

Sustainable Development of Tourism in Haridwar, Uttarakhand

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Abstract : *The paper presents an assessment on sustainability of tourism in Haridwar, Uttarakhand. Tourism is the strongest support of economy in Haridwar. However, tourism environment in Haridwar city is vulnerable due to continuous degradation of natural resources. The objective of this paper is to evaluate the sustainability of tourism in terms of ecology and local community of the Haridwar city. The study has been completed based on various data and information from different secondary sources and intensive field survey during 2007 to 2010 with scientific methods. The paper has mainly focused conflicts between tourism and conservation of natural resources in the city. Uncontrolled tourism has caused adverse impact on Ganga river water quality and as well as infrastructure of the city. The author emphasized on critical analysis about the Master project of Haridwar city and suggested scientific measures for sustainable development of tourism with stressing ecotourism.*

Key words: *Uncontrolled tourism, vulnerability assessment, sustainable tourism, eco tourism*

Introduction

Haridwar is the world famous religious and spiritual pilgrimage centre of the state of Uttarakhand as well as India because of its rich and ancient religious and cultural heritage. Tourism is one of the biggest and fastest-growing economic sectors in the global economy and has local, cultural, economic and ecological effects both positive and negative. Study on assessment of sustainable tourism in Haridwar has not been done by recent researchers. Based on the current literatures it is evident that more emphasis has been given on prospect of tourism and its economic sustainability in Haridwar, but unfortunately acute conflict between tourism and conservation of natural resources has been hardly discussed in recent studies. Hence, the study on negative impact of uncontrolled tourism in the city has a great significance to assess the ecological sustainability of tourism of the area. That is why the present paper has focused on detailed discussion of sustainable development of tourism in Haridwar district, Uttarakhand. The study has immense importance because it shows serious clash between uncontrolled tourism and

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environmental quality of the area. Ecologically the city is the most vulnerable part of Haridwar district. Hence, the author has selected the issue as a research problem and tried to assess the sustainability of tourism in Haridwar district in terms of economy, ecology, culture and local community with scientific methods including modern techniques. Based on vivid observation and evaluation, some planning for sustainable development of tourism in Haridwar has also been suggested in the paper.

Study Area

The study area is situated in upper Ganga basin. Northern portion of the area includes young folded Tertiary Himalayan mountain and southern part falls under Ganga-Yamuna Doab. The area falls under three tehsils namely i) Haridwar ii) Roorkee iii) Laksar including six C.D. blocks namely 1) Bhagwanpur, 2) Roorkee, and 3) Narsan, 4) Bahadradabad, 5) Laksar, and 6) Khanpur. The study area extends (Fig-1) from 29°35'37"N to 30°13'29"N of latitudes and 77° 52' 52"E to 78° 21' 57"E of longitudes, covering an area of 1883 sq.km. Tourism is the strongest support of economy in Haridwar city. Tourists come here because of the river Ganga. The Hindus believe that a dip in the holy river cleanses them of their sins. Every year about eight million tourists come here for their holy bathing. So there are immense pressure of pilgrims and tourists on the local resources.

Significance of the study: Tourism is one of the biggest and fastest-growing economic sectors in the global economy and has significant environmental, cultural, social, and economic effects, both positive and negative (Singh, 2008). The author thinks that there is a clash between uncontrolled tourism and environmental quality of the area. Generally conflicts emerge when tourism has detrimental effects on the environment and when there is little contact between tourism and conservation. Day by day environmental quality of Haridwar is being deteriorated increasing ecological vulnerability. So, the present research on assessment of sustainability of tourism and conservation of natural resources has a great significance. The present discussion must play important role towards sustainable development of tourism in Haridwar.

Materials and Methods

To elaborate the discussion required primary and secondary data have been used in this paper. The more emphasis has been given on secondary sources of data including tourist related data from Kumbh Mela office, Haridwar, and data regarding Haridwar city from Nagarpalika Parishad of Haridwar city. These types of data are very crucial to illustrate the tourist and pilgrims profile of the city.

