

Improving Climate Resilience of Vulnerable Communities and Ecosystems in the Gandaki River Basin, Nepal

Annex 16: Maps of Gandaki River Basin

This report presents the comprehensive assessment of climate change impact and vulnerability assessment through collecting and reviewing existing literature, data and documents as well as consultations with key national, provincial and local stakeholders and other key informants in the field from the target sites to enable consultation with local people, collection of information, perception and verification of baseline information.

Background

Overall vulnerability is having the spatial variability with the vulnerability categories depending on the geospatial variability of the exposure factors, sensitivity level and the adaptive capacity of the ecosystem. Thus, the geospatial approach can be adopted to document the spatial variability of the different indicators of exposure, sensitivity, adaptive capacity and ultimately vulnerability of the ecosystem and community. The extreme events and the disaster events and their impacts to the natural resources and to the communities. The geospatial approach thus documents the climate change and their impacts, temporal and spatial changes on the resources.

Government of Nepal has mapped the vulnerability of the Nepalese communities considering extreme climatic events, disasters, climate change, migration of the population and institutional set up under the formulation of NAPA in 2010 (MOSTE, 2010). IWMI (2012) has also analyzed the vulnerability of the community considering water ecosystem in the main criteria on the basis of NAPA details at the Mid-Hill micro-watersheds. ICIMOD has implemented a geospatial approach of climate change vulnerability assessment with the interactive web-application in GRB areas considering forest ecosystem and its sensitivity and exposure.

This annex aims to provide relevant spatial information on climate change, vulnerability, multi-hazard zonation, possible adaptation activities through EbA and CBA interventions. Specifically, it aims to provide GIS data, maps and analyses and to identify project interventions sites and site specific activities.

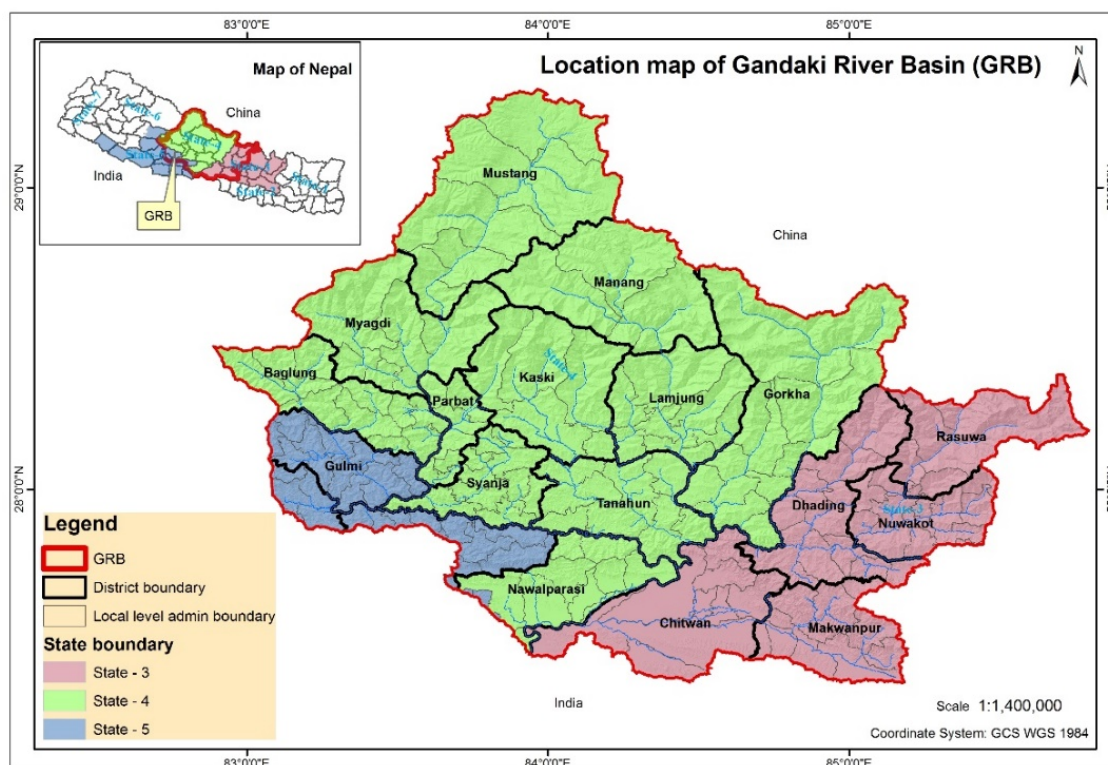
Method

Secondary sources of the data: Most of the geospatial data in either format of raster or vector layers were collected from the secondary sources as it was already available with number of agencies i.e. Department of Forest, Department of Forestry Research and Survey, Department of Survey, Department of Soil Conservation and Watershed Management.

