Project Documentation: Maji Ndogo National Water Improvement Dashboard

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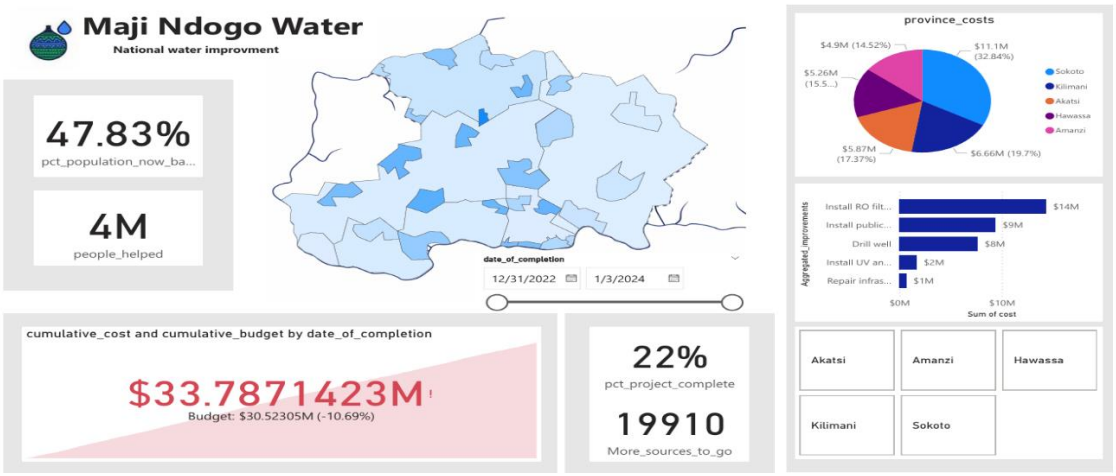
Overview:

This Power BI dashboard provides a comprehensive analysis of the water improvement projects across various regions in Maji Ndogo. The primary focus is on evaluating project costs, completion rates, population access to clean water, and the performance of vendors involved in the projects. The dataset includes information about project costs, locations (rural vs. urban), improvement types, vendor performance, and project completion times.



Key Metrics & Insights:

1. **Population with Basic Access to Clean Water**:
    - At the beginning of the project, only **2%** of the population had basic access to clean water. As of the latest data, this number has improved to **47.83%**.
    - The significant improvement from **2% to 47.83%** highlights the major progress made in expanding access to clean water through the various water source improvements.
2. **Total Water Sources Remaining**:
    - **19,910** water sources are still left to be improved.
    - The **project completion rate** currently stands at **22%**, meaning a majority of the work remains.
3. **Cumulative Costs vs. Budget**:

- The project is facing a **budget overrun** of approximately **-10.69%**.
- The total **cumulative cost** as of now is **$33.79M**, while the budgeted amount was **$30.52M**.
- This overrun indicates challenges in cost forecasting and managing expenditures in complex rural projects.

4. **Cost Breakdown by Improvement Type**:
   - The chart shows the cost distribution for different types of improvements:
     - **Drill Well**: The most expensive improvement type, accounting for **$14M** of the total costs.
     - **Install Public Tap**: A significant cost contributor with **$9M**.
     - **Install RO Filter**: **$8M**.
     - **Install UV Filter**: **$2M**.
     - **Repair Infrastructure**: **$1M** (the least costly type of improvement).
5. **Province-Level and Location-Level Costs**:
   - **Province Costs**:
     - The province of **Sokoto** leads in terms of expenses, with a total cost of **$11.1M**.
     - **Kilimani** follows with **$6.7M**.
     - Other provinces have incurred relatively lower costs.
   - **Location Type Costs**:
     - Improvements in **rural areas** have been more expensive, with a total of **$17M**.
     - Urban improvements cost slightly less, totaling **$16.8M**.
6. **Project Duration vs. Cost**:
   - There is a correlation between **project duration** and **costs**, particularly for rural improvements, where the average duration is higher, resulting in increased costs.
   - Projects that involve well-drilling, particularly in rural areas, take longer to complete and cost significantly more.

7. **Vendor Performance and Cost Analysis**:
    - The vendors with the highest average costs are concentrated in challenging rural regions, such as Sokoto:
        - **Meru Borehole Services (MBS605)** in Sokoto: **$677K** (noted for their work in rural Sokoto, where the conditions are particularly harsh).
        - **Entebbe RO Installers (ERI893)**: **$1.32M**.
        - **Banjul Filtration Tech (BFT485)**: **$661K**.
    - In contrast, vendors working in urban areas tend to have lower costs:
        - **Zanzibar Water Tech (ZWT273)**: **$445K** in Sokoto (urban).
8. **Budget Overrun Across All Provinces**:
    - All provinces are currently **over budget**, with **Sokoto** showing the largest overrun due to its rural nature and the complexities associated with drilling wells.
    - The overrun in Sokoto stems primarily from underestimating the difficulty and expense of improvements in rural areas.
9. **Comparison of Rural vs. Urban Costs**:
    - It is almost **twice as expensive** to improve a water source in a rural area compared to an urban area. The total cost of rural improvements is **$17M**, compared to **$16.8M** in urban areas.
    - This difference highlights the challenges of access and project complexity in rural regions, which adds to travel time, labor costs, and material transportation.
10. **Underestimation of Costs in Sokoto**:

- Rural improvement costs in Sokoto were underestimated, leading to higher-than-expected expenses.
- The combination of remote location, difficult terrain, and the need for specialized equipment (especially for well-drilling) contributed to the cost overruns.

Slicers and Interactive Features:

1. **Date Range Slicer**: Allows users to filter data by the project completion dates, offering insights into how costs and progress have changed over time.
2. **Improvement Type Slicer**: Provides the ability to filter by improvement types such as "Drill Well", "Install RO Filter", "Repair Infrastructure", etc., allowing for granular analysis of costs by type.
3. **Rural/Urban Slicer**: Enables the filtering of data by rural or urban locations, highlighting the difference in costs between the two types of locations.
4. **Map Visual**: The interactive map displays the geographic distribution of project costs across provinces and towns, with color coding to indicate high-cost areas.

Conclusions and Key Takeaways:

- **Significant Improvement in Clean Water Access**: The percentage of the population with basic access to clean water improved from **2% to 47.83%**, a remarkable achievement that underscores the success of the water improvement project thus far.
- **Rural Areas Drive Costs**: Costs for improvements in rural areas, particularly in Sokoto and Kilimani, are substantially higher due to the challenges of accessibility and the complexity of well-drilling projects. Rural costs are almost twice those of urban areas.
- **Vendor Performance**: The most expensive vendors, such as **MBS605**, are justified in their costs as they operate in the most difficult regions, like Sokoto. Conversely, vendors in urban areas charge less due to easier access and simpler improvements.
- **Budget Overruns**: All provinces are facing budget overruns, with Sokoto showing the largest discrepancy due to underestimations in cost forecasting for rural improvements.
- **Longer Project Durations**: Longer project durations, especially in rural areas, are contributing to higher costs. Projects involving well-drilling or remote locations require more time, increasing labor and logistical costs.