

STUDY OF SUITABLE SITES FOR TOURISM DEVELOPMENT IN THE GORI GANGA WATERSHED KUMAUN HIMALAYA BY USING REMOTE SENSING AND GIS

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ABSTRACT

Tourism is a fast growing and leading industry in all service sectors at the globally which supports socio-economic development of the destination. It provides job opportunities in different tourist sectors like accommodation, catering, transport, entertainment and others which related to tourism activities. The current research area Viz. Gori Ganga watershed is chosen by keeping the above perception in the mind, to analyze the tourist arrived status in different tourist destinations. Aims of this study are mapping existing tourism sites and data analysis according to tourism offices and also suggesting some suitable sites of tourism developments with the help of field survey Global Position System (GPS) and Geographic Information System (GIS) software in the Gori Ganga watershed. There are total 9 tourism spot categories which contribute 50 existing tourist sites in the different part of the study area and suggesting 20 tourism sites in different tourism spot categories. A brief account of these results it's discussed in the following paragraphs.

KEYWORDS: *Tourism, Suitable Sites, Development, GPS and GIS.*

1.0 INTRODUCTION

The present-day tourism sector is closely linked to development and many new destinations as possible. In the Indian Himalayan Region tourism has experienced continued growth and increasing diversification over the last few decades to become one of the fastest growing economic sectors in India as well as many other countries. This status is in line with predictions for the sector, which is expected to grow at an average annual rate of 7.9% from 2013 to 2023 (NITI Aayog, 2018) [7]. Since most of the nature-based tourism destinations are located in peripheral regions where communities are marginalized, outside investors tend to control the tourism industry and obtain most of the benefits.

If tourism developed with a responsible, pro-poor and equitable approach, has an obvious poverty reduction potential (DFID 1999 [4], Ashley et al., 2001 [1], UNWTO 2004 [11], UNESCAP 2003 [9], Hall 2007) [5]. Tourism can yield high levels of employment and income for the poor, especially in mountain areas where biodiversity and indigenous cultures have not yet been significantly eroded. Tourism brings relatively powerful consumers to Southern

countries, an important market potential for local entrepreneurs and an engine for local sustainable economic development (UNWTO, 2002) [10]. Tourism, one of the most important sectors of Nepal's economy, contributes 9.1 percent of total foreign currency and employs approximately 257,000 people (MCTCA 2004) [6]. Recent studies suggest that the tourism industry has a higher multiplier and positive spillover effect than other economic sectors, with one job directly created for every additional 3.5 tourist, and a further 0.8 indirectly created in support sectors (SASEC/ADB, 2008) [8]. Many mountain regions have seen a strong rise in living standards after tourism was introduced. Even in the European Alps, where tourism is now one of the major sources of income for many mountain resorts, most mountain communities were poor agricultural settlements before the growth of mountain tourism began in the 18th century (Beniston, 2000) [2]. Alternative policies, based on the specific mountain conditions or 'specificities' and focused on establishing benefits for the poor and socially excluded are crucial. Case studies by Campbell, 2008 have shown that where policies and training have been introduced to support local communities, such as in the Annapurna Conservation Area in Nepal, or the Yuksum area in Sikkim, India, tourism benefits for the poor have increased substantially.

2.0 OBJECTIVES

The fundamental objectives of the present investigation viz., tourism and suitable sites for tourism development in the Gori Ganga watershed Kumaun Himalaya, Uttarakhand, which incorporates the follows:

- Detailed study about tourism and visited sites in the Gori Ganga watershed.
- Suggesting suitable sites on the basis of field survey for tourism development.
- Mapping of tourism existing and suitable sites in the study area.

3.0 METHODOLOGY

Mapping for the present study based on field survey and Global Position System (GPS) prepared by Geographic Information System (GIS) software Arc GIS. Number of tourist arriving in the study area were received from District Tourism Office Pithoragarh. Plates 1 are collected during field survey of the Gori Ganga watershed.