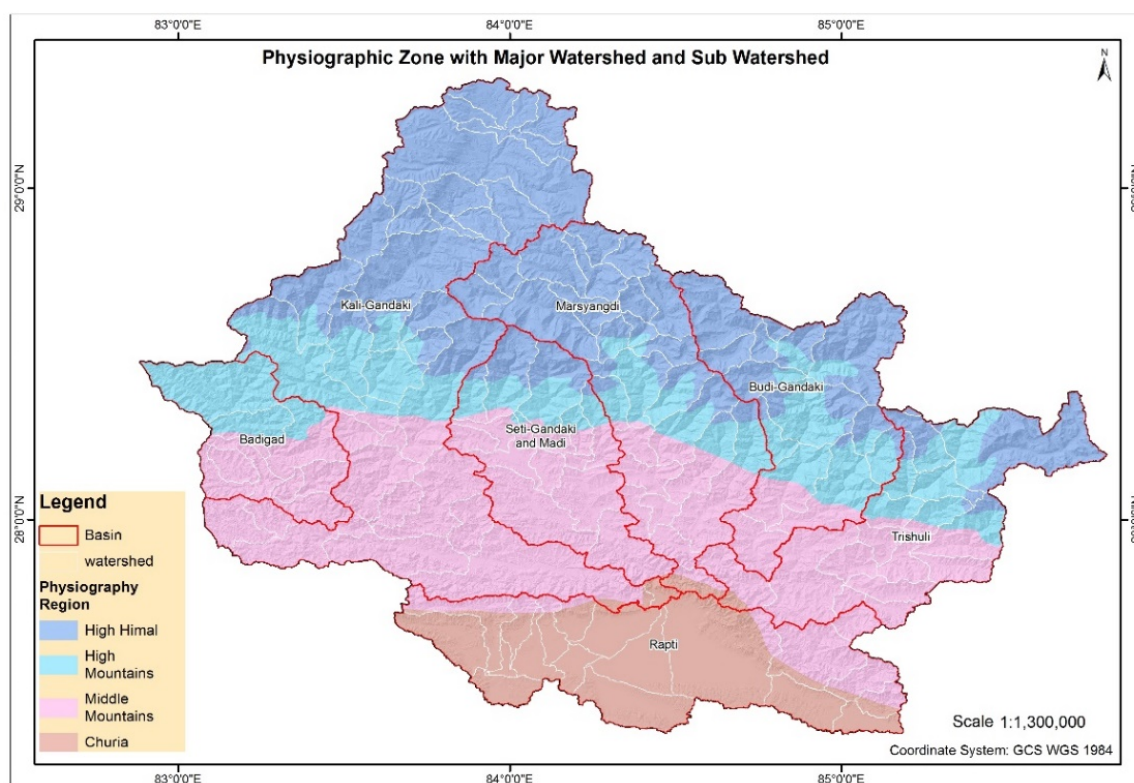
Data standardization and classification: The data available from different agencies are having some integration issues and inconsistency in terms of nature of data, geographic extent, boundary issue and categorization of the data. Thus, those issues were managed working on the geospatial environment to make those integral, consistent and similar categorizations. To accomplish this task, map re-projection, re-classification, boundary editing and attribute editing have done according

Maps of Gandaki River Basin (GRB)

