

The background of the image is a wide-angle photograph of a natural landscape. It features a foreground of tall, golden-brown grass swaying in the wind. Beyond the grass is a valley with sparse vegetation and shrubs. In the middle ground, there are several low, rounded mountains or hills. The sky above is filled with large, white, billowing cumulus clouds against a bright blue sky.

# FlowWELL

Doing well, better.

**“Water is a key foundation, whose importance can hardly be overestimated ”**



-Irina Bokova  
*UNESCO Director General*

# ABOUT THIS SLIDE DECK

This slide deck was created as part of a project completed by Kristen Davis at Flatiron School. This deck is written from the hypothetical perspective of a startup company looking to gain seed money from a funding group such as [The Unreasonable Group](#).

This slide deck is in conjunction with a github repo found [here](#)

Skills Demonstrated within this project include:

- Proficiency in the [Pandas](#), [Plotly](#), [Seaborn](#), [Matplotlib](#), [Numpy](#) and [sklearn](#) libraries
- Advanced understanding of EDA & feature engineering techniques
- Machine Learning Techniques such as [Decision Trees](#), [Random Forest](#), [GridSearchCV](#), [Cost Function](#), [RSME/ RME](#), [ROC curves](#), [Feature Importance](#) and [Confusion Matrices](#)
- Ability to present non technical data insights & data analysis

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Overview of the state of current Tanzanian water access

