Koshi Tappu Wildlife Reserve

AND IT'S BUFFER ZONE MANAGEMENT PLAN 2074/75-2078/79

(First Revision)

Koshi Tappu Wildlife Reserve
and
It's Buffer Zone Management Plan
(2074/75 – 2078/79)
(First Revision)

Government of Nepal
Ministry of Forests and Environment
Department of National Parks and Wildlife Conservation
Koshi Tappu Wildlife Reserve Office

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FOREWORD

Koshi Tappu Wildlife Reserve was established in 1976 with the aim of conserving Wild Water Buffalo, providing refuge to migratory birds and sustaining wise use of wetland resources. It was declared as the first Ramsar site in Nepal in recognition of importance of its wetland for a large congregation of migratory birds and livelihood options for River-dependent community. This is the only biological hotspot in the Terai region of eastern Nepal and is not only rich in birdlife but also aquatic fauna and the most popular destination for bird watching in Nepal. The number of visitors is gradually growing since early 1990s with the establishment of accommodation facilities at Madhuvan.

The first management plan of the KTWR was prepared in 2009 with the view of conserving the integrity and diversity of the reserve. During this period, population of threatened wildlife such as Wild water buffalo has increased. Fishing pressure from local communities has been minimized by extension of alternative fish ponds in buffer zone with the support of Conservation and Sustainable Use of Wetlands in Nepal (CSUWN) project. Issues of feral cattle in the core area and illegal settlements in the fringe and core area of the reserve are yet to be addressed through multistakeholder collaboration and legal measures.

This plan is the outcome of rigorous review of the first plan (2009-2013) and has been prepared in consultation with stakeholders and experts. I would like to extend my sincere thanks to the reviewers - Mr. Shyam Bajimaya, former Director General, DNPWC, Prof. Dr. Santosh Raymajhi, IOF, TU, Dr. Siddhartha Bajra Bajracharya, Executive Director (Programme), NTNC, Dr. Hem Sagar Baral, Country Manager, ZSL Nepal for their valuable inputs on its draft. Mr. Shyam Kumar Shah, Chief Conservation Officer, KTWR deserves special appreciation for his tireless efforts for leading the process to update and prepare this plan. I would like to thank DNPWC officials especially Deputy Director General, Mr. Gopal Prakash Bhattarai and Mr. Sher Singh Thaguna for their contribution to this plan. I also take this opportunity to thank National Trust for Nature Conservation (NTNC) for the financial support to update this plan. Last but not the least, I thank buffer zone communities including executive committee members of BZMC, BZUC for their continuous support in the conservation of KTWR. I hope this plan will be instrumental for the conservation and management of KTWR and its BZ.

Man Bahadur Khadka
Director General

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ACKNOWLEDGEMENT

Koshi Tappu Wildlife Reserve is the first Ramsar site of Nepal largely situated in the flood plain area of the Koshi River. The reserve is the only prime habitat for Wild water buffalo, rich in aquatic fauna and hotspot for migratory birds. Management is committed to conserve its biodiversity for the interest of present and future generations.

Several organizations and individuals, buffer zone user committees, buffer zone management committee, buffer zone community forest user committees contributed in this plan in various ways. We are grateful to the Department of National Parks and Wildlife Conservation (DNPWC) for providing opportunity for the preparation of this plan. Special thanks go to Mr. Man Bahadur Khadka, Director General, DNPWC for his continuous guidance and support for write up and overall management of the reserve. We would appreciate efforts and inputs of Mr. Gopal Prakash Bhattarai and Mr. Shersingh Thaguna, Deputy Director General, DNPWC. We would like to express great appreciation to both reviewers Mr. Shyam Bajimaya, Biodiversity Experts, former Director General and Dr. Santosh Rayamajhi, Professor, Institute of Foresty, Pokhara for their invaluable inputs. We would express our sincere thanks to Dr. Siddhartha Bajra Bajracharya, Executive Director (Programme) from National Trust for Nature Conservation (NTNC) for his guidance, inputs and efforts. We would like to express heartfelt thanks to Dr. Hem Sagar Baral, Country Representative, ZSL Nepal for his invaluable comments on draft plan especially on birdlife. We would like to thank Mr. Narayan Rupakheti, Mr. Bishnu Prasad Thapaliya and Mr. Santosh Kumar Bhagat of Management Section of the Department for coordinating the process and their sincere efforts in finalizing this document. Successful completion of this work would not have been possible without support and cooperation of senior officials at the Department. We would like to express my sincere appreciation to all of them. Special thanks go to Mr. Amir Maharjan, Planning Officer, Mr. Bishnu Prasad Shrestha, Conservation Officer, Mr. Laxman Poudyal, Ecologist, Mrs. Sushma Rana, Investigation Officer, Wildlife Crime Control Section. Our thanks go to Mr. Bhupendra Prasad Yadav, Assitant Ecologist, Mrs. Saraswoti Sapkota, Assistant Planning Officer, Mr. Rupak Mahajan, Asst. Investigation Officer, Mr. Bhojraj Pantha, Asst. Conservation Education Officer, Mr. Kedar Nath Kattel, Asst. Monitoring and Evaluation Officer, Mr. Rishi Ranabhat, Asst. Ecologist, Mr. Rabindra Karki, Computer Officer of DNPWC.

We take this opportunity to express our sincere thanks to Mr. Shiv Raj Bhatta from WWF and Dr. Bhagwan Raj Dahal from ZSL for their invaluable comments on the draft plan. Special thanks go to Mr. Dipesh Joshi and Mr. Gokarna Jung Thapa WWF Nepal/ Hariyo Ban Program for their contribution in conducting vulnerability assessment and integrating climate change adaptation measures in various theme plans. We are thankful to consulting team leader Dr. Jhamak Bahadur Karki, CODEFUND for his painstaking efforts for field observation, consultation meeting with buffer zone committees and district level stakeholders and finally bring the plan in the format guided by protected area management

plan preparation procedure, 2073. Thanks goes to Mr. Tikaram Poudel, former Assistant Conservation Officer, Chitwan National Park for his facilitation works for the consultation meeting at buffer zone level and district level. We would like to acknowledge the hardwork of Mr. Vivek Gautam, Mr. Ashish Subedi, Mr. Bharat Bastola for data collection and compilation. We are thankful to PhD scholar, Mr. Nawaraj Chapagain for GIS work and invaluable suggestion for the plan. The contribution of Dr. Bhuvan Keshar Sharma especially for writing logical framework of this plan is highly appreciated. We would like to express our appreciation to Mr. Minesh Ghimire for Initial Environment Examination (IEE) of this plan.

We would like to appreciate the contribution of Major Mr. Nanda Bahadur Gurung, Bhagwati Prasad Company on framing issues, strategy and activities of the plan. The support and contribution of Chairpersons, Mr. Birendra Yadav, BZMC, Chairpersons of BZMCs Mr. Amar Gurung, Mr. Jung Br. Khadka, Mr. Pankaj Mahato, Mr. Raj Kumar Singh, Mr. Daya Sankar Jha, Mr. Hasmuddin Shekh, Mrs. Renu Shah, Mr. Bachu Lal Chaudhary, and other members of BZUC are acknowledged with due regards.

The plan would not have been produced in this form without continuous writing and discussion in KTWR team by Mr. Birendra Gautam and Mr. Prakash Sigdel, Program Officer from NTNC deputed in KTWR. They deserve special thanks for their efforts. KTWR is also thankful to all the agencies and individual experts who provided their valuable comments and suggestions.

Finally, we would like to express our sincere appreciation to World Bank funded Strengthening Regional Cooperation for Wildlife Protection in Asia Project (*IDA Grant No.: H6660*) through National Trust for Nature Conservation (NTNC) for their financial support.

Shyam Kumar Shah
Chief Conservation Officer

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वन तथा वातावरण मन्त्रालय
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(.....व्यवस्थापन.....शाखा)

फोन नं. : ४२२०८५०
४२२०९१२
फ्याक्स नं. ४२२७९२६
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संकेत नं. :-
पत्र संख्या :- ०७४।७५ व्य.नं. २६३
चलानी नं. :- ३०४९

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मिति :- २०७५।२।२१

विषय :- कोशीटप्पु वन्यजन्तु आरक्ष र त्यसको मध्यवर्ती क्षेत्रको पञ्चवर्षिय व्यवस्थापन योजना (२०७४।७५-२०७८।७९) र सो को प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE) स्वीकृत गरिएको सम्बन्धमा ।

श्री कोशीटप्पु वन्यजन्तु आरक्ष कार्यालय
पश्चिम कुशाह, सुनसरी

प्रस्तुत विषयमा कोशीटप्पु वन्यजन्तु आरक्ष र त्यसको मध्यवर्ती क्षेत्रको पञ्चवर्षिय व्यवस्थापन योजना (२०७४।७५-२०७८।७९) र सो को प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE) स्वीकृतिको लागि त्यस कार्यालयको पत्र संख्या २०७४।७५ च.नं.३२६ मिति २०७४।८।१० को टिप्पणी सहित पेश हुन आएको ।

