Improving the resiliency of WASH systems under climate and social change in the global south

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The International Water Management Institute – Our Response

Our vision is a water secure world.

Our mission is **research and innovation** in partnerships for **collective action** that **advance the transformation of water systems** for sustainable, just and climate-resilient development.

Since 1986 in Nepal

Outline

Setting the scene

Methodology

Resilience mapping

Conclusion and recommendations

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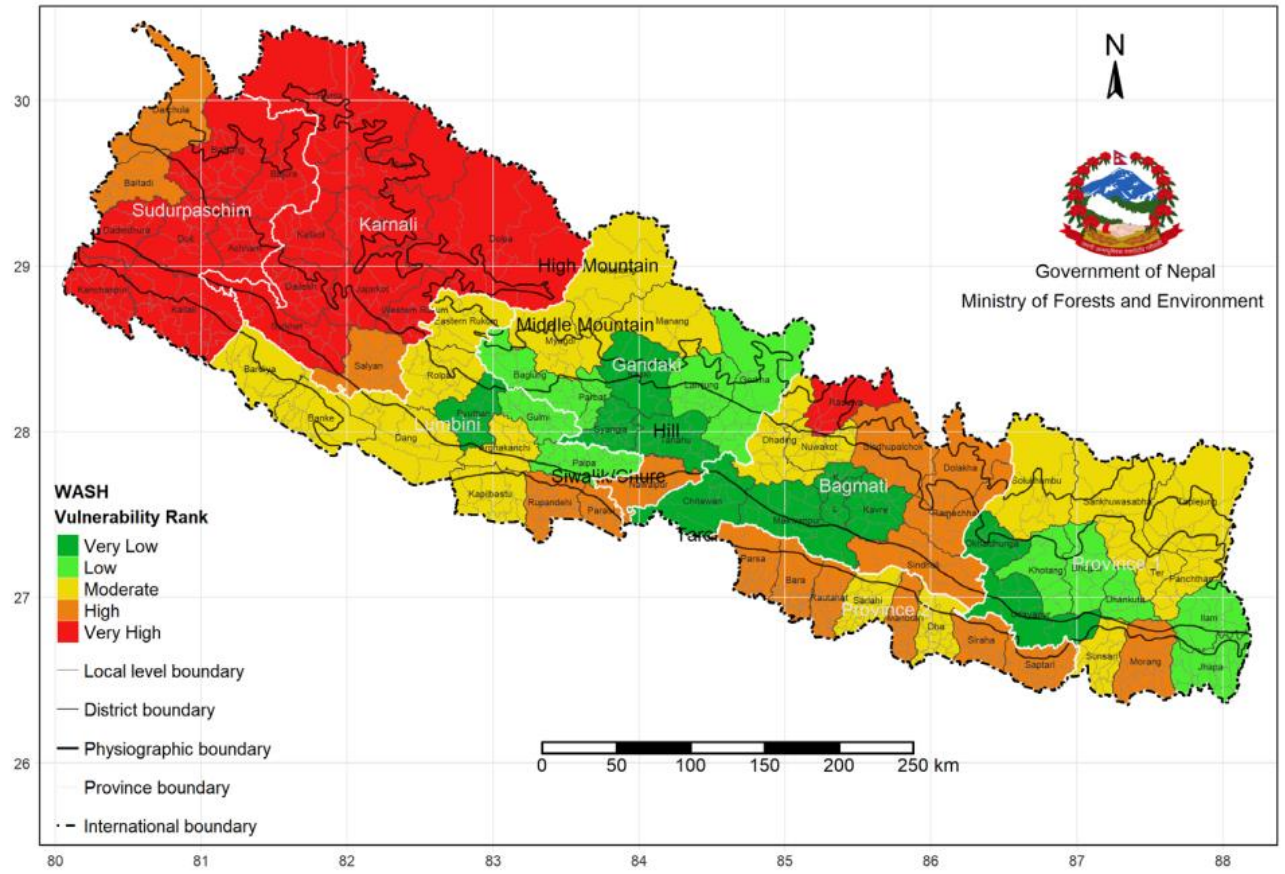
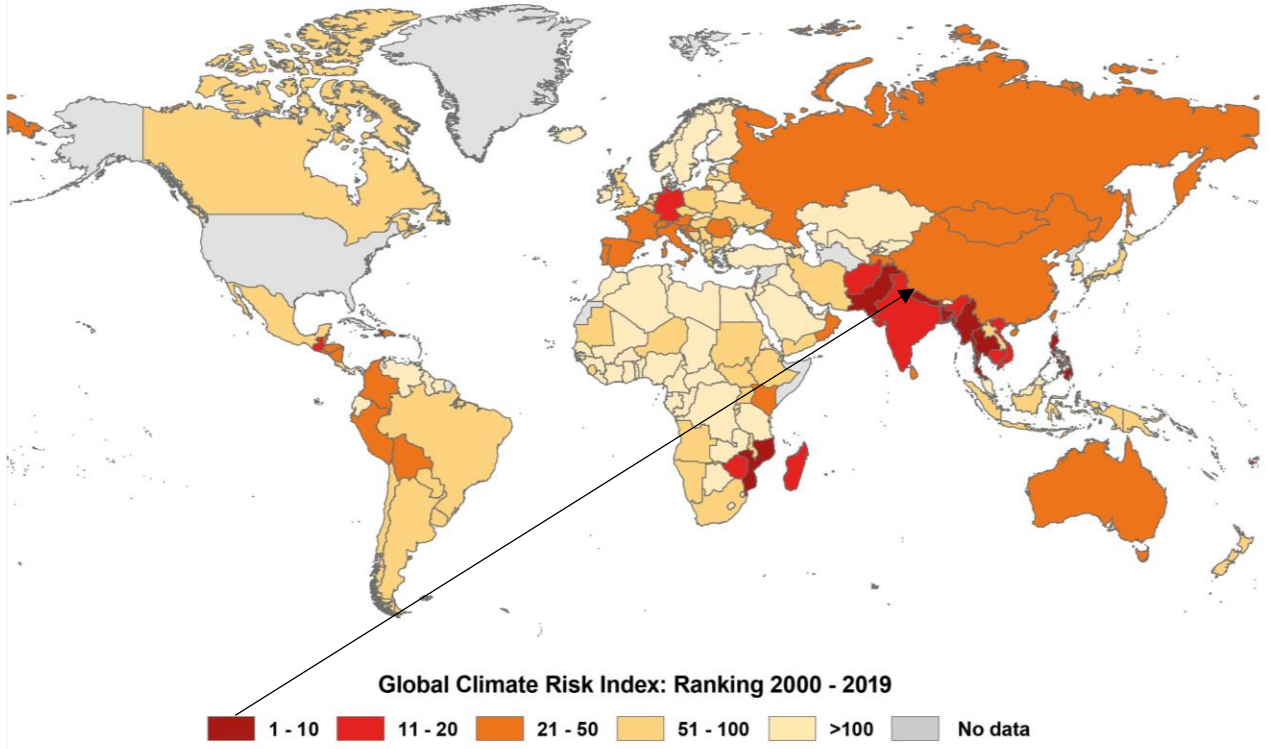
Context setting