## 02. THE SOLUTION

Actionable measures to improve water access & equality

## 03. WHY FLOWWELL

How data drives insights and action at FlowWELL

## 04. CONCLUSION

Summary of findings and future facing proposal



O1.  
THE NEED

The crisis for water in  
Tanzania

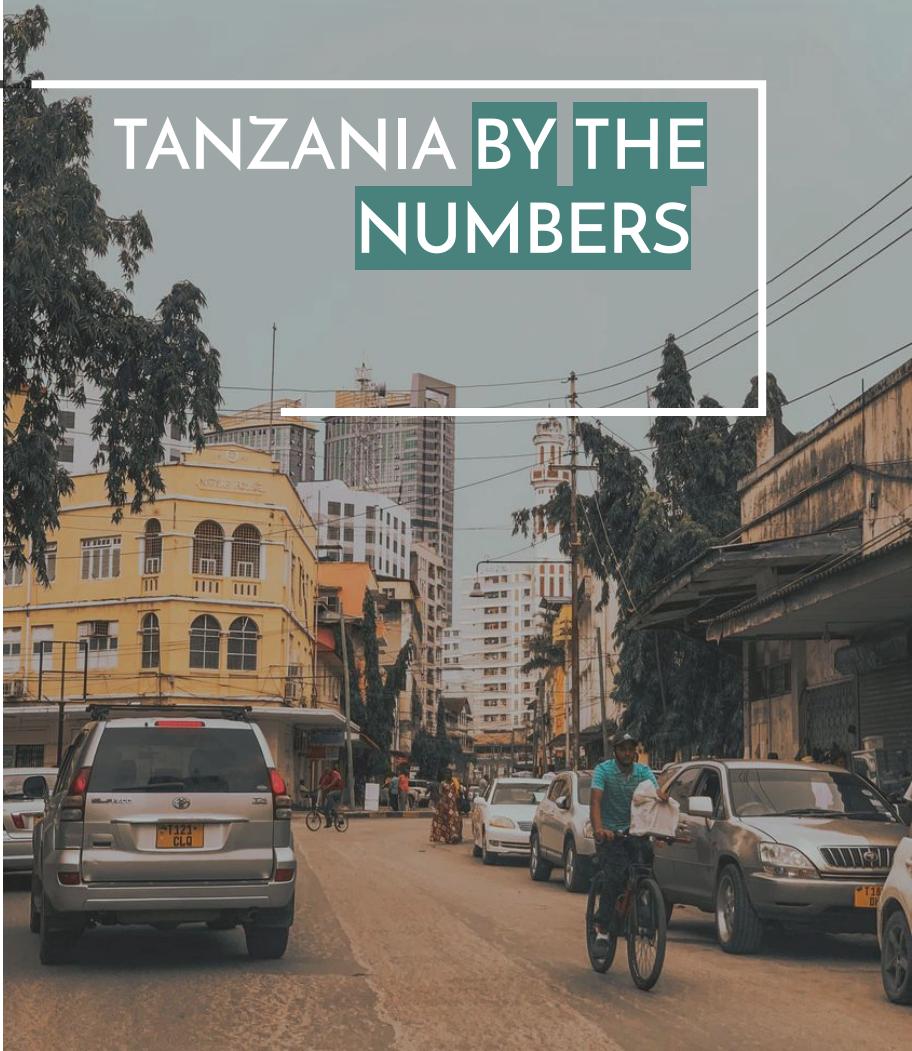
**57** Million people

**85** Percent live on less than \$3.20 per day

**4.67** Million reside in the capital: Dar es Salaam

**37** Percent of the population lives in urban areas

## TANZANIA BY THE NUMBERS

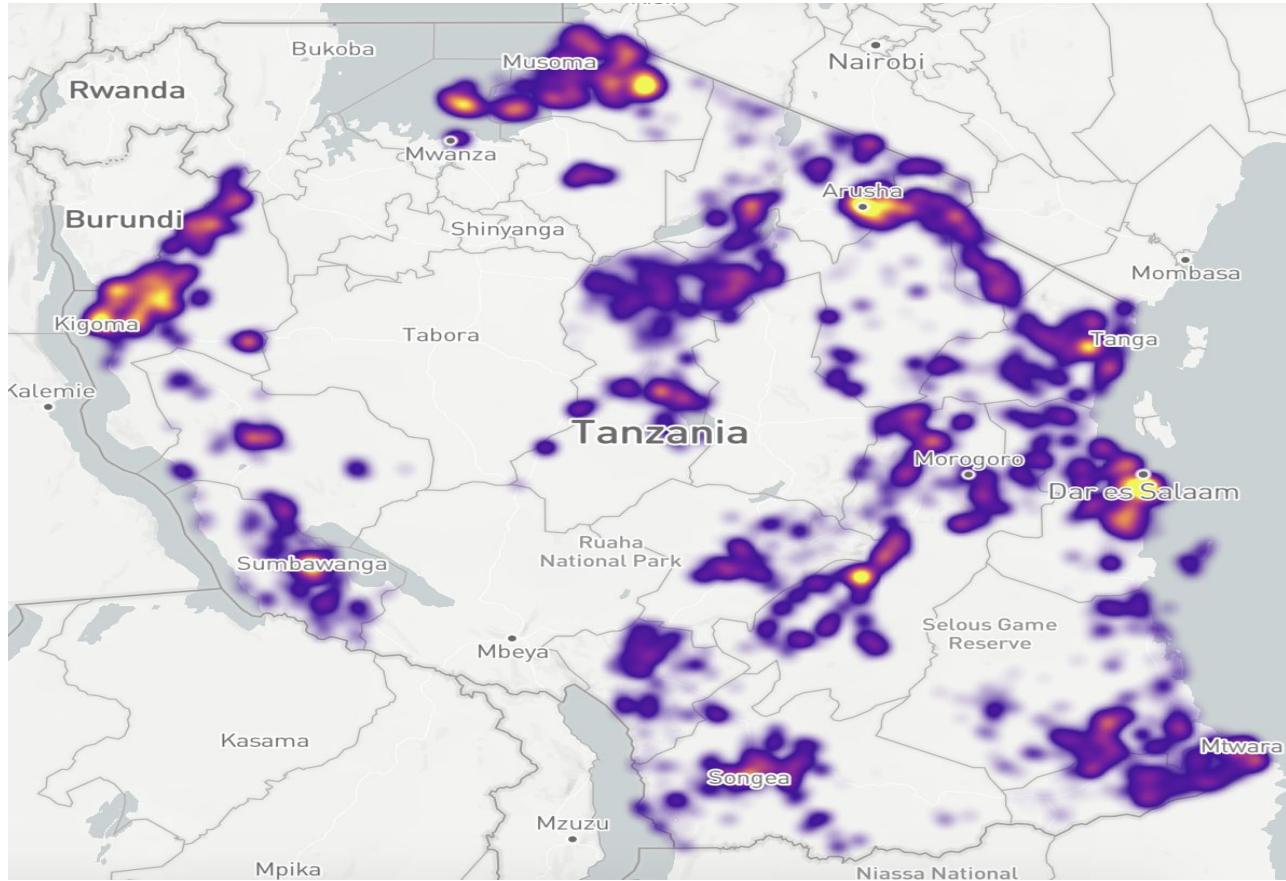


# 4 million people

In Tanzania lack access to an improved source of safe water -- People living under these circumstances, particularly women and girls, spend a significant amount of time traveling long distances to collect water.

