

Eco-Tourism Development Strategies in The Dudhwa National Park

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Abstract : Ecotourism contributes primarily to the conservation of natural and cultural heritage together with creating awareness towards biodiversity adhering to the principles of sustainable development. Such an endeavor often facilitates indigenous tribes or local communities with various socio-economic benefits. Considering its advantages to the environment, the Government is taking gainful initiatives to promote it. Out of 101 National Parks in India, only a few have been developed appropriately for tourism and are popular in public, while the rest are anonymous. Dudhwa National Park (DNP) in the marshy grasslands of northern Uttar Pradesh is one such example. Besides being rich in biodiversity, culture, and the strategic location at Indo-Nepal International Border, it has an exceptionally low tourist footfall. At prima facie, major reasons appear to be improper transport system, inadequate tourist infrastructure & facilities, lack of awareness and promotion. This research aims at recommending appropriate strategies for the integrated development of this historic National Park as a favorable tourist destination. The objective of this study is to assess the existing facilities & infrastructure of the area and formulate a holistic approach for the same with the judicious use of resources. Methodology adopted includes site visits, surveys, interviews along with analysis of some famous national parks, while simultaneously assessing available comprehensive documents & literature. The research outcome seeks to address the environmental challenges and sustainable approaches for ecotourism development strategies at the national park.

IndexTerms - Eco-tourism, sustainable development, conservation, tourist facilities, infrastructure, cultural heritage.

I. INTRODUCTION

Tourism is the industry that contributes almost 1/3rd of international trade (Rubinstein, Valdes-Fauli, Gould, & Khan, 2000). World Tourism Organization (WTO) mentioned the international arrivals of 1.5 billion in 2019 which is a 6% growth from 2018 (UNWTO-World Tourism Organization, 2020). Tourism has its wings in almost all fields, let it be recreational, religious, business, healthcare, sports along with spread in the spectrum of ecotourism, adventure, wellness, and more. Nowadays, Ecotourism is trending & becoming famous exponentially among people due to inclination towards nature and getting educated about it, refusing the reality of polluted, stressful urban life.

1.1. Ecotourism

Ecotourism mainly promotes sustainable travel with the conservation of nature. It can be defined as, the responsible tourism in collaboration with nature which dominantly advocates the conservation, community well being, with exposition and educationa (TIES, 2015). From 1990, the growth of ecotourism is about 20 to 34 percent every year while in 2004 it has been recorded that ecotourism is growing at a pace of 3 times greater than the whole tourism industry (The International Ecotourism Society (TIES), 2006). The broader objectives of Ecotourism are- ecological integrity, promotion of biodiversity, community welfare, nature tourism proliferation, and sustainability at top of all. It is also a need of the hour, as the environment is depleting which makes it important for every person to understand nature in its true sense. Ecotourism is receiving a lot of attention chiefly by the developing countries out of which India has a plethora of biodiversity in its precinct which needs to explore more than the present shape.

1.2. Scenario of Ecotourism in India

As per Mark Twain, an American writer, 'India is a fabulous world of splendor and rags, the one country under the sun with an imperishable interest, the one land that all men desire to see'. India is one of the 17-mega bio-diverse countries of the world including 400 mammals, 1200 birds and over 600 species of reptiles and amphibians found in habitats ranging from tropical rainforests to coniferous and deciduous forests, deserts, grasslands, and mangroves (Puri, Karnath, & Thapa, 2018) and has a rich cultural heritage too. As per India Environment Portal, there are total of 600 protected areas constituting roughly five percent of country's area which includes national parks, wildlife sanctuaries, conservation reserves and community reserves.

The notion of ecotourism is emerging day by day in India with the motive of safeguarding natural heritage and learning from environmental hazards which are results of ecological imbalance. Also, the absence of natural features in urban areas attract visitors towards ecotourism for getting the essence of God's hand. It also acts as facilitator socio-economic benefits to local communities and preventing them from extinction.

According to Forest Survey of India (2003), Very Dense Forest constitutes 1.56 % of country’s area, moderately dense forest has 10.32 % and open forest includes 8.76 % accounting to the whole of 23.68% area with inclusion of tree cover in which national parks have a substantial share.