उल्लिखित फाईल उपर कारवाही हुँदा **"स्वीकृत व्यवस्थापन योजनालाई नेपाली भाषामा अनुवाद गरी अंग्रेजी र नेपाली दुवै भाषाको योजनालाई छापेर सरोकारवालालाई वितरण गर्ने"** गरी कोशीटप्पु वन्यजन्तु आरक्ष र त्यसको मध्यवर्ती क्षेत्रको पञ्चवर्षिय व्यवस्थापन योजना (२०७४।७५-२०७८।७९) र सो को प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन (IEE) मिति २०७५।२।२० को विभागीय निर्णयानुसार स्वीकृत गरिएको हुँदा स्वीकृत व्यवस्थापन योजना र सो को प्रारम्भिक वातावरणीय परीक्षण प्रतिवेदन यसैसाथ राखी कार्यान्वयनको लागि पठाईएको व्यहोरा निर्णयानुसार अनुरोध छ ।

२०७५।२।२१

(विष्णु प्रसाद थपलिया)
सहायक व्यवस्थापन अधिकृत

Executive Summary

KTWR lies in alluvial floodplains of Koshi River with an area of 175 sq. km. covering part of Sunsari, Saptari, and Udayapur districts. Its buffer zone incorporates two municipalities of Saptari district, one municipality of Udaypur district and one municipality and one rural municipality of Sunsari district with an area of 173 sq. km. The Reserve is the first Ramsar site of Nepal primarily for supporting large number of waterbirds and fish species. It is the prime habitat for the last remaining population of endangered Wild Water Buffaloes. It is renowned for congregation of large number of migratory birds and the highest number of globally threatened bird species in Nepal. Grassland is the dominant land cover of the reserve largely determined by frequent shifting of Koshi River course that constitutes approximately 53 % followed by forest 10 %, river bank and river 37 %. The population of focal species, Wild Water Buffaloes has increased gradually from 63 in 1976 to 441 in 2018. However, feral cattle and livestock grazing in the reserve pose constant threat to wildlife conservation including cross-breeding of Wild Water Buffaloes with domestic buffaloes. On the other hand, a dispute of boundary between core and buffer zone in Saptari district with local buffer zone community affects adversely to control infringement. The 30-50 percent sharing of the reserve revenue for buffer zone program is very small (< 3.5 million rupees) for conservation and community development works in buffer zone. The trend of tourists is increasing during five years revision period from 8,474 visitors in FY 2069/70 BS to 11,252 in FY 2073/74 BS.

This management plan (2074/75 – 2078/79) is the first revision of the first management plan (2009 – 2013) of the Koshi Tappu Wildlife Reserve and it's Buffer Zone. National Biodiversity Strategy Action Plan (2014-2020) is the main policy framework for the management plan. The vision statement for this plan is to conserve biological diversity and maintain ecological integrity of the Koshi Tappu Wildlife Reserve.

The specific objectives are -

- To safeguard and restore the unique and characteristic wildlife species and habitats of the reserve
- To conserve the rare, threatened, endemic and common wildlife species of the reserve
- To build and strengthen the capacity of the reserve and buffer zone institutions
- To improve livelihood of local communities and enhance their ownership of reserve and buffer zone
- To enhance climate resilience of the area with specific focus on local communities and species of significance
- To develop biological corridor for wildlife movement
- To develop nature based tourism with focused on avitourism

The major challenges to achieve management objectives are feral cattle and illegal livestock grazing in the reserve, Koshi project intervention for flood control and anti erosion works, and increasing human wildlife conflicts. Management intervention for the core area has been framed on six broad thematic areas - Protection, Habitat Management, Fire Management, Wildlife Health Management, Encroachment Management, and Climate Change Adaptation. Species conservation program particularly focuses on the following species: Wild Water Buffaloes, Dolphin, Fishing Cat, Bengal Florican, Swamp Francolin, Turtle and Crocodile. These species are also assessed for climate vulnerabilities and identified measures

are incorporated in the management strategies. Set of research topics on species conservation, tourism and livelihood theme are prioritized; monitoring of species and their habitats, and capacity building programs are planned.

Interpretation centre and infrastructure development are planned to promote the reserve as the avitourism destination of Nepal. Extension of habitat to include ecological continuity of terrestrial and aquatic ecosystem in the north upto Chatara bridge and in the South upto Koshi barrage specially planned for long-term conservation of mega species under potential climate change impact. Other special programs include wild elephant conservation and conflict mitigation measures associated with it, control feral cattle and livestock grazing in the reserve, and alternative livelihood programs for vulnerable wetland dependent households. Buffer Zone Management Plan is mainly designed on four major thematic areas – conservation, community development, income generation and skill development, and conservation education. A sum of Rs. 494.17 million is required for the implementation of the plan for five year-period excluding operational cost. Total Rs. 307.35 million (62.19%) is allocated for the reserve and 186.823 million (37.81%) is allocated for buffer zone. The Governement regular budget for the Reserve will cover 61.77% of the total estimated amount Rs. 494.17 million based on FY 074/75 budget with 10 % increament in each subsequent year. The gap of about 38.23% is expected to be contributed by non-governemnt conservation agencies and local units. The implementation of this plan is primarily expected to conserve threatened wildlife species, develop avitourism, enhanced institutional capacity of the reserve and buffer zone and improve livelihood of the buffer zone communities. It is estimated that 30,400 mandays of employment will be generated through the implementation of prescribed activities of the plan.

कार्यकारी सारांश

सप्तकोशी नदीको तटीय क्षेत्रको १७५ वर्ग किलोमिटर क्षेत्रफलमा फैलिएको कोशीटप्पु वन्यजन्तु आरक्षले सुनसरी, सप्तरी र उदयपुर जिल्लाको भू-भाग समेटेको छ । आरक्षको मध्यवर्ती क्षेत्र सप्तरीको दुई नगरपालिका, उदयपुरको एक नगरपालिका र सुनसरीको एक नगरपालिका र एक गाउँपालिका गरी १७३ वर्ग कि.मि. क्षेत्रफल ओगटेको छ। मुख्यगरी दुर्लभ अर्नाको एकमात्र प्राकृतिक वासस्थान, विभिन्न प्रजातिका फिरन्ते, दुर्लभ चराहरु र माछाहरुको आश्रयस्थलका लागि प्रसिद्ध रहेको यस आरक्ष नेपालमा पहिलो रामसार (अन्तर्राष्ट्रिय महत्वको सिमसार) क्षेत्रको रुपमा सूचीकृत गरिएको छ। कोशीनदीको वहाब क्षेत्रमा अवस्थित यस आरक्षमा मुख्यगरी घाँसेमैदान रहेको छ। जसमा ५३% घाँसेमैदान, १०% जंगल क्षेत्र र ३७ % नदी तथा बलौटे क्षेत्र रहेको छ। यहांको मुख्य प्रजाति अर्ना जसको संख्या सन् १९७६ मा ६३ वटा रहेकोमा २०१८ सम्ममा यसको संख्या बढेर ४४१ पुगेको छ। छाडा गाईभैंसी, अर्धजंगली गाईवस्तुहरु आरक्ष क्षेत्रमा चरीचरण गर्ने हुनाले, अर्नाको अनुवाशिंक क्षयीकरण तथा वन्यजन्तु संरक्षण प्रमुख चुनौतीको रुपमा रहेको छ। सप्तरी तर्फ आरक्ष र मध्यवर्ती क्षेत्रको स्पष्ट सिमांकन नछुट्टिएको कारणले अतिक्रमण र अवैध प्रवेश नियन्त्रण गर्न चुनौती रहेको छ। आरक्षको वार्षिक राजश्व आम्दानी अत्यन्त न्यून (रु ३५ लाख) रहेको सन्दर्भमा मध्यवर्ती क्षेत्रको संरक्षण र विकासका कार्यक्रमको लागि छुट्टाएको राजश्वको ३० देखि ५०% रकम अपुग रहेको छ। यस आरक्षमा पर्यटकको आगमन विगत पाँच वर्षको अन्तरालमा बढ्दो क्रममा रहेको छ (आ.व.२०६९/०७० मा ८,४७४ र आ.व.२०७३/०७४ मा ११,२५२)

आरक्ष र मध्यवर्ती क्षेत्रको पहिलो व्यवस्थापन योजना (२००९-२०१३) को पहिलो पुनरावलोकन गरी यो व्यवस्थापन योजना आ.व. २०७४/७५-२०७८/७९ तयार गरिएको हो। राष्ट्रिय जैविक विविधता रणनीतिक कार्ययोजना (२०१४-२०२०) को नीतिगत रुपरेखाको आधारमा यो व्यवस्थापन योजना तयार पारिएको छ। यस व्यवस्थापन योजनाको दूरदृष्टि आरक्षको जैविक विविधताको संरक्षण र पारिस्थितिकिय प्रणालीको अक्षुण्णता कायम राख्नु रहेको छ। यसका खास उद्देश्यहरु निम्न रहेका छन्।