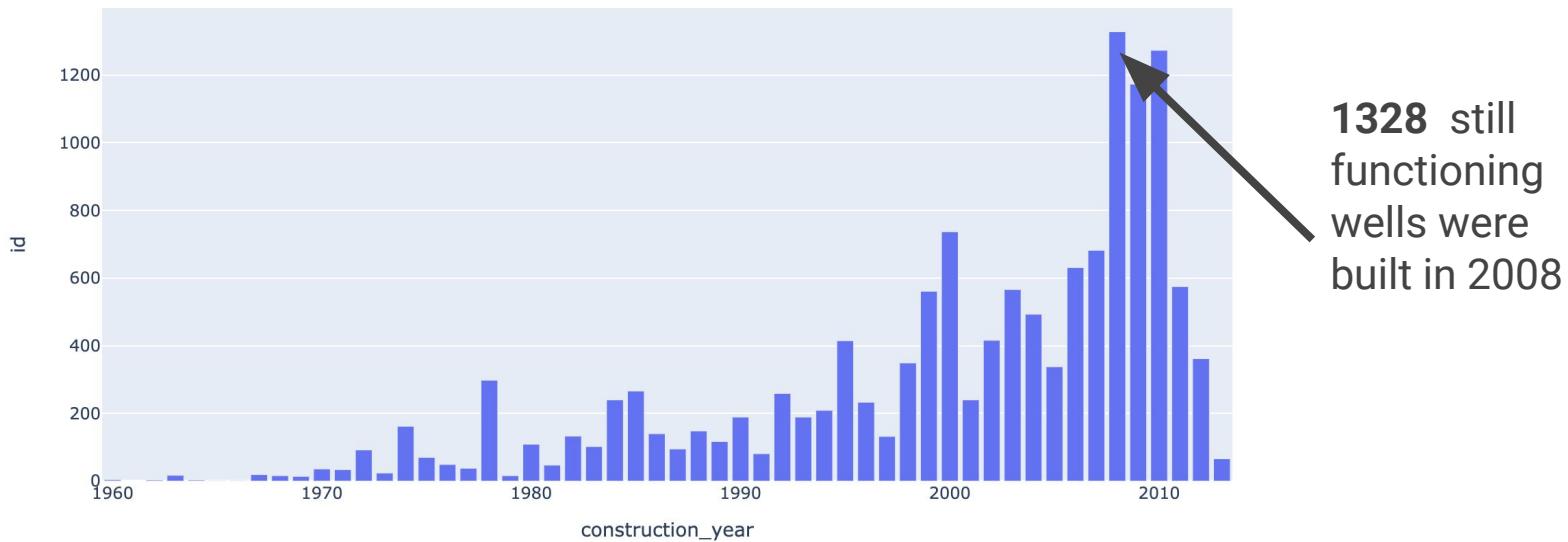


# CURRENT WELL DISTRIBUTION



# FUNCTIONAL WELL BUILT EACH YEAR

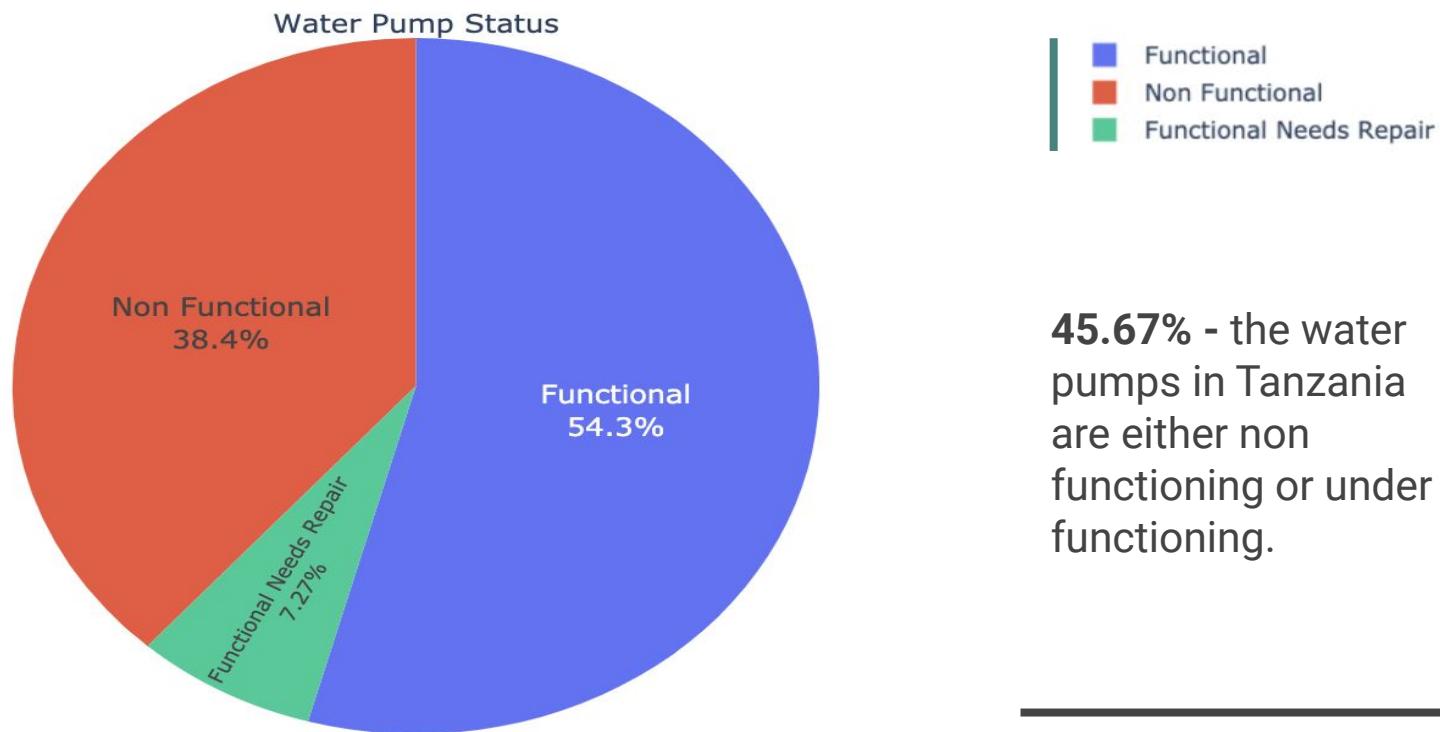
Functional Wells Built Each Year