The satellite images (LISS-IV-2005 & Google earth -2010) have been analyzed to prove inconsiderate anthropogenic interferences on river bars as well as the river

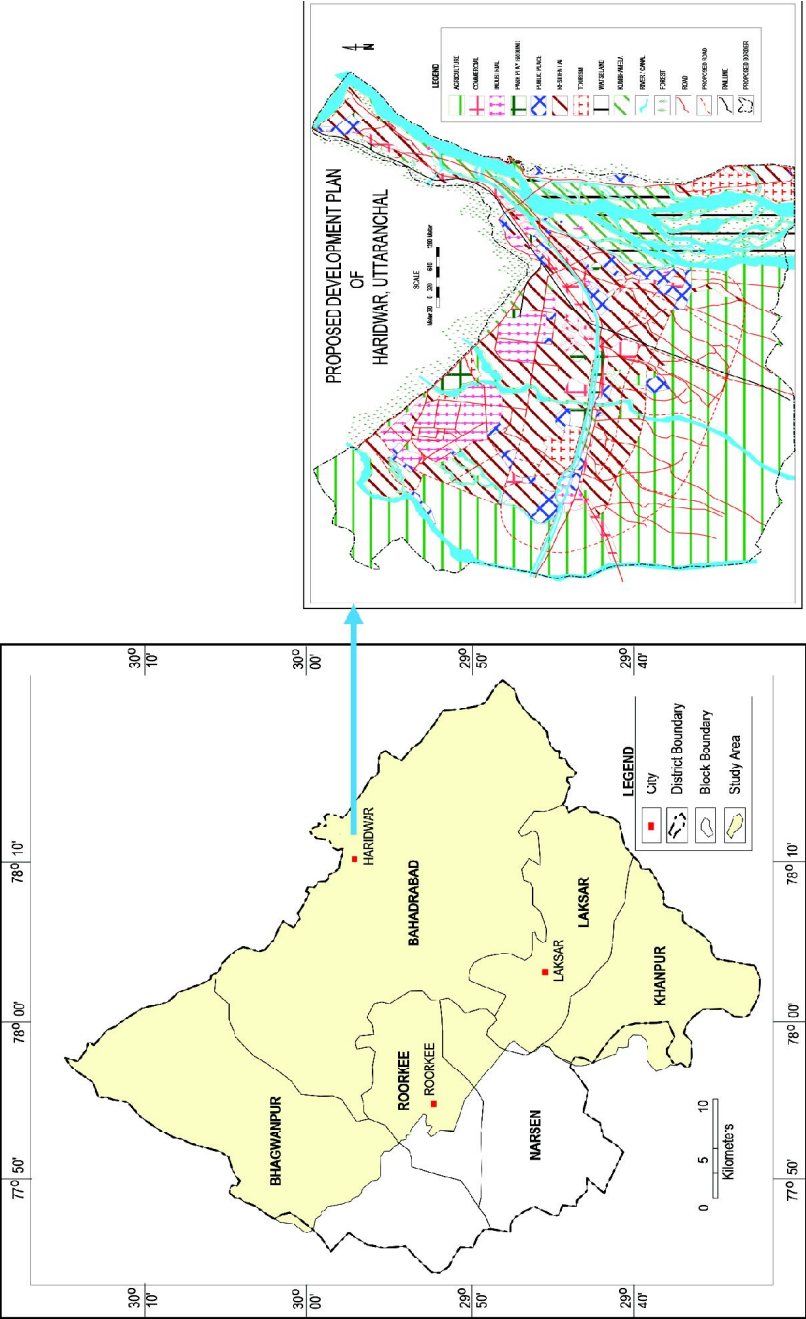


Fig:1: Location of the study area of Haridwar District including six blocks. Right side image indicates Haridwar city under Bahadurabad Block.(Source:toposheet,SOI; and Nagarpalika Parishad of Haridwar city)

Ganga during Kumbh Mela (2010) in Haridwar city. Several reports by National Institute of Hydrology (NIH), Roorkee on water quality of river Ganga have been consulted to explain the impacts of tourism on river water pollution. A number of topographical sheets (53 K/1, 53 K/2, 53 K/5, 53 J/4, 53 G/13, 53 G/14), Survey of India have been used to prepare the map of study area and for getting spatial information about the different tourists spots and depending on the information about many remote places (Banganga wetland, Ballawali, Jhilmil wetland) were visited to assess economic and ecological sustainability of those areas. Several national and international standard papers have been studied for better understanding about the trend of research in this field and getting idea about the tourism scenario in Haridwar as well as Uttarakhand.

In this study emphasis has also been given on primary information collected from intensive field work and photographic evidences. Repeated field visits (2007, 2008, 2010) were completed in the study area but the researcher has provided emphasis specially during Kumbh Mela (2010) because the author had visited Haridwar city during that time to interact with different pilgrims and to evaluate their perception about river Ganga and the local environmental quality. Ground truth verification during Kumbh Mela and other religious activities was possible because of this field survey. To study about the impact of tourism on environment and economy, field visits of the different tourist places were necessary.

