

Technology Fact Sheet for Adaptation

CONSTRUCTION OF SAND DAMS ⁱ

6. TECHNOLOGY:	CONSTRUCTION OF SAND DAMS
Introduction	Seasonal rivers, mainly found in arid and semi-arid areas, usually receive high water input during rainy season but dry up during the prolonged dry season. However, in sandy river beds underlain by impervious layer, subsurface can be available even after the river stop flowing. Therefore, if appropriate technology is applied to increase storage it can be an important contributor to abatement of water stress associated with drought conditions.
Technology Characteristics	A sand storage dam (or sand dam) is a small dam build on and into the riverbed of a seasonal sandy river. Sand dams effectively increase the volume of groundwater available for abstraction as well as prolonging the period in which groundwater is available. The damming acts by abstracting the flow of groundwater through the riverbed which helps to create additional groundwater storage for the community. The volume of water available for abstraction is considerably larger than just the volume present in the riverbed sands because a large quantity of the water is additionally stored in the riverbanks, recharging the sand dam reservoir in the dry season. The construction of a sand dam involves construction of a reinforced concrete wall (or a similarly robust and impermeable weir) built 1-5 meters high across a seasonal sand river.
Country Specific Applicability & Potential	Many rivers in the arid and semi-arid areas are seasonal, filling during the rainy season and completely drying out during the dry season. The river beds in these regions are usually sandy, which has a large water holding capacity. Construction sand dams will help to hold and store water during the rainy season for use during the dry season. There is large potential for sand dams in the arid and semi-arid regions which constitute the bulk of the land surface in Kenya
Status of Technology in Kenya	Sand dams have been constructed in south eastern regions of Kitui and Machakos mainly by NGOs. These have helped to alleviate water problems associated with prolonged dry seasons in these regions.
Benefits to Economic/Social and Environmental Development	• Availability of water for domestic and livestock during the dry season • As with any good water resource development, since less time is needed to fetch water, so school attendance increases significantly and more time can be spent on other income generating activities. • Women empowerment by providing readily available water and committing time spent looking for water to family and other socio-economic activities • Reduced incidences of water born diseases
Climate Change Adaptation Benefits	Climate change projection for Kenya indicates general rainfall decrease most of the country, which together with population growth is bound to impact serious strains in existing low freshwater endowment in the country. The Arid and Semi-arid areas will be the most affected by the climate change and therefore the sand dams will serve to alleviate the climate change induced water stress in these areas. Sand dams can also contribute greatly to the stabilization of declining groundwater tables (Elliot et al 2011).

Financial Requirements and Costs	The average cost of a sand dam to serve 200 households is estimated at US\$ 10,000
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ⁱ This fact sheet has been extracted from TNA Report – Technology Needs Assessment Reports For Climate Change Adaptation – Kenya. You can access the complete report from the TNA project website <http://tech-action.org/>