

Final Evaluation Report

| Your Details | |
|----------------------------|---|
| Full Name | Beeju Poudyal |
| Project Title | Land Use Land Cover Change and their Implications for Human –Elephant Conflict in the Eastern Nepal |
| Application ID | 34101-2 |
| Date of this Report | 20-9-2023 |

1. Indicate the level of achievement of the project's original objectives and include any relevant comments on factors affecting this.

| Objective | Not achieved | Partially achieved | Fully achieved | Comments |
|---|--------------|--------------------|----------------|---|
| To understand the spatial and temporal patterns of land use land cover change and the resulting impacts on elephant's habitat in Jhapa district | | | | A manuscript is under preparation based on the land use land cover change analysis and it's impacts on the human-elephant conflict. |
| To understand the social perspective towards land use land cover change and its impact on elephant habitat | | | | The social surveys and interviews provided enough data, and I am preparing a manuscript. I have plans to publish the manuscript soon. |
| To conduct awareness among the different stakeholders in the local communities in regard to minimize human-elephant conflict. | | | | |

2. Describe the three most important outcomes of your project.

a). Land Use Land Cover Change map preparation and analysis:

We analysed the land use land cover (LULC) dynamics of the Jhapa district. We analysed the LULC dynamics for 5 different years, 2000,2005,2010,2015, and 2019 (Fig.1-2). Our analysis revealed that the study area faced a rapid increase in build-up area. We also found an increment in the forest area and grassland areas. Globally, the land use land cover change is rapid, and the human-transformed landscape alters the interface of human-wildlife interactions due to the shifting socio-ecological and environmental pressures (Sanare et al., 2022). We believe that understanding this dynamic is important in mitigating the negative interactions between human and wildlife. Through this study, we have studied the land use land cover change of 19 years in Jhapa district, which is a prime habitat of Asian elephant outside of the protected areas in Nepal. A manuscript on understanding landscape composition and configuration of the study area is under preparation. We aim to submit this manuscript to the journal, Biological Conservation.