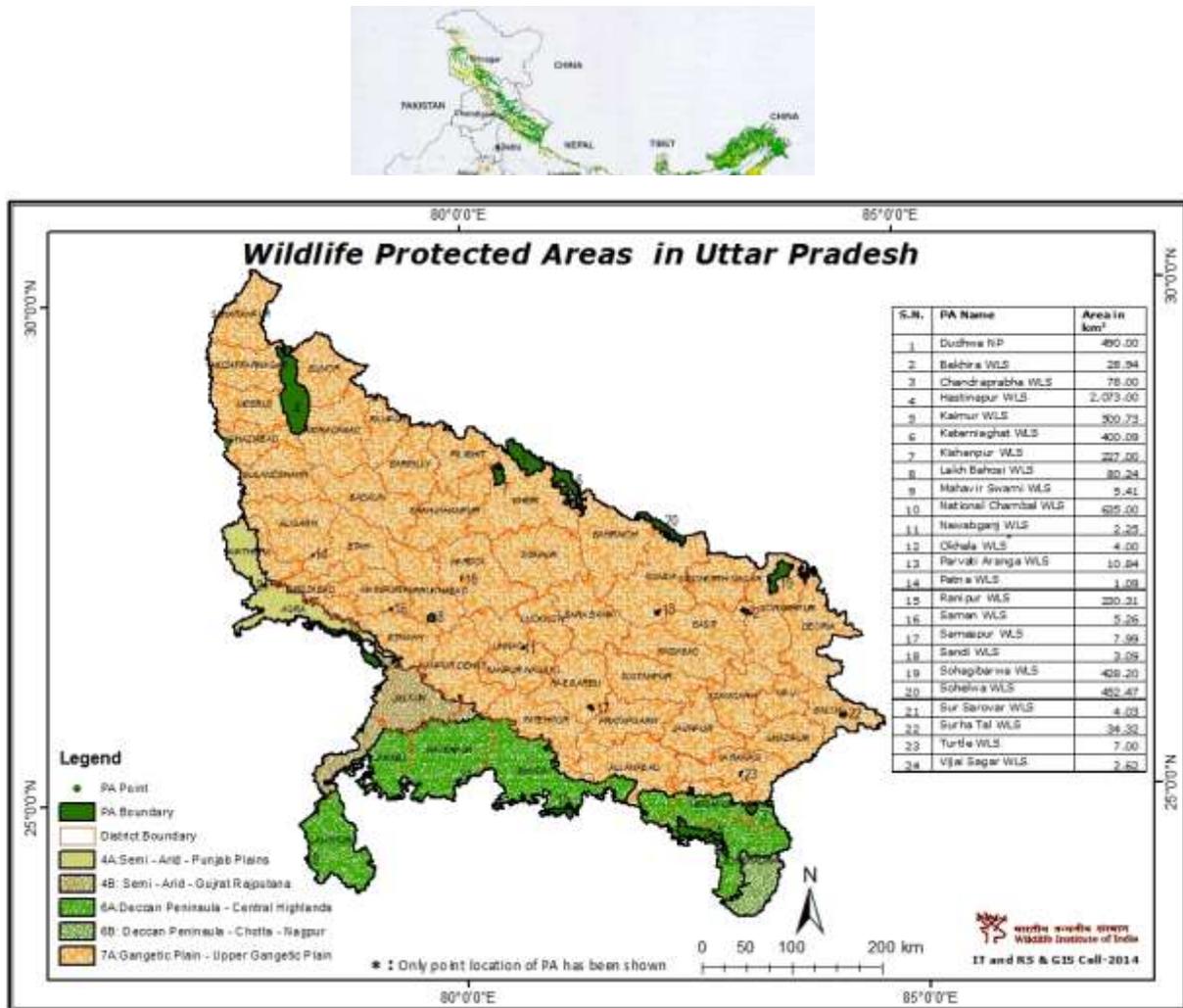


Figure 3 Wildlife Protected Areas in Uttar Pradesh (ENVIS Centre on Wildlife & Protected Areas, 2020)



Figure 2 National Parks of India (EDUBABA, 2020)