District-level vulnerability in the WASH sector
(Source: MoFE, 2021)



Top 10 climate vulnerable country

(Source: Germanwatch, 2019)

Nepal is highly vulnerable to climate change impacts and Nepal faces losing **2.2%** of annual GDP due to climate change by 2050 (ADB).

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Context setting

Annapurna Post: 03 October 2024

बाढीको बितण्डा

2024 September Floods and Landslides
Situation Report #4 as of 16 October 2024
(Third SitRep published on 03 October 2024)

Government of Nepal
Ministry of Home Affairs
National Disaster Risk Reduction and Management Authority

This report is produced by National Disaster Risk Reduction and Management Authority (NDRRMA) in collaboration with sectoral ministries, departments, provincial and local governments. It covers the situation of floods and landslides due to the heavy rainfall across the country from 26-28 September until 16 October 2024.

Summary of Loss and Damage

- 5,18,403 Total HH affected
- 2.59 Million Total Population affected
- 46 Billion Estimated Economic Loss

Human Casualties

- 250 Deaths
- 76 Female, 114 Male (2 Korean Citizens (M), 1 American Citizen (M))
- 60 Children (35 Boys, 25 Girls)
- 18 Missing
- 178 Injured

Emergency Rescue

- 30,731 Security Personnel Deployed
- 910 Heli Rescued
- 17,174 Rescued

Water Supply and Sanitation

- 1,639 No of Projects worth NPR 5.73 Billion
- 0.5 Million HHs
- 2.5 Million Population

Private Housing

- 5,916 Fully Damaged
- 12,477 Partially Damaged
- 10,807 Displaced HHs
- 18,403 Private Housing needs

Infrastructure

- 146 affected Bridges, NPR 1.04 Billion Loss
- 7 Irrigation Projects, NPR 1.35 Billion Loss
- 5 Fully Closed, 4 One-way Open
- 26 Hydropowers, 1,636.1 MW, NPR 3.02 Billion Loss

2024 September Floods and Landslides
Situation Report #3 as of 03 October 2024
(Second SitRep published on 01 October 2024)
Government of Nepal
Ministry of Home Affairs
National Disaster Risk Reduction and Management Authority

Damage to Drinking Water Supply

Details	Information
Number of houses affected	Approximately **500,000**
Number of people affected	Approximately **2.5 million**
Number of water supply projects	Approximately 520+ (Federal projects only, data collection for provincial and local projects ongoing)
Damage details	• Extensive damage to pipelines, chambers, water tanks, treatment plants, and other critical structures • Damage to assets like GI pipes, HDPE pipes • Damage to wastewater treatment plant structure • Damage to households and institutional toilets

Source: DWSSM, 2024

Approximately **NPR 3.5B** loss

Context setting

- Understanding **vulnerability** and **risk** in **WASH systems** is crucial for enhancing resilience.
- Vulnerability in WASH systems arises from **technical**, **social**, **economic**, and **environmental** factors.
- Communities with limited resources face greater **challenges** accessing **clean water** and **sanitation**.
- By identifying these factors, we can **better address** the needs of the most affected community and implement effective solutions.

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However .....