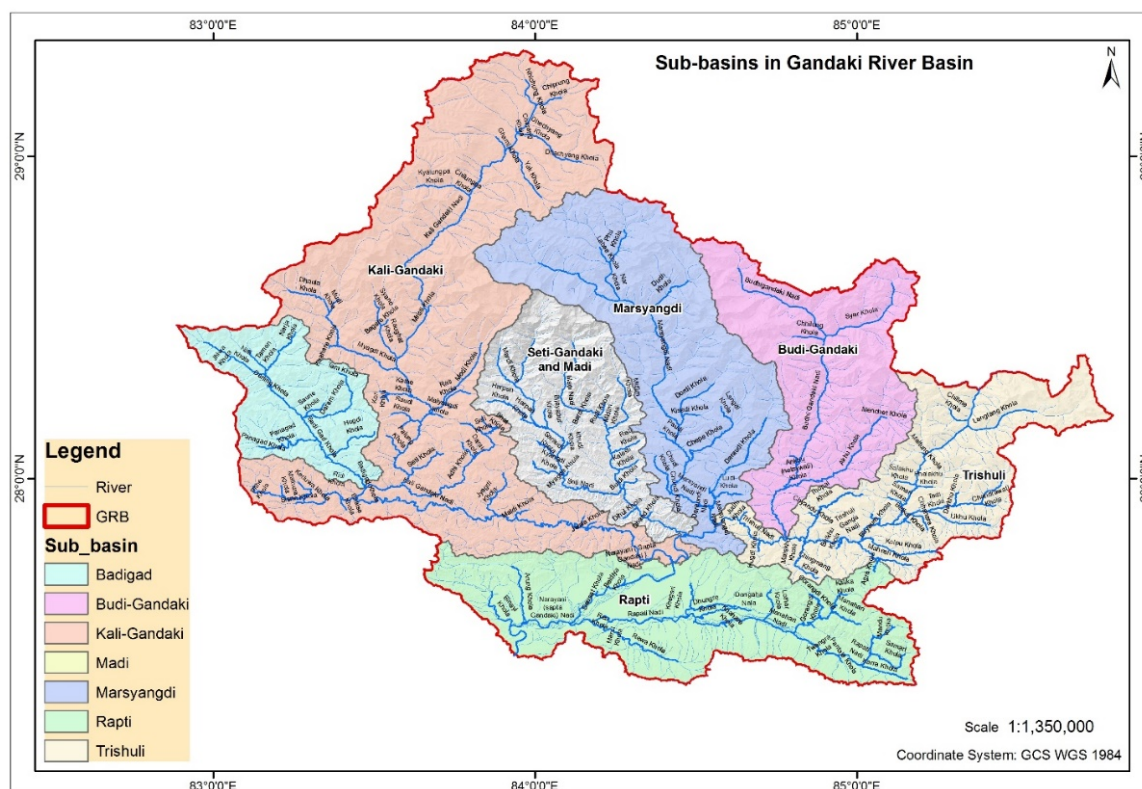
Map 1: Location Map of GRB



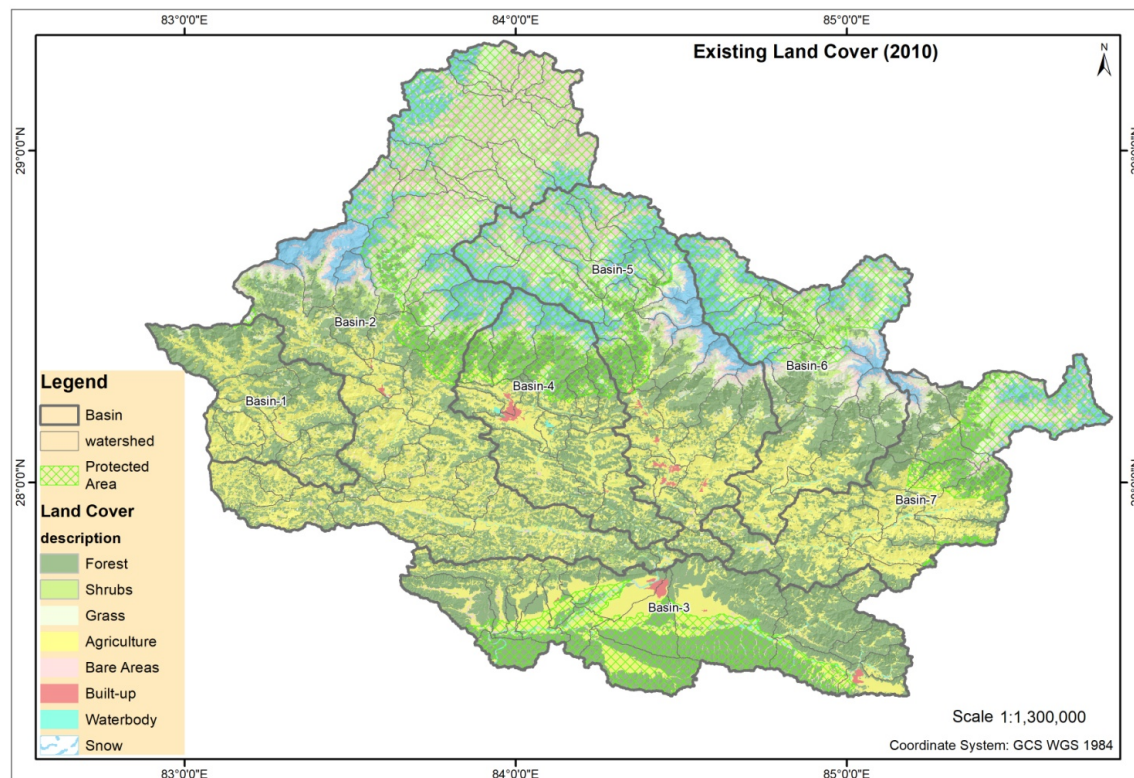
Map 2: Physiographic Map of GRB



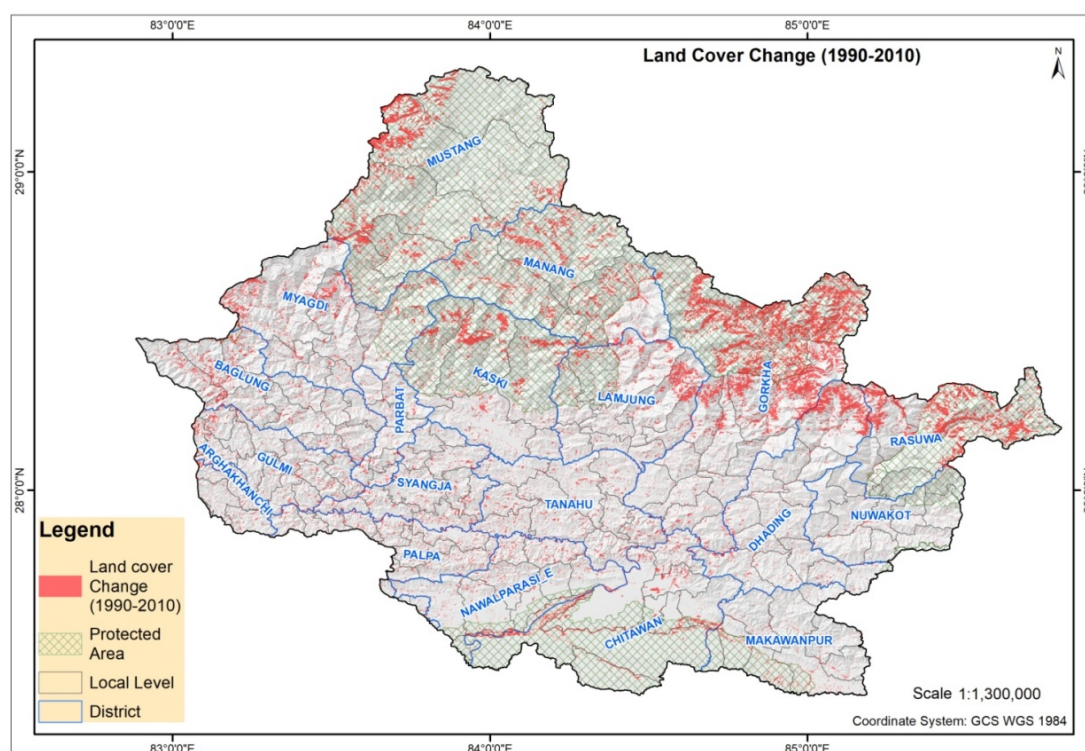
