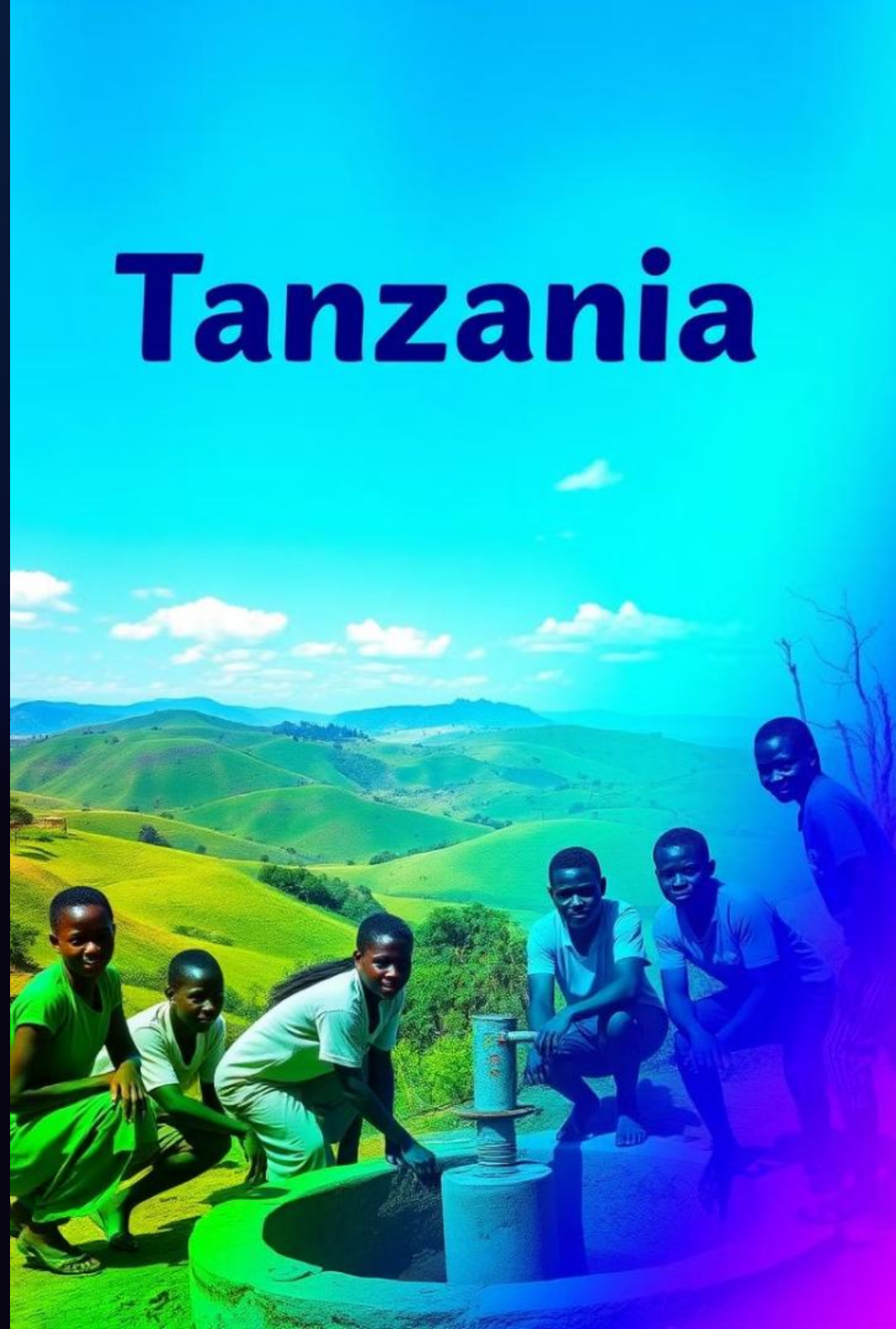
Tanzanian Water Wells Project

This presentation explores a data-driven approach to improving water access in Tanzania.