4.0 LOCATION AND EXTENT OF STUDY AREA

The study area viz., the Gori Ganga watershed, Kumaun Himalaya (Figure-1) extends between 29°45'0'' N to 30°35'47'' N latitudes and 79°59'33'' E to 80°29'25'' E longitude, and encompasses an area of about 2191.63 km². Internationally known Milam glacier lies in this watershed from which the Gori Ganga river originates. It is a valley glacier having compound basin belonging towards south east from the Trisul peak. The Milam glacier is the second largest glacier of the Kumaun Himalaya. The glacier is 16.7 km long and it receives ice from the Trishul peak and from seven other tributary glaciers of the Gori Ganga watershed. Munsyari remains one of the last accessible hill stations by motor road in the region. The Munsyari and Madkote towns located in the study area are currently the starting point for many track routes into the Himalayan interior. Munsyari town one of its key advantages is the superb backdrop that is provided by the high Himalayan Pancha-Chooli range in full view. It is an awe inspiring place surrounded by undisturbed nature and high mountains. Land uses spread across region comprise settlements, terraced farms, Van Panchayat (forests governed by village forest councils), reserve forests and

the Askote Musk Deer Sanctuary. The last village in the watershed is Milam which is 65 km far away from the nearest motor road. Three main valleys i.e., Gori Ganga valley, Ralam valley and Johar valley are famous valleys in the study area.

5.0 RESULT AND DISSCUSSION

The Gori Ganga watershed is constructed of two physiographic regions (Great Himalayan region and Lesser Himalayan region) where 50 existing tourism sites (Table-1) are available for tourist which is geographically distributed in Figure-2. There are the data to total arrived tourists in the study area are registered in Table-2 and diagrammatically presented in Figure-3. Where 20 suggested tourism sites are presented in Figure-4 and example of suitable sites of tourism development in the study area presented in Plate-1. A brief account of these results it's discussed in the following paragraphs.

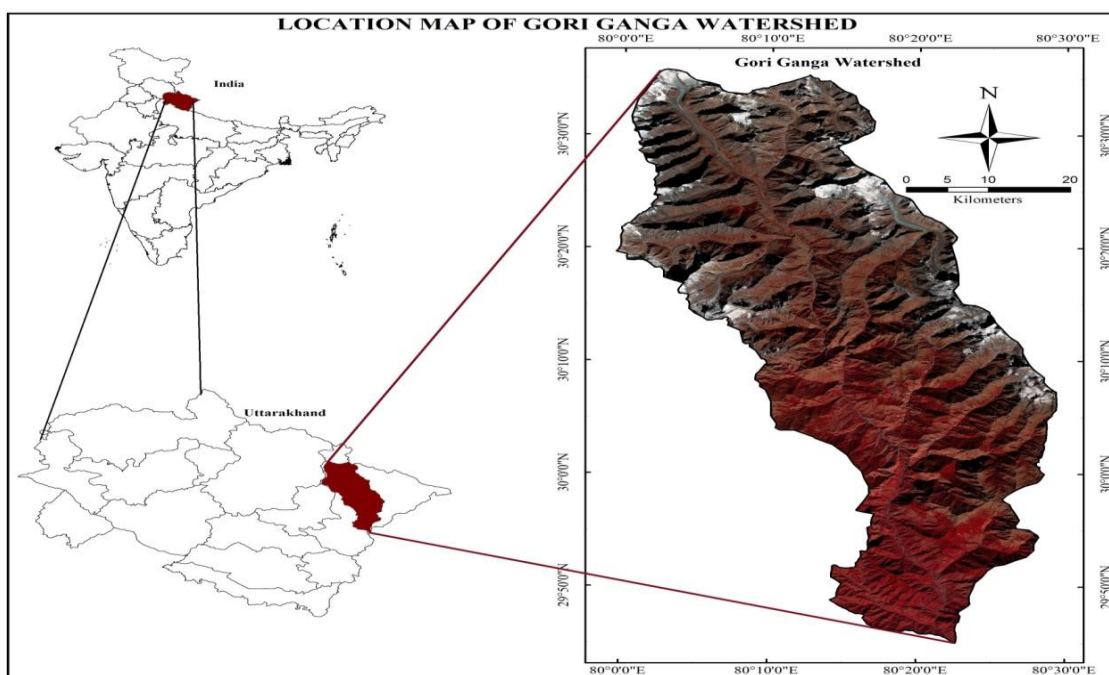


Figure-1: Location and extent of the study area viz., Gori Ganga watershed, Kumaun Himalaya (Uttarakhand).