..... there are bottlenecks

Resilience


Sim Water Supply Project

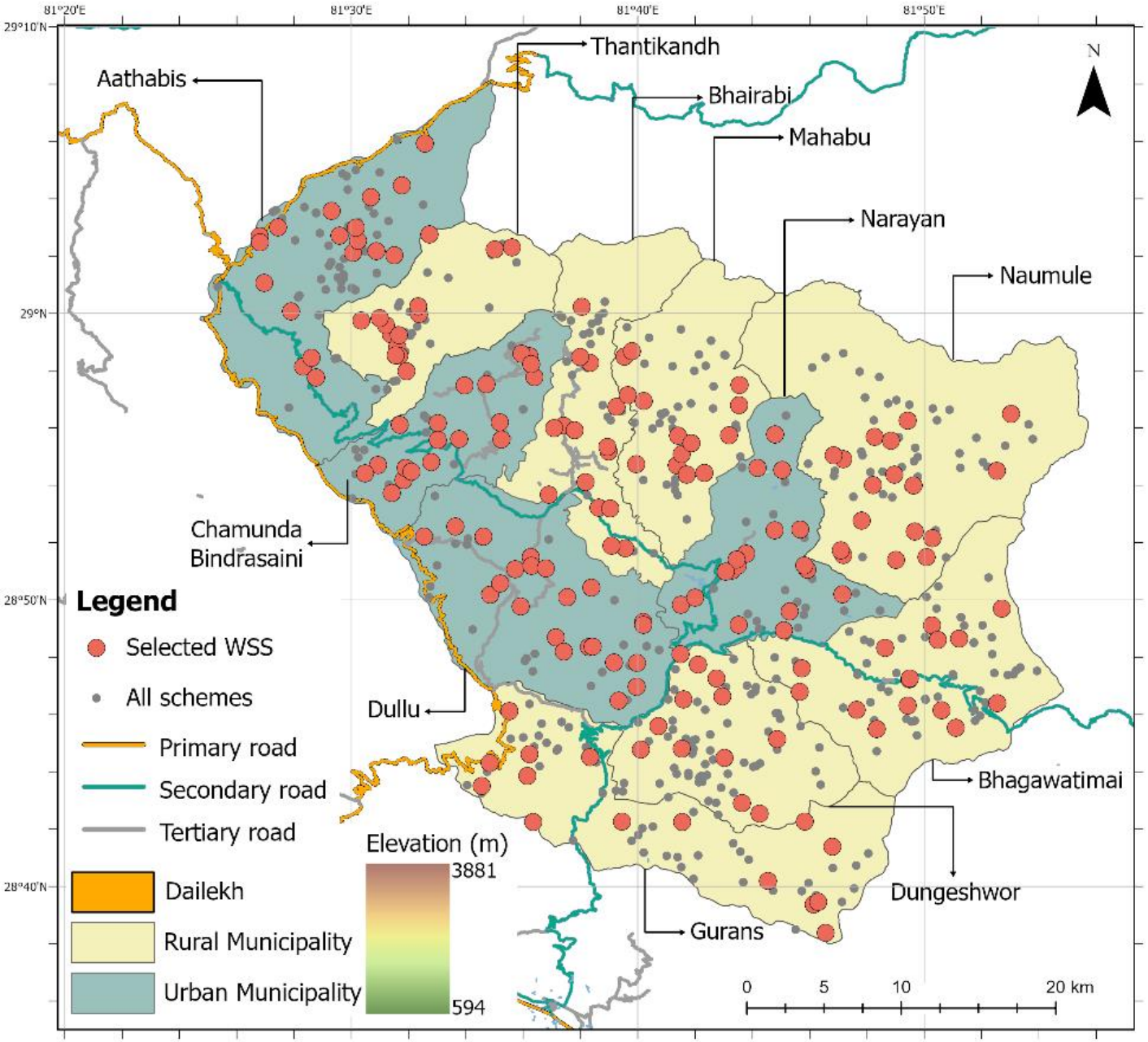

Basudhara WS project

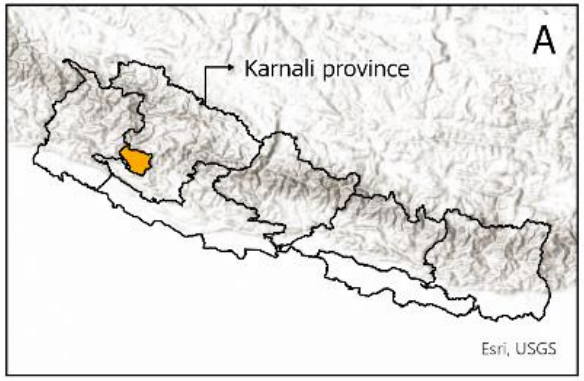

ADB WS Project

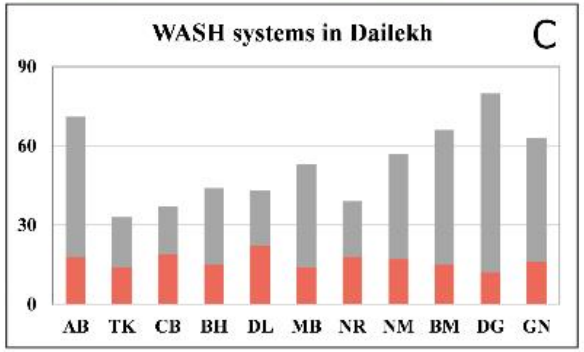

Chuntakura WS Project


Lohose WS Project

Study Area







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Resilience Mapping

Domains

Guided from Howard et al. 2021

Method

1. Co-design workshop
2. Development of the questionnaire
3. Selection of sample sites
4. Training to enumerators
5. Data collection
6. Resilience mapping

