

Hybrid Sustainable Agri-Energy Infrastructure

This innovation combines biodegradable agricultural sensors with decentralized energy trading to support sustainable rural development. Biodegradable sensors measure real-time soil and water parameters, while solar-powered microgrids enable energy generation and peer-to-peer trading via blockchain smart contracts. Farmers use mobile apps to monitor land conditions and sell surplus renewable energy to neighboring farms or villages. The system ensures transparency, boosts productivity, reduces environmental impact, and enables inclusive economic growth in off-grid or under-resourced regions. It targets SDG 2 (Zero Hunger), SDG 7 (Clean Energy), SDG 12 (Responsible Consumption), and SDG 13 (Climate Action).