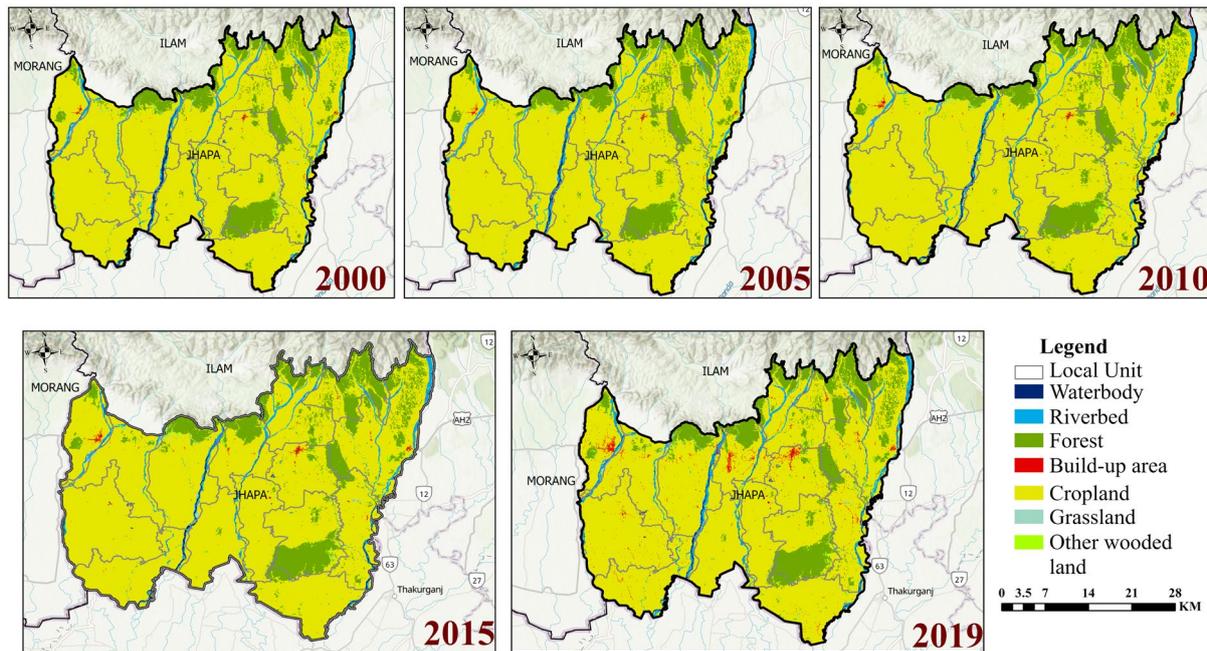


Figure 1: Land Use Land Cover Change Map of Jhapa

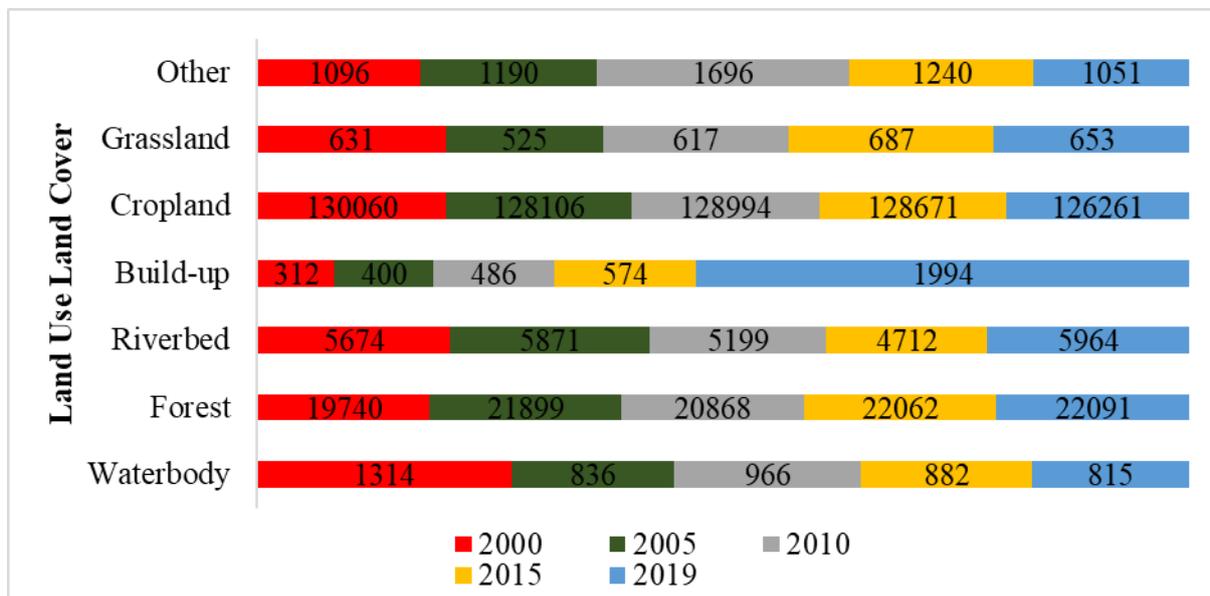


Figure 2: Land use and land cover change dynamics of the study area from 2000-2019.

b). Understanding of local people's perception towards land use land cover change.

We assessed and understood local people's perception towards the land use land cover change and its impact on human-elephant conflict. We conducted focus group discussions and interviews (n=281) for data collection.