6.0 TOURISM IN GORI GANGA WATERSHED

The environment and natural beauty around the Gori Ganga River is works in many different ways for the possibilities and conditions for tourism industry. Gori Ganga watershed is rich in natural beauty i.e. many glaciers, Panchachuli Peaks, Monal Bird, Kasturi Mirg (Musk deer), Brahma Kamal (*Saussurea Obvallata*) and also rich in social and culture i.e. Traditional village, tribal culture, old village etc. Table-1 depicts the details of tourism spots in the study area which is presented in Figure-2. Table-2 depicts number of tourist visited in the study area from 2010 to 2019 and diagrammatically presented in Figure-3. Table-2 is define that highest number of tourists visited about 104692 in the year 2016 where about 49308 tourists visited Munsyari, about 20152 tourists visited Jauljibi and about 35232 tourists visited Dharchula. Lowest number of tourists visited about 15952 in the year 2012 in the study area where about 10924 tourists

visited Munsyari, about 2003 tourists visited Jauljibi and about 3025 tourists visited Dharchula. Table-2 also define tourism destination wise tourist visited in the study area where largest number about 67092 tourists visited Munsyari in the year 2017.

**TABLE-1: DETAILS OF TOURISM SPOTS IN THE GORI GANGA WATERSHED
(BASED ON FIELD SURVEY AND GPS).**

| S. N. | Tourism spots types | | Name of tourism sites |
|-------|----------------------|--------|---|
| | Names | in no. | |
| 1 | Glaciers | 3 | (1) Milam, (2) Ralam, (3) Panchachuli |
| 2 | Waterfalls | 6 | (1) Josha Gad, (2) Dharikhet, (3) Fagua, (4) Dhunamani, (5) Andheri Ghat, (6) Alam waterfall |
| 3 | Tourist rest house | 3 | (1) Bhujani, Khaliya Top, (2) Kumaon Mondal Vikas Nigam (KMVN) Tourist Rest House (TRH) |
| 4 | Parks | 2 | (1) Eco park and (2) Lichen Park |
| 5 | Lakes | 2 | (1) Thamri Kund and (2) Messar Kund |
| 6 | Hot water spring | 3 | (1) near Madkote, (2) Bhadeli and (3) Sera |
| 7 | Tourist places | 14 | (1) Askote Musk Deer Sanctuary, (2) Dhandhura Reserve Forest, (3) Chhipla Kedar, (4) Khaliya Top, (5) Dana Dhar, (6) Nirtoli Dhar, (7) Ralam Village, (8) Najuri Kote, (9) Balanti Farm, (10) Munsyari, (11) Chulkote Dhar, (12) Khariya Khan near Toli, (13) Dhunamani Dhar and (14) Milam Village |
| 8 | Temples | 12 | (1) Darkote Mandir, (2) Dana Dhar Mandir, (3) Gayatri Chetna Kendra Mandir, (4) Chulkotedhar Mandir, (5) Shiv Mandir Madkote, (6) Waigadhar mandir, (7) Mahakali Mata Mandir Umta, (8) Maa Nanda Devi Mandir, (9) Maftal Dhar Mandir, (10) Maa Nanda Devi Bhikuriya, (11) Nanda Astami Sirtola, (12) Kanar Devi |
| 9 | Park | 2 | (1) Eco parks, (2) Dana Dhar Eco park |
| 10 | Flower garden/valley | 3 | (1) Tulip, (2) Orchid, (3) lichen garden |
| Total | | 50 | |