- आरक्षमा पाईने वन्यजन्तुहरुको वासस्थान पुनःस्थापित गर्ने एवं सुरक्षित राख्ने।
- दुर्लभ, संकटापन्न तथा स्थानीय वन्यजन्तुको संरक्षण गर्ने।
- आरक्ष र मध्यवर्ती क्षेत्रको संस्थागत विकास एवं क्षमता अभिबृद्धि गर्ने।
- स्थानीय जनताको जीवनस्तर उकास्ने साथै आरक्ष क्षेत्रको अपनत्व बढाउने।
- वन्यजन्तु र स्थानीय समुदायमा पर्ने जलवायु परिवर्तनको असरलाई न्युनिकरण गर्ने उपाय अवलम्वन गर्ने।
- वन्यजन्तुको लागि जैविक मार्गको विकास गर्ने।
- मुख्यगरी चरा-दृश्यावलोकनको लागि पर्यटन विकास गर्ने।

यस व्यवस्थापन योजनाका निर्दिष्ट उद्देश्यहरु पुरा गर्न आरक्षमा रहेका अर्धजंगली गाईभैंसी, खुल्ला चरिचरन, कोशी आयोजनाद्वारा बाढि नियन्त्रणको लागि गरिने कृयाकलाप र बढ्दो मानव वन्यजन्तु द्वन्द चुनौतिको रुपमा रहेका छन्। संरक्षण एवं व्यवस्थापनको लागि यस योजनालाई छवटा विषयगत क्षेत्रमा विभाजन

गरिएको छ ; संरक्षण, वासस्थानको व्यवस्थापन, आगलागि नियन्त्रण/व्यवस्थापन, वन्यजन्तुको स्वास्थ्य व्यवस्थापन, अतिक्रमण व्यवस्थापन र जलवायु परिवर्तन अनुकूलन । प्रजाति संरक्षणमा विशेषगरी अर्ना, सोंस, मलाहा विरालो, खरमुजुर, सिमतित्रा, कछुवा र गोहीलाई प्राथमिकतामा राखिएको छ । विषयगत अध्ययन अनुसन्धानको लागि प्रजाति संरक्षण, पर्यटन र जीविकोपार्जनलाई राखिएको छ साथै प्रजातिको वासस्थान व्यवस्थापन र अनुगमन तथा कर्मचारीहरुको क्षमता अभिबृद्धि सम्बन्धि कार्यक्रमहरुलाई पनि प्राथमिकतामा राखिएको छ ।

मुख्यरुपमा पर्यटन प्रवर्द्धनको लागि चरा अवलोकनको गन्तब्य स्थान बनाउन सुचना केन्द्र र भौतिक पुर्वाधारहरु ब्यवस्थित गर्ने योजना रहेको छ । वन्यजन्तुको वासस्थानको विस्तार गरी जलचर र स्थलचर प्राणीहरु विशेष गरी ठुला प्रजातीहरु संरक्षण गर्नको लागि उत्तरतर्फ चतरा पुल र दक्षिणमा कोशी ब्यारेज सम्म विस्तार गर्ने योजना रहेको छ । अन्य विशेष कार्यक्रमहरुमा जंगली हात्तीको संरक्षण र यसबाट हुने द्वन्द न्यूनिकरण, अर्धजंगली गाईभैंसी तथा खुल्ला चरिचरन नियन्त्रण तथा सिमसारमा आश्रित घरधुरीलाई वैकल्पिक जीविकोपार्जनको व्यवस्था गर्ने लक्ष्य राखिएको छ ।

मध्यवर्ती क्षेत्र व्यवस्थापन तर्फका योजनालाई चारवटा मुख्य विषयगत क्षेत्रमा विभाजन गरिएको छ, जसमा संरक्षण कार्यक्रम, सामुदायिक विकास, आयआर्जन तथा क्षमता अभिवृद्धि र संरक्षण शिक्षा कार्यक्रम रहेका छन् । व्यवस्थापन योजनामा प्रस्ताव गरिएका क्रियाकलाप कार्यान्वयन गर्न तलव भत्ता तथा प्रशासनिक खर्च बाहेक पाँच वर्षको लागि रु.४९४.१७ लाख रकम आवश्यक देखिन्छ जसमध्ये रु.३०७.३५ लाख (६२.१९%) आरक्षतर्फ र रु.१८७.८२३ लाख (३७.८१%) मध्यवर्ती क्षेत्र कार्यक्रम प्रस्ताव गरिएको छ । नेपाल सरकारको आ.व. २०७४।७५ को आरक्षको विनियोजित रकम र वार्षिक योजनाको १० प्रतिशत वृद्धि हुने आधारमा योजनामा समाविष्ट कार्यक्रमहरु कार्यान्वयन गर्न ६१.७७ प्रतिशत रकम पूरा हुने देखिन्छ भने नपुग ३८.२३ प्रतिशत विभिन्न संरक्षण साझेदार संस्था एवं स्थानीय तहबाट पूर्ती हुने अपेक्षा गरिएको छ ।

मुख्यतया यस व्यवस्थापन योजना कार्यान्वयनबाट संकटापन्न वन्यजन्तुको संरक्षण, पर्यापर्यटनको प्रवर्द्धन, आरक्ष एवं मध्यवर्ती क्षेत्रको संस्थागत विकास र मध्यवर्ती क्षेत्रका जनताको जिवनस्तर सुदृढ हुने अपेक्षा गरिएको छ । साथै करीब ३०,४०० श्रमदिन रोजगारी सृजना हुने प्रक्षेपण गरिएको छ ।

ACRONYMS AND ABBREVIATIONS

^{0}C	Degree Centigrade
BESC	Biodiversity and Ecological Service Center
BS	Bikram Sambat
BZ	Buffer Zone
BZUG	Buffer Zone User Group
BZUC	Buffer Zone User Committee
BZMC	Buffer Zone Management Committee
BZCF	Buffer Zone Community Forest
BZCFUG	Buffer Zone Community Forest User Group
CBO	Community Based Organisation
CBS	Central Bureau of Statistics
CCO	Chief Conservation Officer
CF	Community Forest
CR	Critically Endangered
CITES	Conventionon on International Trade in Endangered Species of Flora and Fauna
CNP	Chitwan National Park
CODEFUND	Conservation Development Foundation
CSUWN	Conservation and Sustainable Use of Wetland in Nepal
DDC	District Development Committee
DNPWC	Department of National Parks and Wildlife Conservation
EIA	Environmental Impact Assessment
GoN	Government of Nepal
IDA	International Development Association
IUCN	International Union for Conservation of Nature and Natural Resources
Km	Kilometre
KTWR	Koshi Tappu Wildlife Reserve
METT	Management Effectiveness Tracking Tool
NA	Nepal Army
NGO	Non-Governmental Organisation
NPWC	National Parks and Wildlife Conservation
NRDB	National Red Data Book

NTFP	Non-Timber Forest Products
NTNC	National Trust for Nature Conservation
RD	Reduced Distance (1 RD = 1000 feet)
SAF	Sapta Koshi Alluvial Fan
Sq. km.	Square Kilometer
UC	User Committee
UG	User Group
UNDP	United Nations Development Programme
VDC	Village Development Committee

Table of Contents

List of tables

List of figures

Koshi Tappu Wildlife Reserve and It's Buffer Zone at a Glance

Location	Terai region of Eastern Nepal
Designation Year	2032 BS (1976 AD)
IUCN Category	IV
Ramsar Site Declaration	17 December, 1987
Reserve Area	175 Km^2
Buffer Zone Gazetted Year	2061 BS (2004 AD)
Buffer Zone Area	173 Km^2
Province No.	1 & 2
Buffer Zone District	3 (Sunsari, Saptari and Udaypur)
Buffer Zone Rural Municipalities/ Municipalities	5 (1 - Rural Municipality and 4 Municipalities)
Buffer Zone User Groups	469 (Male UGs – 235, Female UGs - 234)
Buffer Zone User Committees	9 (4 - Sunsari, 4 - Saptari and 1 - Udayapur District)
Buffer Zone Community Forests	16 (15 + 1 proposed CF)
Buffer Zone Households	14,865
Buffer Zone Populations	84,423
Major Rivers	Saptakoshi and Trijuga
Bioclimatic Zone	Tropical
Biogeographic Realm	Indo-Malayan
Climate	Tropical Monsoon
Temperature	Maximum 38 ^{0}C, Minimum 8 ^{0}C
Average Annual Rainfall	2019 mm
Elevation Range	80 – 95 m
Forest Type	Mixed deciduous riverine forest
Main Mammals	Wild Water Buffalo, Asian Wild Elephant, Gangetic Dolphin, Fishing Cat, Bluebull, Hog Deer, Spotted Deer
Main Reptiles	Asian Rock Python, Golden Monitor Lizard
Main Birds	Bengal Florican, White-rumped Vulture, Swamp Francolin, Nepal Rufous-vented Prinia (*Prinia burnesii nepalicola*), Migratory birds
Special Feature	Large Floodplain Area which is critical habitat for Wild water buffalo and migratory birds

Process of management plan preparation

Participatory approach was pursued to revise the first management plan (2009-2013) of the reserve. The plan template has been based on protected area management plan preparation procedure, 2073. Nepal biodiversity strategy and action plan (2014-2020) was the main guiding document for conceptualizing vision, goal of the plan document, and devising strategy and plan activities. In the plan preparation process, following steps were followed– a. review of published literature, documents, annual reports, project reports, b. consultation meeting with reserve staff, Nepal Army c. focus group discussion with all buffer zone user committees, buffer zone management committee, and hotel entreprenuers, d. district level stakeholder meeting one each in Sunsari and Saptari district, e. logical framework was prepared in stakeholder consultation at the reserve office. f. prepare draft management plan, g. forwarded to reviewers for suggestions, comments and feedback, h. after incorporating reviewer comments (Annex 25), draft plan presented at the Department of National Parks and Wildlife Conservation to get officials comments and feedback, i. finalization of the management plan j. to be submitted for approval (Annex 1).