cw project done by catherine wangui

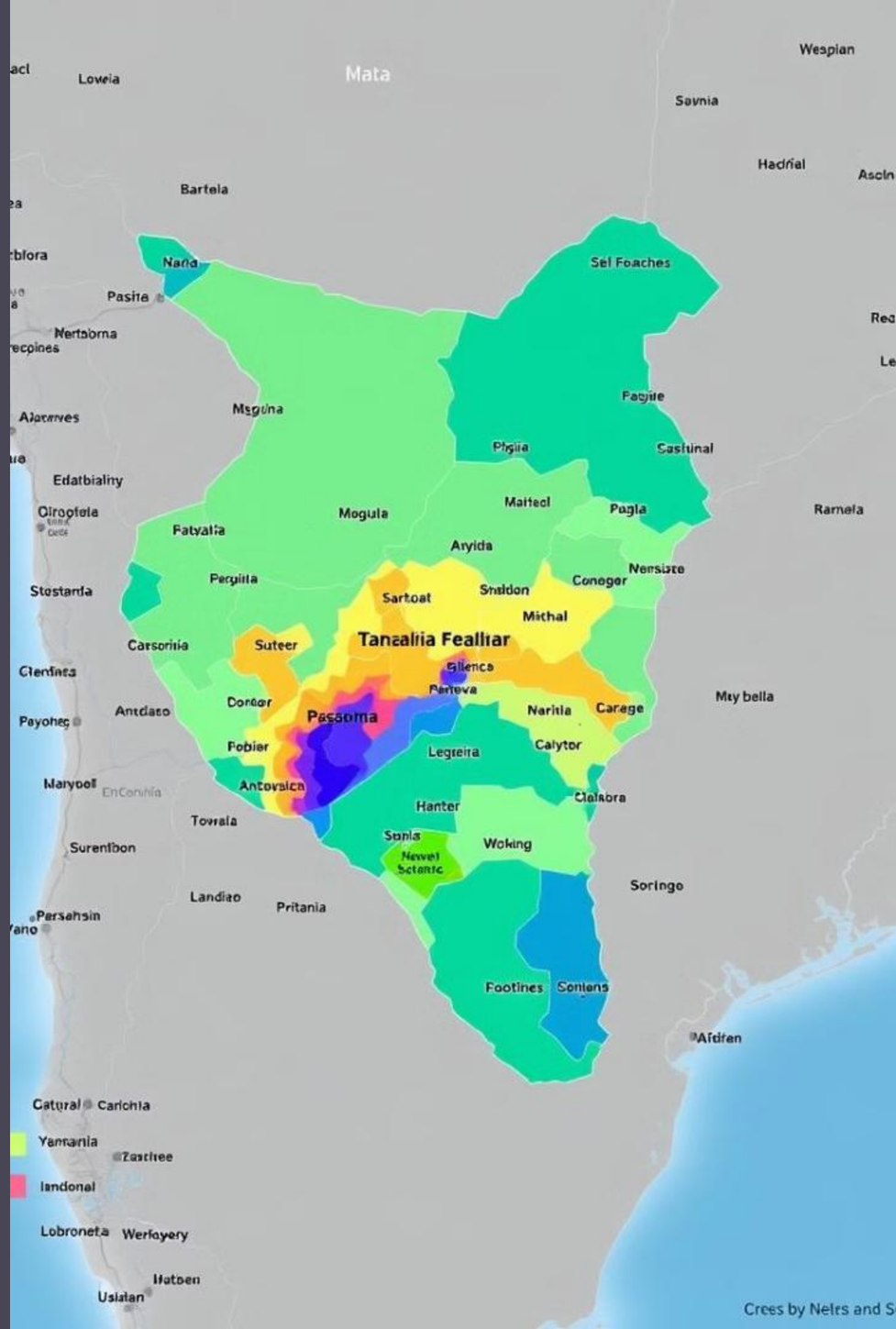


Project Overview

This project aims to develop a machine learning classifier to predict the condition of water wells.