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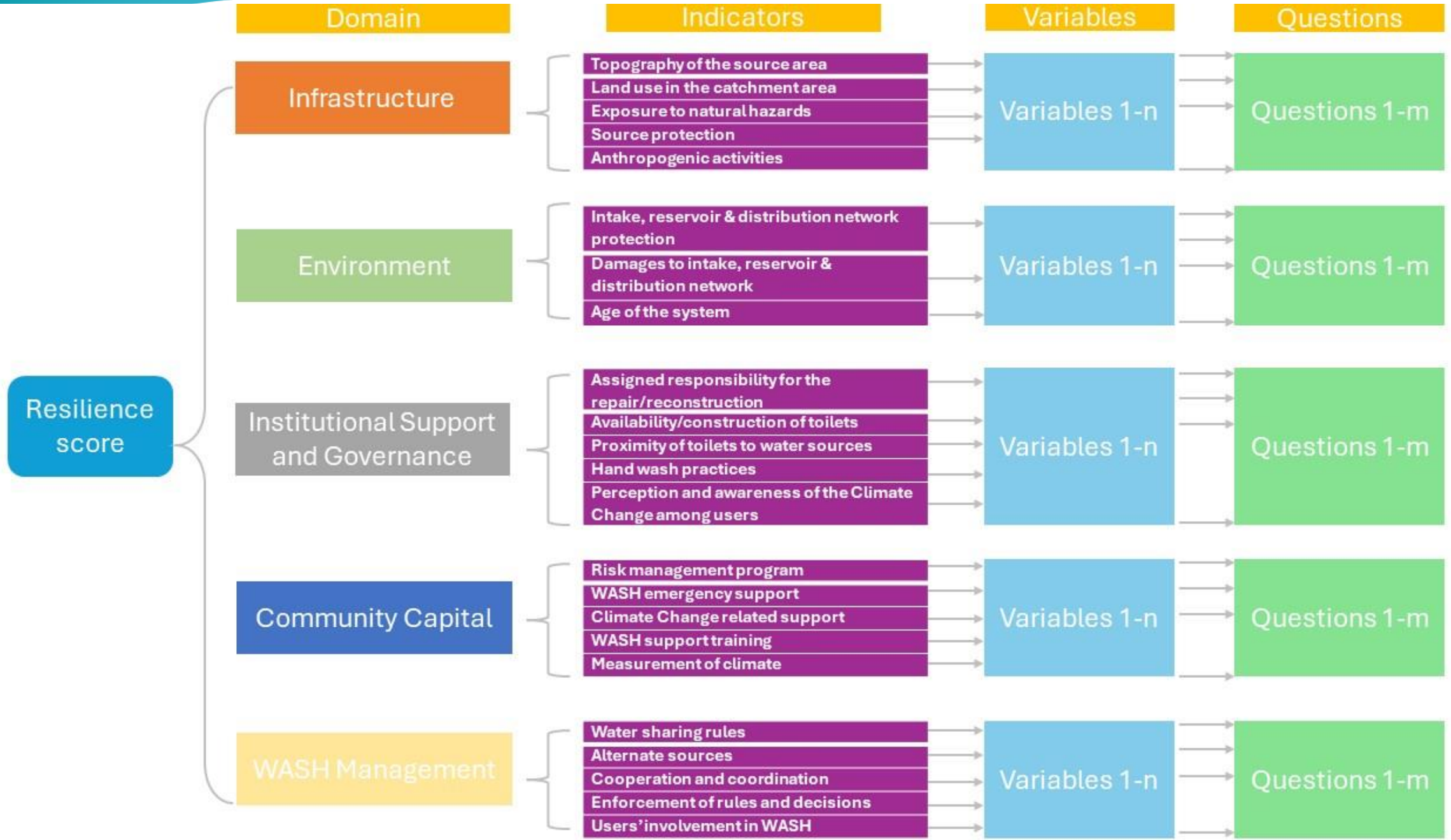
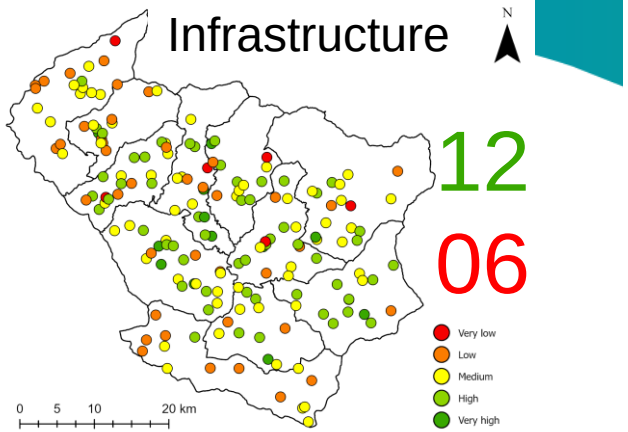
Scoring resilience