Map 3: Sub-basin Map of GRB



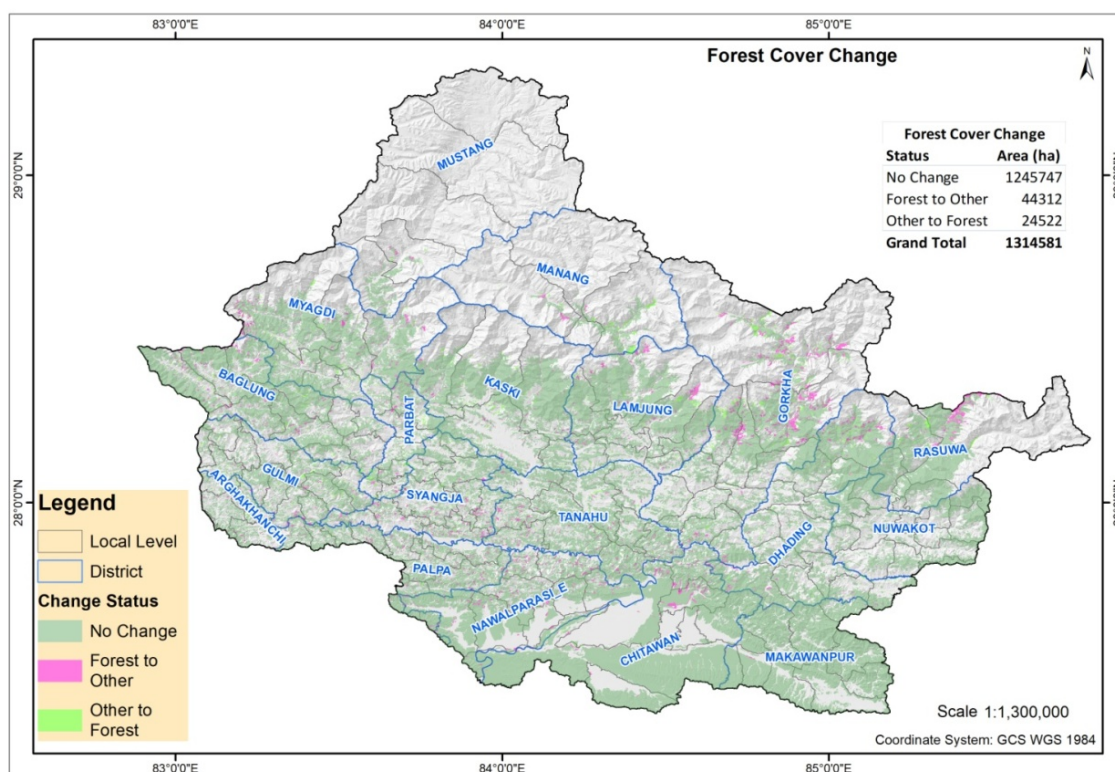
Map 4: Land use Land Cover map of GRB



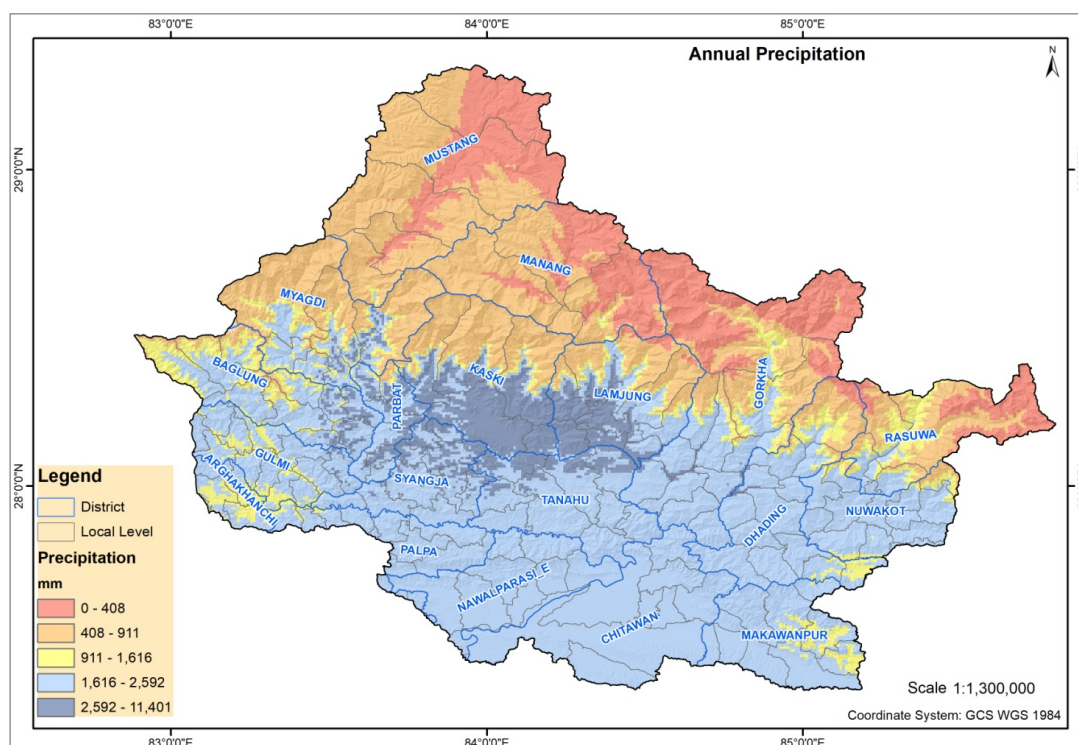
Map 5: Land Cover Change Map of GRB