Part A

The Existing Situation

Introduction

CHAPTER 1

1.1 Name, Location, Constitution and Extent

Koshi Tappu Wildlife Reserve is named after the largest River, Koshi, of Nepal. The Reserve head office is in Koshi Rural Municipality - 3, Sunsari. It is located within 86°55'15"-87°05'02" E longitude and 26°33'57"-26°43'40"N latitude. Initially, Reserve was declared covering 65 sq. km. area east of Koshi River in Sunsari district in 1976 (2033). In 1978 (2036) it was extended to 175 sq. km. by including the Koshi River alluvial floodplain of the west of Koshi River as well covering part of Sunsari, Saptari, and Udayapur districts. The Reserve is almost rectangular in shape measuring 17.5 km north south and 10 km east west.

Buffer Zone was declared in 2004 (2061) covering 173 sq. km. within 86°53'41"-87°06'32"E longitude and 26°33'58"-26°43'42"N latitude (Fig.-1). Presently, it incorporates two municipalites of Saptari district, one municipality of Udaypur district and one municipality and one rural municipality of Susari district.

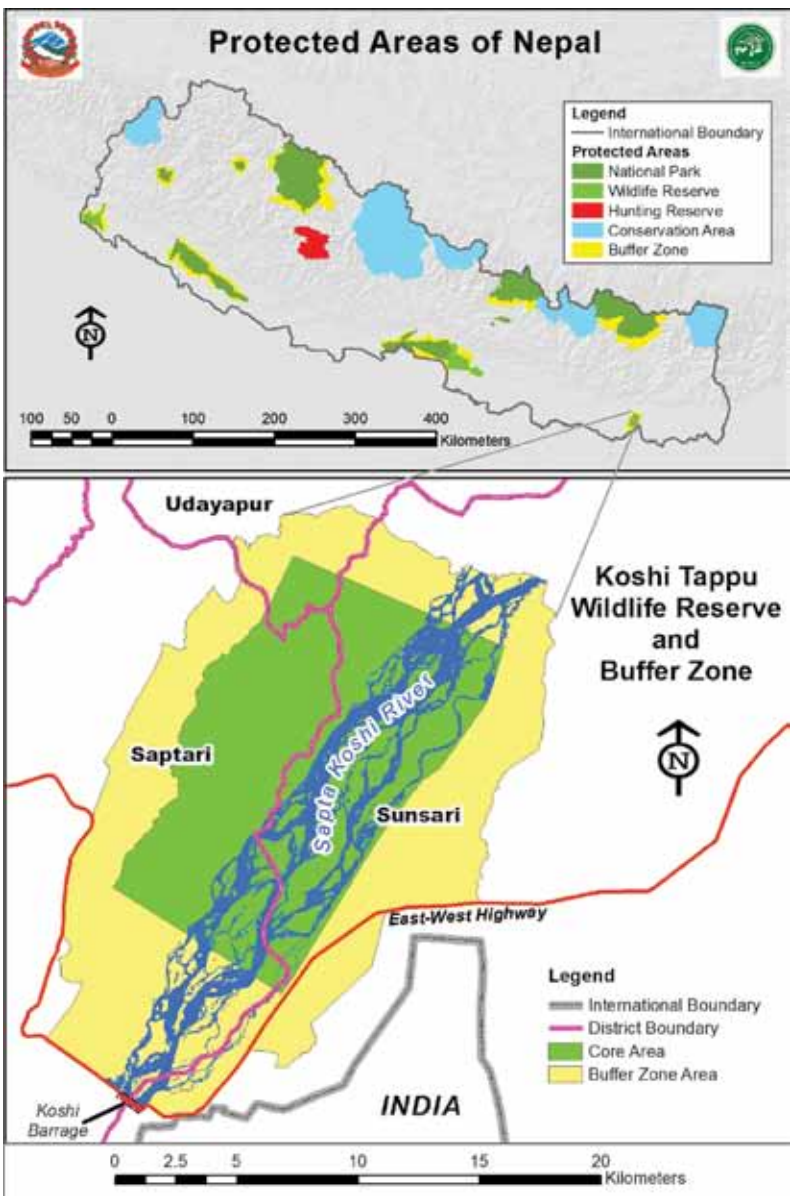

Figure 1 Location of the Reserve

1.2 Access

The Reserve is accessible both by air and land routes and encircled by blacktopped road networks in the east, west, south and north direction. Visitors travelling by buses from west need to disembark just before Laukahi at Jamuwa canal (marked by a signboard) of East-West Highway after passing the Koshi bridge and travel on foot, rickshaw, or safari, 2.6 km north to reach the Reserve Head office at

Koshi rural municipality – 3, Kushaha. Biratnagar airport operates several flights to Kathmandu and other eastern mountains of the country. The Reserve Head office is at a distance of 57 Km north-west from Biratnagar airport.

1.3 Statement of Significance

The Reserve is the first Ramsar site of Nepal declared in 1987 primarily for supporting more than 20,000 waterbirds population and 200 species of fish (www.ramsar.org accessed on 15 Nov. 2016). It is a hub for migratory birds for many years due to its location and most important site for bird conservation in the country as the highest number of globally threatened bird species have been recorded in this Reserve (Baral, 2016). It is the prime habitat for the last remaining population of threatened Wild Water Buffaloes. The wetlands, determined by changing Koshi River course, that includes oxbow lakes, submerged areas, manmade ponds with seepage water, marsh lands are cruicial feeding and breeding habitat for a number of resident and migratory birds, mammals, herepetofauna, fishes and invertebrates. The wetland resources particularly fish and *typha* plant supports livelihood needs of indigenous community for years. The threatened species such as Swamp Partridge, White-rumped Vulture, Fishing Cat, Marsh Mugger Crocodile, Gangetic Dolphin, Tortoise and Turtle reside in the Reserve and in the downstream of the Koshi barrage. This flood plain of the Koshi River is renowned for feeding, breeding, stopover area mainly for a variety of migratory waterfowl, ducks and shorebirds (IUCN 1998).

- Representing tropical rain forest of the eastern Nepal with 514 species of plants, it becomes a refuge for engangered Wild Elephants.
- The highest population of endangered Bengal Florican is found in the *Sachharum species* dominated short grassland area of the Reserve where critically endangered Lessar Florican has been sighted after long time in 2017 (KTWR, 2017).

Background Information and Attributes

2 CHAPTER

2.1 Boundary

Rajpatra Date - Falgun 13, 2036

East: East of Koshi River afflux bund from 22 reduced distance (RD) to 78 RD

West : From spur no. 22 southward following western boundary of Koshi River till spur no.1 and from spur no.1 straight along the afflux bund upto point meeting the southern boundary in the West of Koshi River (spur are included inside the boundary).

North: From eastern afflux bund 78 RD following main trail to Koshi River and straight west up to spur no. 22.

South: From the 22 RD of the eastern afflux of Koshi River straight 90 degree angle in Koshi River towards western afflux bund point.

Buffer Zone

East: Along the eastern boundary of Prakashpur the then VDC keeping Dholbajiya village inside along the trail to Prakashpur up to canal that goes towards Haripur. Then following Haripur canal upto Khuniyadhar and through Khuniyadhar to east-west highway. Then, following east-west highway up to Haripur canal in west. Following Haripur canal upto Khuniadhar and again following Khuniadhar keeping Haripur Khairatole inside upto Sitaram Chowk. From Sitaram chowk to east-west highway leading to Koshi barrage.

West: From Kankalini Chowk along northern afflux bund to Mahuli River. Following Mahuli River to the boundary of the then Bairwa and Badgama VDCs upto east-west highway. Then through east-west highway along the boundary of the then Jagatpur and Dharampur VDCs upto Chandra canal. Following Chandra canal up to Gangajali River and through Gangajali River to the then Odraha VDC keeping whole VDC inside upto Trijuga River.

North: From Trijuga River to following the then Tapeswori VDC's Trijuga forest boundary to keeping Bantole Balahi ward no. 6 and Jungle tole ward no. 4 and 5 inside to Galpharia village up to Dhar Khola including Galpharia village. Keeping the villages of both sides of the Bishariya ghat main trail from Dhar kola to Jamahi Tole joining to the then Prakashpur VDC boundary inside buffer zone.

South: From Koshi barrage to east-west highway up to Kankalini chowk (Fig. 2).