Resiliency



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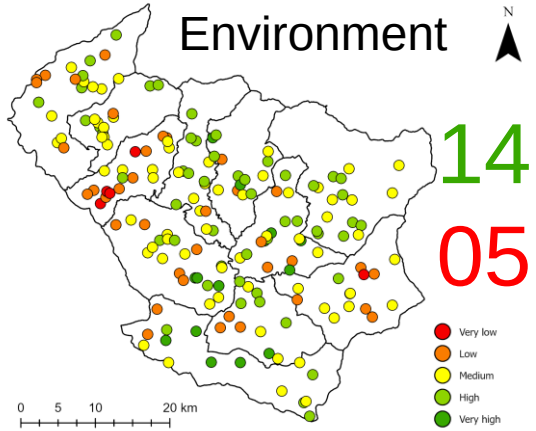

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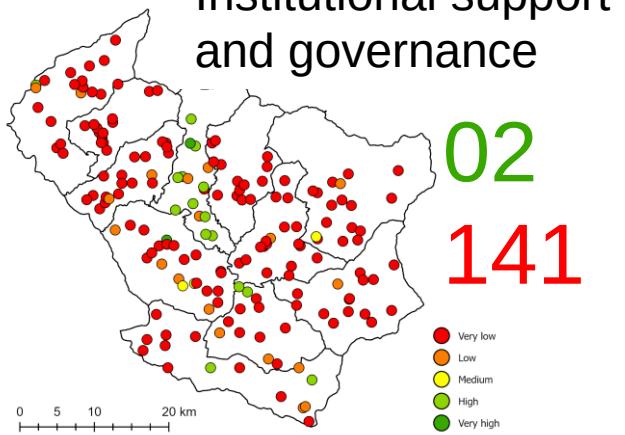

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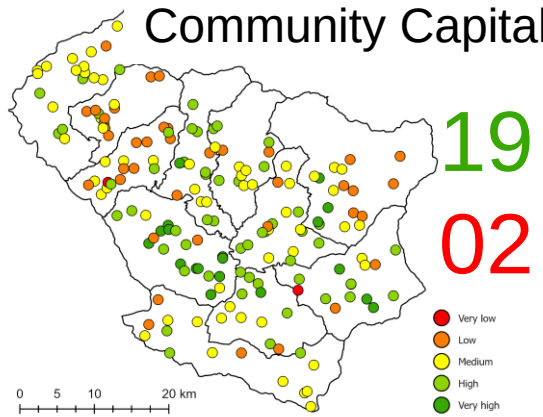

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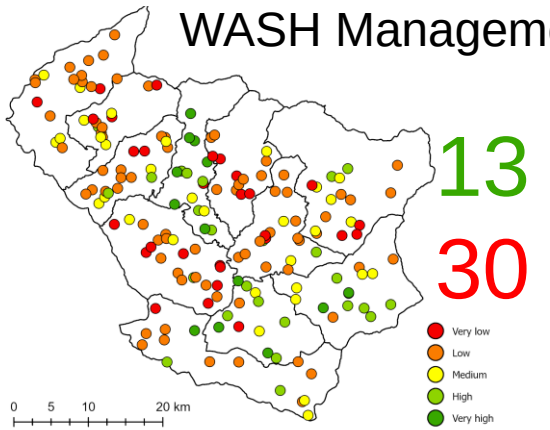