As per ‘The Wildlife Protection Act, 1972’, National Park is a notified area which has its own zoological, faunal, floral, geomorphological, zoological or overall ecological importance, and are to be protected with no human activity inside it. (Ministry of Environment & Forest, Government of India, 2013). At present there are 101 national parks in India which covers 40,564 sq. km. making 1.23 % of country’s geographical area and 75 national parks of 16,608 sq. km. are proposed in the Protected Area Network Report (National Wildlife Database, 2020) flourished in 28 states and 8 Union Territories out of which Uttar Pradesh is the most populous state with 19,95,81,477 population in the area of 2,40, 928 sq. km. (Know India, 2020).

Uttar Pradesh has 23 Wildlife Sanctuaries and only one national park, which is Dudhwa National Park spread in 490 sq. km. (ENVIS Centre on Wildlife & Protected Areas, 2020).

1.3. Dudhwa National Park (DNP)

The study area, Dudhwa National Park (DNP) is a large forest area on the Indo-Nepal International Border in north eastern Uttar Pradesh. It is surrounded by some settlements like town of Palia Kalan, and several villages. Other forest areas including Kishanpur Wildlife Sanctuary, Katerniaghat Wildlife Sanctuary, South Kheri Forest Division and Pilibhit Forest Division are nearby.

1.4. Aim & Objectives

This paper aims to frame the suitable strategies to develop DNP as the sustainable tourist site. The objectives of this paper are as follows:

- Assess the potential of ecotourism at DNP
- Examine the existing stage of tourism at DNP
- Comparative Analysis with other National Parks
- Recommendation of best possible strategies for ecotourism

1.5. Methodology

The methodology adopted is:

- Literature Study regarding ecotourism
- Analyze the existing available data on DNP
- Identification of issues/problems in way of ecotourism
- Case Studies
- Strategies based on above assessment

1.6. Scope & Limitations

The focus is kept on comprehensive planning of the area with agenda to develop it as good ecotourism site and addressing the questions. The research is limited to the recommendation part due to limited time constraint.

Figure 4 Dudhwa National Park & Surrounding Areas (WWF-India, 2010)

II. DUDHWA NATIONAL PARK

DNP was declared wildlife sanctuary in 1965, national park in 1977 and included to 'Project Tiger Network' in 1987-1988. It is situated on the extensive alluvial plains alongwith several water bodies ranging from rivers to lakes. The park has a variety of species of about 400 birds, 90 mammals. The hugely fertile land of Indo-Gangetic plains holds up a lush growth of grasslands and woodlands, majorly Sal forests and a diversity of fauna. (WPSI, 2020)



Figure 5 Dudhwa National Park (WPSI, 2020)

North-East: Villages- Sunda & Chandan Chowki, Indo-Nepal Border
 East: Poya, Chandan Chowki, Indo-Nepal Border
 South-East: Barsola Kalan, Masurha, Singahi Baraura, Nighasan Tehsil
 South: Majhgain, Salimabad, Sharda River,
 South-West: Pancchi, Majhgain, Daulatpur,
 West: Palia Kalan
 North-West: Sampooranagar

2.2. Climate

The climate of this area is Tropical Monsoon.
 Month-wise climate distinction can be done as follows:

- March-June: Summer Season
- July-September: Southwest monsoon Season
- October-November: Post-monsoon Season
- December-February: Winter Season

2.2.1. Temperature

In Summer, temperature goes upto 25.5 Deg-C to 45 Deg-C and Winter, 8.5 Deg-C to 23 Deg-C. May is recorded as the hottest month and January as the coldest.

