

A Case Study on

Women's Participation in Geospatial Mapping

OpenStreetMap Mapping Sprints under the RAIN Programme
Madhesh & Lumbini Provinces, Nepal | 2025–2026

26 Municipalities Mapped	185,063 Total OSM Edits	55+ Women Mappers Engaged	2 Provinces Covered
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Executive Summary

Nepal's exposure to climate-related disasters is among the highest in the world. In Madhesh and Lumbini provinces, recurring floods and inadequate geospatial data coverage continue to constrain effective disaster preparedness, climate adaptation, and inclusive local governance.

The Resilience, Adaptation and Inclusion in Nepal (RAIN) Programme, funded by [UK International Development](#) and implemented by People in Need (PIN) and [DCA](#), with partners [Community Self Reliance Centre \(CSRC\)](#), [Local Initiatives for Biodiversity, Research and Development \(LI-BIRD\)](#), [Prerana](#), [Youth Innovation Lab](#), [Red Cross Red Crescent Climate Centre](#) and [Met Office](#). Through the RIAN programme two structured OpenStreetMap (OSM) mapping sprints between 2025 and 2026 were conducted to bridge these data gaps. Together, these sprints produced 185,063 validated edits across 26 priority municipalities - generating openly available data on buildings, road networks, waterways, and land use that now directly supports disaster risk management and climate adaptation planning.

A defining feature of this initiative was the meaningful participation of women at every level of the mapping process as contracted advanced mappers, student volunteers, validators, and peer mentors. More than 55 women engaged across both phases, representing approximately 50% of contracted mappers in the Autumn Mapping Sprint 2025. Their contributions were not incidental; they were central to the programme's success.

Key Highlights

- 26 municipalities fully mapped across Madhesh and Lumbini provinces
- 185,063 total OSM edits contributed by over 110 mappers
- Women constituted 50% of mappers in the Autumn Mapping Sprint 2025
- 55+ female mappers engaged across both sprint phases

1. Programme Background

1.1 The RAIN Programme

Nepal's vulnerability to climate change and natural disasters is acute, particularly in the Terai lowlands. Communities in Madhesh and Lumbini provinces face recurring floods and climate-related risks that disproportionately affect women, children, and marginalized groups. Accurate spatial data is fundamental to evidence-based planning for disaster risk reduction and climate adaptation. The initiative aims to:

- Strengthen capacities of local governments in disaster risk management and adaptation planning
- Promote social inclusion and equitable access to development resources
- Improve data-driven decision-making through open geospatial data

1.2 The Role of OpenStreetMap

OpenStreetMap (OSM) is the world's largest collaborative, open-source mapping platform. Under the RAIN Programme, OSM was identified as a powerful tool to fill critical gaps in geospatial data particularly Land Use/Land Cover (LULC), road networks, buildings, and waterways - across priority municipalities that had little or no prior digital mapping coverage.

Youth Innovation Lab (YI-Lab) was engaged as the technical partner to design and implement structured mapping sprints that would generate high-quality, validated OSM data to support local governance, disaster preparedness, and RAIN programme activities.

2. The Mapping Initiative

The RAIN Programme's geospatial mapping initiative was executed in two distinct phases, collectively covering all 26 municipalities identified under the programme. Both sprints prioritized youth engagement and actively encouraged women to participate as skilled OSM mappers and validators.

2.1 Autumn Mapping Sprint 2025

Organizer	Youth Innovation Lab (YI-Lab)
Duration	5 November – 5 December 2025 (One Month)
Municipalities	18 Core and Connecting Municipalities
Provinces	Madhesh and Lumbini
Platform	HOT OSM Tasking Manager
Tools Used	JOSM, iD Editor, Google Earth Pro, ESRI World Imagery
Mappers Engaged	9 Contracted Mappers + 1 International Volunteer
Female Mappers	4 Contracted (Prativa Thapa, Rubi Shrestha, Siwangi Pokharel, Sushma Magar) + 1 Volunteer (Ivy Perez, Philippines)

Advanced OSM mappers were recruited through an open call to universities, geospatial institutions, and OSM Nepal chapters. Shortlisted candidates were contracted and provided an advanced training covering JOSM, LULC mapping techniques, quality assurance standards, and

Nepal’s OSM tagging conventions. Weekly leaderboards tracked progress and fostered accountability.

