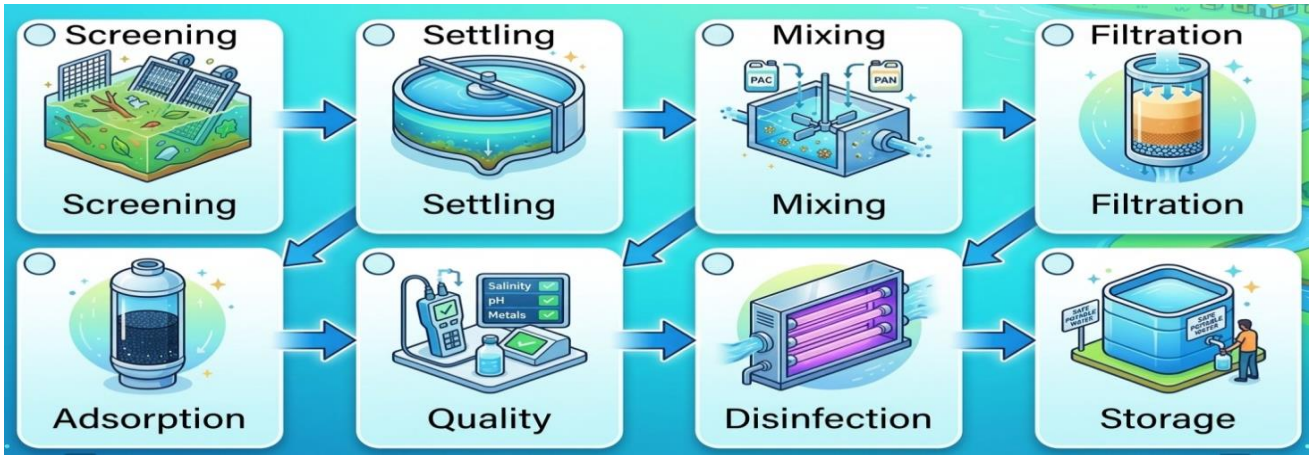
<table>
<tr><td>Product Name</td><td>Coastal River Water Desalination Filter</td></tr>
<tr><td>Brief Description</td><td>A zero-waste purification system engineered to remove excess salinity, suspended solids, and harmful pathogens, returning clear, safe, and mineral-balanced drinking water.

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<tr><td>Problem Being Addressed</td><td>Drinking water scarcity across 19 coastal districts in Bangladesh (~20 million affected people), where water salinity has increased by 26% over 35 years. High-cost Reverse Osmosis (RO) that strips essential minerals, energy-intensive distillation, or simple filtration units that fail against salinity and microbes.</td></tr>
<tr><td>Primary Applications</td><td>Rural households, community supply stations, small-to-medium industrial plants, and emergency post-disaster relief. Direct potable water production, utility water treatment, and decentralized rural supply networks.</td></tr>
<tr><td>Target Users & Buyers</td><td>Department of Public Health Engineering (DPHE), local water entrepreneurs, disaster relief NGOs, and coastal aquaculture processors. High-salinity districts including Satkhira, Bagerhat, and Coastal belt.</td></tr>
<tr><td>Development Status</td><td>Fully validated from laboratory. Demonstrates complete disinfection of 11,660 liters per 30-minute exposure cycle.</td></tr>
<tr><td>Testing & Quality Validation</td><td><table>
<tr><th>Metric</th><th>Standards & Performance</th></tr>
<tr><td>Compliance</td><td>Meets WHO (2011) and Bangladesh ECR (1997) drinking water guidelines</td></tr>
<tr><td>Pathogens</td><td>Complete elimination (Absent / <1.8 MPN/100ml) of E. coli, Fecal, and Total Coliforms via 254 nm UV-C</td></tr>
<tr><td>Salinity & pH</td><td>Safe salinity (0.4–0.5 ppt); balanced pH (6.5–8.5)</td></tr>
<tr><td>Heavy Metals</td><td>Arsenic <0.005 mg/L; Lead <0.001 mg/L (well below maximum limits)</td></tr>
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<tr><td>Core Technical Advantages</td><td>Retains essential dietary minerals (Calcium 40–70 mg/L, Magnesium 30–50 mg/L), avoiding mineral deficiency caused by conventional RO. Direct UV-C irradiation eliminates pathogens without chemical additives, preserving natural taste and odor. Employs low-cost local sand beds and recyclable activated carbon with built-in backwash and thermal/chemical regeneration.</td></tr>
<tr><td>Raw Materials & Supply Chain</td><td>Coagulants/Flocculants: Poly Aluminum Chloride and Polyacrylonitrile.
Filter Media: Gradated natural sand over coarse gravel.
Adsorption & UV Unit: Micro-porous activated carbon and enclosed UV-C lamps.
Availability: Primary media (sand, gravel) are locally abundant; food-grade PAC, PAN, and carbon are readily sourced locally or imported.</td></tr>
<tr><td>Key Machinery</td><td>
Debris screening grids & 24-hour sedimentation tanks
Coagulation mixing unit (Rapid: 350 rpm for 60s; Slow: 30 rpm for 20m)
Multi-layer sand and activated carbon filtration beds with backwash valves
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	• Enclosed high-efficiency UV-C chamber with quartz-glass lamp. • Clean water storage tanks (PVC, PET, HDPE, or Reinforced Concrete)
Indicative Economics	Significantly cheaper to run than RO systems due to minimal electrical load (low-wattage UV-C lamps and low-pressure pumping) and ultra-low chemical dosing. Activated carbon bed service life reaches 8–12 months / 4,000 gallons before simple regeneration is required.
Market Evidence & Readiness	Tested and optimized by researchers at INARS and BCSIR. Specifications are ready for commercial licensing, pilot deployment, or public-private partnerships (PPP).
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