**Project Summary**

The overarching hypothesis of this proposal is that there has been an unmapped forest transition in Nepal over the last 25 years, and this transition has waxed and waned across the landscape in response to various socioeconomic and political drivers. The project will: 1) Build a comprehensive database of Middle Hills forest cover change since 1990 based on annual Landsat satellite imagery and using an automated forest disturbance detection algorithm; 2) Identify socioeconomic and physiographic variables associated with forest cover change and quantify their respective influences on forest cover gain or loss using census data from the Nepali Central Bureau of Statistics and the Survey Department and a machine learning model; and 3) Assess how foreign labor migration and remittances correlate to forest cover change across the Middle Hills and at a sample of community forest sites based on both primary and secondary data. Objectives are realized at two nested scales: the Middle Hills and Village Development Committees.

Rudel et al. (2005) distinguished two forest transition pathways: economic development and forest scarcity, and suggests that the economic development pathway may be more prevalent in richer countries, and the forest scarcity pathway more prominent in poorer countries. Hecht (2010) argues that none of the prevailing deforestation or forest transition models examine the effect of globalization on forest cover, particularly the globalization of labor and the role of remittance income on human dominated landscapes. Nepal has gained worldwide recognition for path breaking achievements in community forest management; as of 2011 community forests occupied nearly 23% of forest area in the country (1.2 million ha), the management of which involves over 18,000 community forest user groups comprising 1.6 million households and nearly 40% of the population (DoF, 2012). The spatially explicit impacts of this transition in forest management have not been documented due to the difficulty of mapping forest cover in mountainous environments. Mapping the forest transition in Nepal and developing a comprehensive understanding of factors underlying observed changes in forest cover are critical if Nepal is to improve upon its already successful resource initiative. The project will further our understanding of the roles of spatial information technology for understanding long-term processes of socioecological change in mountain environments, and will provide expertise on a complex and little understood set of relationships between policy-making, economic development, and changes in forest cover. Because similar processes are occurring elsewhere in South Asia and worldwide, insights into these processes will have broad applicability. The significance of the project to the NSF GSS program lies in its improved methods for mapping forest cover in mountainous regions, its integration of methods and datasets for conducting a comprehensive, interdisciplinary assessment of forest cover change, and its engagement with geographical theory.

The collaboration among the two participating institutions in this project will provide unique opportunities for students to interact with experts in Geography, Spatial Sciences, and geospatial technologies and to develop crucial skills for studying human-environment interactions and the transformation of forest landscapes. The East-West Center funds students from the Asia-Pacific region to obtain graduate degrees at the University of Hawaii. Recruitment of student participants from among underrepresented groups including women, native Hawaiians, and South Asian immigrants to the U.S. is a high priority. The Resources Himalaya Foundation seeks to mentor young graduates in environmental and social sciences on the path to becoming dedicated conservationists. Significant funding resources and time commitments will be devoted to improving teaching and learning and broadening participation of underrepresented groups at the University of Hawaii, Tribhuwan University in Nepal, and the Resources Himalaya Foundation. Project results will be broadly shared through scientific publications and presentations, the data and model shared in national data centers, and scientific results will be delivered in forms useful for decision-makers and the public through stakeholder engagement. Reports will be prepared in English, and Nepali languages. Dissemination of research results will be facilitated by the experience and established infrastructure of the East-West Center with long-established links in Asia.