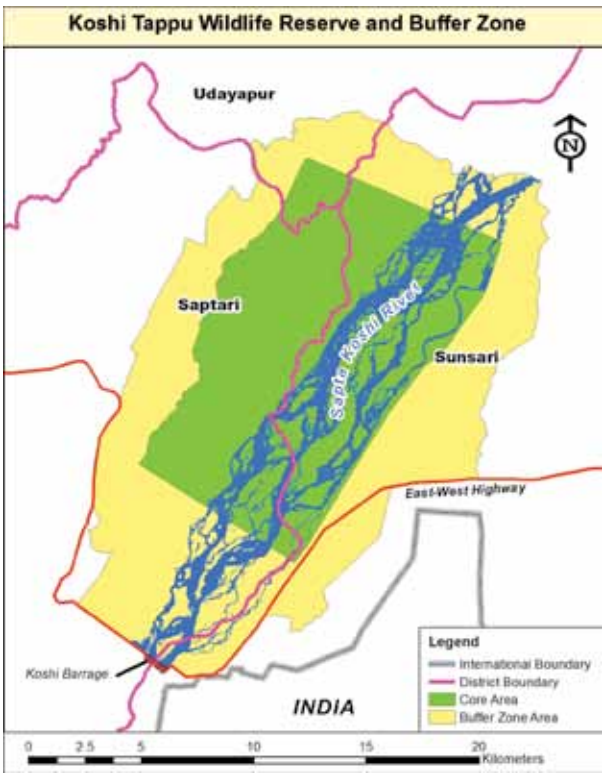

Figure 2: Location of Koshi Tappu Wildlife Reserve and Buffer Zone

2.1.2 Legistations

2.1.2.1 National Parks and Wildlife Conservation Act 2029 (1973)

The Clause 3 (1 Ka) of the Fifth amendment of NPWC Act 2029 has made it mandatory that national park, reserve and conservation area has to be conserved and managed according to the approved management plan. The management plan shall be approved by the Department of National Parks and Wildlife Conservation.

2.1.2.2 International Trade in Endangered Wildlife and Plant Control Act, 2073 BS, (2017)

International Trade in Endangered Wildlife and Plant Control Act, 2074, generally know as CITES Act, has recently been enacted. This Act has authorized Chief Conservation Officer or officer assigned by him/her of the protected area to work as Investigation Officer in illegal wildlife trade case and to file case in District Court as per the Clause 23.

2.1.2.3 The reserve is governed by the Wildlife Reserve Regulations 2034 BS (1978)

The provisions of the Regulation have mainly mandated to provide services (resources extraction, jungle safari, elephant riding, and access corridor) to community and visitors by charging specified fee.

Ecological boundary:

The Belka forest and Trijuga forest in the Churia range of Udaypur district is the potential connectivity with Reserve area that provides Wild Elephant movement in the north-west. In the noth east Patnali stream at Pulthegouda, Trijuga River in the north-west, and Pouda stream in the west could be River corridor with forest cover. Along the Koshi River, in the downstream of Koshi barrage and in the

upstream in the north particularly upto Chatara Bridge is ecological boundary as critically endangered dolphin resides in downstream of Koshi Barrage area and many aquatic fauna for example fishes, crocodile and migratory birds inhabit either side with movement and seasonal migration between downstream and upstream.

2.2 Geology and Soil

The Mega fan, Saptakoshi Alluvial Fan (SAF) of a total of 45 Km. and a width of about 15 Km. in Nepal is formed after emerging out from the Chure Hills near Chatara. Annual flooding, channel shifting, and soil erosion are geo-environmental phenomena in SAF (Thakur & Tamrakar, 2002).

The Reserve lies in the northern part of the Gangetic plain in a low-lying area. Its alluvial deposits are mainly composed of thin fine sand, silt and clay, which frequently alternate in different proportions (Ohta and Akiba, 1973 cited in DNPWC 2009). The nutrient content in the soil varies greatly, depending upon the time of sedimentation and the establishment of vegetation on it in subsequent years. Five different types of soil such as sandy, sandy loam, loam, sandy clay loam and clay loam were described in and around the Reserve with soil pH ranging from 5.2 – 8.1 and fertility ranging from low to high (Pradhan et. al. 1967 and Sah 1997 cited in DNPWC 2009).

The Reserve's floodplains are characterised by sand and silt soil with varieties of grasses, patches of shrub and deciduous mixed riverine forest. There are not many large trees inside the Reserve due to frequent changes of Koshi River course and annual monsoon flood.

The map depicts that in 1980, the river was in western side which was reached completely to the eastern side in 16 years period (1996). Now in 20 years, it has shifted towards center (Fig. 3 and 4).

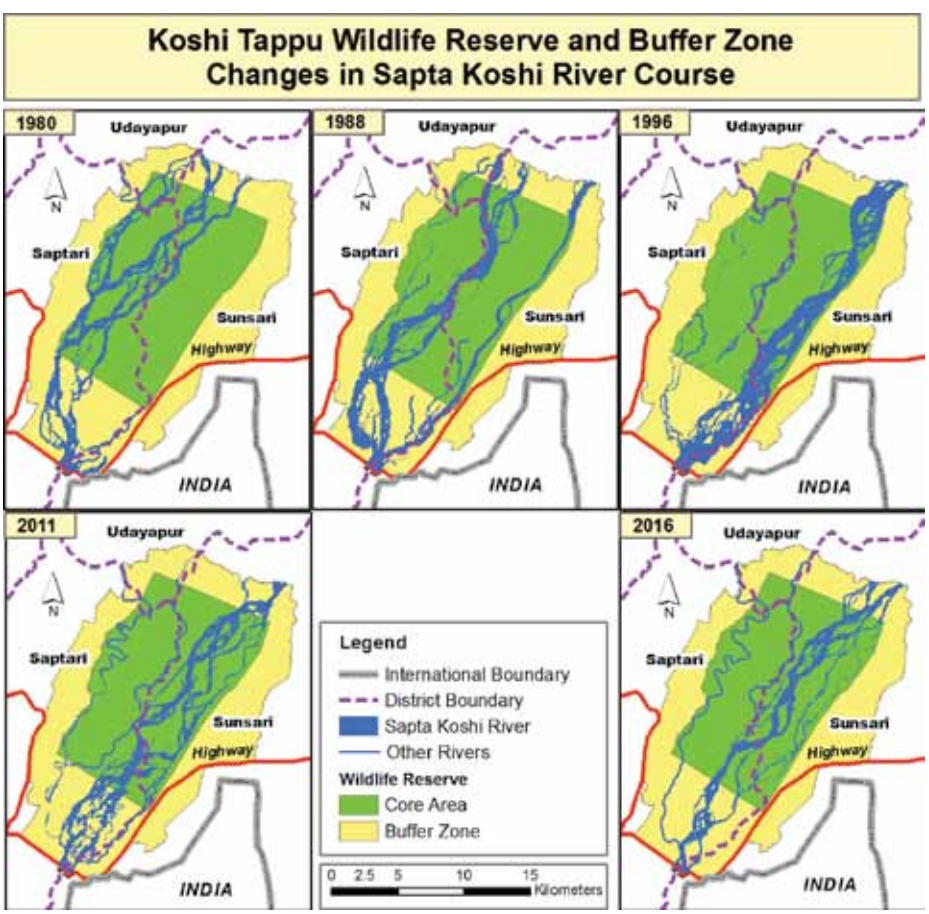

Figure 3 Changes in Sapta-Koshi River Course

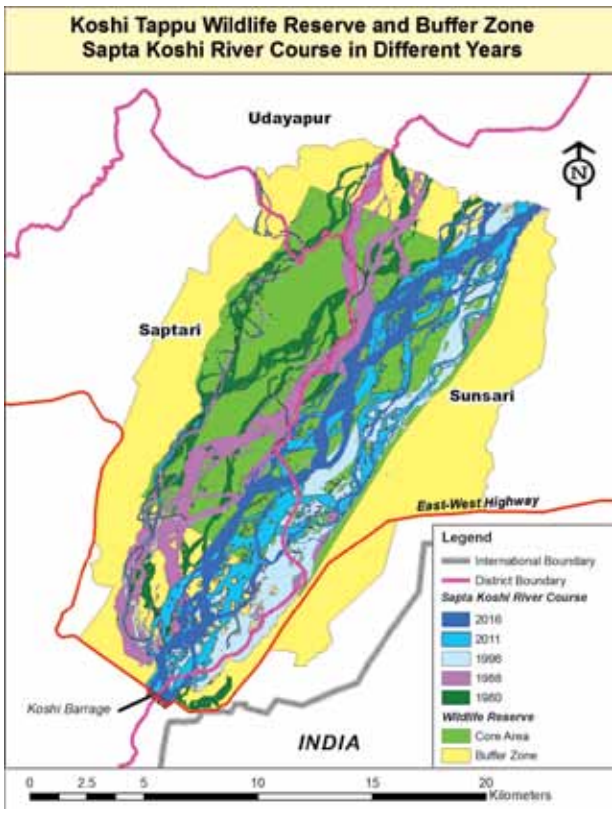

Figure 4 Sapta-Koshi River Courses from 1980 to 2016

2.3 Topography and Drainage

KTWR is roughly a flat and rectangular area stretched out in floodplain of Koshi River which is also known as Saptakoshi in the lowland as it is fed by seven major Rivers - Arun, Tamor, Likhu, Tamakoshi, Indrawati, Dudhkoshi and Sunkoshi Rivers. Its elevation ranges from 80m-95m from the mean sea level with a gradual increase from south to north. Afflux bunds of 5-7 metres high were constructed on both eastern and western banks of the River to contain its water and control monsoon floods. Afflux bunds have been supplemented by crated stone spurs. The eastern afflux bund extends 35 km from the barrage to Chakarghatti (settlement further north from Reserve's boundary). The western afflux bund is shorter extending only 8.5 km up to Pathari. Both bunds on either side of the river effectively contain the river to a maximum spread of 10 km width (DNPWC, 2009). The terrain of buffer zone is flat with mainly agriculture field and human settlements. The buffer zone in west of the Reserve is drained by Triyuga River, Gangajali stream and Pauda stream. Triyuga River and Pauda stream drain into Koshi River. In the eastern side, surface run off drain in Khuniadhar at the boundary of the buffer zone.