2.2 RAIN Mapping Sprint 2026 (GESAN)

Organizer	Geomatics Engineering Students’ Association of Nepal (GESAN)
Commissioned By	Youth Innovation Lab (YI-Lab)
Duration	16–23 March 2026 (One Week)
Municipalities	8 Remaining Core and Connecting Municipalities
Location	Paschimanchal Campus, Pokhara, Nepal (Hybrid Mode)
Total Mappers	100+ (GESAN Members + GES Kathmandu University Chapter)
Female Mappers	50+ mappers
Task Completion	100% - All 8 HOT tasks mapped and validated

For the second phase, YI-Lab partnered with GESAN - a student body at Paschimanchal Campus, Pokharato mobilize over 100 student mappers to complete the remaining municipalities through a week-long hybrid mapathon. A dedicated kick-off and training session on 15 March 2026 equipped 23 volunteers with mapping skills, validation techniques, and quality assurance protocols before the sprint commenced.

3. Women at the Forefront: By the Numbers

A defining characteristic of the RAIN mapping initiative was the meaningful participation of women across both phases. Rather than being peripheral contributors, women served as core mappers, technical validators, and knowledge champions - demonstrating that geospatial mapping is an accessible and empowering career pathway for women in ICT.

Phase / Sprint	Women’s Participation
Autumn Mapping Sprint 2025 (YI-Lab)	5 of 10 hired advanced OSM mappers
RAIN Mapping Sprint 2026 (GESAN)	50+ female participants across 8 municipalities
Combined Total	55+ women engaged across mapping initiatives

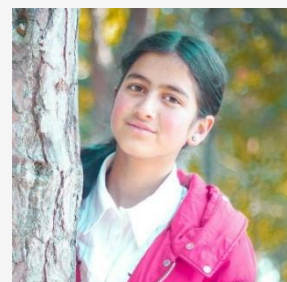
4. Voices from the Female Mappers

The following profiles showcase the journeys, motivations, and contributions of some female mappers who participated in the RAIN mapping sprints. Their stories illustrate how access to open geospatial tools and structured mapping programmes can transform young women into confident digital professionals.

Prativa Thapa | Nepal

Yashodhara Rural Municipality & Kaudena Rural Municipality

Prativa Thapa is a Geomatics Engineering student at Kathmandu University, currently serving as President of KU YouthMappers and recognized as an OSM Guru in Asia - distinctions that reflect both her technical expertise and her commitment to growing the open mapping community. In the Autumn Mapping Sprint 2025, she brought this leadership directly to the field, mapping buildings, roads, and key geospatial features across Yashodhara Rural Municipality and Kaudena Rural Municipality in Lumbini Province. Beyond her own contributions, Prativa played an active mentoring role during the sprint, supporting beginner mappers and fostering a collaborative environment where participants could learn, contribute, and build confidence together. Her ability to combine technical output with community leadership makes her a standout example of what women can achieve in geospatial ICT.



- ▶ 3,710 map edits contributed
- ▶ 946 buildings digitized
- ▶ 131.48 km of highways mapped
- ▶ 11.90 km of waterways mapped
- ▶ President, KU YouthMappers | OSM Guru in Asia

"Girls should be part of ICT because their perspectives can shape more inclusive and impactful digital solutions."

Rubi Shrestha | Nepal

Kamala Municipality & Janaknandani Rural Municipality

A third-year Geomatics Engineering student at Kathmandu University, Rubi Shrestha was both a contracted mapper in Autumn 2025 and a returning contributor in the GESAN sprint. Her academic excellence - a topper in her previous studies - translated directly into meticulous, high-quality mapping output. Rubi was particularly driven by the intersection of geospatial technology and disaster risk management, areas she is passionate about pursuing professionally. Her participation across both sprints demonstrates a growing commitment to open mapping as a career path for women in geomatics.



- ▶ 1,095 map edits contributed
- ▶ 460 buildings digitized
- ▶ 57.28 km² land use/land cover mapped
- ▶ Also participated in the GESAN Sprint 2026 as a mentor

"Map used to guide me. Now I help to create them."

Siwangi Pokharel | Nepal

Sabaila Municipality & Balwa Municipality

Siwangi Pokharel is one of Nepal's most accomplished young females OSM contributors, actively mapping since 2022. Recognized as an OSM Guru and winner of the prestigious Open Asia Mapping Contest, she brought exceptional technical skill and experience to the RAIN sprint. Her output of over 25,000 edits made her one of the highest contributors in the Autumn 2025 phase. For Siwangi, mapping is not merely a technical exercise - it is a social responsibility and a means of supporting communities through data. She has consistently demonstrated that women can lead and excel in open-source geospatial initiatives.



- ▶ 25,395 map edits contributed
- ▶ 5,660 buildings digitized
- ▶ 48.46 km of highways mapped
- ▶ 63.94 km² LULC mapped
- ▶ Recognized as OSM Guru | Winner of Open Asia Mapping Contest

"Mapping is my way of giving back - every edit I make on OSM helps create data that empowers people, supports decision-making, and strengthens communities."