4,832 of the wells  
constructed after 2000  
have become non functional

# CURRENT WATER PUMP STATUS



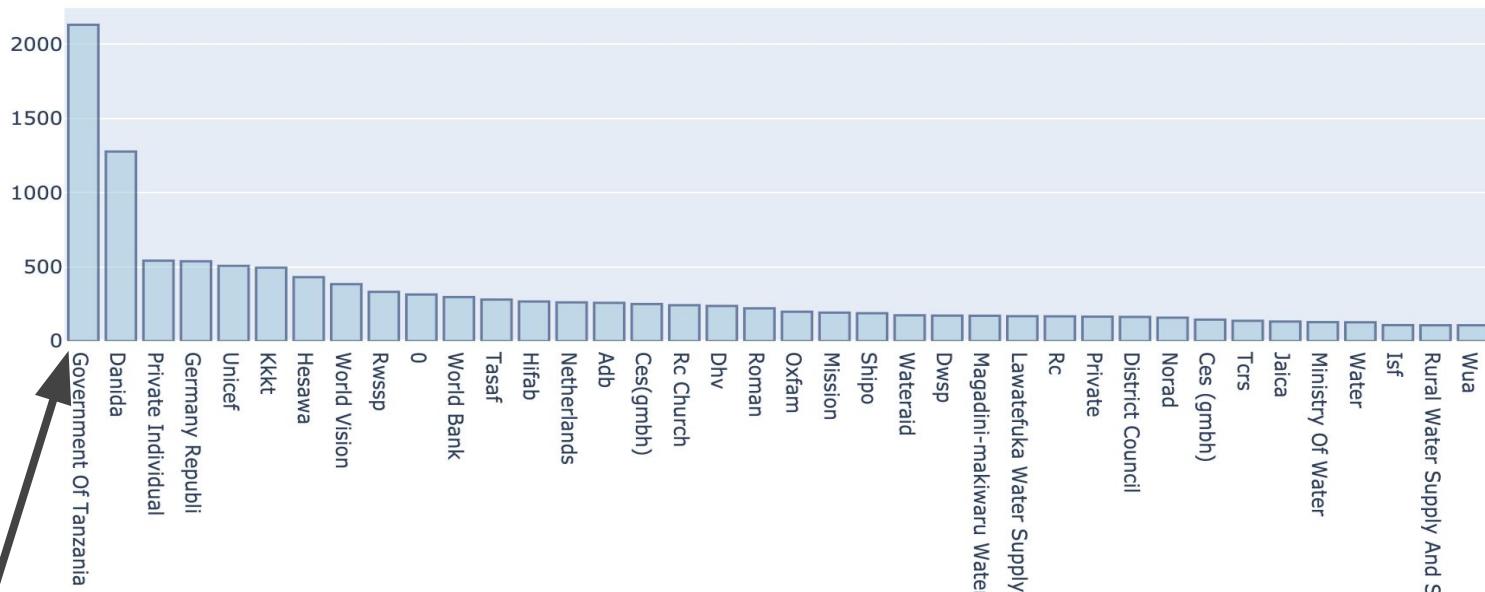


02.

