■ AI for Clean Water — Pitch Deck

Prepared by: Mercy Wafula

1■■ The Problem

Access to safe drinking water remains a major challenge worldwide. Traditional laboratory testing is often slow, costly, and unavailable in remote or low-income areas. Communities need an affordable, AI-powered solution for predicting water safety instantly and accurately.

2■■ The Solution

An AI system that predicts water safety using measurable chemical properties such as pH, hardness, solids, and chloramines. The model uses a **Random Forest Classifier** to classify water as safe or unsafe, with predictions accessible through an interactive **Streamlit web app**.

3■■ How It Works

Data Input → Automated Preprocessing → AI Model Prediction → Output (Safe / Unsafe with Confidence Score)

4■■ Technical Overview

Feature	Description
Model	RandomForestClassifier
Language	Python 3.11
Framework	Streamlit
Testing	pytest
Deployment	Docker
Version Control	Git/GitHub

5■■ Impact & SDG Alignment

- Supports SDG 6 – Clean Water and Sanitation - Provides instant and affordable water testing - Reduces dependence on costly lab testing - Promotes ethical, transparent, and sustainable AI development

6■■ Ethics & Sustainability

- Balanced dataset to prevent bias - Transparent prediction through feature importance metrics - Optimized model for low-resource environments - Accessible via free platforms like Google Colab and local machines

7■■ Future Directions

- Integrate IoT sensors for real-time water monitoring - Expand dataset for more accurate global predictions - Use deep learning for contamination anomaly detection - Collaborate with NGOs and local water authorities

8■■ Call to Action

We are seeking collaborations and partnerships to scale this AI solution for broader impact — improving access to clean water in underserved communities worldwide.