and maintenance</u></b>                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>3.1 Endorsement by Experts:</b>                                                                                                                                                                                                                    | Most of the RWH minor tanks in the country, lost their capacities due sedimentation and poor management. Best adaptation measure to increase crop production, fresh water fishery and livestock under CC, is the rehabilitation of these tanks and increase the water holding capacity and introduction of proper management system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>3.2 Adequacy for current climate:</b> <i>Are there negative consequences of the adaptation option in the current climate? Some adaptation may be targeted at the future climate but may have costs and consequences under the current climate.</i> | <p>The use of different forms of RWH technology is complementary to the current practice of irrigation for agriculture and would strengthen system resilience.</p> <p>It has other advantages such as greatly reducing land erosion and flood inflow to major rivers. It contributes greatly to stabilization of declining ground-water resources, assuring water supplies for domestic and other community uses.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>3.3 Size of beneficiaries group:</b>                                                                                                                                                                                                               | RWH benefits large sectors of populations over big regions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

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| <i>Technology that provides small benefits to larger number of people will often be favored over those that provide larger benefits, but to fewer people.</i>                                                          | as agriculture is the dominant occupation in some areas of the country.                                                                                                                                                                                                                                                                     |
| <b>4. <u>Costs</u></b>                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                             |
| <b>4.1 Cost to implement adaptation options:</b> <i>Cost measures</i>                                                                                                                                                  | As a pilot project RS. 600 M was estimated to restore 250 minor irrigation tanks to collect rain water for irrigation.<br>Costs of practicing RWH will be higher as the construction of reservoirs and minor irrigation tanks for water impounding and delivery and control structures for water conveyance demand heavy engineering works. |
| <b>4.2 Additional costs to implement adaptation option, compared to “business as usual”:</b>                                                                                                                           | Costs are location specific and vary by the scale of the project. Large reservoirs and networks of small rural tanks have different cost structures depending on the local geography.                                                                                                                                                       |
| <b>5. <u>Development Impacts, indirect benefits</u></b>                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                             |
| <b>5.1 Economic benefits:</b><br><b>Employment -</b> <i>Jobs</i><br><b>Investment -</b> <i>Capital requirements</i>                                                                                                    | <ul style="list-style-type: none"> <li>• Increase job opportunities</li> <li>• Makes investments more attractive by lowering risk of crop failures</li> <li>• Raise profits</li> </ul>                                                                                                                                                      |
| <b>5.2 Social benefits:</b><br><b>Income -</b> <i>Income generation and distribution</i><br><b>Education -</b> <i>Time available for education</i><br><b>Health -</b> <i>Number of people with different diseases.</i> | <ul style="list-style-type: none"> <li>• Improve livelihoods of the community through economic benefits from increasing access to irrigated food production</li> <li>• quality of life from strengthening of domestic water supply</li> </ul>                                                                                               |
| <b>5.3 Environmental benefits:</b><br><i>Reductions in GHG emissions, Local pollutants, Ecosystem degradation etc</i>                                                                                                  | <ul style="list-style-type: none"> <li>• Reduced ecosystem degradation- silting, changes of microclimate</li> <li>• Increase ground water table</li> <li>• Reduced runoff/erosion</li> </ul>                                                                                                                                                |
| <b>6. <u>Local context</u></b>                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                             |
| <b>6.1 Opportunities and Barriers:</b><br><i>Barriers to implementation and issues such as the need to adjust other policies.</i>                                                                                      | <ul style="list-style-type: none"> <li>• The cost of storage systems is a barrier to popularize the technology.</li> <li>• Lack of national policy on rain water harvesting</li> </ul>                                                                                                                                                      |
| <b>6.2 Status:</b> <i>Status of technology in</i>                                                                                                                                                                      | Rain water harvesting has been practiced since, ancient                                                                                                                                                                                                                                                                                     |

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| <i>the country</i>                                                                                               | times, especially in the dry zone agriculture. |
| <b>6.3 Timeframe:</b> <i>Specify timeframe for implementation.</i>                                               | 3-4 Years                                      |
| <b>6.4 Acceptability to local stakeholders:</b> <i>Whether the technology will be attractive to stakeholders</i> | The technology has high local acceptability.   |

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