## THE SOLUTION

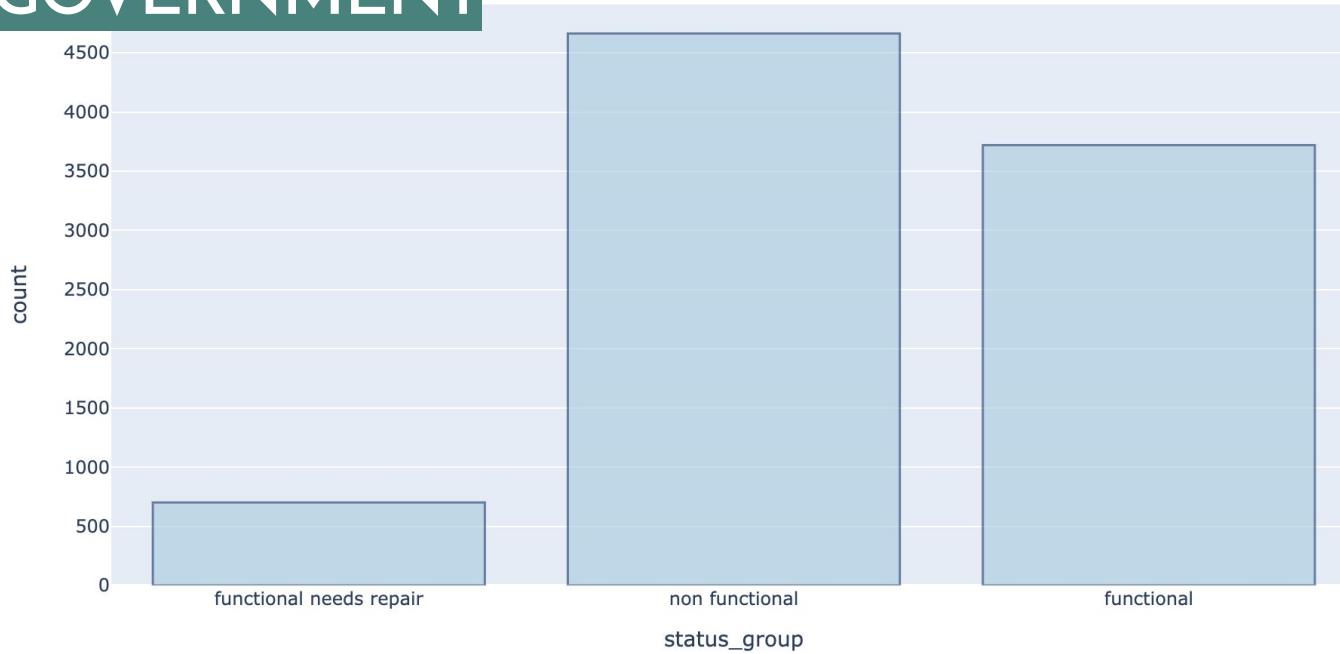
Existing structure repair &  
refurbishment