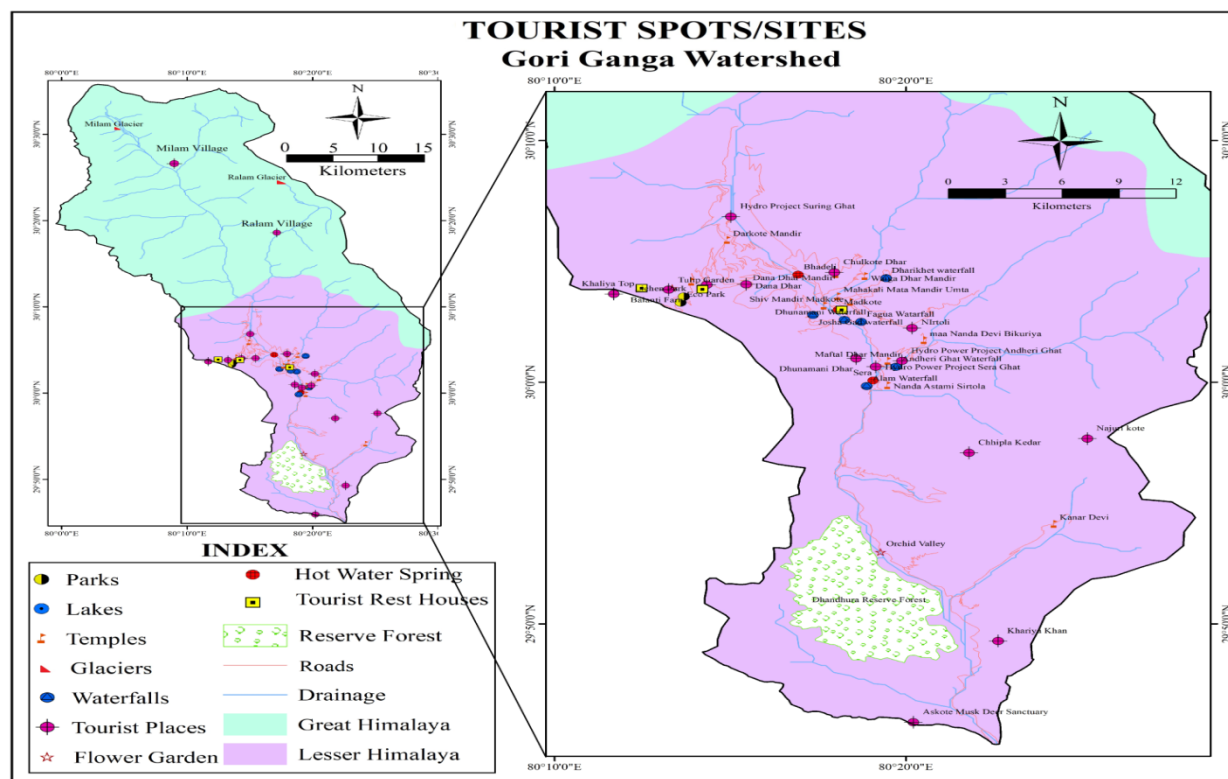


Figure-2: Geographical distribution of existing tourist spots in the Gori Ganga watershed (based on field survey and GPS).

TABLE-2: DETAILS OF NUMBER OF TOURIST VISITED IN THE GORI GANGA WATERSHED DURING 2010 TO 2019 (SOURCE: DISTRICT TOURISM OFFICE, PITHORAGARH).

| Years | Tourism Office | | | Total Tourist |
|-------|----------------|----------|-----------|---------------|
| | Munsiyari | Jauljibi | Dharchula | |
| 2010 | 10819 | 34000 | 0 | 44819 |
| 2011 | 11505 | 34500 | 0 | 46005 |
| 2012 | 10924 | 2003 | 3025 | 15952 |
| 2013 | 10023 | 45006 | 18610 | 73639 |
| 2014 | 11777 | 46524 | 19711 | 78012 |
| 2015 | 12272 | 48781 | 20227 | 81280 |
| 2016 | 49308 | 20152 | 35232 | 104692 |
| 2017 | 67092 | 17689 | 18744 | 103525 |
| 2018 | 23021 | 2016 | 12315 | 37352 |
| 2019 | 42120 | 0 | 19363 | 61483 |
| Total | 248861 | 250671 | 147227 | 646759 |

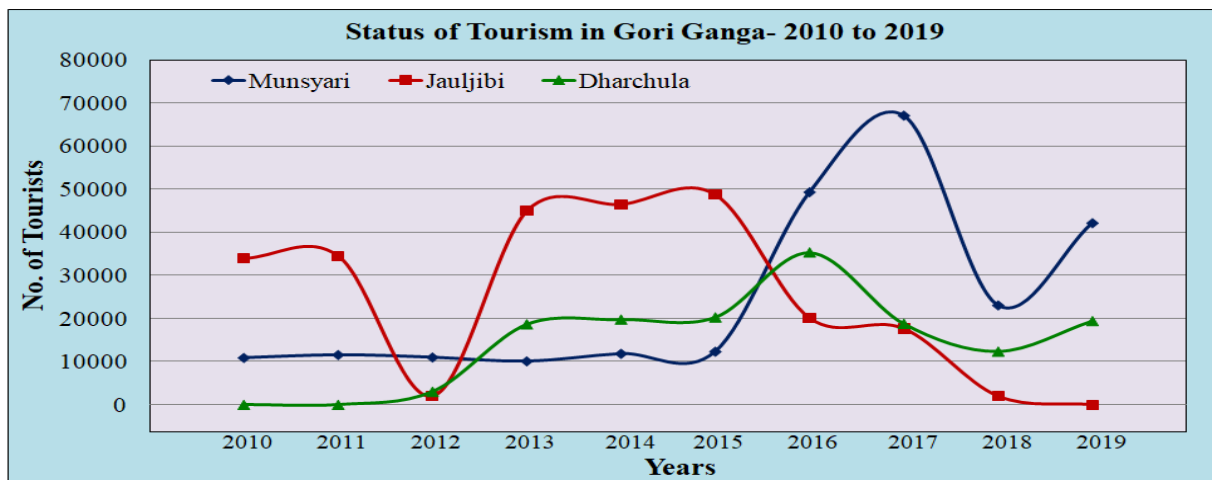


Figure-3: 2010-19 status of tourism in Gori Ganga watershed (source: District Tourism Office Pithoragarh).