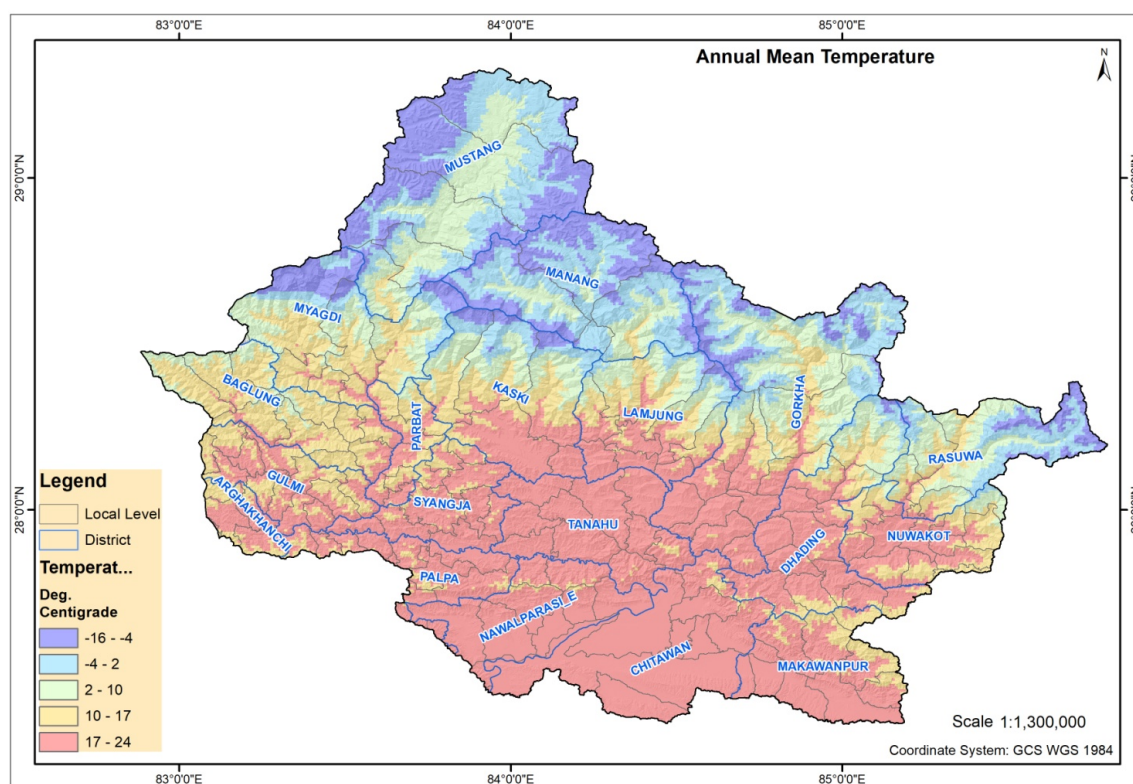
Map 6: Forest Cover Change Map of GRB



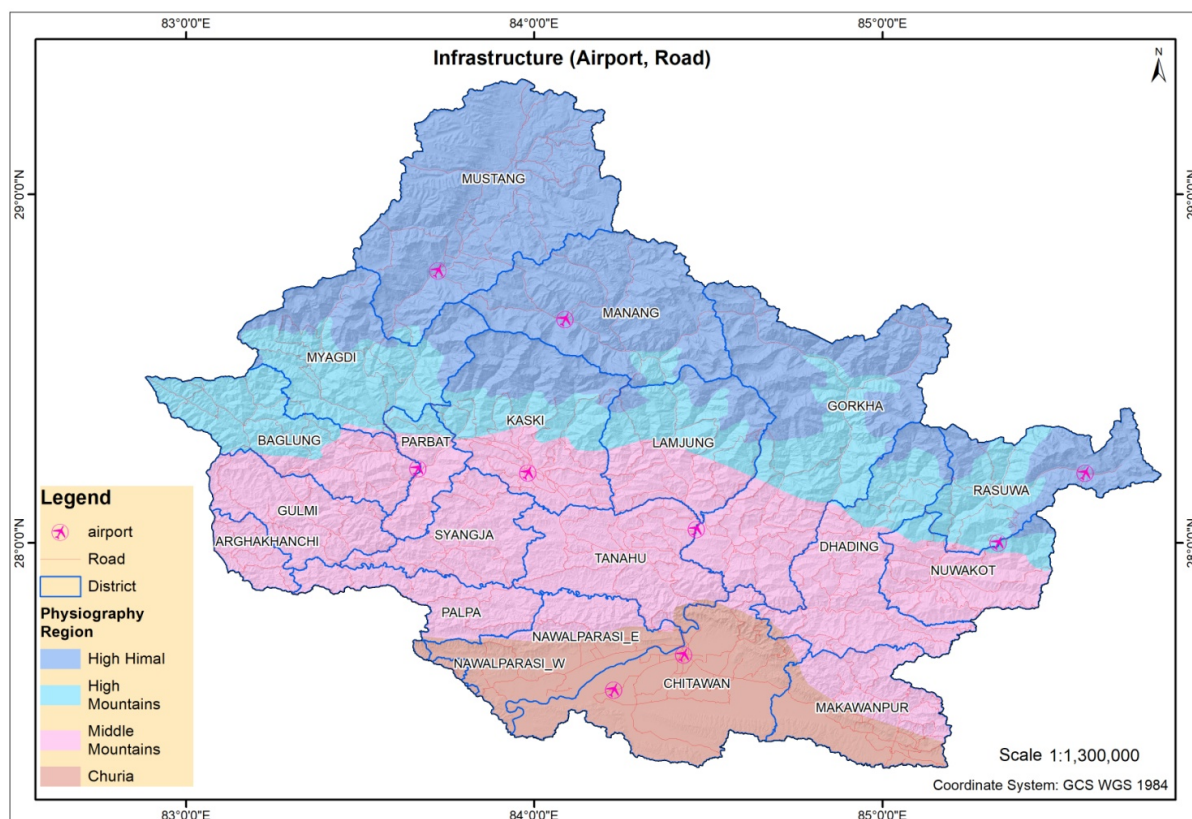
Map 7: Annual Precipitation map of GRB



