



HARNESSING DATA TO SUSTAIN VILLAGE LIFE OF LADAKH

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INSPIRATION BEHIND MY WORK

I AM A DATA ANALYTICS PROFESSIONAL WITH TWO YEARS OF EXPERIENCE, DEEPLY INSPIRED BY SONAM WANGCHUK SIR'S INITIATIVES UNDER HIAL. HIS WORK IN VILLAGE REHABILITATION, WATER MANAGEMENT (SUCH AS ICE STUPAS), AND SUSTAINABLE SOLUTIONS SPARKED MY INTEREST IN LEVERAGING DATA-DRIVEN APPROACHES TO CONTRIBUTE TO MEANINGFUL CHANGE.

HIAL'S VISION:

HIAL AIMS TO DOCUMENT AND DEVELOP A METHODOLOGY FOR REHABILITATING WATER-SCARCE VILLAGES IN THE TRANS-HIMALAYAN REGION, STARTING WITH KULUM, WHICH WAS ABANDONED DUE TO WATER SCARCITY. THE INITIATIVE FOCUSES ON IDENTIFYING AT-RISK VILLAGES, CREATING A FLEXIBLE REHABILITATION FRAMEWORK, AND EMPOWERING LOCAL COMMUNITIES WITH ADAPTIVE CLIMATE RESILIENCE STRATEGIES. THESE STRATEGIES INCLUDE ICE STUPAS, MODERN IRRIGATION, AND SOLAR-PASSIVE TECHNOLOGY.

IDENTIFIED PROBLEMS

DIFFICULTY IN MONITORING & PREDICTING:

- GLACIER MELTING RATE
- GROUNDWATER LEVELS

MIGRATION THREAT

DIFFICULTY IN PREDICTING THE IMPACT OF CHANGING ECONOMIC CONDITIONS ON LIVELIHOOD SUSTAINABILITY.

MY CONTRIBUTION

I HAVE DEVELOPED A DASHBOARD TO MONITOR VILLAGES IN LADAKH.

WHICH TRACKS KEY METRICS TO SUPPORT INFORMED DECISION-MAKING FOR SUSTAINABLE VILLAGE REHABILITATION.

IMPACT

WITH ACCURATE INSIGHTS, HIAL CAN PRIORITIZE AND ALLOCATE RESOURCES EFFECTIVELY.

PROJECT OVERVIEW

VILLAGE REHABILITATION DASHBOARD

- **Goal:**
 - I have developed a Power BI dashboard that analyzes village demographics, predicts migration risks, to prevent village abandonment.
- **Scope:**
 - Villages Analyzed: 12 remote villages in Ladakh.
 - Data Sources: Extracted from census data available online for the years 2015, 2018, and 2021.
- **Key Metrics:**
 - Groundwater Depletion: Monitoring water table levels and identifying risks.
 - Glacier Melting Rate: Evaluating the impact of climate change on water sources.
 - Migration Probability Rate: Predicting the likelihood of migration due to resource scarcity.
 - Occupational Analysis: Insights into locals' primary and secondary occupations.
 - Population Dynamics: Analyzing population trends and family sizes.
 - Income Distribution: Understanding income allocation based on average family size.

DASHBOARD WALKTHROUGH – KEY INSIGHTS



Village Rehabilitation Monitor

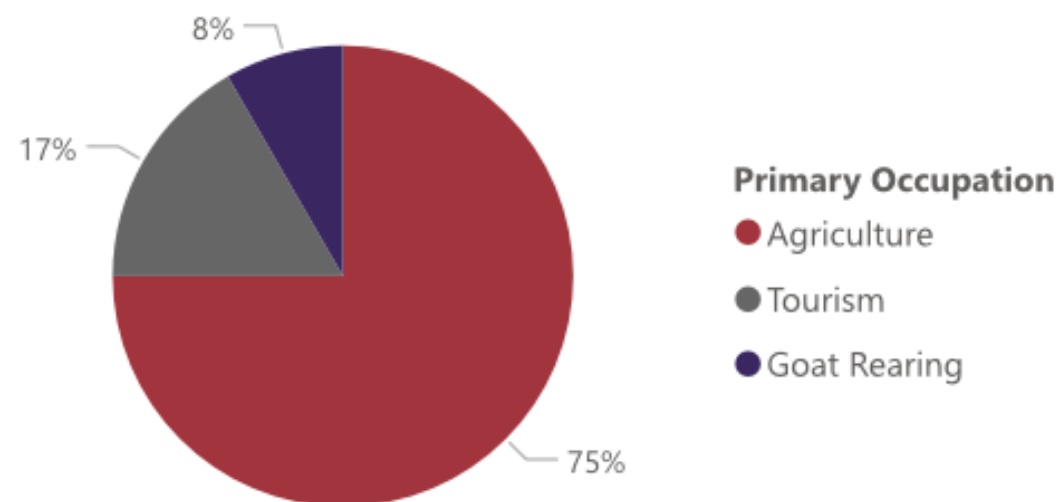
Website Navigation Button:

A button on the top left navigates directly to the HIAL website for quick reference.