2.4 Climate

The Reserve has subtropical monsoon climate with four distinct seasons: spring, summer, autumn and winter. Spring (February-April) has pleasant warm temperate and strong silt laden wind. Summer (May) is intensely hot with minimal precipitation and maximum temperature up to 40 ^{0}C. In recent years monsoon starts towards the end of June with frequent and violent thunderstorm and lasts normally upto July. Autumn commences on August and continues till October. Due to moisture-laden winds from the Bay of Bengal, 80-85 % of the total rainfall occurs from June to September. Winter set in from November through January with clear sky, cold mornings and warm days having lowest temperature 3.3^{0}C in January. The area receives small amount of winter rain due to south-westerly winds occasionally. The average annual rainfall is 2019 mm and average daily maximum temperature

ranges from 23.5 ^{0}C-33.4 ^{0}C, the minimum from 7.8 ^{0}C-25.3 ^{0}C and the mean monthly temperature between 15.7 ^{0}C- 29.2 ^{0}C. Humidity remains high all year round with the monthly average 76 % - 94 % (DHM, 2016).

2.5 Limnology

Rivers and oxbow lakes constitute the water bodies of the Reserve. The drainage system of KTWR area is shown in Fig 1, 2. The bathymetric records have been maintained by the Indian government to monitor flood and siltation in the Koshi barrage area. The highest flow rates recorded for the Sapta Koshi River at Barahakshetra over the 45 years between 1945 and 2016 was on August 5, 1968 at 9,13,000 cusec, while the lower was on July 30, 1953 at 1,91, 418 cusec (Koshi Project, 2016) (Annex -23). The records over 71 year period show a pattern of flow rate with peaks followed by diminished flow over a 2-5 year period and a 14-16 year flood cycle

Despite high amount of suspended materials in the river, the alkalinity in the river systems is surprisingly low. The low carbonates sedimentary geology of the watershed may be responsible for low alkalinity (Jones et al. 1989). The river contains such high concentration of suspended solids that algal productivity is non-existent. Nutrient sample from the river shows much lower levels than the adjacent oxbow lakes.

A limnological study has found that the nutrient characteristics of the oxbow lakes on the floodplains of the Reserve are consistent with tropical lakes elsewhere (WMI/IUCN-Nepal, 1994). The nitrogen to phosphorus ratio was 13:1 and the study opined that there might be occasion when phosphorus is limiting. The dissolved oxygen level was found 59-84 % of air concentrations, suitable for fish. Water hyacinth (*Eichornia crassipes*) has invaded many of the water bodies in the area, but monsoon flooding that connects the oxbows to the main river occasionally or partially flushes them out.

2.6 Biodiversity Status

2.6.1 Vegetation

Diverse assemblages of 514 species of plants belonging to 110 families have been recorded from the Reserve (IUCN, 1998). Out of the total species, 502 belong to 99 families of flowering plants and 12 belong to 11 families of Pteridophytes. The family Graminea is dominant. The successional forest of primary and intermediate seral stage exists in patches in the Reserve. The forests are mostly open and degraded and form isolated patches of woodlands, dominated by one or more of the three species, khair (*Acacia catechu),* simal *(Bombax ceiba)* and sissoo (*Dalbergia sissoo)*.

a) Khair and Sissoo (*Acacia catechu and Dalbergia sissoo*) forest

Typical riverine forest is found mostly near the banks of rivers and on islands surrounded by segments of braiding river. Khair and sissoo form the first seral stand of trees along the river course because they are able to withstand flooding. This forest type is prominent in the north-west and central part of the Reserve. This forest is open with crown cover ranging between 20-50 %.

b) Sissoo (Dalbergia sissoo) forest

Sissoo predominates in most of the forest patches in KTWR. In sissoo-dominated forest, the crown cover ranges between 10-40 %. In this forest, ground vegetation consisted of *Arundinella spp, Cirsicum wallichi, Cyperus dichtomos, Eupatorium adenophorum, E. odoratum, and Solanum indicum*.

c) Khair (*Acacia catechu*) forest

In the north-western part of the Reserve, especially along the river courses of the Mariyadhar and Trijuga rivers, the forest patches are dominated by khair. However, in the entire Reserve the khair forest is less prevalent in comparison to the sissoo forest. The stratification of the canopy layer is more prominent in this forest than in sissoo forest. The ground vegetation consists of *Cynoglossum zeylanicum, Cynodon dactylon, Eupatorium odoratum, Persicaria barbatum, Solanum nigrum, S. torvum and Vernonia cinerea*.

d) Mixed deciduous riverine forest

Mixed forest is mostly confined to areas away from the river where the ground has been further developed from the forest alluvium characterized by Simal (*Bombax ceiba),* Khair *(Acacia catechu) and* Sissoo *(Dalbergia sissoo),* Gutel *(Trewia nudiflora)*. In this forest, the growth of *Artemisia vulgaris, Calotropis gigantica, Eupatorium adenophorum, Lantana indica* as understory and *Solena heterophylla, Boerhavia diffusa and Momordica charantia* as climbers, indicates relatively dry conditions of the forest.

e) Grassland/Savannah

Grassland habitat is a characteristic feature of the floodplains of the Reserve. In KTWR, about 53 % of the total area is covered by grassland (Analysis of Sentinel 2 satellite image accessed on November 29, 2016), which get flooded annually during monsoons and is dominated by *Saccharum-Phragmites* association. The grassland is locally called "*Phant*". Major species present in different proportions include *Imperata cylindrica, Phragmites karka, Saccharum spontaneum, Typha elephantina and Vetiveria zizanioides*. Trees of other species like *Albizia chinensis* and *Trewia nudiflora* are also present. On the flood plain, *Tamarix dioica* are the dominant species. In swampy grassland, *Typha - Vetiveria* association is dominant. Other plants, present in this area, include *Crotolaria sp., Persicaria barbata and Urena lobata* (Peet et al., 1999).

Saccharum-Phragmitis **Type:** Occurs commonly on banks of the Sapta Koshi River, floodplains, in the forest and in moist places. ***Saccharum-Typha* Type:** Occurs in dried water bodies of the Reserve. Associated species are *Persicaria barbata, Tetrastigma serrulata and Cucurbita* species. ***Saccharum* Type:** Occur near the running water bodies in the Reserve. Associated species are *Fimbristylis, Persicaria, Blumea, Sida, Eupatorium, Desmodium and Diplazium*. ***Imperata* Type:** Occurs on the drier sites and between forest patches. Associated species are *Desmodium triflorum and Imperata cylindrica*. ***Cymbopogon-Saccharum* Type:** Occurs in the comparatively drier places of the Reserve. Associated species are *Phragmitis karka* and *Desmodium triflorum.*

2.6.2 Wildlife

The reserve supports about 45 % of total vertebrate species of the country (IUCN, 1998). The Wild water buffalo (*Bubalus arnee*), prominent species of KTWR, has increased from 63 in 1976 (Dahmer, 1976), to 441 in 2018 (KTWR, 2018). Among other mammals, Wild elephant *(Elephus maximus),* Wild boar (*Sus scrofa*), Nilgai (*Boselaphus tragocamelus*), Hog deer (*Axis porcinus*), Spotted deer (*Axis axis*), Smooth coated otter (*Lutrogale perspicillata*), Fishing cat (*Prionailrus viverrinus)*, Jungle cat (*Felis chaus*), Indian fox (*Vulpes bengalensis*) and Jackal (C*anis aureus*) are common (IUCN, 1998). The wetlands harbour several aquatic fauna like insects, fishes, amphibians, reptiles, birds and mammals mentioned in Annex 2, 3, 4, 5 and 6.

The reported vertebrates of the Reserve include 127 species of fishes, 45 species of herpetofauna (amphibians and reptiles) and 32 species of mammals (BPP, 1995; IUCN, 1998). Around 77 species of butterflies are reported from the Reserve (IUCN, 1998). Out of total species of fishes, 91 species are resident, 21 species are local migratory and 5 species are migratory (IUCN, 1998). The most common species in the Koshi River are *Puntius conchonius*, *P. ticto* and *Barilius barna*. Similarly, *Badis badis*, *Chanda nama* and *Esomus danricus* are common in marshes and swamps.

Among the 45 species of herpetofauna, 11 are amphibians (2 toads and 9 frogs), 34 reptiles (2 crocodiles, 9 turtles, 1 tortoise, 6 lizards and 15 snakes).