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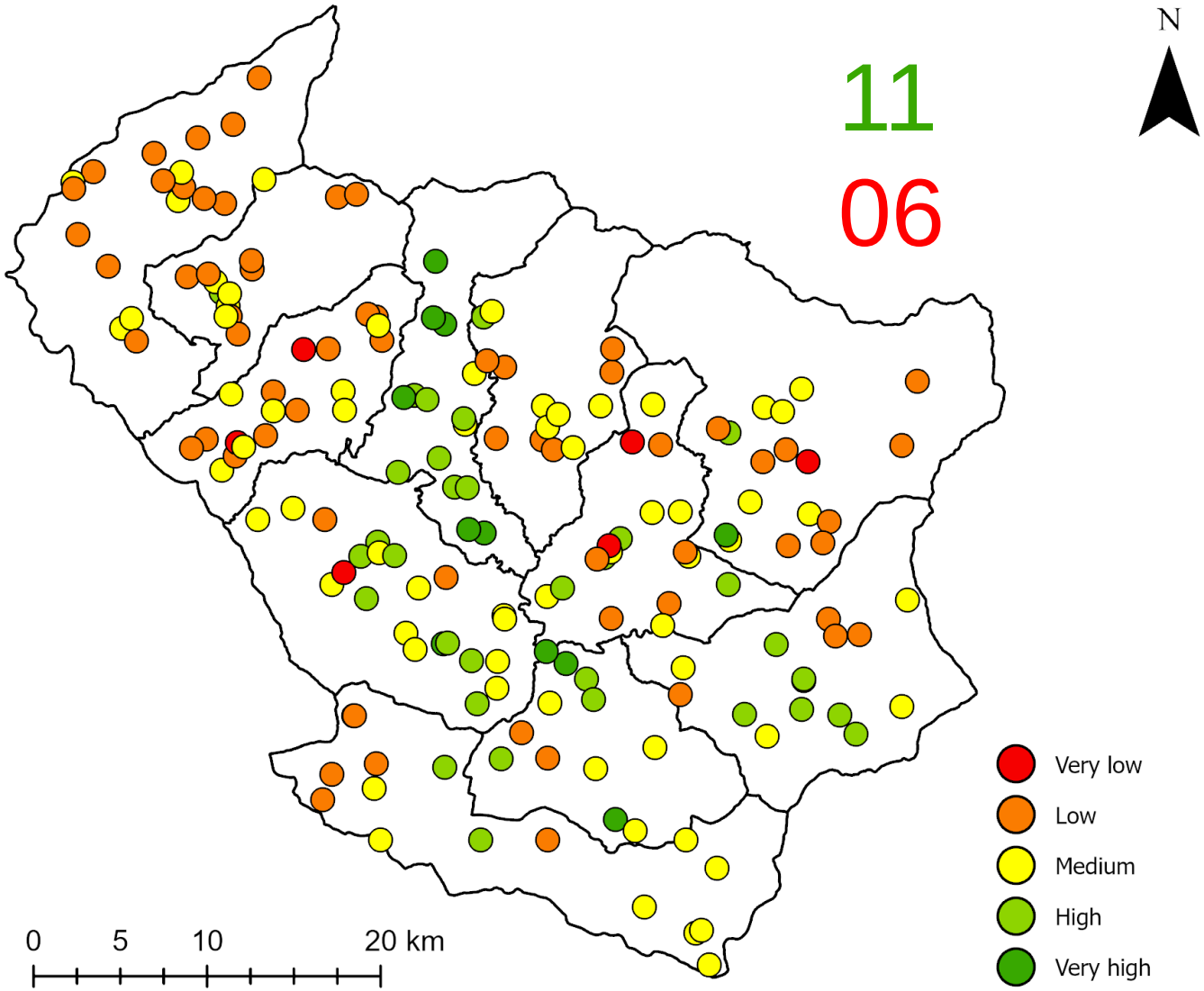