Month	Temp	Kheri	Gola Gokharnath				Bahraich
		1870-1950	1959-1968	1969-1978	1979-1988	1989-1998	1901-1950
January	Max.	22.1	21.7	23.1	20.9	19.6	22.6
	Min.	9.1	12.6	8.8	10.2	8.4	8.8
February	Max.	25.9	26.0	28.8	24.1	23.3	25.6
	Min.	10.8	12.6	9.6	11.6	10.7	10.9
March	Max.	31.8	31.5	35.8	29.8	28.7	31.9
	Min.	16.0	17.5	13.7	16.8	15.8	15.4
April	Max.	37.6	37.9	41.0	36.5	35.7	37.4
	Min.	20.9	25.5	20.1	23.3	19.5	20.9
May	Max.	40.3	40.3	42.7	37.8	40.7	39.8
	Min.	25.4	26.7	22.7	26.1	23.5	25.6
June	Max.	37.7	38.0	41.9	37.3	38.6	37.6
	Min.	26.3	27.9	21.2	27.8	27.2	27.0
July	Max.	32.7	34.0	37.2	34.1	33.8	33.0
	Min.	25.8	26.9	24.4	26.6	22.6	26.3
August	Max.	32.1	33.4	36.6	34.6	34.6	32.2
	Min.	25.6	26.3	24.0	26.7	26.4	26.1
September	Max.	32.7	33.9	35.4	34.1	34.6	32.7
	Min.	24.8	25.4	23.3	25.6	24.6	25.1
October	Max.	31.7	32.0	34.8	32.2	32.7	32.1
	Min.	20.1	21.1	19.4	21.7	21.0	20.7
November	Max.	28.5	27.3	30.3	27.9	28.1	28.6
	Min.	13.0	14.8	13.0	16.0	16.8	13.4
December	Max.	24.3	22.7	24.7	22.5	22.7	24.3
	Min.	9.8	10.4	9.0	10.9	10.5	9.4

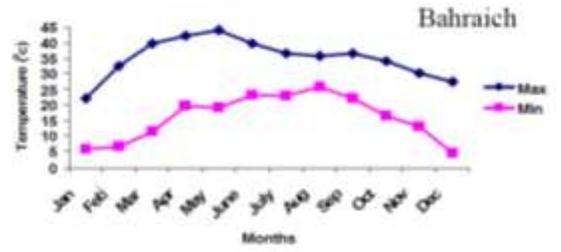
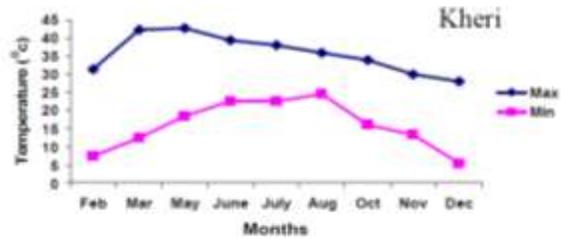


Figure 8 Temperature Recordings at Dudhwa Tiger Reserve (Wildlife Institute of India, 2008)

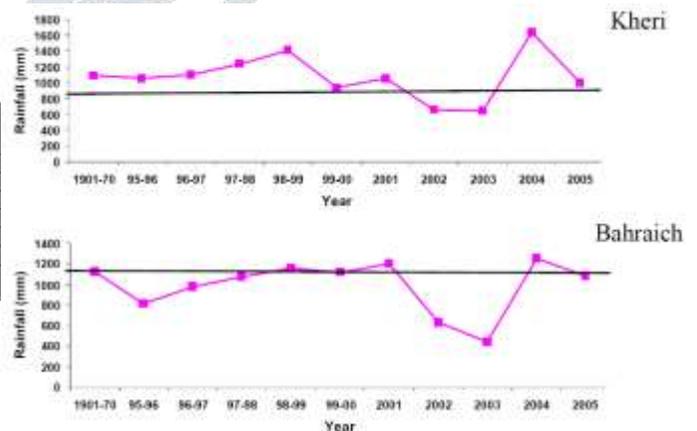
Figure 9 Mean Monthly Temperatures (Wildlife Institute of India, 2008)

2.2.2. Rainfall

The rainfall recorded here is from 813-to-1386 mm annually, in which July-August months receives the most of rainfall, about 90%.

Period	Kheri	Gola Gokharnath	Nighasan	Mohandi	Overall Kheri	Overall Bahraich	Source
1870-1959	1,070	-	1,155	980	1,068	-	Prakash, 1979
1959-1968	-	1,151	-	861	-	-	Kumar et al., 2002
1969-1978	-	1,396	-	1,096	-	-	Kumar et al., 2002
1979-1988	-	1,076	-	813	-	-	Kumar et al., 2002
1989-1998	-	975	-	952	-	-	Kumar et al., 2002
1901-1950	-	-	-	-	-	1135	Pande, 1988
1901-2005	-	-	-	-	1,090	1,105	Dept. Agriculture, U.P.