The classifier will categorize wells into three conditions: functional, functional-but-needs-repair, and non-functional.

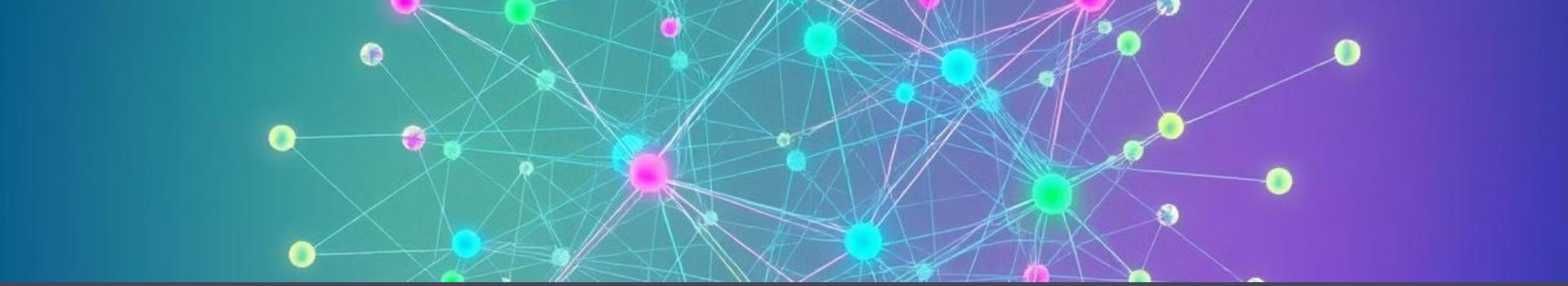
The prediction will be based on various features, including the type of pump, installation date, installer information, region, and other relevant data.



Business and Data Understanding

Tanzania is a country in east africa. The country is known for its vast wilderness areas. They include the plains of Serengeti National Park, a safari mecca populated by the “big five” game (elephant, lion, leopard, buffalo, rhino), and Kilimanjaro National Park, home to Africa’s highest mountain Mount kilimanjaro. Offshore lie the tropical islands of Zanzibar, with Arabic influences, and Mafia, with a marine park home to whale sharks and coral reefs.

The World Bank estimates its population at 65.5 million as of 2022 and its land size is about 947,303 km2 (365,756 sq mi).



Modeling Evaluation

We’ve used advanced techniques to predict the condition the Random Forest model helps us make better predictions about well conditions by using a collective approach, ensuring we have a clearer picture of where and how to address issues with water wells.

Recommendations

I recommend that the Government of Tanzania implement my final model to predict the condition of well pumps across the country. This model is capable of accurately assessing the condition of each pump with at least an 80% success rate.

I recommend the government should prioritize the Northern regions of Bukoba and Arusha, where there is a high concentration of pumps that are functional but in need of repair. Additionally, increased focus is needed in the regions of Dodoma and Mtwara, where the density of non-functional pumps is the highest.

I recommend the government need to find out more about why there are more non-functional pumps among the pumps recorded as having zero static head and in areas recorded as having zero population.

I recommend the government need to implement and operationalize a payment scheme for the water points, having observed that the sites where people never pay for water had the highest frequency of non-functional pumps.

Next Steps

1

Pilot Implementation

We recommend piloting the model's recommendations in a few select areas to evaluate its effectiveness in real-world settings.