Gender distribution

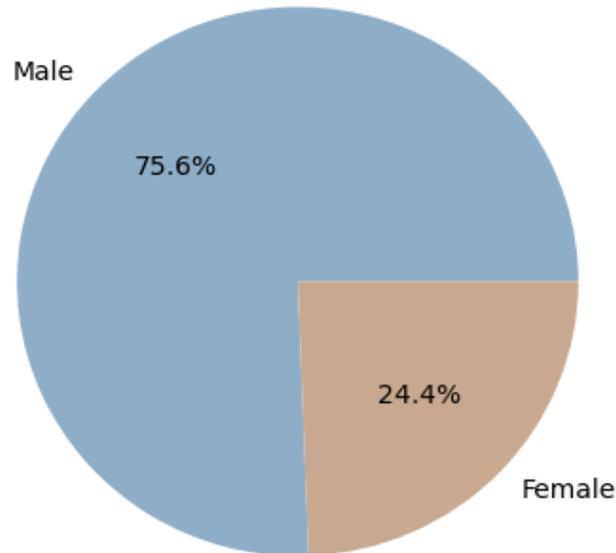


Figure 3: Gender distribution of the respondents.

Among the female-headed households, the knowledge of land use systems was found comparatively low when compared to the male respondents. Land use and land cover is a crucial aspect to be understood to minimise human-wildlife conflict in Nepal. A study by Sanare et al. (2022) clearly states that the human population has accelerated the land use changes and reduced natural vegetation which resulted in an increased number of human-elephant interactions and the likelihood of conflict. This result indicated the need to increase women's awareness in the project area.

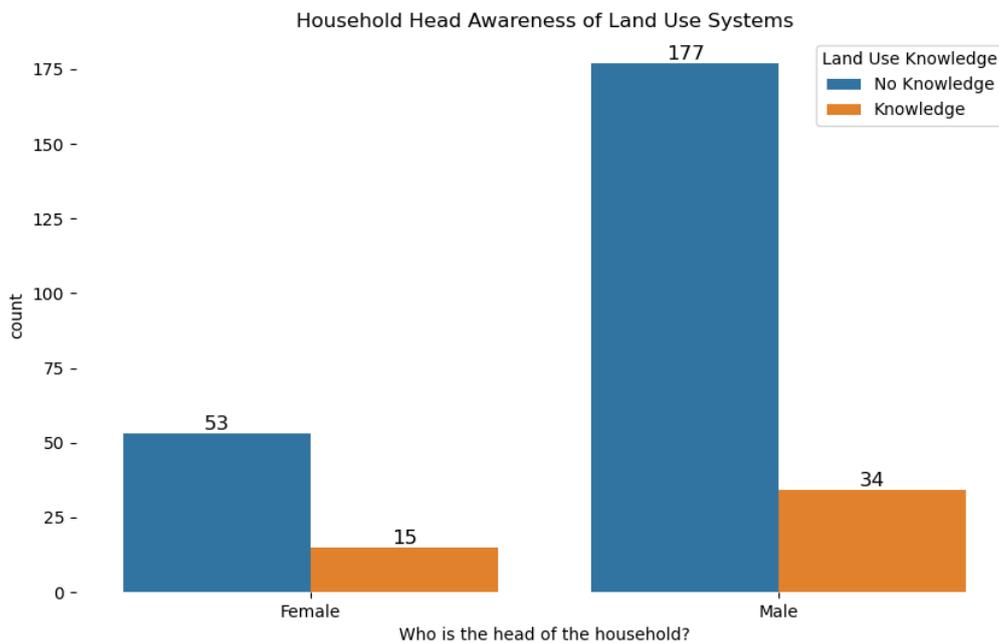


Figure 4: Awareness related to land use systems.

Most of the respondents believed that the forest area has increased whereas the grazing land and the barren lands are believed to have decreased in the study area. The local communities also believed that the agricultural area had decreased. Respondents stated that they believe the forest area has increased over the time period. This is also true with our land use land cover mapping (Figs. 1-2, 5). Our LULC analysis and local people's survey suggested that there is a decrease in cropland. We also found that there is an increase in human-elephant conflict incidents. The majority of the respondents responded that they have experienced interacting with the elephant throughout the whole year, so based on the crops they are producing, each cropping season is equally susceptible to damage.