The present work has been completed with modern methods including field techniques. Data related incoming tourists and pilgrims and information about different tourist spots have been collected from different secondary sources. Analysis has been done to make a comparative study of land use of different years over a channel bar of the Ganga river. More emphasis has been given for ground truth verification of anthropogenic impacts on Ganga river ecosystem and the condition of city life during Maha Kumbh Mela (2010). Depending upon the secondary data and vast field experiences assessment was done on the sustainability of tourism in terms of economic sustainability, cultural sustainability, local community level and ecological sustainability. Incapability of the authority to develop proper Master plan for the city and discrepancy in hazard management in the city and its adjoining area has been studied to evaluate the local community level sustainability. Ecological sustainability has been assessed depending on previous literature review, ground truth verification, comparative study of satellite images (LISS-IV, 2005 and Google earth Image-2010) and critical analysis of city Master Project (2006-2025). With some significant observations few scientific measures for sustainable development of tourism of the area with special emphasis on ecotourism have been suggested.

Objectives

The objectives of the study are to evaluate the sustainability of tourism in terms of ecology and local community of the Haridwar city adjoining areas and to suggest possible strategies for sustainable development of tourism industry emphasizing on ecotourism in the world famous pilgrimage; Haridwar.

The present investigator thinks that in literatures of recent studies there are some limitations in the field of research on sustainable tourism development of Haridwar. More studies are required to evaluate the sustainability of tourism in Haridwar district based on vivid primary and secondary data and information. None of the earlier scientists have assessed the sustainability of tourism in Haridwar in terms of economy, culture, ecology and local community. The former researchers did not make any critical discussion on the Master project of Haridwar City (2006-2025) prepared by Haridwar City Development Authority (CDA). Some scientists (Singh, 2008, Joshi, 2014 & Chaudhary et. al, 2018) had emphasized on policy and prospect of eco-tourism in Rajaji National Park. However, they hardly focused on impacts of Maha Kumbh Mela scenario on the sustainability of local community and environment. Present researcher suggested some practical measures that can be suitable with local environmental condition to achieve sustainable tourism development in true sense.

Principles of sustainable tourism

Sustainable tourism emphasis the ecological, social and economic elements of tourism in order to achieve a 'balanced' or 'wise' use of natural resources (Hall 1998). Another term closely linked to sustainable tourism is carrying capacity (Mathieson and Wall (1982). The concept of carrying capacity recognizes that for any environment or tourism destination there are limits to growth, which, when exceeded, are likely to cause a range of harmful and sometimes irreversible changes in the environment. World Travel and Tourism Council (WTTC) contributed to the principles of sustainable development, which aims to minimize damage the environment, wildlife and local populations caused by tourists and the industry.

Tourism scenario in Haridwar

Haridwar is the hub of religious tourism in the state of Uttarakhand. It is also one of the four places of India; where Maha Kumbh Mela occurs after rotation of every twelve years and Ardh Kumbh after every six years. The place also referred to as 'the Gateway to the God, is considered as the gateway to the four pilgrimages in Uttarakhand area; Badrinath, Kedarnath, Gangotri and Yamunotri. Tourism is the strongest support of economy in Haridwar city. The data of **table -1** indicates a huge number of domestic and foreign pilgrims and tourists arrived at the city during different years.

Table: 1: Number of Indian and foreign tourists in Haridwar city.

Year	Total Tourists	Indian	Foreigner
1997	4073751	4070182	3569
1998	5817387	5811200	6187
1999	4426896	4421974	4922
2000	5324639	5316980	7659
2001	5508549	5502273	6276
2002	5585299	5578270	7029
2003	5631964	5624432	7532
2004	6294738	6283726	11012
2005	7540644	7527020	13624
2006	9812544	9800770	11774
2007	11219884	11204275	15609
2011	6092000	6081000	11000
*2021	6792000	6779000	13000
*2025	7150000	7136000	14000

Source: Tourism dept,Haridwar. *2021 &* 2025-expected data.

Important places and Temples In and Around Haridwar town

The area has some important places having a rich and ancient religious and cultural heritage. The significant sites are like; Har-Ki-Pauri Ghat, Mansa Devi temple, Chandi Devi Temple, Daksha Mahadev Temple, Gurukul Kangdi University, Bhimgoda Kund: Pipleshwar Mahadev Temple, Piran Kaliyar, Bharat Mata Mandir, Sureshvari Devi Temple, Pawan Dham, panoramic view of Jhilmil Jheel, Banganga wetland, The Rajaji National Park etc. There are also many religious fairs and festivals held in different months of year (table-2) attracts the numerous pilgrims.

Assessment on Sustainability of tourism In Haridwar

The sustainable tourism development is actually based on four prime factors, like; economic sustainability, ecological sustainability, cultural sustainability and local or community sustainability (Singh, 2008). Undoubtedly, tourism in Haridwar district having great sustainability in terms of economy and culture. But, ecological and local or community level sustainability are becoming vulnerable.