Enhancing institutional capacity is required

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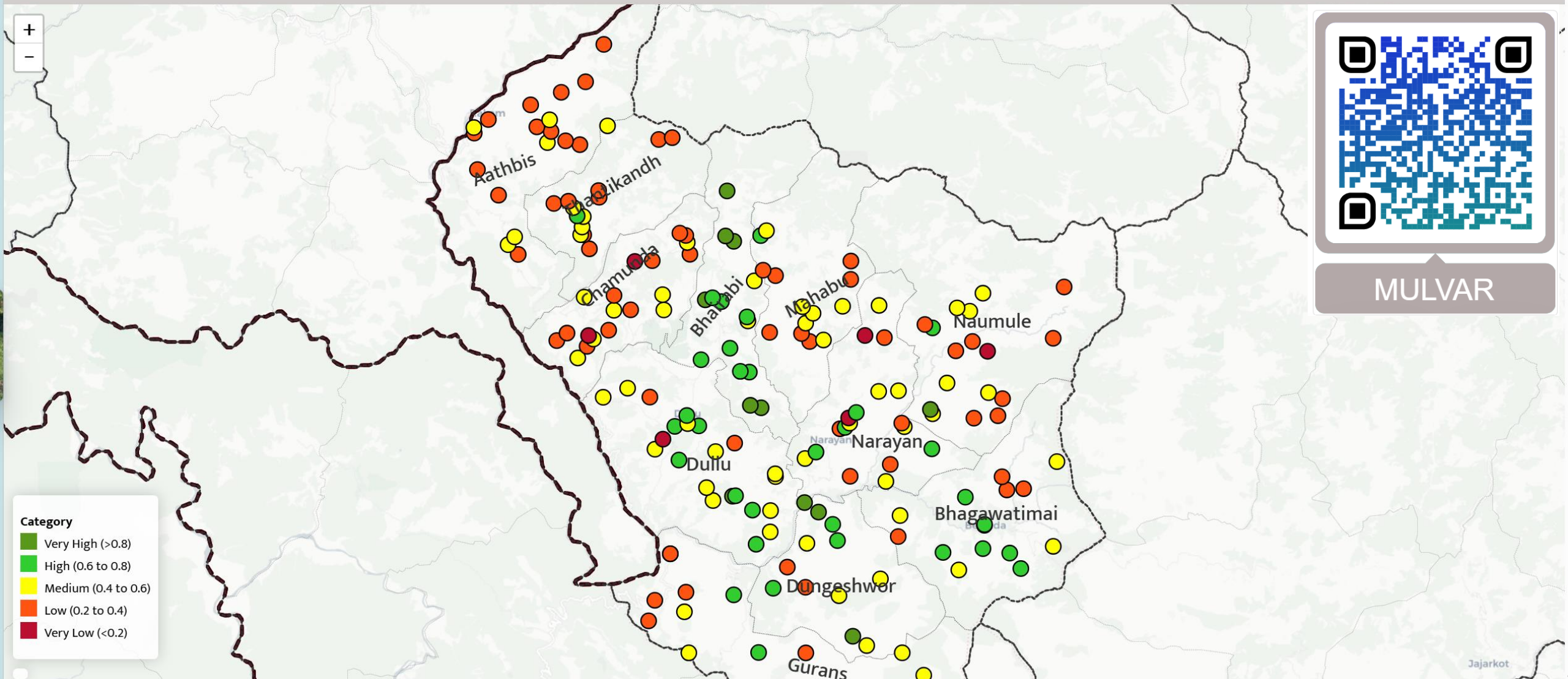
http://thegiis.org/giis-data/mulvar

Online dashboard

Municipality and System Level Vulnerability, Risk and Resilience Mapping (MULVAR)
Visualization dashboard for the WASH sector

Water For Women | Australian AID | IWMI International Water Management Institute | Global Institute for Interdisciplinary Studies

Karnali | Dailekh | System Level | System Level Risk | Overall Resilence | Raw Data | About



Conclusion and Recommendations

- **Institutional support and governance** within the WASH system show the **lowest resilience scores**, highlighting a critical need for government intervention.
- Prioritizing the **most vulnerable systems** and focusing on their climate resilience would **address significant gaps** in risk management, emergency preparedness, and basic operational capacity.
- By targeting **specific indicators** from the assessment, the government can **enhance resilience** in weaker systems, ensuring more robust, **climate-resilient WASH** services across regions.

- Need to develop a **climate resilient** WASH systems in the context of climatic extreme events (**a traditional WASH system cannot cope with changing climate**)
- **Investment** could be high in making a system climate resilient, however, they will be sustainable in **long run**
- **Local government** should focus on drafting climate-resilient **WASH plans** for WASH systems

Thank You

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