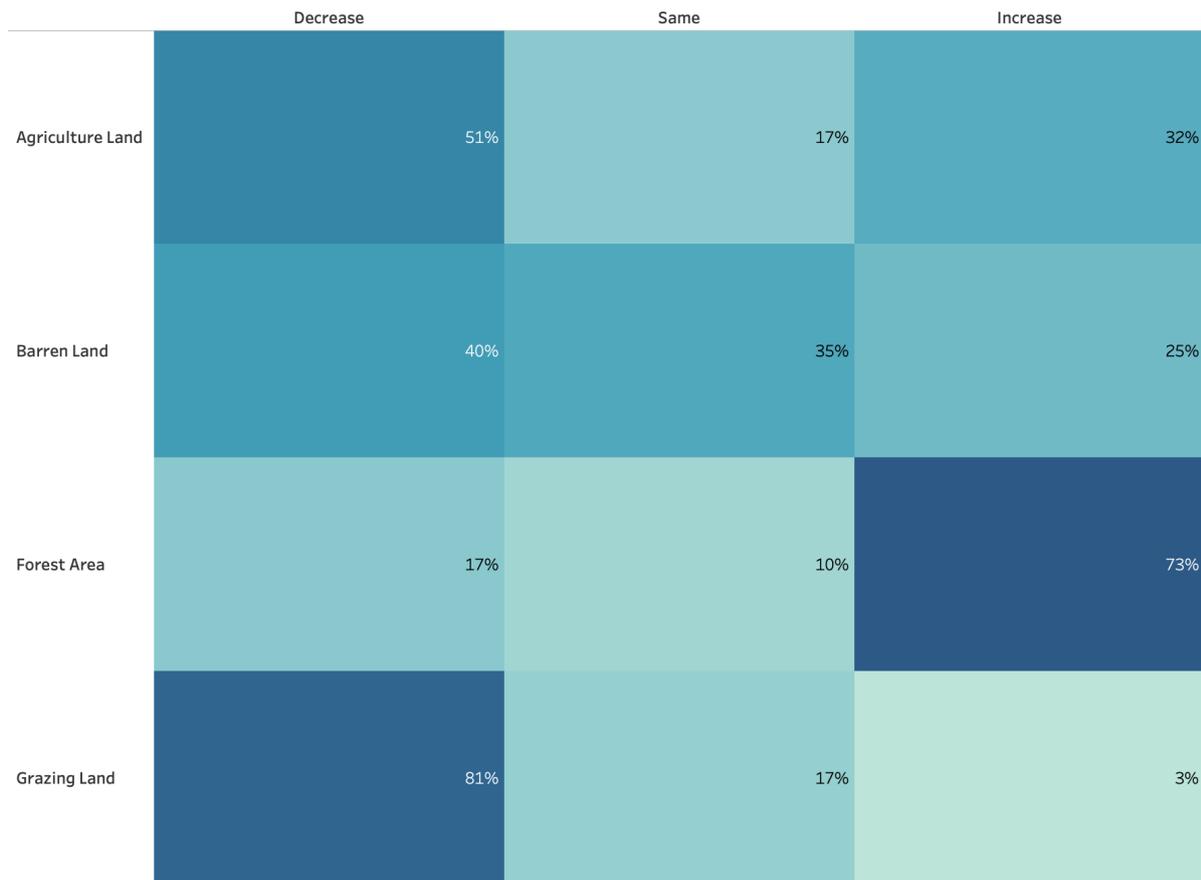


Figure 5: People's perception towards the land use land cover change.

c). Change in perception of people:

We carried out awareness and outreach activities through different means and methods, including training sessions for community forest guards, community forest user committees, and individuals as part of household surveys. Our media outreach efforts have had a positive influence on local communities, enhancing their comprehension of conservation efforts and the significance of elephants. Moreover, the local communities' understanding of land use and land cover change has significantly improved as a result of these activities.

3. Explain any unforeseen difficulties that arose during the project and how these were tackled.

The primary challenge we encountered during our project implementation period was the impact of the COVID-19 pandemic. I personally tested positive for the virus multiple times and organising public gatherings during the COVID-19 lockdown was exceptionally challenging. However, we were successfully able to implement all the objectives of the project.