# SUFFICIENTLY FUNCTION WELL FUNDERS



The Government of Tanzania  
is the primary funder for well  
functioning wells

# STATUS OF ALL WELLS FUNDED BY THE GOVERNMENT



# GOVERNMENT WELLS BY THE NUMBERS?

Of all wells funded and installed by the government

11%



Use gravity as the extraction type

55%

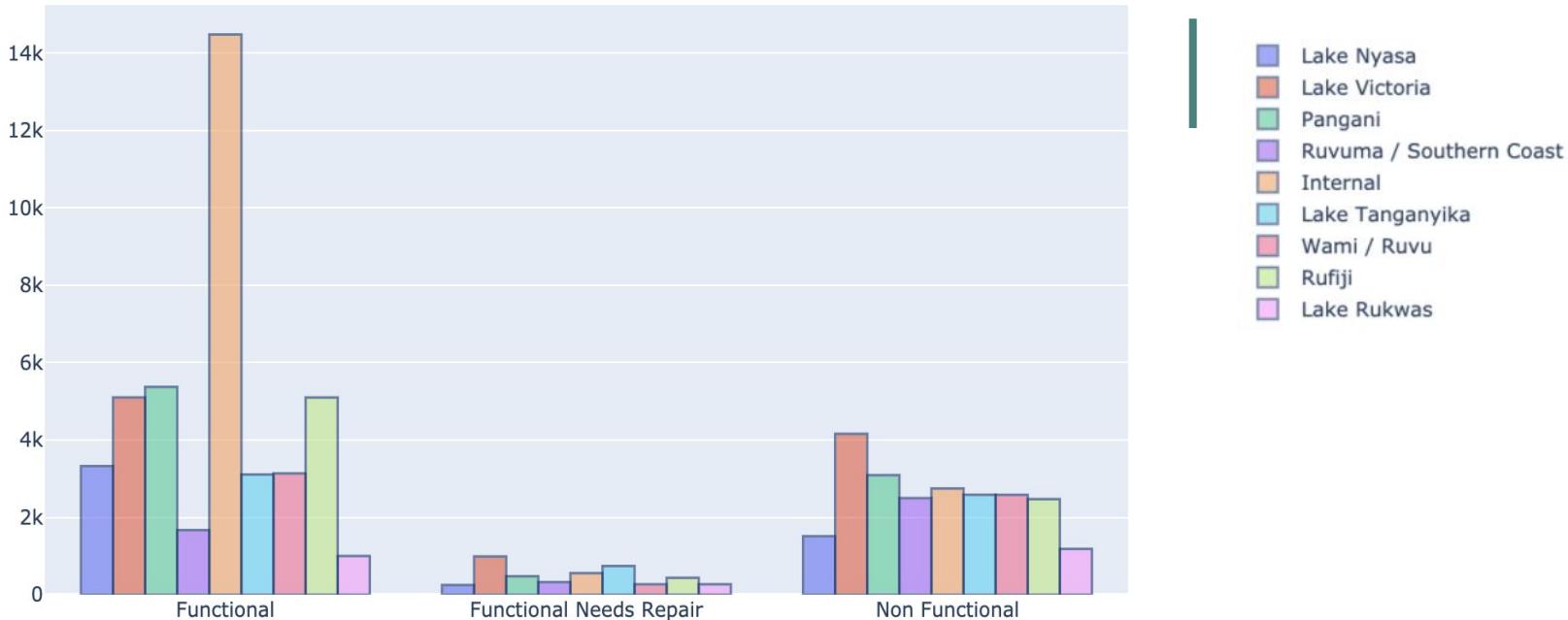


Use groundwater as a source

77%



# WELL STATUS BY BASIN



# STATUS GROUP BY WARD

Wards

Lake Nyasa

Lake Victoria

Pangani

Ruvuma / Southern Coast

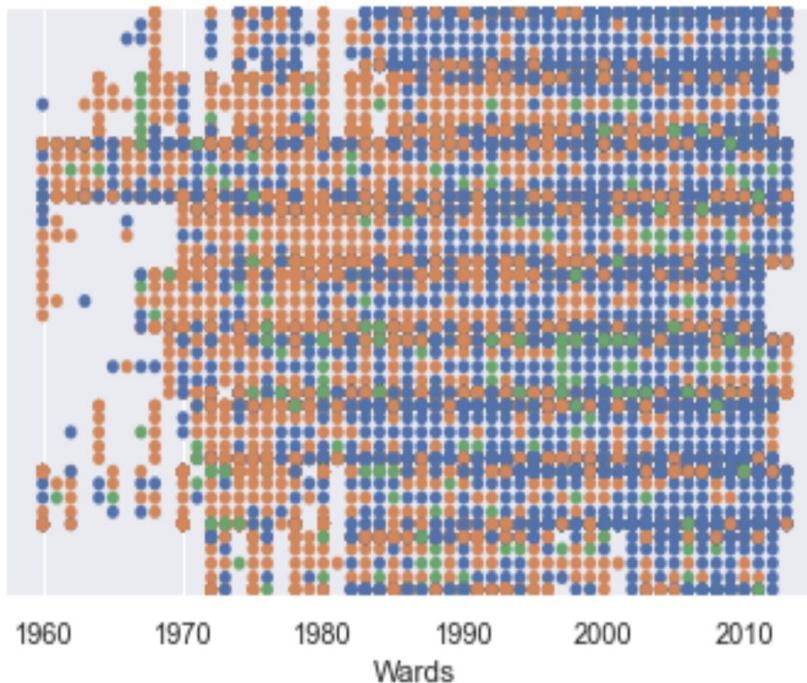
Wami / Ruvu

Lake Tanganyika

Rufiji

Internal

Lake Rukwa



- functional
- non functional
- functional needs repair

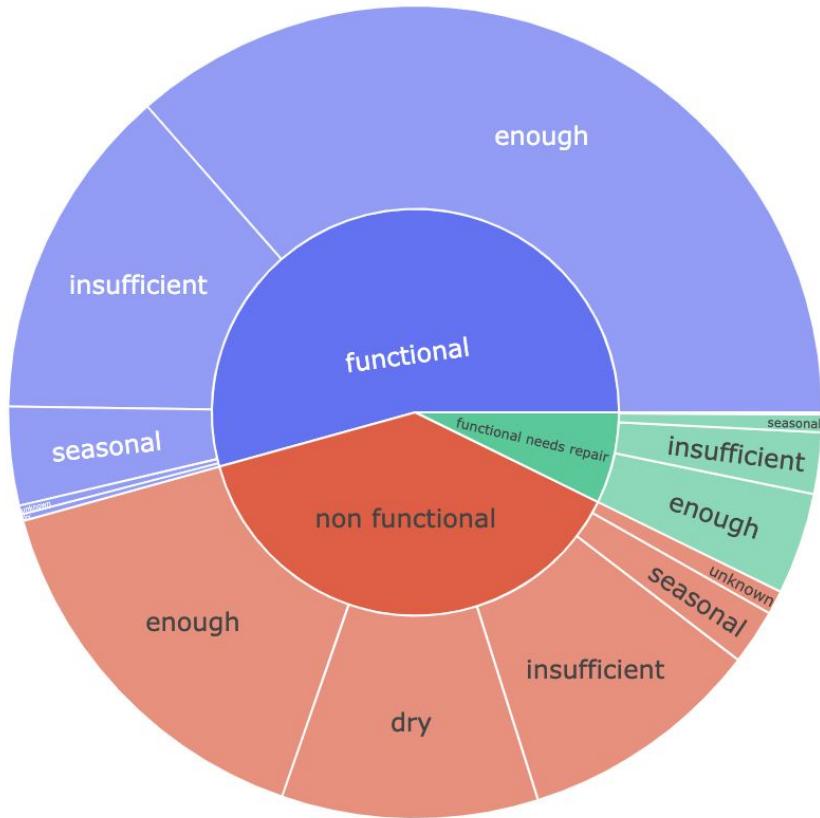
**WARD** - A city subdivision



03.