Economic sustainability-scope of employment and income: Haridwar attracts the largest number of tourists and pilgrims (Table-1&2), the impact of which on the

service sector is quite significant, particularly in the small trade, hotel business, transport and such other activities. So, in the study area tourism helps to generate income, employment among different section of society like; small trade, hotel business, transport and such other activities. However, tourism in Haridwar has a great economic sustainability in both the immediate and for long term. With the growth of tourist population the tertiary sector will continue to grow, particularly the activities like transport and storage, communication; trade, hotel and restaurant; real estate and bus services.

Table:-2: Incoming tourists in Haridwar during religious fairs and festivals

Sl. No.	Occasion	Month	Approx. no. of Tourists
1	Makar Sakranti	January	2-2.5 lacs
2	Maha Shivratri	Feb-March	2 lacs
3	RamNavmi	March-April	3-4 lacs
4	Baisakhi	April	8-10 lacs
5	Buddha Poornima	May	3 lacs
6	Ganga Saptami	May	2 lacs
7	Ganga Dussehra	June	8-10 lacs
8	Kanwar Mela	July	25-30 lacs
9	Somwati Amavasya	July	20-25 lacs
10	Janmashtmi	August	1 lac
11	Durga Puja	October	3 lacs
12	Kartik Poornima	November	7-8 lacs
13	Ekadashis	Every Month	2 lacs
14	Poornimas	Every Month	2 lacs
15	Amavasyas	Every Month	2lacs
16	Surya Grahans	Whenever occurs	4-5 lacs
17	Chandra Grahans	Whenever occurs	4 lacs

Source: Official website of Haridwar, www.ua.nic.in

Cultural sustainability-diffusion of cultural heritage

It has a rich and ancient religious and cultural heritage. Haridwar is also one of the four places; where Kumbh Mela occurs. Tourism has enhanced the culture and values of the pilgrimage. Undoubtedly enrichment of tourism has strengthened the cultural identity of the area including different temples, dham and other places.

Tourism prospect in new local places

The beauty of Haridwar district is not only confined at Hari-Ki-Pauri ghat (plate no.1) or in Haridwar city. There are so many less known places with brilliant tourism prospect. A very few people know about the beauty of Jhilmil Jheel areas of Haridwar district. At the southern part of Haridwar district there are few wetlands which contain a very unique and species rich eco-system like, Banganga wetland. Scenic beauty of those area have different unique signatures and individuality that are diffused worldwide through tourism.

Local or community level sustainability- vulnerability to develop proper city planning: In spite of the tourism's prospect of the area, sustainability of the local community (mainly the local residents) has become more vulnerable in terms of hazard management and development of proper master plan of the city.

Inability to develop proper Master plan for the city

According to The Statesman News Service (4th October,2011) the Supreme Court has sought the Uttarakhand government's response, on framing comprehensive master plan for development of basic infra-structure in the holy city of Haridwar that is thronged by pilgrims and tourists, in view of alleged lack of planning. Infrastructure of Haridwar has total-ly collapsed with the sharp rise in the population and number of vehicles play-ing in the city and there is apathy of the state government and the development authorities in providing a solution by means of planned development of the city to address the difficulties of the residents.

Table : 3: Number of day-wise of pilgrims in month of February at Haridwar city during MahaKumbh,2010.

Date	Pilgrims	Date	Pilgrims	Date	Pilgrims
01-02-2010	60,000	11-02-2010	7,00,000	21-02-2010	50,000
02-02-2010	60,000	12-02-2010	45,00,000	22-02-2010	40,000
03-02-2010	70,000	13-02-2010	8,00,000	23-02-2010	45,000
04-02-2010	75,000	14-02-2010	3,00,000	24-02-2010	65,000
05-02-2010	1,00,000	15-02-2010	2,00,000	25-02-2010	65,000
06-02-2010	1,50,000	16-02-2010	40,000	26-02-2010	70,000
07-02-2010	75,000	17-02-2010	50,000	27-02-2010	80,000
08-02-2010	1,00,000	18-02-2010	40,000	28-02-2010	1,50,000
09-02-2010	3,50,000	19-02-2010	45,000		
10-02-2010	4,50,000	20-02-2010	65,000	TOTAL PILGRIMS	88,20,000

Source: Official website of Haridwar, www.ua.nic.in

Discrepancy in Hazard management

Bank erosion management near Haridwar city (located at right bank of the Ganga) has been done with masonry, stone, iron, etc. as the tourism at the Haridwar city is an important revenue earner industry for the state of Uttarakhand and it is the strongest support of economy of Haridwar. Enough financial cooperation is provided by the government to mitigate different types of hazards (riverbank erosion, waterlogging, etc.) in the city. On the other hand, in the adjacent village areas like; Kangri, Shyampur (located on left bank of Ganga), bank has not been protected by above structure because that is not feasible if compare the cost of structure and in the rural area where value of land or property is low, and the land is usually owned by poor farmers. No doubt it disturbs sense of justice (Dutta, 2012).