Figure 10 Rainfall Recordings at Dudhwa (Wildlife Institute of India, 2008)



2.2.3. Humidity

Here, March-to-May has minimum humidity, 50% in morning and 30% in evening. Else, 70% in morning and 50% in evening.

Month	Kheri (1870-1950)		Bahraich (1901-1950)	
	8.30*	17.30	8.30*	17.30
January	83	64	82	57
February	74	48	74	47
March	63	37	55	32
April	44	25	43	24
May	47	27	50	31
June	69	49	68	51
July	86	75	81	73
August	88	79	83	77
September	84	75	80	72
October	79	65	73	57
November	75	60	72	51
December	81	63	79	58
Annual	73	56	70	52

udhwa (Wildlife Institute of India, 008)

Figure 12 Relative Humidity at Dudhwa (Wildlife Institute of India, 2008)

2.2. Terai Region of DNP

‘Terai’ which denotes the ‘land with dampness’ have the characteristics of high-water-table & wetlands, extremely fertile land & deciduous forests, and flood prone area. DNP lies in the Terai Belt of Upper Gangetic Plains.

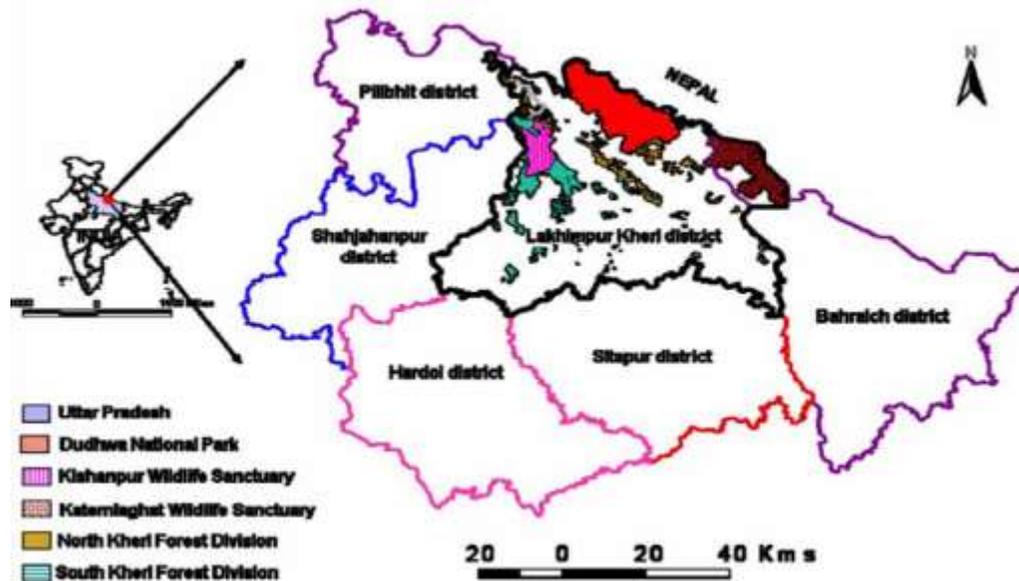


Figure 13 Dudhwa Landscape in Uttar Pradesh (Wildlife Institute of India, 2008)



