

Project title: Landslide susceptibility Map of Bhutan

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Project Start Date: 01/07/2022

Project End Date: 01/12/2022

Target Budget: \$5000

Location (Region, Country, City/Municipality): Bhutan (Monger Dzongkha)

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1. Background

- Due to geographical terrain and heavy rainfall, landslides have been and continue to be major natural disasters in Bhutan.
- Social problem: Landslides can cause significant loss of life, infrastructure damage, and agricultural land loss. Despite the absence of serious injuries and fatalities, landslides can have significant socio-economic impacts. These include the severance of access to and from relatively remote communities for services and markets for goods; employment, health and educational opportunities and social activities.
- Data problem: Landslide prone areas are difficult to locate due to the inaccessibility of landslide data. Furthermore, the lack of expert (especially women), locating and informing about landslides posed a challenge in acquiring up-to-date data and mapping information. The lack of geospatial data first affected policymakers and planners. Then it has hampered the local people who live nearby by delaying their planned work and livelihood. The lack of data posed a threat to the country's economy.

1. Target Results (Objectives)

Impacted Areas: Bhutan's most impacted areas are near the road and on the mountain. The entire twenty regions in Bhutan are impacted by the landslide and to cite an example in Namling Brak and Malong Brak, many people are killed and injured when landslides occur.

Aims:

1. Assist planners and policy makers.
2. Able to take precautions measures.
3. To create awareness among general population
4. To inform people about the landslide hazard
5. Able to mitigation and solution.

2. Project Target Outcomes

By the end of the project, the project will achieve the following:

- Women participation have increased in the Geospatial field (Mapping area)
- Updated map and data will be available for the user and general public
- Give an insight to people the risk of landslide.

3. Solution

- ✓ Social problem: with the help of map, people will be aware about the risk and they will be cautious. Thus, number of accidents and landslide related distraction will be reduced. Furthermore, policymakers will find alternative ways for people to travel and import vegetables so that the country's economy is not harmed.
- ✓ Data problem: The most recent landslide data will be made available. In addition, women's participation in the landslide susceptibility map will increase. With these data,

the women participation will increase and latest data and information on landslide will be made available to general public.

- ✓ Number of expected to benefit from the project: policy maker, planners, local people, entrepreneurs, and women will be benefited from this project.

4. Data Use

- ☐ It will used for the future reference and for comparative studies in the process of decision making. And also to see the trend of landslide susceptibility within the country. The map generate from these data will predict the susceptibility of landslide in the future.
- ☐

5. Activities

Activity Title	Activity types	Activity Dates	Target Participant(if relevance)
How to use OSM training for data collection?	Training	1 st July- 15 th August	Project participants and partners
Data processing and cleaning in OSM.	Material development	16 th August- 15 th September	Project participants and partners
OSM data usage in susceptibility analysis.	Training	1 ^{6th} September-15 th October	Project participants and partners
Map preparation using the data from OSM	Mapping	16 th October-15 th November	Project participants and partners
Map analysis and interpretation.	Analysis	16 th November-1 st December	Project participants and partners

6. People and Partners

1. OSM mapping community

(<https://www.hotosm.org>)

The OSM mapping community (Mentor) guides us in creating maps and collection of data. Moreover, they solve our doubt regarding mapping and provide us with solution.

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7. Sustainability

- With the final output gained from this project the landslide risk management plans and programmes can be formulated and the community will be advocated as per the findings. The finding can be used by other researchers as a reference and data collection for landslide susceptibility can be maintained. Other places prone to landslide can be observed, identified and predicted.

8. Relevance

1. The project will contribute to the growth of the OSM movement in the region as well as growth as leader in the OSM movement
2. The project should be related to:
 - ✓ Cooperating with the Department of Mining and Geology (DGM) to address the challenges and advancing the goal through OSM and tools.
 - ✓ Mapping activities that contribute to the improvement of lives in the community and contribute to the betterment of field we are working.

- ✓ Engaging in collecting raw data and spatial data from other department to enhance the mapping and to encourage women participation in mapping community with the help of OSM mapping technique.

3. Project with the potential for replication, scale up, and sustainability are given

Budgeting

Item	What do you plan to spend the money on?	Unit being purchased (how many?)	Quantity Description	Rate	Rate Description	Total cost for budget item (USD)	Why is it needed?
Program and activity cost							
1	Reflective vests	5	piece	\$ 7	USD	\$ 35	Vest for travelling around the community during mapping
2	Head gears (Hard hat)	5	piece	\$ 5	USD	\$ 25	For sun protection while collecting the data during mapping
3	Trip expenditure	1	months	\$ 1500	USD	\$ 1500	Trip expenses required to travel to place which is accessible by foot.
4	Accommodation and meals	1	months	\$ 1040	USD	\$ 1040	Expenses required for place to stay and during the period of research and data collection.
Equipment, online and digital costs							
5	GPS units	2	piece	\$ 100	USD	\$ 200	To collect GPS coordinates during community mapping.

6	RTK (hire)	1	piece	\$ 1500	USD	\$ 1500	To collect exact sp data from the site.
Prizes and Swag, Token for speakers							
7	Swag	As per the		\$ 200	USD	\$ 200	As a token appreciation cooperating with us.
		number of					
		speakers					
8	Token	As per the		\$ 300	USD	\$ 300	Token of gift for hig officials for coopera
		number of					and supporting our wo
		officials					
		who					
		assisted					
		our					
		project					
Administrative and overhead cost							
8	Internet	2	months	\$	\$ 100	\$ 200	Internet connection
	connection						team to upload pro
							data.
Total	\$ 5000						