Lack of Ecological sustainability of tourism in Haridwar

Tourism is an important revenue earner industry for the district Haridwar city but unfortunately, there is a huge gap between tourism and ecological sustainability. Overtourism (table-3) has declined the quality of natural resources as well as the beauty of nature of the area. Inconsiderate tourism has been deteriorating the quality of water resources. Implementation of insensitive plans for the growth of tourist spots has been disturbing the natural flow property of the river Ganga and its ecosystem (Plate-1 &2). In order to earn maximum revenue and profit from tourism more emphasis has been giving on investment for the infrastructural development at the Haridwar city specially in tourism sector but, unluckily it has caused extremely uneven distribution of fund and resources of the area and its surroundings.

Tourism and surface water pollution

There are some prime causes of surface and ground water pollution (Dutta, 2013) in the study area, like; (1) Municipal activities (2) Industrial activities (3) Land disposal of solid wastes, (5) Pollution by bathing and other activities of pilgrims. The above causes are directly and indirectly influenced by tourism. Pilgrims come here because of holy bathing (plate:1) in the river Ganga (table-3). The Hindus believe that a dip in the holy river cleanses them of their sins. In 2016 about 29.842 million tourists visited Uttarakhand (Ministry of Tourism, Govt of India). In 2011 total 6092000 tourists including 6081000 domestic and 11000 foreign had visited at Haridwar city.

The depletion in groundwater resource is also taking place mainly due to (i) increasing water demand by growing population including tourists and expanding agricultural and industrial sector (ii) shrinking of rechargeable area as a result of rapid urbanization, built-up rise and cementing of areas for the more enhancement of tourism. Over withdrawal of ground water to meet the need of increasing water

causes lowering of water table and groundwater contamination.

Maha Kumbha Mela-2010

Kumbha Mela is attended by millions of people on a single day(**Table-3**). A ritual bath at a predetermined time and place is the major event of this festival. Kumbha Mela (especially the Maha Kumbha Mela) is the most sacred of all the Hindu pilgrimages. Thousands of holy men, women (monks, saints, sadhus) grace the occasion by their presence. Hence Ganga river water is polluted by mass bathing(plate:1) on this occasion. The world famous Maha Kumbh mela was held in the year 2010 at Haridwar city. The table shows the staggering data(table-3) of incoming pilgrims in Haridwar during the month of February In MahaKumbh Mela.

The author visited the place during Maha Kumbh mela(2010) and experienced a mess condition of the citylife. The roads of city mainly adjacent to Har-Ki –Pauri ghat becomes restricted for normal mobility of people and a lot of processions of monks, saints and sadhus are observed along different roads. Even a cycle-rickshaw is not allowed to move within the city. Police and other agencies of security remain extremely busy to regulate the traffic rules in the city. This scenario clearly establishes that during Kumbh and other festivals the normal activities of the city



Plate No. 1: Left side photograph shows mass gathering along Har-Ki-Pauri ghat for bathing at noon during normal time in May, 2008 and right side photograph indicates thronged Har-Ki-Pauri ghat for bathing at evening during Maha Kumbh Mela in February, 2010. (source: Field survey, 2008 & 2010.)



Plate: 2: Photographs reveal difference in land use and land cover on the left bank and the abandoned channel course of the river Ganga at Haridwar city (just below the Chandi bridge). Left side photograph indicates thin vegetation cover over the abandoned part of the Ganga river channel (June, 2007) . Right side photograph shows intensive utilization of the abandoned channel course with human induced shelters for pilgrims of Maha Kumbh Mela (Feb., 2010). (source: Field survey, 2007 & 2010).

inconsiderate anthropogenic interferences with river Ganga.

dwellers are not smooth. So, sustainability of local community is badly interrupted due to uncontrolled tourism. From the plate (no: 3) it is clearly observed that during Mahakumbh Mela, 2010 a channel bar of the river Ganga, located just below of the Chandi bridge is intensively used for temporary shelter of pilgrims. The photographs (plate no: 2) reveals a comparative land use and land cover scenario along the extended left bank and abandoned channel course of the river Ganga between June, 2007 and February, 2010 (Kumbh mela). The heaps of garbage and abandoned plastics materials by pilgrims disturbs riverine ecology. However the Kumbh mela authority had tried their best to make the environment pollution free, but the effort was not enough. So the uncontrolled pilgrims directly cause