A total of 526 species of bird species including residents and migrants has been listed that represent 63 bird families of the world. The most numerous birds come from *Muscicapidae* (57 spp.), closely followed by A*ccipitridae* (44 spp.), *Sylviidae* (43 spp.), *Passeridae* (31 spp.), and *Anatidae* (31 spp.) (Baral, 2016). KTWR avian fauna is dominated by migrants as only 35 percent of birds are resident here, and the rest 65 percent are largely migratory in nature. Of the resident bird, Nepal Rufous-vented Prinia (*Prinia burnesi nepalicola)* is only found in this Reserve and in the entire world. The number of Bengal florican has also increased possibly due to improved grasslands within KTWR. Compared to overall decline of bird population in Koshi, only a very few species have increased. Of the currently listed 39 species of globally threatened species in Nepal, 26 species have been recorded at KTWR. At least 126 species breed in the Reserve and 191 species are winter visitors (Baral, 2016).

The total number of migratory birds has dropped from around 50,000 in 1990s to less than 7000 in 2018 and among them migratory waterfowl including Ruddy shelduck (*Tadorma ferruginea*) is the highest in number (KTWR, 2018).

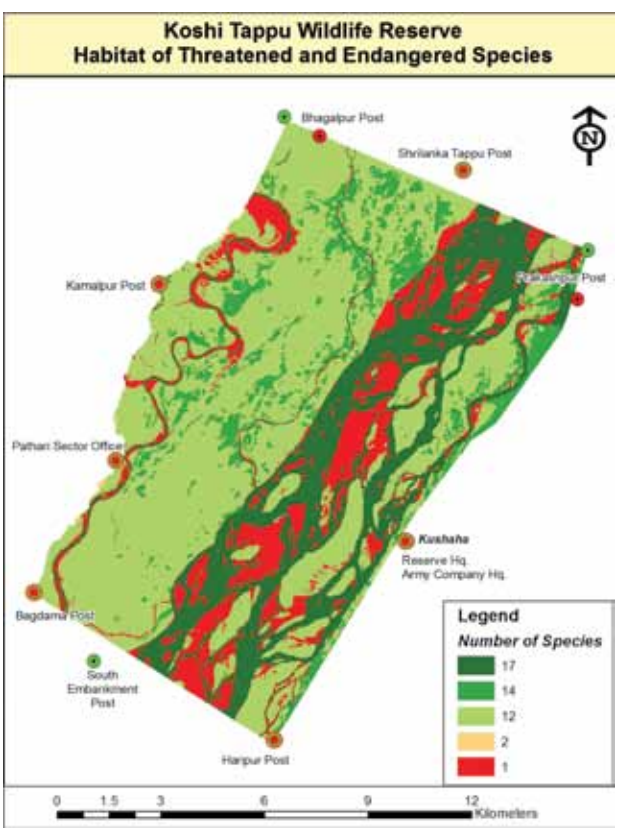

Figure 5 habitat types versus species richness

Species richness in different habitat is depicted in the Map (Fig 5). The species habitat matrix with their conservation status is mentioned in Annex 7.

3 CHAPTER

Past Management and Present Practices

3.1 Conservation History

In 1969, the Government of Nepal (GoN) established six Royal Hunting Reserves in the Terai, including Koshi Tappu. The construction of Koshi barrage in 1958 with eastern and western afflux bund to contain and control Koshi River flood, highway across the barrage, railway line coupled with other anthropogenic activities and devastating flood have cleared the forest and eventually destroyed habitat of big wild mammals including the Bengal tiger (*Panthera tigris*), Common leopard (*Panthera pardus*), Asiatic wild elephant (*Elephas maximus*), Wild Water Buffalo (*Bubalus arnee*), Bluebull (*Boselaphus tragocamelus*), Gangetic dolphin (*Platinista gangetica*) and Swamp partridge (*Houbaropsis bengalensis*). The landscape has lost 80 % carnivores and 58 % ungulates over the last 40 years (Heinen, 1993).

In Nepal, biodiversity conservation took momentum after promulgation of the National Parks and Wildlife Conservation Act (NPWCA), 1973. In 1969, the east of Koshi River up to eastern afflux bund was declared as the Royal Hunting Reserve to overcome the diminishing biodiversity of the area. KTWR was gazetted in 1978 extending its area further in the west of Koshi River up to western afflux bund. To strengthen protection efforts, Nepal Army (NA) was deployed in 1977 for strict law enforcement. The status of Wild water buffalo was studied by Dhamer in 1978.

> *"Regarding Wild water buffalo, locally called Arna, an elderly person above 100 years of age from the indigenous Yadav community, Mr. Ragghu Yadav from Trihut rural municipality ward no. 1, Dhanpuri village, Saptari district who used to stay in the Reserve for months till 2005 for herding domestic buffaloes said that three female buffaloes different than his own local breeds came from Indian side and settled in the Reserve. The progeny of those buffaloes are today's Wild Water Buffaloes."*

In 1979, around 12,000 people living inside the reserve were relocated outside by providing them land. It was declared as Ramsar site - a wetland of international importance, on December 17, 1987. Nepal joined the "Convention on Wetlands of International Importance especially as Waterfowl Habitat" (IUCN 1990). The first resort in 1990s - Koshi Tappu Wildlife Camp, in Prakashpur village, Sunsari district pioneered avitourism in this reserve. DNPWC prepared biodiversity database of the reserve and its adjacent area in 1994 with the support of Woodlands Mountain Institute/IUCN Nepal. In the same year, Park People Programme was implemented mainly for buffer zone development with the support of United Nations Development Program (UNDP).

Buffer Zone management regulation, 1992 and guideline, 1996 opened avenue for the interventions in the Buffer Zone that has made major break through to harmonize the park people relation. The DNPWC initiated formulation of conservation strategy and integrated management planning of KTWR and its vicinity in 1998. The Buffer Zone of KTWR was declared in August 2004.

In August 2008, the south-east portion of Buffer Zone was swept away by the devastating flood in Koshi River. The flood destroyed three Wards of the then west Kushaha, four Wards of the then Shreepur and five Wards of the then Haripur VDCs. Remaining six Wards of the then west Kushaha and five Wards of

the then Laukhai VDCs were inundated in the Koshi flood. This devastating flood damaged the entire south-eastern portion of Buffer Zone and reserve area with few human casualties.

With financial assistance of UNDP/GEF 'Conservation and Sustainable Use of Wetlands in Nepal (CSUWN)' project was implemented for five years from January 2008 to 2013 with an overarching goal to ensure maintenance and enhancement of wetland biodiversity and environmental goods and services for improved local livelihood in Nepal with an immediate objective "to strengthen national and local capacity on ecosystem management and sustainable use of wetland biodiversity in Nepal". The program was aimed to minimize pressure of the local people in KTWR by providing alternative livelihood options. With financial support from the UK government's Darwin Initiative for the Survival of Species, BCN and Wildfowl and Wetland Trust (WWT) worked to develop alternatives for income generation for wetland dependent community around KTWR from 2006-2009 (Thapa & Dahal, 1999).

National Trust for Nature Conservation (NTNC) facilitated to implement the "***Strengthening Koshi Tappu Wildlife Reserve for the effective management of its Biodiversity"*** project from September 18, 2015 to June 30, 2016 under "Strengthening Regional cooperation for Wildlife Protection in Asia Project" through the financial assistance of the World Bank with main objectives: strengthen reserve security, promote eco-tourism and improve livelihood of local people. Its intervention contributed to strengthen reserve security with army deployment in the northern part of the reserve, to promote ecotourism by infrastructure development and sensitizing community. Road Connectivity project (ADB loan no. 3012 NEP) was launched in January 2017 for 20 months for social and environment safeguard from adverse impact of Nadaha-Koshi Bridge (Chatara) – Rupnagar Road project. Social and health awareness, livelihood enhancement and biodiversity conservation activities have been implemented in Dharampur, Purwapipra, Ghoganpur, Kamalpur and Tapeswori village.

3.2 Protection

A company of Nepal Army has been deployed for the protection of reserve since 1977. During insurgency, the security posts were merged into 3 different locations. Now, there are 7 security posts with 4 sentry posts in the Reserve and buffer zone to ensure protection of wild animals and their habitats. A security post at Kamalpur is awaiting court decision on land dispute with a local person for security force deployment. Similarly, the overall conservation of biodiversity and development of the reserve remains with the effectiveness of the Reserve administration. Currently, seven Reserve administration posts adjoining to the Army post and one reserve staff post alone are providing service and safeguarding the reserve's resources. A post at south of the reserve normally inundated in the rainy season uses for camping and sweep operation in pre and post monsoon period. A network of about 60 km forest road

