1.5 Feasibility of Replacing Irrigation Canals with Pipes in Sudan

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This is a feasibility study comparing water canals with pipes in irrigation projects in Sudan. Two types of soil (sand and clay) and two types of pipes (high-density polyethylene and carbon steel) were investigated. Three existing irrigation schemes that use both canals and pipes were investigated, namely, Aljinaid Sugar Project, the White Nile Sugar Project and Silait Agricultural Scheme. The study revealed that for relatively short hauls, open canals are cost effective. For relatively long hauls, pipes are cost effective due to the periodic need for silt and grass clearance. Use of high-density polyethylene pipes has the extra advantage of limited land occupancy, flexibility in adjusting pressure and flow rates and no silt accumulation if turbulent flow is assured all through.