4. Describe the involvement of local communities and how they have benefited from the project.

Local communities were directly involved during the implementation of the project. Without the direct involvement of the local communities, it would not have been possible to complete this project. During the questionnaire surveys and focus group discussion, the local community actively participated in the process and were made clear about technical terms such as land use land cover change and human-elephant conflict. The awareness materials produced during this project helped local communities increase their awareness within themselves. During the surveys, trainings, and consultation meetings through direct and indirect interactions, local communities also got a chance to share the problems they are facing and exchange experiences within themselves. After finishing the data analysis, we again plan to disseminate the results to the local government bodies and communities which will help them understand the current scenario of conflict and look for possible minimisation ways.

5. Are there any plans to continue this work?

Yes, I plan to continue this work as there are many other unexplored areas that need to be addressed in the study area. The local government bodies are in need of technical support to address the human-elephant conflict issues and to incorporate those in the local level planning. There is evidence of conflict in the other areas where this project could not incorporate within the project time. There are many other communities where awareness activities are still needed. Target group-oriented awareness activities are still crucial in managing the conflict between humans and elephants.

6. How do you plan to share the results of your work with others?

I am planning to prepare two manuscripts and publish them in peer-reviewed journals:

1. Quantifying land use land cover change and conflict between human-elephant in eastern Nepal.
2. How do local people perceive human-elephant conflict in a changing landscape?

Along with this, I am planning to prepare a news article and publish it in the newspaper based on the findings from the research questions of land use land cover change and its impact on human-elephant conflict.

I will also present the results at national and international conferences in the near future.

I have already published an article related to the human-elephant conflict in a locally available online portal (https://hernekatha.com/beeju-jhapa/?fbclid=IwAR1xmB1mutUawor6GFllfNqGZD4kVA5Oh736d-YK9BE0ySni_HJOdgCIYiw).

7. Looking ahead, what do you feel are the important next steps?

Human-elephant conflict is an issue established for long in eastern Nepal. A multi-institutional involvement is crucial in addressing it. In this scenario, the local government bodies such as municipalities, wards, and their representatives need to be aware of the issue, understand the issues critically, and include conflict minimisation in their annual plans. For this, local government bodies need guidance and consultation for conflict minimisation techniques, prioritisation of the areas and communities more vulnerable to the conflict and find ways to minimise those. The compensation mechanisms provided to the communities after the conflict should be made clear to the local authorities and community members. Different alternative methodologies are needed to be explored in direct involvement of the local communities with their interest.

8. Did you use The Rufford Foundation logo in any materials produced in relation to this project? Did the Foundation receive any publicity during the course of your work?

Yes, I used The Rufford Foundation logo in the visual material prepared for the awareness programs. The radio program later was prepared in the visual material and posted on the YouTube channel of Himalayan Conservation and Research Institute and the link to it is <https://www.youtube.com/watch?v=IOLavCPRhjs&t=6s>.



Nature Talks Episode 1 | प्रकृतिका कुरा



Figure 6: "Nature's Talk" series on YouTube.

9. Provide a full list of all the members of your team and their role in the project.

| Team Member | Description | Role |
|--------------------|------------------------|--|
| Beeju Poudyal | Principle Investigator | Project design, implementation, report writing |
| Suraj Upadhaya | Co-Investigator | Land Use Land Cover Change Analysis |
| Mala Deep Upadhaya | Co-Investigator | Data analyst, technical assistance |
| Sabin Sitaula | Field Assistant | Data collection and management |
| Laxmi Khadka | Social Media Assistant | Awareness program materials preparation, editing and formulation |
| Namata Khatiwada | Social Media Assistant | Awareness program materials preparation, editing and formulation |

10. Any other comments?

This project successfully conducted the prescribed activities despite the consequences of COVID-19. I am thankful to The Rufford Foundation for understanding the difficulties and providing with the flexibilities. Human–elephant conflict has huge impacts in the project area and this project could only address very few of the issues. There is a need for the interest of various stakeholders and their active involvement in addressing the existing conflicts.



Discussion with the communities.



Household survey.



Destroyed crop land.



Destroyed crop land.



Destroyed house.