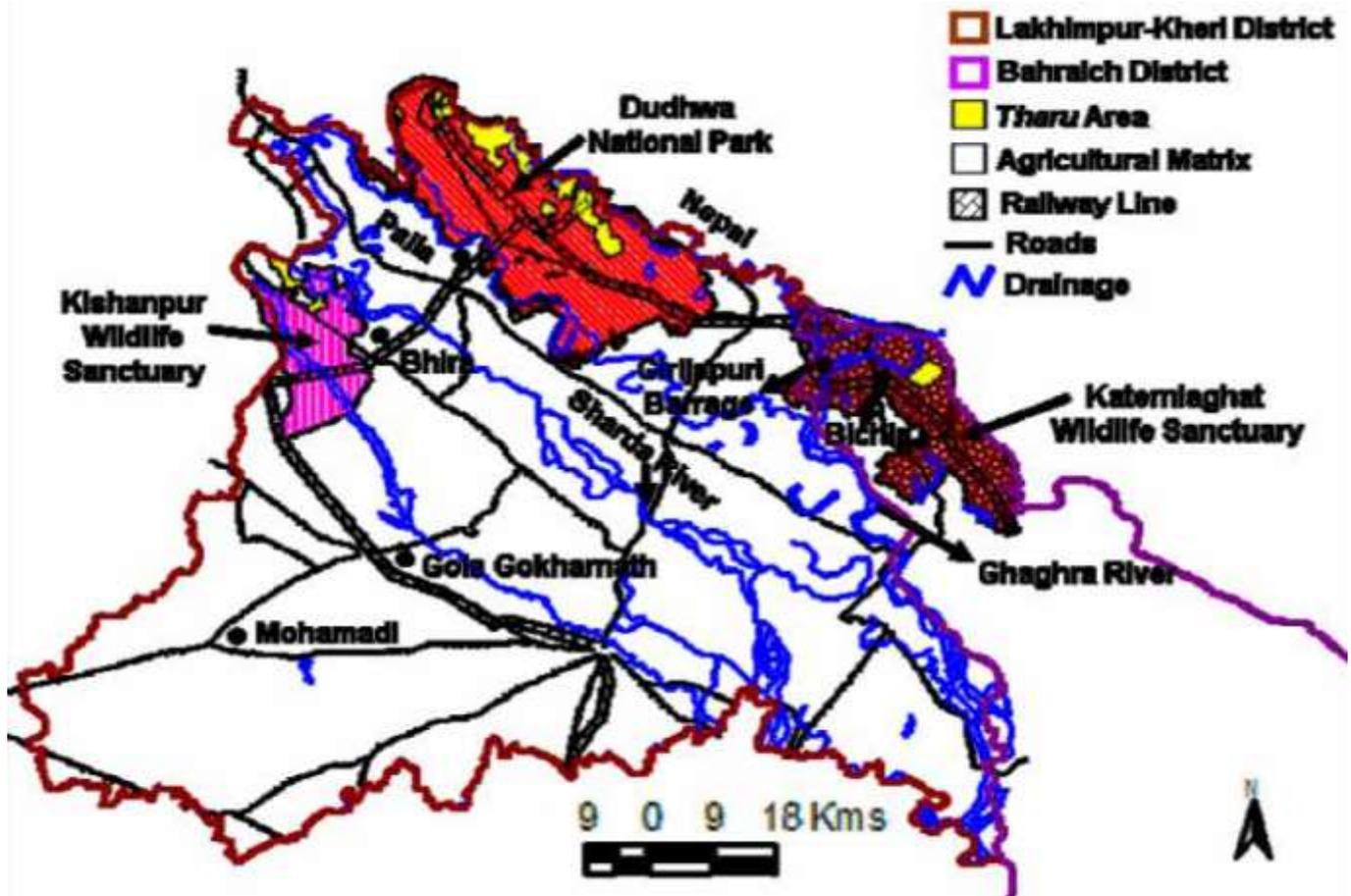


Figure 14 Area of Dudhwa Tiger Reserve (Wildlife Institute of India, 2008)