7.0 SUITABLE SITES FOR TOURISM DEVELOPMENT

The Gori Ganga watershed is diverse in physical landscape and rich in natural scenic beauty. It has beautiful glacial landforms which provided large number of tourist and trekking attraction. Figure-4 depicts the suitable sites which can be developed as tourism site and places in the study area. These tourism sites are beautiful lakes (1- Charthi, 2- Golpha, 3- Najuri, 4- Bogdiyar, 5- Gaukha and 6- Quiry Zimiya), Glaciers (1- Panchachuli, 2- Burfu, 3- Lwa, 4- Martoli, 5- Goukha and 6- Bilju) and Bugyals (Charthi, Chhipla Kedar, Kamba Bagar, kolgu, Laspa, Nagini Dhoora, Panchachuli and Thalba). Example of suitable sites for tourism development are presented in Plate-1 besides these, for speedy development of tourism in the Gori Ganga watershed, there is urgent need for development of tracking routes for connecting with existing nationally and international tourist places such as Milam, Munsyari etc.

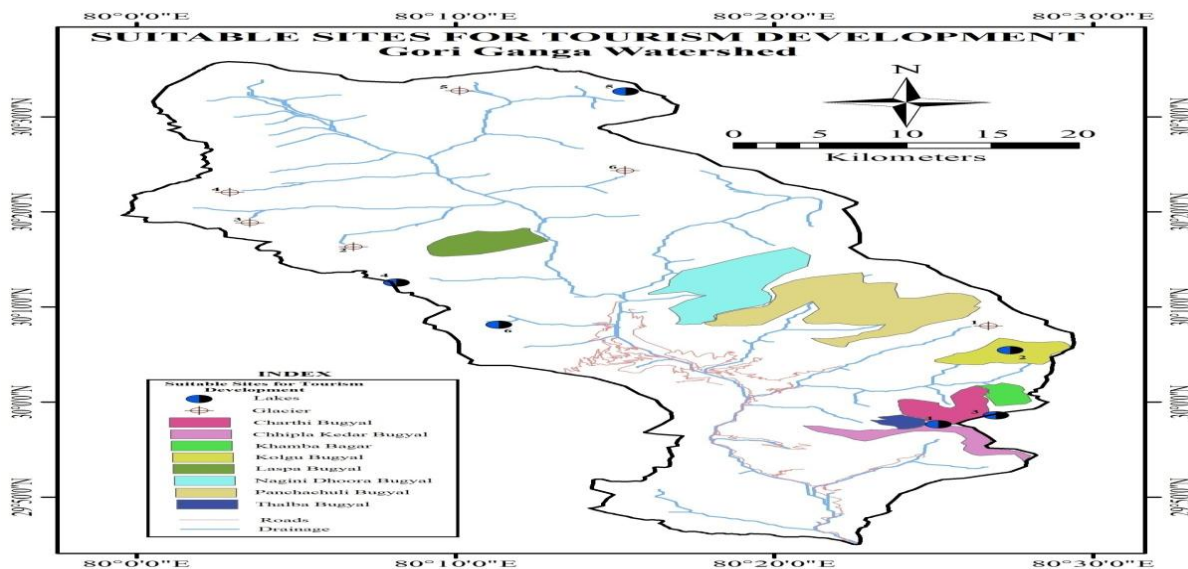


Figure-4: Geographical distribution of suitable sites for tourism development in the Gori Ganga Watershed (based on field survey).