According to Chauhan & Bhardwaj (2018), bacterial parameters serve as indicators of fecal pollution. Coliform group of bacteria include genera *Escherichia* and *Aerobacter*. The values of standard plate count (SPC) and most probable numbers (MPN) were ranged at different sampling sites of Haridwar city near Alaknanda Ghat, near Lok Nath Ghat and near Matrisadan, Kankhal and these were quite higher to the values of SPC and MPN. Among different sampling sites the most values of SPC (5.8×10^6 SPC ml⁻¹) and MPN (3.9×10^8 MPN 100 ml⁻¹) were

observed and it is likely due to the mass bathing and to perform of various religious rituals. Because of ordinary dumping of slag and bones of cadaver, effluents of ventures, ashrams, inns, visitor houses, nallah of several ghats and sewage water of city ought to be treated before blending in the river Ganga. According to the scientists there are also concentration of heavy metal Cd, Pb, Hg, Ni, Pb ranged between $0.0012 \text{ mg/l} \pm 0.0005$ to $0.0017 \text{ mg/l} \pm 0.0009$ found in the river water . The minimum value was found in winter period and maximum in monsoon period at all the three sampling sites. It is very evident that the water quality of the Ganga river deteriorates day by day. The heaps of garbage are being damped on the riverside. If the increasing rate of Ganga water pollution is not stopped properly then there is a high probability of decline of tourism at Haridwar city in future.

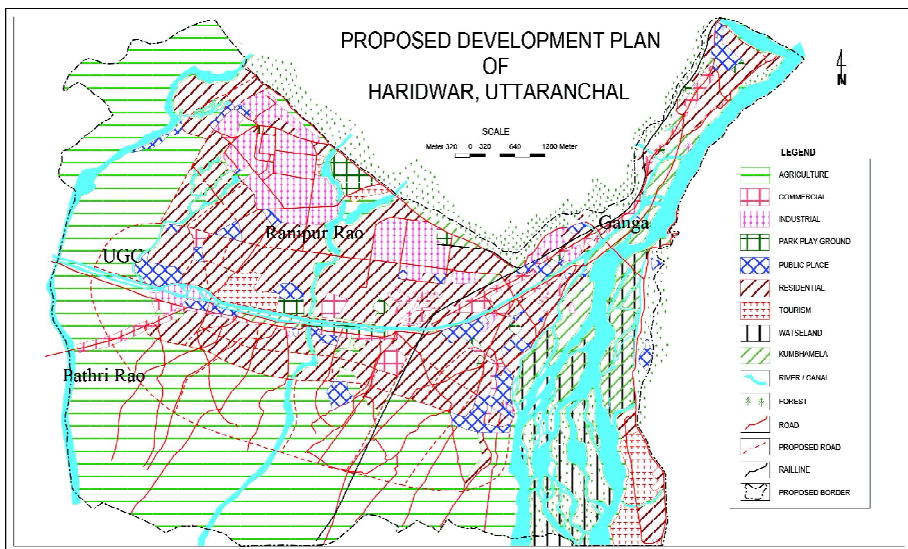


Fig:3: In the Master Plan of Haridwar city (2006-2025) most of the river bars have been proposed for Kumbh Mela and tourism.

(Source:Nagarpalika Parishad of Haridwar city).

Tourism and critical analysis of Master project in Haridwar City

In Haridwar city a Master Project (2006-2025) of land use planning (**fig-3**) has already been started for scientific development and conservation of local resources. In the present paper the investigator critically analyzed the ecological sustainability about the Master Project of Haridwar City (2006-2025) .The researcher suspects that the project may enhance the vulnerability of tourism environment of the city. It is evident (figure-3) that the river Ganga characterized with unstable braided bars and several channels, which are very common features at the foothill flow of any river. Generally, over a long time periods channels must shift over its entire surface to maintain fan form (Field, 2001) at the foothill area. The diversity in channel

morphology is caused due to variability in water discharge, sediment load, ground slope, human activities and tectonic influence (Valdiya,2003). Unfortunately, the planners of the project had hardly thought about the behavior of aggrading Ganga river channel at the Siwalik foothill during the preparation of the model, rather they had more priority on expansion of tourist spots and Kumbh mela area along the reach of the river Ganga and its bars to minimize the pressure of tourists and pilgrims at the core of city. In the master plan (figure-3) prepared by the City Development Authority (CDA) most of the braided channel bars of the river Ganga have been proposed for Kumbh mela and other tourist activities. Along the left bank area natural vegetation has been destroyed and the entire tract is utilized for tourism and Kumbh mela purpose. The bars were intensively utilized for the temporary tents for the pilgrims (**plate; 3**) during Kumbh mela (2010). The natural vegetation of the channel bars has been totally obliterated. However, the researcher thinks that the human-induced wastages are removed into Ganga river unintentionally. These wastage materials seriously degrade water quality as well as the river ecology of the Ganga and if it continues, no doubt the tourism environment in terms of river ecosystem will be more vulnerable in near future.