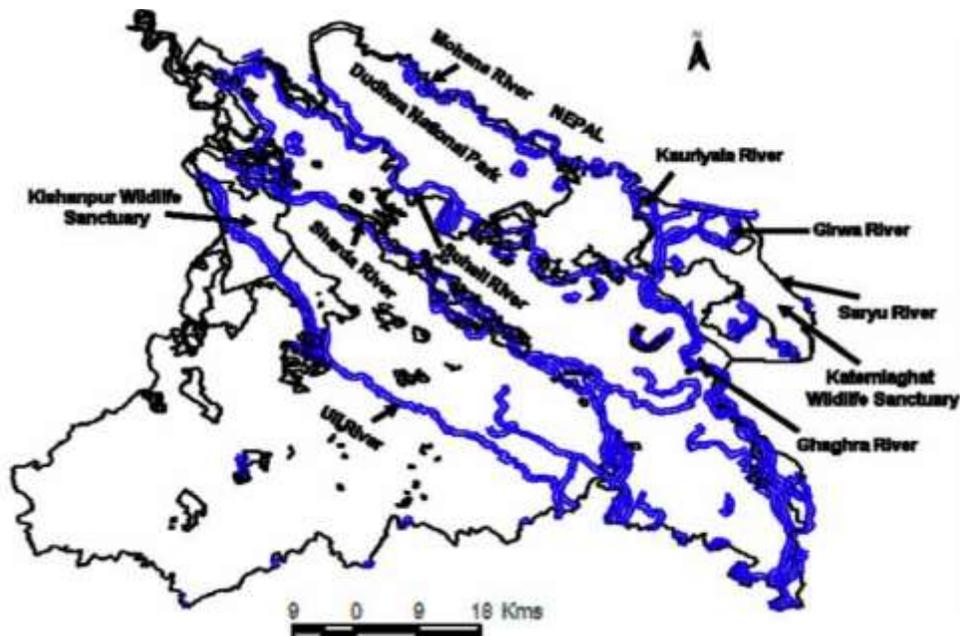


Figure 15 Prominent Rivers around DNP (Wildlife Institute of India, 2008)

Dudhwa Region is spread in the district of Lakhimpur-Kheri, Pilibhit, Bahraich and some other parts of Uttar Pradesh. The total of Dudhwa Tiger Reserve constitutes of about 1285 sq. km.

Constituent Areas	Area (sq km)
Dudhwa National Park (DNP)	490.3
Buffer Area of National Park	190.0
Kishanpur Wildlife Sanctuary (KWS)	203.4
Katerniaghat Wildlife Sanctuary (KAT)	400.6
Total Area – Dudhwa Tiger Reserve	1,284.3

Figure 16 Table showing Areas of Dudhwa Tiger Reserve (Wildlife Institute of India, 2008)

The DNP is surrounded by lot of water bodies (Fig.15), out of them, Sharda and Ghagra are dominant one.

III. LITERATURE REVIEW

As per study undergone, main ecotourism concepts evolved are the:

- Nature Based
- Educational
- Sustainable

Overall, the tourism 5As are to be addressed carefully:

- Accessibility
- Attraction

Protected Area	Rivers/Streams/taal
DNP	Rivers - Mohana and Suheli
	Streams - Joraha, Neora, Nagrol, Donda, Nakhaua
	taal - Bankey Kakraha, Bhadi, Chhedia, Aamha, Khajuria, Pajuha, Bhadraula, Chapra, Puraina, Mutna, Ludaria, Churiala, Nagra, Ranwas
KWS	Rivers – Sharda and Ull
	taal - Jhadi
KAT	Rivers – Kauriyala, Girwa, Saryu, and Ghaghra
	Streams - Orai nala, Maili nala, Maila nala, Patalchuhi nala, Bhaghar nala, Saryu nala, Gandhalla nala
	taal - Mahadeva, Puraina, Girija, Dhanaura, Khajuha

Figure 17 Prominent Rivers, Forest Swamps & Streams (Wildlife Institute of India, 2008)

- Accommodation
- Amenities
- Activities

IV. CASE STUDIES

The following case studies are done based on similarity with DNP on the criteria of size, terrain, popularity, tourist footfall and nationality. Following National Parks are selected mentioned with the reason of selection:

1. Jim Corbett National Park, Uttarakhand, India
 - *Reason for Selection*- One of the famous National Park in India, Similar Forest Cover as DNP, Lies in DNP neighboring State, Almost similar terrain
2. Kaziranga National Park, Assam, India
 - *Reason for Selection*- UNESCO World Heritage Site, Known for it's biodiversity, Same Forest Cover as DNP
3. Kruger National Park, Limpopo and Mpumalanga, South Africa
 - *Reason for Selection*- One of the most visited National Park in World, Same Terrain, Cultural Heritage

4.1. Jim Corbett National Park

It is one of the famous National Park. Recently, PM of India promoted this by doing television shows.

