Green Wave Project: An Innovative Approach for Interactive Drought Management in the Barind Region.

Hasan Soumick, Yeamun[1]

Introduction:

Aim: To develop a platform that fosters communication and collaboration among stakeholders in drought management in Bangladesh's drought-prone Barind region. By combining OpenStreetMap (OSM) with advanced technology, this solution aims to address groundwater scarcity and support sustainable water management.

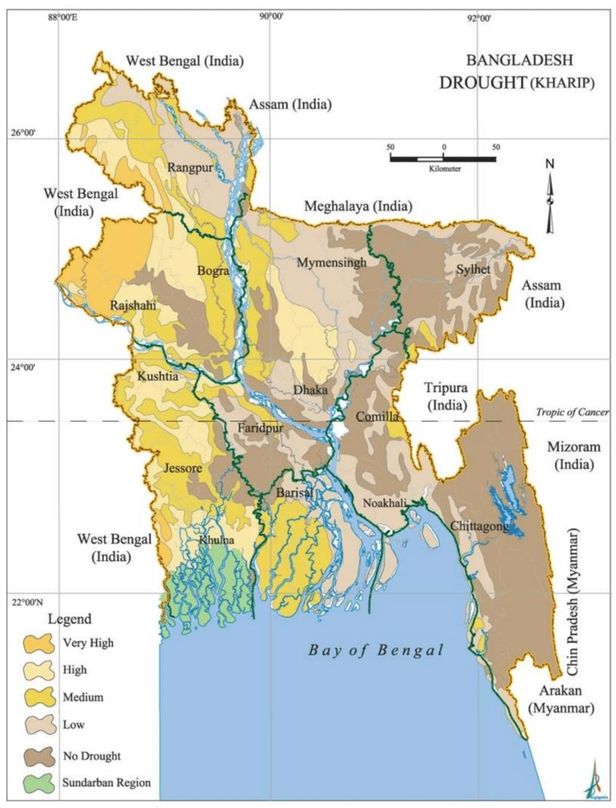

Figure: Map of Bangladesh showing drought-prone areas

Problem Statement: Groundwater scarcity and poor water management are critical challenges, posing severe hardships for local farmers. The tragic case of two Santal farmers in Rajshahi in 2022, who lost their lives due to the unavailability of irrigation water, highlights the devastating human toll of this crisis. To prevent further tragedies and promote sustainable agriculture, it is essential to implement community-driven solutions that address water needs effectively and support farmers in building resilience.

Solution Overview:

This drought management website aims to provide the following functionalities:

1.Public Information Access: Easily accessible information on drought status, groundwater levels, and conservation methods.

2.Drought-Prone Area Analysis: Use of OSM, GIS, and RS data to visualize and communicate drought risk zones.

3.Groundwater Assessment: Regular updates on groundwater reserves based on historical and real-time data.

4.IoT-Based Irrigation Monitoring: Real-time data from soil and moisture sensors to manage and conserve irrigation water.

5.Crop Recommendations: Information on drought-tolerant crops and best practices for sustainable agriculture.

6.Interactive Support: Users can post questions, share experiences, and receive expert advice on drought management, while regular blog posts provide best practices and updates on drought-related issues.

