TIEC3.0 Poster Title

Name: Schrodinger Technologie

Affiliation : Bayero University Kano

Proposed Solution

The RienLIGHT Water Box is a solar-powered, chemical-free water purification device that transforms 8 liters of contaminated water into safe drinking water in just 90 seconds. Designed for underserved and off-grid communities, it removes 99.98% of bacteria and viruses, reducing the spread of waterborne diseases and improving quality of life.

Technical Design

Power Source: 30W solar panel (off-grid compatible)

Filtration: Multi-stage system (sediment, carbon, and UV)

Output: 8 liters per 90-second cycle

Features: Portable, refillable, durable, and user-friendly design

Built for low-resource settings using locally sourced materials

Economic feasibility/Proposed Business Model

Unit Cost: NGN 32,000

Selling Price: NGN 62,500

Model: Hybrid – Direct sales, NGO/government partnerships, water kiosks run by local youth, and maintenance subscriptions

5-Year Target: 250,000 units deployed

Projected ROI: 500%+ with breakeven by Year 3

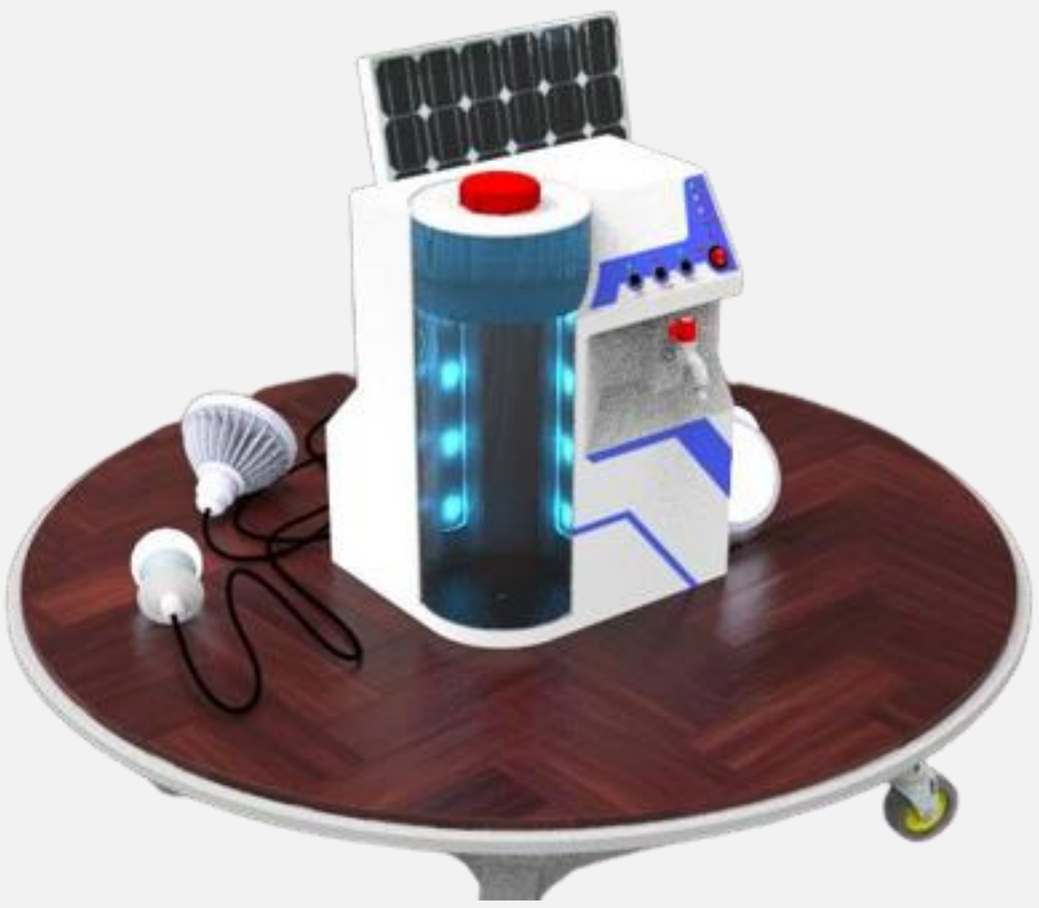

Fig. 1: RienLight Water Box, a solar powered portable water purification device.

Timeline for developing prototype/trial

We have completed the **functional design** of the RienLIGHT Water Box. The next step is to develop the **Minimum Viable Product (MVP)** for pilot testing.

Next 4 Months Plan:

Month 1: Finalize design for manufacturing (DFM)

Month 2: Build and test MVP units

Month 3: Field simulation and user feedback

Month 4: Refine and prepare for pilot deployment

This will ensure the product is ready for real-world testing and scalable production.

Budget & Target User/Market/Scale

MVP Development Budget – ₦1,400,000 NGN
To build 3 pilot-ready MVPs:
₦600,000 – Components
₦400,000 – Fabrication
₦250,000 – Testing & refinement
₦100,000 – transportation and reasearch volunteer Stipends
₦50,000 – Documentation & support

Target Users: Underserved households, schools, IDP camps, clinics

Primary Markets: Lagos, Abuja, Northern Nigeria (Kano, Kaduna, Borno)

Scale Target: Reach 250,000+ users in 5 years; expansion into other African LDCs

References

1. **WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene (JMP) 2023 Report** https://washdata.org/reports

2. **Nigeria Water, Sanitation and Hygiene (WASH) Sector Status Report – Federal Ministry of Water Resources** https://www.waterresources.gov.ng/ (Note: Report access may require a direct request from the ministry or partnership organizations.)

3. **UNICEF Nigeria – Water, Sanitation and Hygiene** https://www.unicef.org/nigeria/water-sanitation-and-hygiene

4. **World Bank: Nigeria – Water Sector Diagnostic Report** https://www.worldbank.org/en/topic/water/publication/nigeria-water-sector-diagnostic-report

Acknowledgements

We acknowledge the support of FC4SL, NCIC, IRENA, UNDP, Matari community leaders in Kaduna, and our team volunteers Special thanks to our internal R&D team at Schrodinger Technologie, BUK Fabrication Lab and early funders who believed in our mission.