# WHY FLOWWELL

Data driven predictive  
power



## MAPPING WATER WELLS

**INNER CIRCLE:**  
Well Status

**OUTER CIRCLE:**  
Water Quantity

At FLOWell data mining and machine learning lead to:

- Targeted Repairs
- Ability to classify new wells status
- Deep domain knowledge

In combination this allows FLOWell to do the most good with the smallest necessary capital.

An aerial photograph showing a single-lane asphalt road curving through a dense, green forest. The road is light-colored and contrasts with the dark green foliage of the trees.

DATA DRIVE  
NON PROFIT  
APPROACH

A wide-angle photograph of a massive herd of wildebeests in a savanna. The animals are densely packed, filling the frame from left to right. They are dark brown with prominent white stripes on their faces and legs. The background shows a vast, dry landscape with distant hills under a clear sky.

## 04. CONCLUSION

Summary analysis and  
future work



# MACHINE LEARNING MODEL

**84%**

Accuracy when  
predicting non  
functioning wells

**94%**

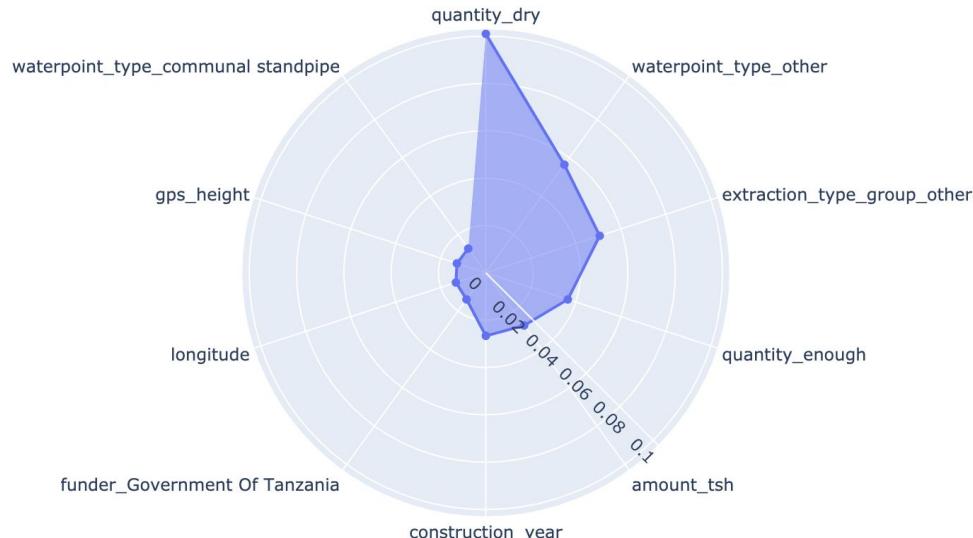
Recall when  
predicting  
functional wells