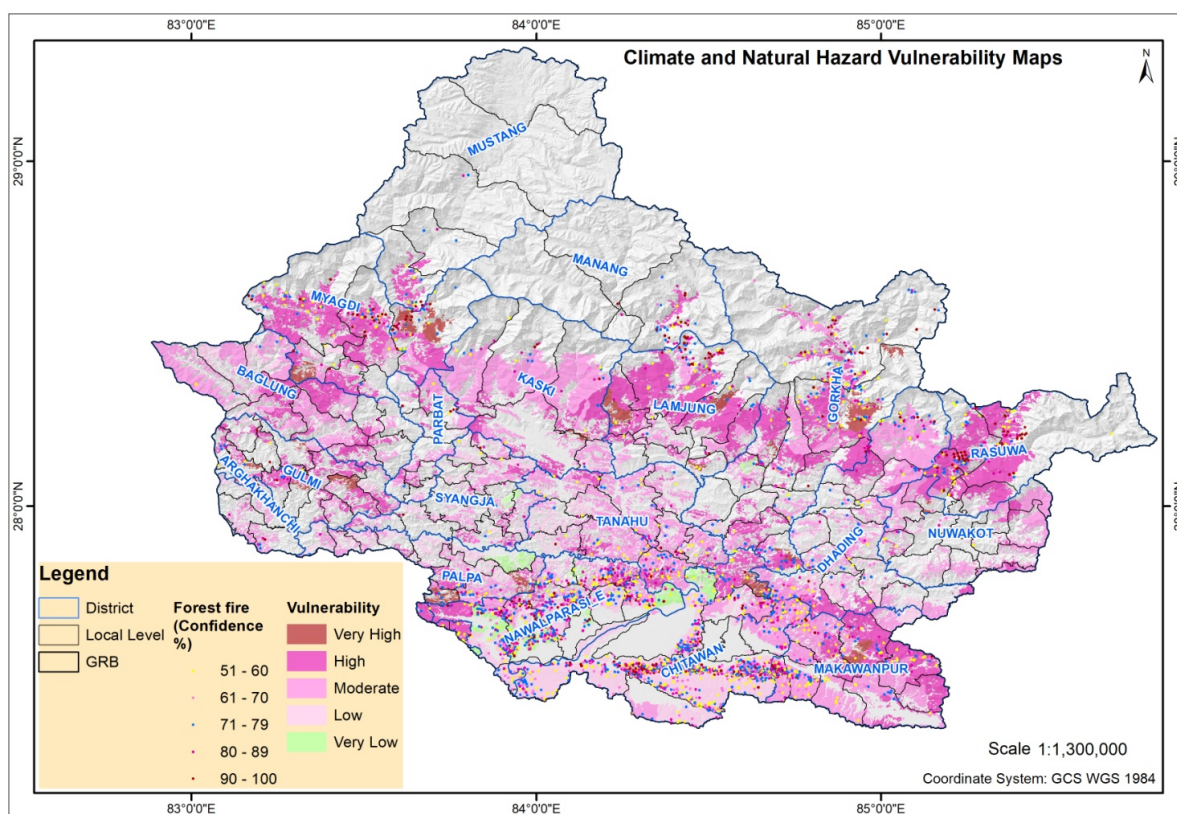
Map 8: Annual Mean Temperature map of GRB



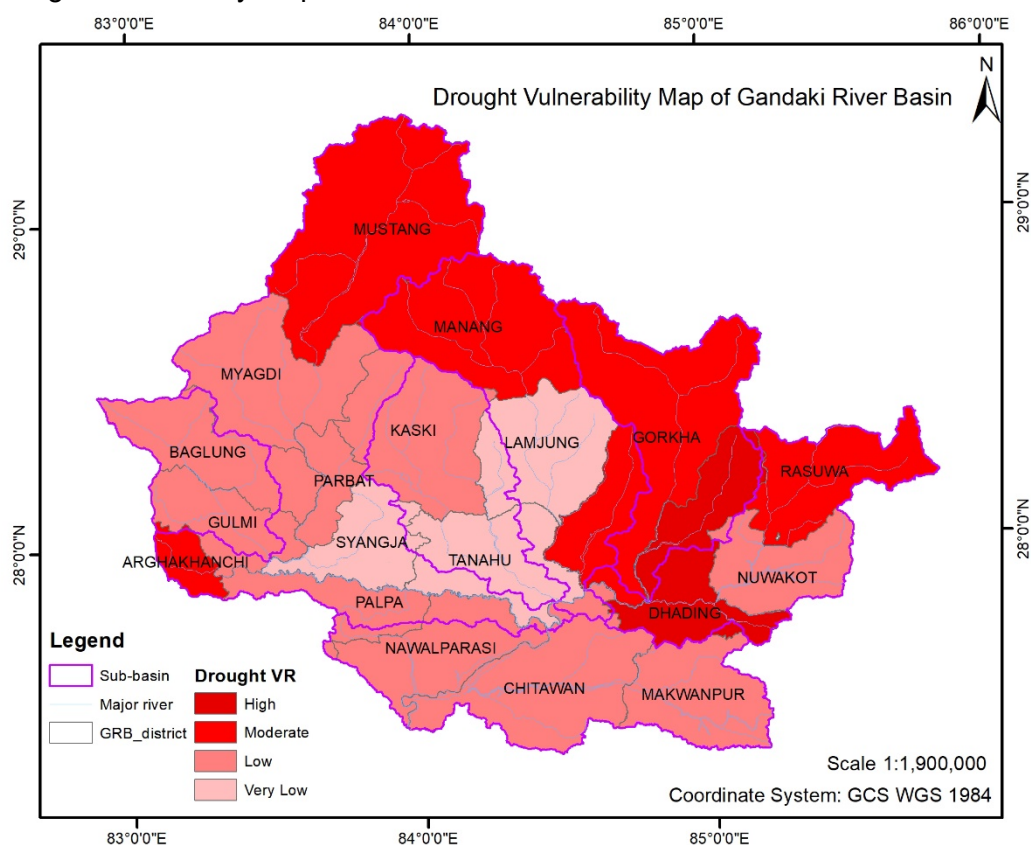
Map 9: Map showing Infrastructure (Road, Airport) of GRB