Beside this, the author suspects that implementation of the project can also intensify high risk of fluvial hazards as well as disaster due to flashflood, channel avulsion, and bank erosion along the course of the river Ganga of the area in future. The city is located at the foothill of Siwalik where different fluvial hazards like; flash flood, bank erosion are very common natural events with low intensity Dutta,2017), but with the construction of public places, permanent built up area, roads etc for the purpose of tourism, in the area, most of the people would be exposed and adversely affected by those fluvial hazards and it can also lead a disaster during major flood. So proper application of fluvial geomorphological knowledge is necessary for the preparation of the Master Project over the vast braided and unconfined channel under fan topography.

Category of tourism in Haridwar

There is hardly any tourist activity that does not rely on environmental resources in some way (**Hunter and Green 1995**). **Budowski (1976)** has classified the relationship between nature conservation and tourism into three categories: (1) coexistence implies that although tourism and the environment are not necessarily directly compatible, there are certain circumstances where the two elements may coexist to each other's benefit; (2) conflicts emerge when tourism has detrimental effects on the environment and when there is little contact between tourism and conservation; (3) symbiosis is a more complex relationship, whereby the protection of environment can be enhanced by tourism due to the advantages of interaction between conservationists and the tourist industry.

Present researcher thinks that tourism in Haridwar falls under category two, because from the above discussion it is prominent that there is a huge gap between tourism and conservation of natural resources.

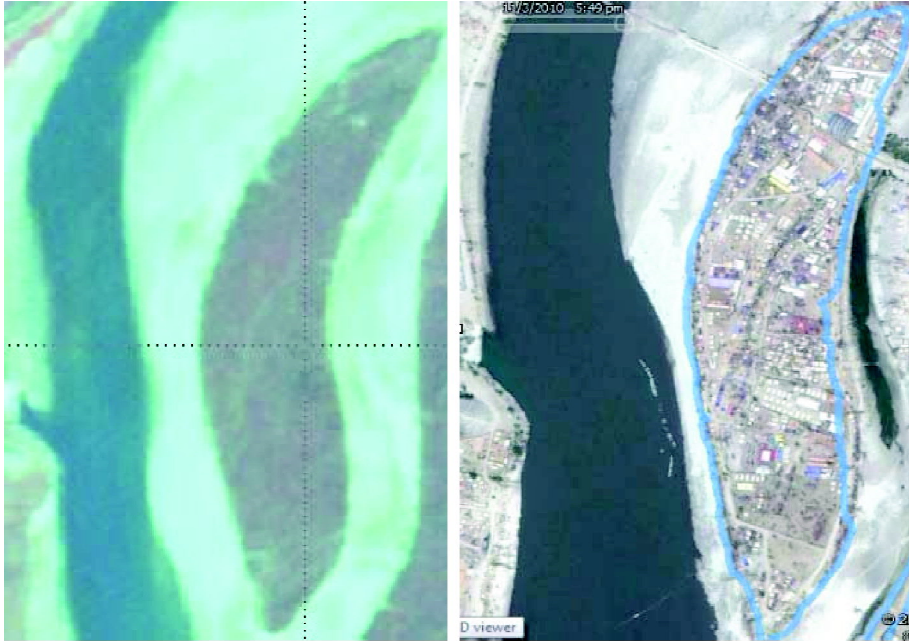


Plate 3: Temporal changes of land use and land cover over a channel bar (located in Nildhara area, close to Chandi bridge) of the Ganga river (2005 and 2010). Satellite image (LISS-IV, 2005) at left side representing normal vegetation cover over the bar and the right side image (Google earth-2010) indicating inconsiderate use of land over the bar for pilgrims shelter of Kumbh Mela (source: LISS-IV, 2005, NRSC & exported GPS track on Google earth, 2010).

