# Assessing climate change vulnerability and adaptation strategies of socio-ecological systems in the Central Himalaya

Thesis submitted to Jawaharlal Nehru University in partial fulfilment of the requirements for the award of degree of

#### **DOCTOR OF PHILOSOPHY**

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28th February, 2022

#### **CERTIFICATE**

This is to certify that the research work embodied in this thesis entitled 'Assessing climate change vulnerability and adaptation strategies of socio-ecological systems in the Central Himalaya' is submitted to Jawaharlal Nehru University for the award of the degree of Doctor of **Philosophy**. The work is original and has not been submitted in part or in full for any other degree or diploma to any other University/Institution.

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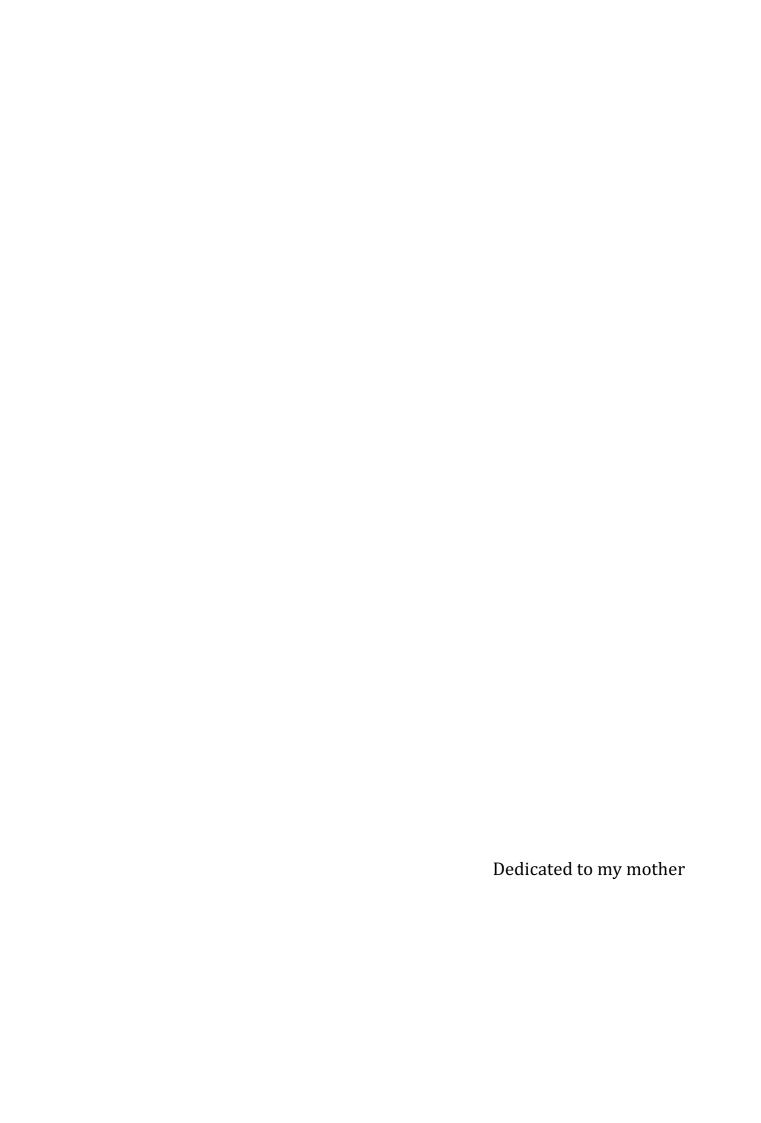
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#### LIST OF ABBREVIATIONS

SES Socio-ecological System

IHR Indian Himalayan Region

IPCC Intergovernmental Panel on Climate Change

STES Socio-Technical-Ecological System

NTFP Non-Timber Forest Product

MSL Meter above Sea Level FSI Forest Survey of India

IIRS Indian Institute of Remote Sensing

NRSC National Resource Repository Survey

ASTER Advanced Spaceborne Thermal Emission and Reflection Radiometer

GDEM Global Digital Elevation Model

MODIS Moderate Resolution Imaging Spectroradiometer

PDS Public Distribution System

LULC Land Use/Land Cover

PCA Principal Component Analysis
HCA Hierarchical Cluster Analysis

KMO Kaiser-Meyer-Olkin
ACU Adult Cattle Units

LPG Liquefied Petroleum Gas

SVI Socio-Ecological Vulnerability Index

EI Exposure Index

SI Sensitivity Index

ACI Adaptive Capacity Index







#### **Last Page**

The appended material is based on research carried out at the partner institution of URGENT Project, and has potentially utilised the equipment support, inputs based on course revised/developed and training programs (*lecture series, research seminar and webinars*) through the URGENT Project.

The document is part of thesis part of PhD/MSc/MA research work carried out at the Jawaharlal Nehru University. Purposefully limited pages are shared to avoid copyright and other issues. However, the full thesis can be shared on request.

The complete thesis can be obtained from Prof P K Joshi (<u>pkjoshi27@hotmail.com</u> or <u>pkjoshi@mail.jnu.ac.in</u>).