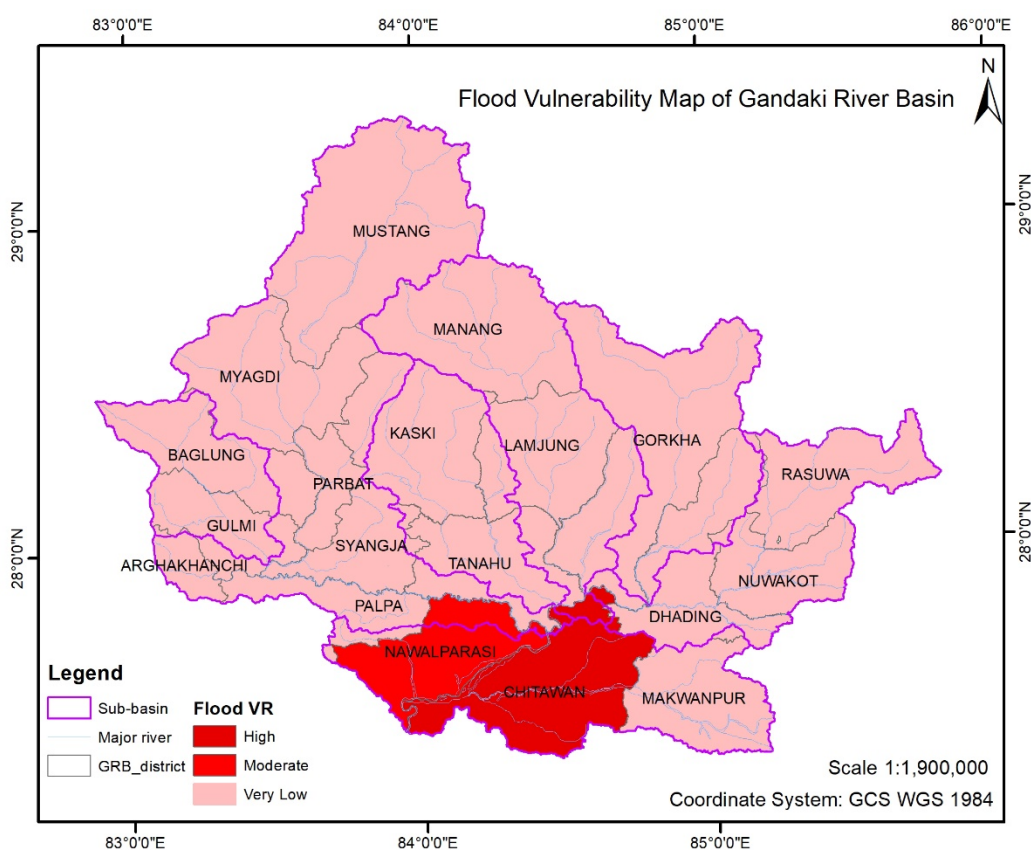
Map 10: Forest fire vulnerability map of Gandaki River Basin



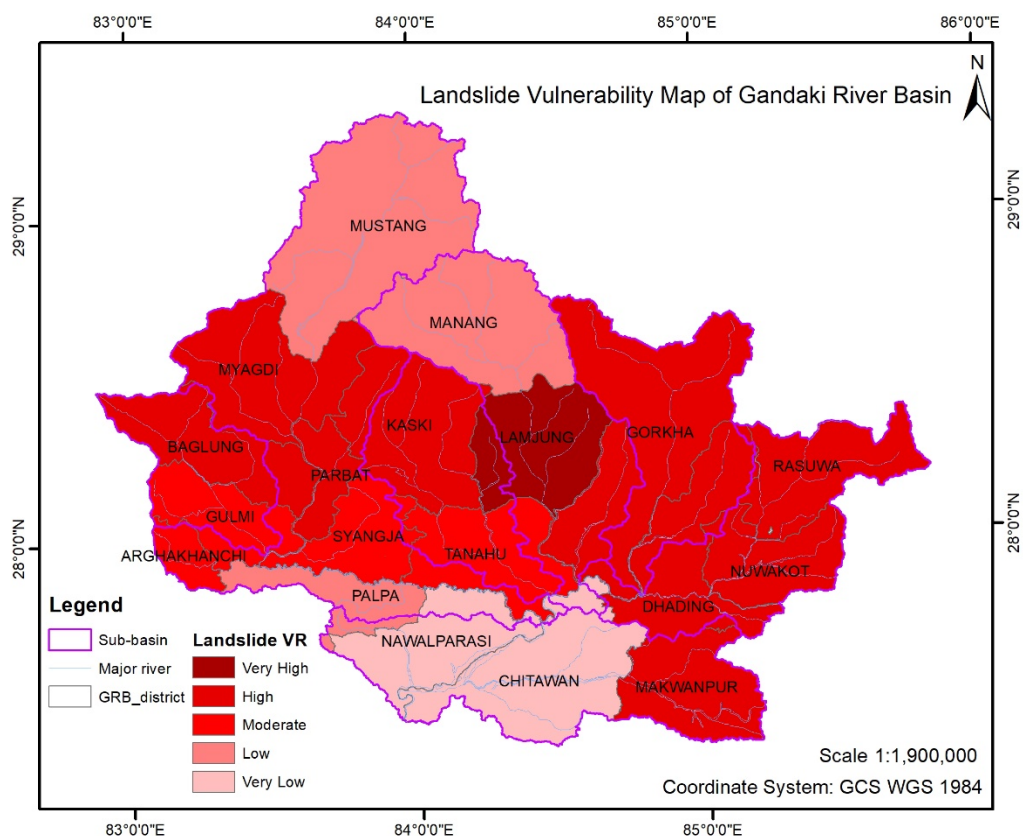
Map 11: Drought vulnerability map of GRB