Strategies for sustainable development in tourism of Haridwar

However, depending on the field experiences and analysis of the secondary data, present author thinks that the following guidelines (**Holloway ,2009**) with special emphasis on ecotourism can be taken to orient the tourism industry of Haridwar into ecological sustainable tourism, like;

- (i) **Encouragement of Ecotourism:** The promotion of ecotourism can empower local community by providing employment opportunity for the local people that is what the need of the district Haridwar. Innovative and attractive ecotourism maps and guidelines of different sites of the district for promotion of ecotourism at different scales should be designed properly.
- (ii) **Rural Tourism:** The district tourism authority should more emphasis on rural tourism . There are many remote villages in the district where favourable

conditions of tourism are available and this strategy will increase benefits to rural areas in terms of rural productivity, employment and conservation of rural environment as well as culture by involving the local people.

- (iii) **Film Tourism** : Importance can be given on film tourism in the study area. Film tourism includes both film production, shooting and induced tourism activities. The local culture, ecotourism and art can be promoted through the film tourism.
- (iv) **Establishment of a centre for Ecotourism and Sustainable livelihoods**: A district level centre for ecotourism and sustainable livelihoods can be established for awareness, training and research on ecotourism. Developing strategies of eco-tourism and promotion of tourism oriented agriculture (floriculture), handicrafts industry and food can maintain ecological balance and at a same time, it will help to develop sustainable livelihoods of the local people.
- (v) **Ecotourism Potentials and Attraction of the Rajaji National Park (RJNP)** : In the floral heritage, RJNP have about 128 species of trees, 63 species of shrubs and herbs, 38 species of grass and 63 types of climber's plant species (Joshi, 2014). In the faunal characteristics, RJNP consists of 25 species of mammals, 08 type species of reptile, 06 species of amphibians, 09 species of fishes and 315 species of birds. With these floral and faunal characteristics now a day's RJNP is huge potential for ecotourism nature (Chaudhury & et al, 2018). The local tourism authority should conduct tourism in the park maintaining proper forest ecology.
- (vi) **Integrating biodiversity into tourism development**: The tourism industry, including the hospitality sector, depends strongly on healthy ecosystems. To specifically address the biodiversity risks associated with the development and operations of hotels and resorts, International Union for Conservation of Nature (IUCN, 2012) has developed the biodiversity principles for siting and design of hotels, resorts and a series of guidelines for the sustainable use of biological resources in hotels and resorts. Those guidelines should be appropriately followed by the local authority to construct tourism related land use. The river Ganga has a most significant role on tourism, and religious values of the area. Hence, making pollution free the Ganga river and maintaining its water quality will enrich its species diversity.
- (vii) **Prospect of generating non-conventional energy**: Haridwar has tremendous potential for generating energy. The velocity of Upper Ganga Canal (UGC) water may be used in generation of electricity. Many non-perennial rivers flowing from higher Siwalik, become violent during monsoonal period. This huge velocity of water may also be utilised in generation of electricity.

Conclusion

From the above comprehensive study on sustainable development of tourism in Haridwar, Uttarakhand the author has drawn some conclusions.

- (1) Presently, tourism in Haridwar appears in sustainable form in terms of economy and culture but from the point of ecological value and local or community level amenities, tourism industry of the area is in very vulnerable condition. So entire tourism environment of the area would not be sustainable without the support of proper ecological sustainability.
- (2) The legendary river Ganga is the main attraction of the world famous pilgrimage. It is very evident that the water quality of the Ganga river deteriorates day by day due to insensitive activities to river by millions of pilgrims and tourists. If the increasing rate of Ganga water contamination and degradation of ground water are not stopped properly then tourism environments may lead social instability at Haridwar city in future.
- (3) The city requires large investment to upgrade, expand and provide new infrastructure to meet the growing demand, rapid pace of urbanization and fast rate of population growth. The master plan prepared by the City Development Authority for coming years(2006-2025), should be reviewed properly from the ecological perspectives of the area. The entire tourism activities should be guided according to "carrying capacity of the city.
- (4) The beauty of Haridwar is not confined only within its city. There are so many adjoining rural places (Jhilmil wetland, Banganga wetland, Ballawali wetland) where new tourist spots can be established.
- (5) The economic development of the district is only confined with in the Haridwar city. There are many adjoining villages (like; Kamgri, Shyampur, Tatwala etc) where villagers are facing serious of problems related poverty, unemployment, discrepancy in hazard management, mismanagement of garbages etc. The present researcher must have humble request to the local and state level authority to review the socio economic discrepancy in the area for taking necessary steps for their economic development.

Present author has suggested some strategies for ecotourism in holistic approaches to achieve sustainable tourism development of the area in true sense, because tourism is a service-intensive industry focusing on the customers' service experiences not only during their stay, but also prior and subsequent to it. So, symbiotic relationship between tourism and conservation in the wide sense, can offer a very large variety of advantages and benefits—physical, cultural, ethical, and economic to the area.

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