Sushma Magar | Nepal

Rapti Sonari Rural Municipality & Narainapur Rural Municipality

Sushma Magar began contributing to OpenStreetMap in 2021 and has since developed into a seasoned mapper with a particular commitment to rural and under-mapped communities. Assigned to Rapti Sonari and Narainapur Rural Municipalities - areas that are often overlooked in national spatial datasets - she found deep purpose in making these communities visible on the global map. One of her most significant personal achievements during the sprint was independently learning JOSM, a professional-grade OSM editing tool, progressing from uncertainty to confident, validated contributions. Her journey is a testament to the power of structured mentorship and inclusive mapping programmes.



- ▶ 15,417 map edits contributed
- ▶ 8,768 buildings digitized
- ▶ 51.97 km of waterways mapped
- ▶ Contributing to OSM since 2021

"Exploring the unexplored through the art of mapping."

Ivy Perez | Philippines (International Volunteer)
 Rapti Sonari Rural Municipality & Kamala Municipality

Ivy Perez, a graduate of BS in Geodetic Engineering from Visayas State University in the Philippines, volunteered her time and expertise to support the RAIN mapping effort from abroad. As a member of the OMGuru Network and a YouthMappers alumna, she brought international perspective and professional rigor to the sprint. Working remotely, she contributed over 12,000 edits, advanced her proficiency in handling multipolygons and validator warnings, and deepened her understanding of how quality geospatial data serves communities beyond borders. Her participation underscores the global community of women who are advancing open mapping as a tool for development.



- ▶ 12,371 map edits contributed as a volunteer
- ▶ 6,189 buildings digitized
- ▶ Member of the OMGuru Network
- ▶ Viscan YouthMappers Alumni, Visayas State University

"Mapping the unseen - that's how I make every place count through open mapping."

5. Collective Impact: What Was Mapped

Beyond individual stories, the collective contribution of women mappers reshaped geospatial data coverage across the programme area. The combined contributions of all mappers, including the women profiled above, produced a substantial improvement in the geospatial data coverage of 26 municipalities across Madhesh and Lumbini provinces. This data is now freely available on OSM.

Feature Type	Mapping Sprint 2025	Mapping Sprint 2026	Combined Total
Total OSM Edits	160,870	24,193	185,063
Buildings Digitized	70,666	10,169	80,835
LULC Mapped (km²)	727.04	12.13	~739
Highways Mapped (km)	1,567.59	49.58	~1,617
Waterways Mapped (km)	245.53	2.48	~248
Municipalities Covered	18	8	26
Total Mappers	10	100+	110+

5.1 Data Use and Application

The geospatial datasets generated through the mapping sprints are openly available through the OSM platform and are directly utilized to support:

- Local government disaster risk management and adaptation planning
- Land use and infrastructure planning
- Research and analysis by academic institutions and humanitarian organizations

6. Lessons Learnt & Recommendations

Structured training, open recruitment through university networks and OSM Nepal chapters, and recognition mechanisms such as certificates and weekly leaderboards were key to the initiative's success - attracting committed women mappers and sustaining their engagement throughout. The principal technical challenge was satellite imagery misalignment, which required cross-checking across multiple sources and added time to the workflow. Remote participation, whilst flexible, occasionally created difficulties around real-time quality assurance and validator feedback.

Looking ahead, future programmes should establish mentorship pathways that allow experienced women mappers to guide newer contributors and build partnerships with geomatics and ICT institutions to embed open mapping in academic curricula. Field-based mapping opportunities would further complement remote digitisation, enabling women to engage communities directly and enrich datasets with local knowledge that imagery alone cannot capture.

7. Conclusion

The RAIN Programme's mapping initiative has demonstrated that women are not merely capable participants in geospatial mapping - they are indispensable contributors. Across two sprints covering 26 municipalities, women from Nepal and the Philippines brought technical rigour, personal dedication, and a profound sense of social purpose to their work. Their contributions - more than 80,000 buildings digitized, hundreds of kilometres of roads and waterways mapped, and nearly 740 square kilometres of land use documented will directly inform disaster preparedness and climate adaptation planning in Madhesh and Lumbini provinces for years to come.

The RAIN Programme proudly celebrates these achievements and calls on the wider development and technology community to create inclusive pathways for women in geospatial and ICT careers, recognize and amplify their contributions to open mapping, and design programmes that proactively recruit, support, and mentor women.

"The women who contributed to the RAIN mapping sprints did not just put places on a map - they put communities on the road to resilience. Their participation is not a footnote; it is the story."

Youth Innovation Lab, Nepal

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