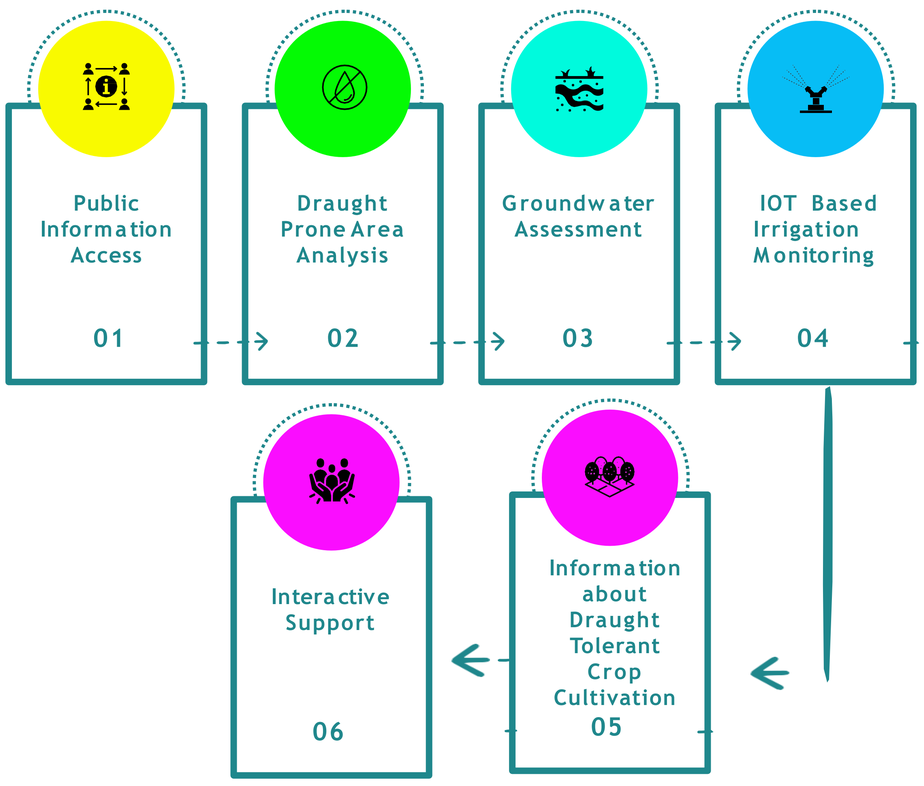

Figure: Platform Features

Role of OpenStreetMap (OSM) in the Project

•**Mapping Drought-Prone Areas:**
•OSM data supports the creation of detailed, localized drought-prone maps based on historical patterns and current groundwater data.
•Crowdsourced data from OSM enables continuous updates on geographic and environmental changes, helping identify high-risk areas.

•**Community Contributions:**
•Local communities and YouthMappers can contribute real-time data on water sources, soil conditions, and drought impacts directly to OSM.
•Community-contributed data enriches the accuracy of drought risk mapping and informs water resource planning.

•**Public Access to Data:**
•Using OSM, we make detailed maps accessible to all, ensuring transparency and promoting a deeper public understanding of drought risks.
•The platform provides open access to drought maps, OSM layers, and GIS analyses, bridging information gaps for both decision-makers and the public.

Platform Features

•**Public Information Access:**
•Easy access to essential drought information, including current status, groundwater levels, and best practices for water conservation.
•Visual data presentation on drought-affected areas, leveraging OSM layers to keep communities informed.

•**Drought-Prone Area Analysis:**
•OSM and GIS data integration enables visualizing and mapping drought risk zones.
•Detailed, region-specific data makes it possible to understand and address drought conditions with clarity and precision.

•**Groundwater Assessment:**
•Regularly updated information on groundwater reserves, presented alongside historical data to track changes over time.
•Uses OSM and remote sensing (RS) data to assess groundwater status in vulnerable regions.

•**IoT-Based Irrigation Monitoring:**
•Real-time data from soil moisture sensors helps monitor and optimize irrigation practices.
•Integrates OSM maps for an interactive display of irrigation needs, promoting water conservation.

•**Crop Recommendations:**
•Provides information on drought-tolerant crops suited for various regions, supporting sustainable agricultural practices.
•Users can access guidance on suitable crops based on location, season, and drought conditions, along with instructional resources.

•**Interactive Support:**
•A community support feature where users can post questions related to drought management.
•Expert members can offer answers and guidance, creating an interactive knowledge-sharing space.
•Regular blog posts by specialists cover topics such as water conservation, sustainable agriculture, and drought resilience strategies

Conclusion:

The **Green Wave Project** offers a cutting-edge platform that leverages OpenStreetMap (OSM), GIS, remote sensing, and IoT technologies to empower communities in the Barind region of Bangladesh. By providing real-time data, drought-prone area analysis, groundwater assessments, and crop recommendations, it ensures better decision-making and resource management. With interactive support from experts and a focus on community engagement, the platform promotes sustainable water conservation practices and enhances agricultural resilience. This initiative marks a significant step toward building long-term drought resilience, fostering collaboration, and utilizing open-source mapping for effective disaster management.

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