2

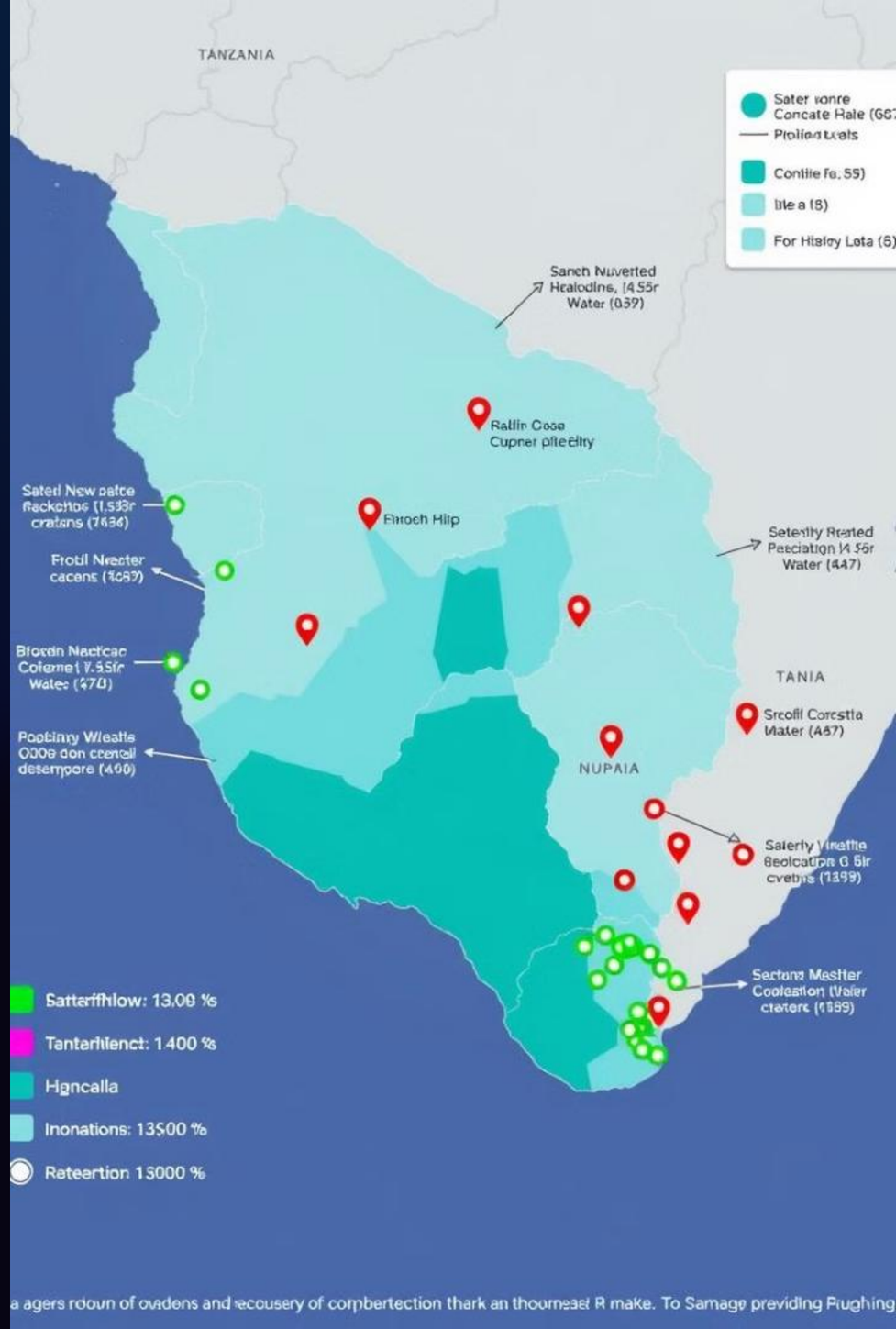
Monitoring and Evaluation

Regular monitoring and evaluation will be crucial to track the impact of new wells and identify areas for improvement.

3

Scaling Up

Based on successful pilot results, the model can be scaled up to benefit a wider population and contribute to sustainable water access across Tanzania.



Thank you

Thank you for your time. We believe this project has the potential to make a significant difference in the lives of many Tanzanians.