4.2. Kaziranga National Park

It is UNESCO World Heritage Site known for one horned rhinoceros, lush forest.

4.3. Kruger National Park

Internationally renowned ecotourism site.

V. ANALYSIS

5.1. Comparative Analysis

An analysis with comparison of DNP to case studies for better understanding the issues.

Table 1 Comparative Analysis of Dudhwa National Park with Case Studies

Parameters	Dudhwa National Park	Jim Corbett National Park	Kaziranga National Park	Kruger National Park
Location	Terai belt, marshy grassland, northern Uttar Pradesh, India	Nainital district and Pauri Garhwal district of Uttarakhand	Golaghat, Karbi Anglong and Nagaon districts of the state of Assam, India	Limpopo and Mpumalanga in northeastern South Africa
Area	490 sq. km.	520 sq. km.	430 sq. km.	19, 485 sq. km.
Surroundings/Closed Proximity	Indo-Nepal Border, Dhangadhi, Dhangadhi Airport to Pashupatinath Mandir, Sharda River, Kali River, Suheli River	Ranganga Dam, Patli Dun Valley, Shiwalik Range, Characteristic longitudinal valleys, geographically termed Doons, or Duns can be seen formed along the narrow tectonic zones between lineaments	Brahmaputra River, Kaziranga is also surrounded by lush green tea plantations, most of them contributing heavily to Assam's economy.	Lebombo Mountains, Khandzalive Hill, several rivers run through the park from west to east, including the Sabia, Oliphant's, Crocodile, Letaba, Luvuvhu and Limpopo Rivers.
Accessibility within India	By Rail, Lucknow Airport, Delhi Airport	Domestic Airport by 20 km	96 km Domestic Airport	KMI Airport
Accessibility for Foreign	Via Delhi	Via Delhi	255 km Int'l Airport	Johannes Berger
Tourist Footfall	35k	3.25 lac	1 lac	16.5 lac
Heritage Status	Grade I	Grade I	WHS, Grade I	WHS, Grade I
Year of existence	1879	1936	1908	1926

5.2. Identification of Issues

As per the study done, there are several issues identified, which are follows:

1. Accessibility- Poor
 - There is availability of all means of transport here in the region.
 - Road network and condition is very well and connected. Also due to Government guidelines to enhance infrastructure in border areas, the roads are building more effectively.
 - Railway network is there with metre-gauge but that is also sufficient. Due to Court orders, the railway is non-operational in the region for the sake of animals in the forest.
 - Air network is non-functional despite airstrip and developed port nearby.
2. Lack of Accommodation
 - There is shortage of accommodation for the visitors.
3. Deficiency in Tourism Activities
 - Several resources are available, but activities are minimum for the visitor
4. No dedicated network tourism
 - Visitor demotivates by the fact that, only spot is DNP, there is requirement of some well-connected route for tourists.
5. Tharus being ignored
 - Local community is not as much promoted in the park
 - There is lack of displaying cultural heritage at the park

VI. RECOMMENDATIONS

Based on the analysis performed, following recommendations are to be adopted to make DNP as a successful ecotourism destination:

1. Improvement in Accessibility
 - By developing proper Airport, which is also proposed and announced several times.
 - Rail network with low-speed trains can build to strengthen the tourism infrastructure which can also act as attraction for tourists.
2. Fulfilling Accommodation
 - By inviting Private Hospitality sector

3. Exploration of Tourism Activities
 - Safari, Kids specific activities can be indulged in the area
4. Route/Network
 - Some route should be developed in way for adventurous experience

VII. CONCLUSION

Dudhwa National Park have all the potential to prosper as a favorable tourist destination. To conclude, there are majorly three steps to enhance ecotourism of this area. Firstly, the Protected Area should be developed as the luxurious/expensive for the premium tourists which will also make it low footfall healthy for the area. Secondly, the Buffer Zone should be in way to accommodate budget-friendly persons. Thirdly, a well-connected adventure tourism route should be there for youth or similar taste people.

This paper needs more elaboration which is to be continued in next phase.

VIII. ACKNOWLEDGEMENT

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