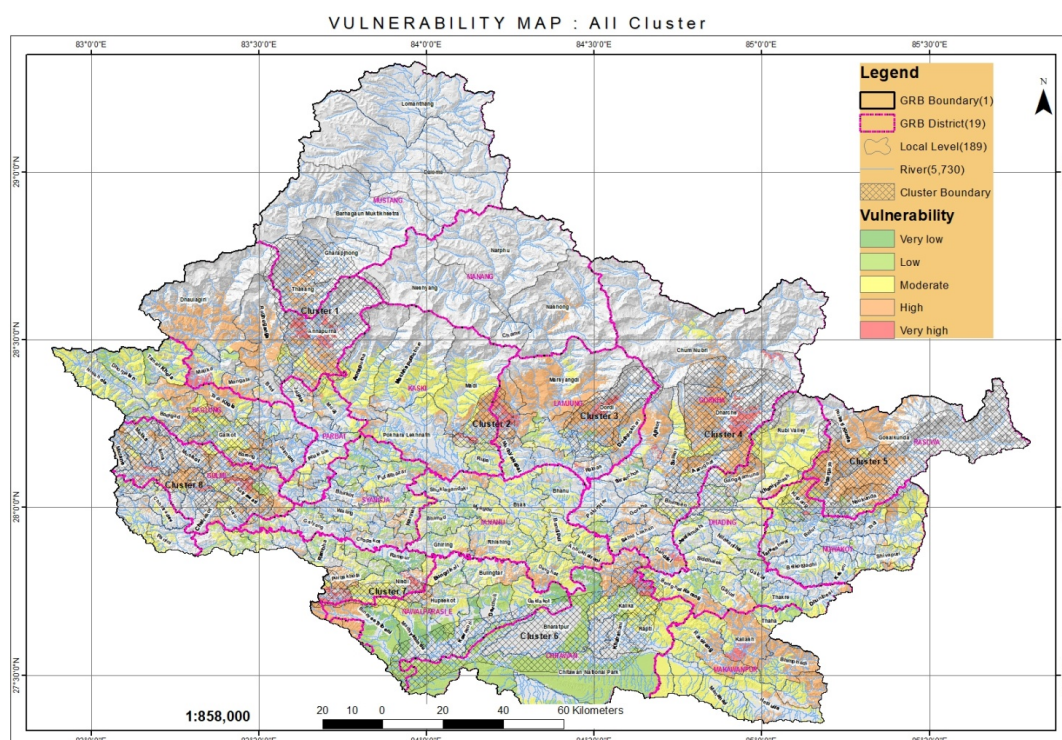
Map 12: Flood vulnerability map of Gandaki River Basin



Map 13: Landslide vulnerability map of GRB



Map 14: Overall Vulnerability Assessment map of Gandaki River Basin



Map 15: Interventions sites (for Eco-Ecosystem, Eco/Liv-Ecosystem/Livelihood, Liv-Livelihood) for ecosystem and community resilience of GRB

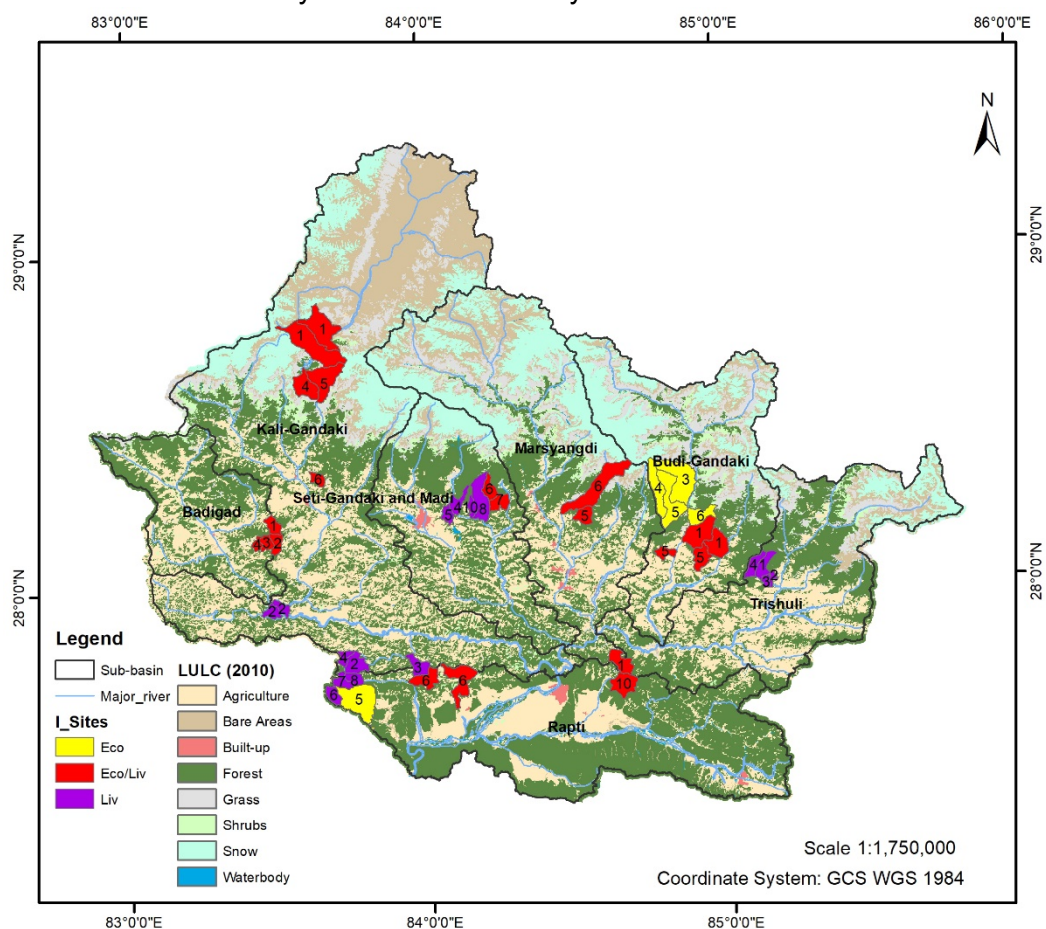


Table 1: Data Sources for above maps

SN	Name of the data	Year of publication	Organization
1	Local level admin	2017	Department of Survey
2	River network with naming	2017	Department of Survey/NGIIP
3	Transportation layer	2017	Department of Survey/NGIIP
4	Land cover data 1990 and 2010	2012	ICIMOD
5	Overall vulnerability layer	2014	ICIMOD
6	Forest cover 2014	2014	FRA/DFRS
7	Protected areas	2017	DNPWC
8	District wise risk	2010	Ministry of Environment