Interactive Slicers:

- Year Selector: Allows filtering data for 2015, 2018, and 2021.
- Village Name Selector: Enables selection of specific villages for a focused analysis.

Primary Occupation By Village



Pie Chart – Distribution by Primary Occupation

Displays major occupations taken up by villagers to sustain livelihood.

DASHBOARD WALKTHROUGH – KEY INSIGHTS

Summary Cards:

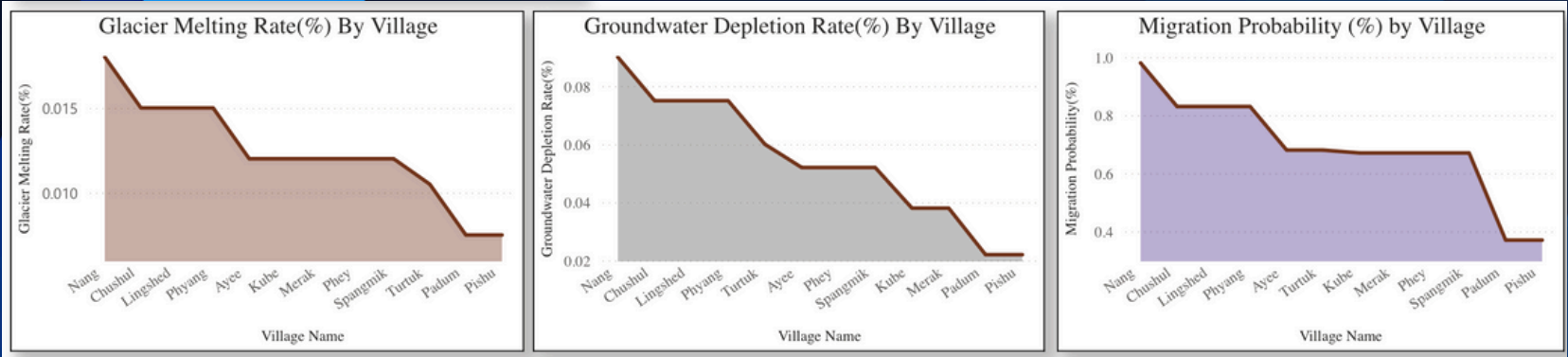
Highlight critical insights for selected villages, such as:

- Threat Level: (High, Medium, Low)
- Water Source Type: (Glacier, River, Pipeline, Tanker)
- Population Count
- Average Number of Houses
- Daily Water Consumption

Village Name	Population	No. Of Houses
Ayee	1351	116
Water Source	Daily Water Consumption(Per Family)	Threat Level
Glacier Meltwater	30–40 l	High

Line Charts for Trend Analysis:

- Glacier Melting Rate: Tracks the rate of glacier melting over time.
- Groundwater Depletion Rate: Analyzes the declining groundwater levels.
- Migration Population Rate: Predicts migration trends based on resource depletion.



VISION FOR SCALING IMPACT WITH HIAL

- **Scope Of This Project:**
 - I have used data from 12 villages, and my vision is to expand this project to include more villages and integrate diverse data sources. I aim to enhance the model by incorporating:
 - Machine Learning Algorithms: To predict resource scarcity, migration risks, and suggest better irrigation techniques based on soil conditions.
 - Real-Time Data Integration: By using IoT sensors and satellite data to continuously monitor groundwater levels, glacier melting, and population shifts.
- **Alignment with Other HIAL Initiatives:** I plan to further integrate this project with ongoing HIAL initiatives such as:
 - **Ice Stupa Technology:** To enhance water management and mitigate seasonal water shortages.
 - **Passive Solar Heating (PSH):** Promoting eco-friendly, carbon-neutral building techniques using locally available materials.
 - **Himalayan Farm Stays:** Supporting sustainable tourism to empower local communities and promote responsible hospitality.

The background is a dark navy blue. It features several large, overlapping, semi-transparent blue geometric shapes, primarily triangles and parallelograms, arranged in a dynamic, abstract pattern. Faint, concentric circles are also visible, creating a subtle ripple effect across the entire background.

The solution to our problems is not in creating more machines, but in creating more human beings who care...



THANK YOU!

**SONAM WANGCHUK SIR AND THE ENTIRE HIAL TEAM,
FOR YOUR UNWAVERING DEDICATION AND
GROUNDBREAKING CONTRIBUTIONS TO SUSTAINABLE
VILLAGE REHABILITATION.**

**WE ARE FOREVER INDEBTED TO YOUR VISION AND EFFORTS
THAT CONTINUE TO INSPIRE CHANGE AND TRANSFORM LIVES.**