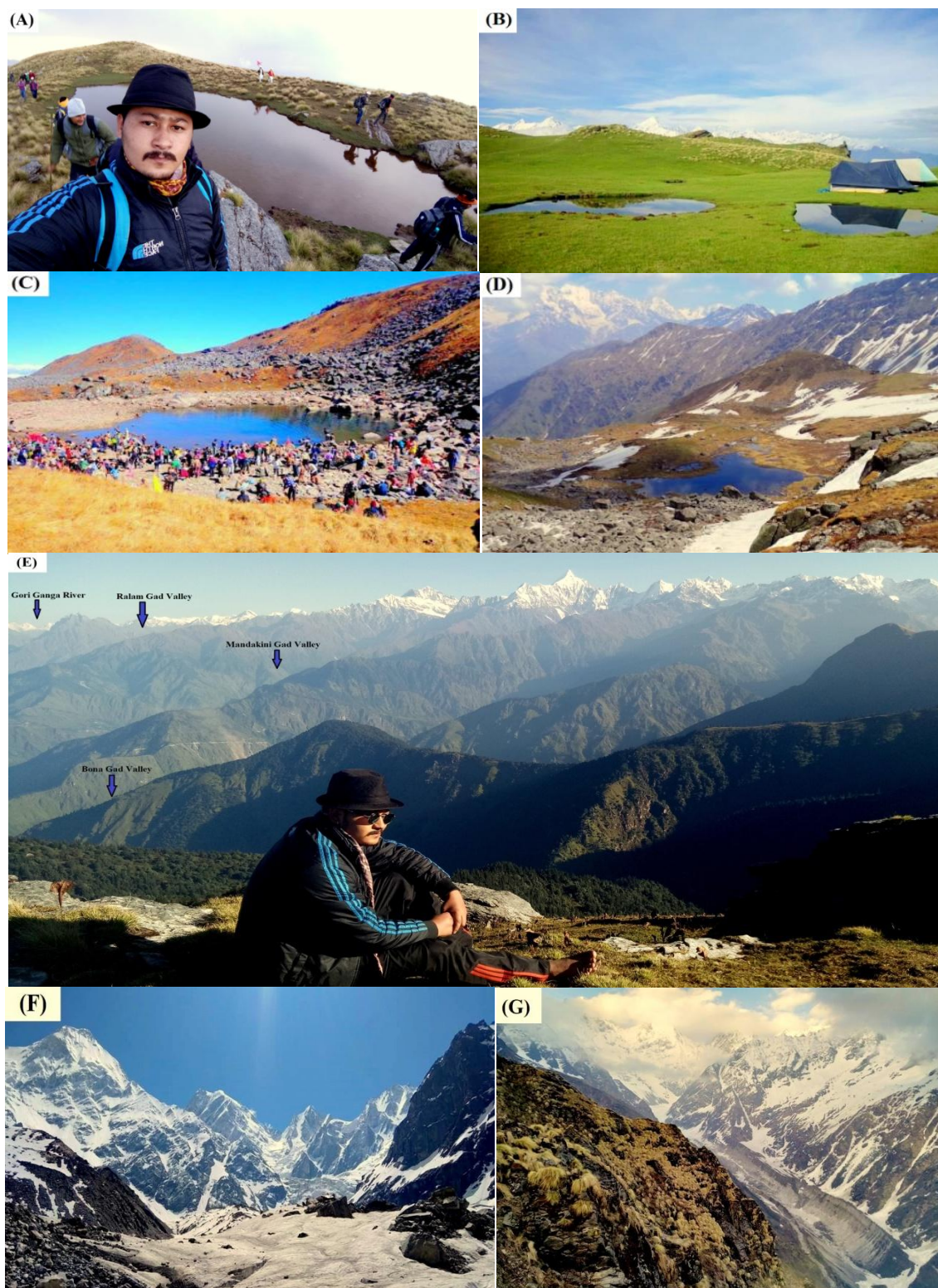


Plate-1: Suitable sites for tourism development in the Gori Ganga watershed: (A) Chhipla Kedar lake, (B) Khaliya lake, (C) Najuri lake, (D) Parvati lake, (E) panoramic natural scenic view of Himalaya from Chhipla Kedar Bugyal, (F) Panchachuli Glacier, (G) Ralam Glacier.

8.0 CONCLUSIONS

Tourism drives economic prosperity and sustainable development in the any destination of the world. Study area were visited large number of tourists between 2010 to 2019 but all 50 sites were not visited lack of tourist guide and bed tracking routes. The Gori Ganga watershed has large natural tourism sites and scopes as well were sustainable tourism cane develop very well. Some suitable tourism sites in the study area are struggling for attract visitors cause lack of proper tracking routes, lack of good tourism map of the study area. Tourism could be one of the more promising strategies to address the rampant poverty situation in the watershed, based on the region's comparative strengths and advantages. There is undeniable scope to increase income retention from tourism for the poor in the Himalaya by facilitating links between tourism and the local product system. The geographical information system technology is currently being offered a wide scope of scientific research and help to finding new tourism development sites in the study area.

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