


Technology	Innovation in Constructed Wetland design using combination of surface and sub-surface wetlands
Research organization	TM Solutions
Description of the technology being developed	<p>Novel CWs system for agricultural reuse of treated wastewater coming from small communities.</p> <p>Treatment of waste water by subsurface wetland (SSF) planted with halophytes followed by a slow sand filter and a novel inactivation unit.</p>  <pre> graph LR A[Primary treated wastewater] --> B[Free water surface Constructed Wetland] B --> C[Horizontal subsurface Constructed Wetland] C --> D[Slow Sand Filter] D --> E[Inactivation Unit] </pre> <p>Halophytes chosen were <i>Tamarix parviflora</i>, <i>Limoniastrum monopetalum</i>, <i>Junkus acutus</i>, <i>Sarcocornia perennis</i>.</p> <p>Inactivation unit consists of a series of low depth plastic canal containing TiO₂ coated pumice.</p>
Benefits	<ul style="list-style-type: none"> • Significant removal (>90%) of organic matter (COD, BOD) as well as total suspended solids in all combinations. • Moderate removal (~50%) was found for nitrogen, again in all combinations • Phosphorus concentration was not significantly different in the influent and effluent for all examined units. • Efficient removal of pathogens from slow sand filter
Financial viability	<ul style="list-style-type: none"> • Low cost, easily operated and maintained system • Strong potential for application in developing countries, particularly by small rural communities. • Important economic considerations include: <ul style="list-style-type: none"> ○ Suitable free-land availability ○ A relatively flat topography to minimize the construction costs. ○ Need for relatively impermeable soils to protect groundwater, nonporous liner may be installed at additional cost.
Potential users	Rural communities, municipalities
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