**79%**

Overall model  
score predicting  
functional wells

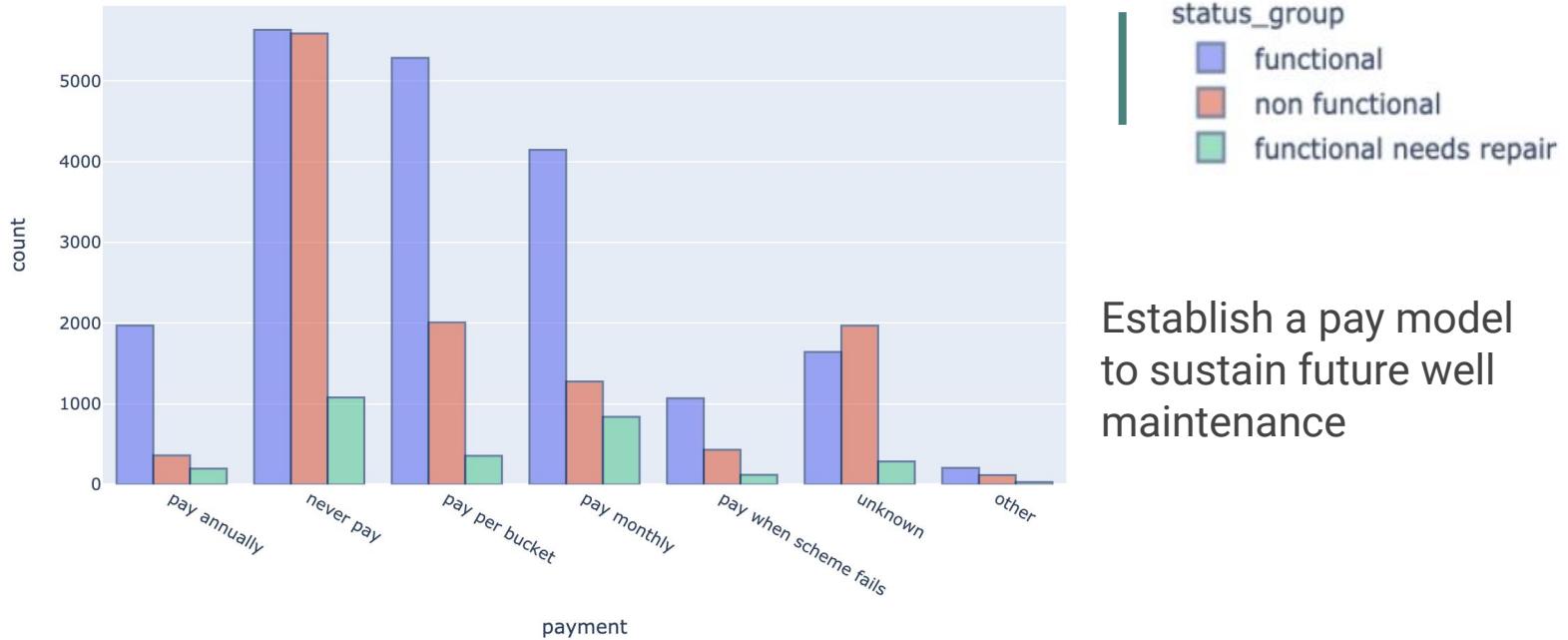
# FEATURE ANALYSIS

Top 10 Most Important Features



WEIGHING  
FEATURE  
IMPORTANCE

# CURRENT WELL PAY STRUCTURE

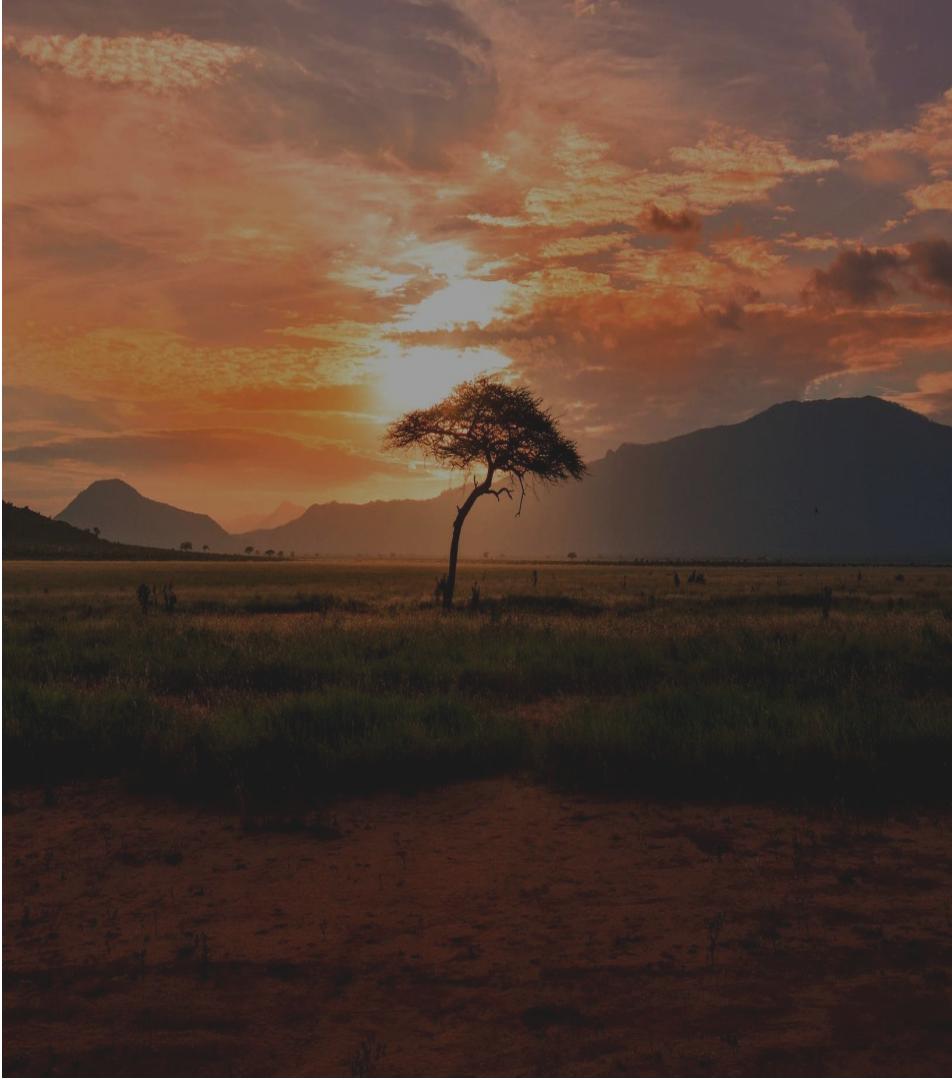




# THANKS!

If you have any suggestions, feedback or questions please reach out!

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GitHub: [@kristen770](https://github.com/kristen770)



# PROJECT RESOURCES

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## PHOTOS

[Unsplash.com](#)  
[Water Quote](#)

## SLIDES

[Slidesgo.com](#)

## RESEARCH

[Water.go](#)

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