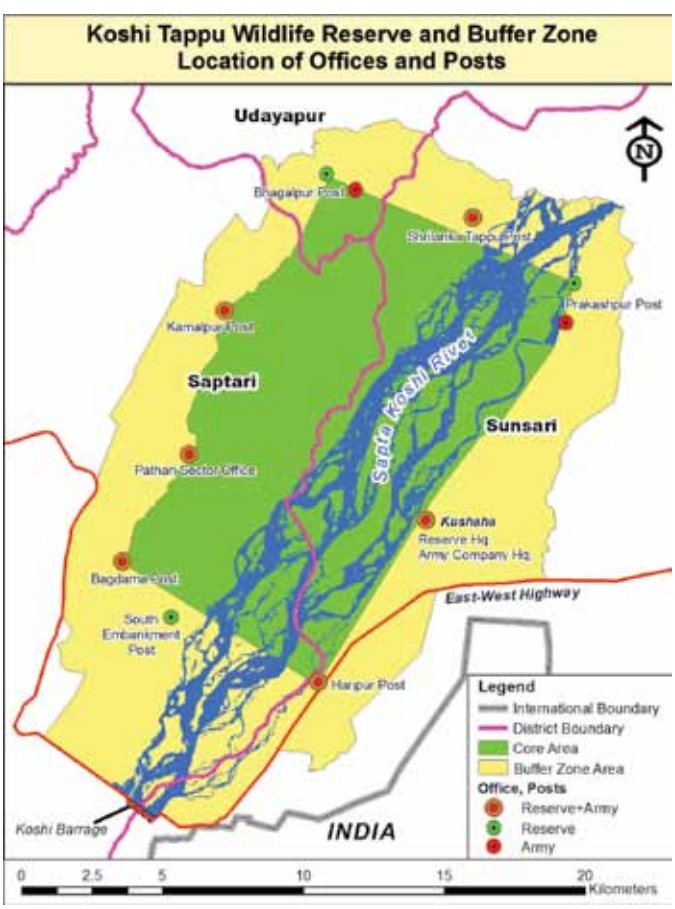

Figure 6 Location of Headquarter and posts in the Reserve

is maintained annually for patrolling. Extension of encroachment, illegal livestock grazing, illegal logging and collection of driftwood is the main security concern of the Reserve. Poaching of birds, deer species and wild boar occurs occasionally according to office record of legal cases. Daily patrolling, mid range patrolling with one night two days, long range patrolling with two night three days is being conducted by army and reserve staff jointly to curb illegal activities inside reserve. Periodic sweeping and camping operation for 3 to 5 days is conducted. Sometimes, armies are mobilized in the buffer zone to deter or capture offenders based on informant intelligence.

The buffer zone community forests are protected and managed by buffer zone community themselves with the support of KTWR. Nepal army do protection of wild animals strayed out or found in the buffer zone and put efforts to chase inside the reserve. The overall conservation and development of forests and biodiversity of the buffer zone remains with the reserve authority and buffer zone communities.

3.2.1 Hattisar (Captive Elephant Management)

Of the 10 captive elephants for this reserve for protection and tourism activities, 5 elephants are in KTWR and 5 are kept in CNP on deputation. These elephants were purchased and received in exchange of Rhino from India in different dates (Annex 11). In 2048, seven captive elephants were shifted to CNP when one male elephant locally named *Ganesh Hatti* created trouble around captive elephant camp and nearby settlement in the reserve. Of them, two captive female elephants were returned from CNP in 2016. Presently, elephant camp is managed at headquarter only with a group of separate elephant staff including a veterinary technician for healthcare services. Elephants are mostly used for patrolling the reserve, monitoring wildlife, and tourism purpose. They are the main transportation means for crossing the River. In addition to patrolling, elephant riding, one of major tourism activities in the reserve, is available from Koshi rural municipality 3, Paschim Kushaha, Sunsari elephant camp.

3.3 Habitat Management

3.3.1 Grassland Management

Grassland is very important habitat component, mainly for Wild water buffalo, ungulates, deers, and birds. Grassland is the predominant habitat types as the reserve is the mainly Koshi River flood plain where vegetation succession is retarded naturally by frequent Koshi River flood and grazing pressure by feral cattle and livestock. Grasslands are managed by grass cutting, ploughing, and control burning in pocket areas near waterholes or wetlands. Grass cutting is allowed annually to buffer zone communities as a priviledge with nominal fee before commencing dry season. People use *Sachharum* species mainly for thatching, roofing, house wall, and other domestic purposes. On the other hand, it helps fresh sprout after the upper portions of the grass tussocks are removed. Control fire is set in such grass cut area in some portions which stimulate new sprouts immediately after drizzling. Portions of the grasslands such as Moriadhar and nearby Pathari sector are ploughed by using tractor to grow grass and forb communities. Managing grassland improves forage and thus helps reduce human wildlife conflict. There are a total of 78.4 sq.km and 27.7 sq.km of grassland in core area and buffer zone area respectively (Table 6, and Fig. 11).

3.3.2 Wetland Management

The reserve is the first Ramsar site, the wetlands of international importance, of the country. In 1950s, there were large submerged area between barrage and southern boundary of the reserve. Submerged area, oxbow lakes, marshy lands, flood plain, waterholes, manmade ponds with seepage water were characteristic feature of the reserve. These wetlands are the prime feeding ground for many migratory

waterfowls, ducks, and aquatic fauna. Most submerged area, marshland, oxbow lakes have been disappeared over the time. The fact that there is too little water during prolong dry period and too much water in the shorter wet period maybe because of impacts of climate change. Siltation and invasive plant species mainly Water hyacinth (*Eichhornia crassipes), Ipomoea fistulata, Mikenia micrantha* combined with inadequate management intervention are another causing factors for degradation and destruction of wetlands. This could be a reason about the decreasing trend of wetland bird abundance which dropped to 6817 population of 58 bird species in 2017. According to 2017 wetland bird count, ten bird species with highest population in decreasing order are Ruddy shelduck, Great cormorant, Cattle egret, Gadwall, Indian pond heron, Little cormorant, Mallard, Intermediate egret, Common teal, Greenshank. Presently, Kamal daha at Kamalpur, marshland at Bhagalpur, 4 waterholes at different places in the core area, wetlands due to seepage water at headquarter are managed irregularly by excavation of silt deposit and cleaning of vegetation. It is urgently needed to restore natural wetlands and planned to create waterholes at lowland site with relatively high-water tables so that status of Ramsar site would be maintained and welcome flock of migratory birds. There is a total of 33.4 sq.km and 17.4 sq.km of water body in core area and buffer zone area respectively (Table 1, Fig 6) including the flowing river.

Table 1 Land Cover Type (sq. km.) of KTWR and BZ (2016)

Land Cover	Core Area (sq.km.)	In percent	Buffer Zone Area (sq.km.)	In percent	Total Area (sq.km.)
Agriculture	0.20	0.11	104.35	60.32	104.55
Forest	17.51	10.01	5.11	2.95	22.65
Grassland	92.43	52.82	27.68	16	120.11
Sand	25.54	14.59	18.14	10.49	43.68
Water	39.31	56.72	17.41	10.06	56.72
Grand Total	**175**	**100**	**173**	**100**	**348**

Source: Analysis of Sentinel 2 satellite image (Date: November, 2016)

3.3.3 Forest Habitat

Forest habitat of the reserve is important for Wild elephant, Wild water buffaloes, deer species, ungulates, reptiles for food and cover. There are hardly 10 percent forests; the smallest coverage of forest habitat could be a limiting factor for large mammals. Early seral stage of forest types i.e. Khair and Sissoo, Mixed deciduous riverine forest, exist in the reserve. These forests are invaded by species such as *Eupatorium adenophorum, Lantana indica and Michenia michrantha* which needs to be controlled by planned management intervention.

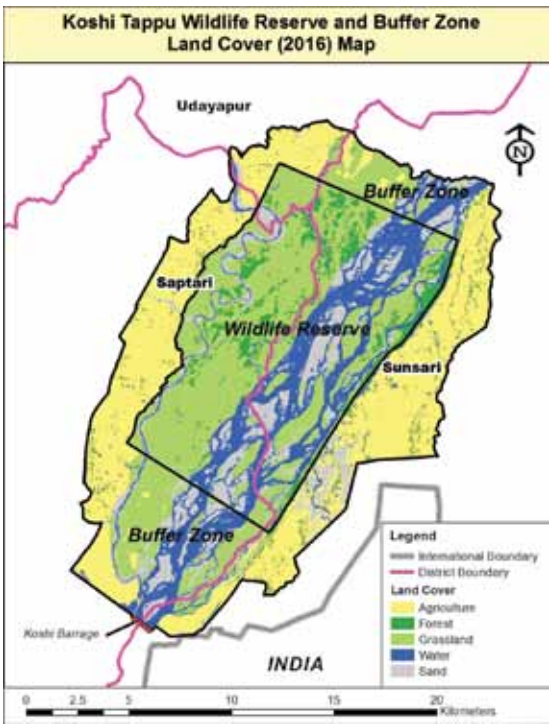

Figure 7 Buffer zone of Koshi Tappu Wildlife Reserve

3.4 Anti-poaching and Intelligence Gathering

Anti-poaching operation based on intelligence is primary task to control wildlife offences. From 2001 (FY 2059/60) to 2016 (FY 2072/9/30), 24 cases were registered in the reserve where 76 men and five women were arrested (Annex 8). Anti-poaching

operations such as sweeping, camping, regular patrolling, intelligence based patrolling are conducted by reserve staff and security force jointly. An anti-poaching unit under the command of a ranger has been responsible for planning and execution of anti-poaching operations. A network of informants is in place and working to provide information about present or potential illegal activities. One community-based anti-poaching unit (CBAPU) under Kushaha Lauki buffer zone user committee formed in 2017 are active for awareness raising, providing intelligence and assisting to capture offenders. During the period, 3 Wild water buffaloes and one Wild elephant were killed in retaliation. Different 22 wild animals were killed in various incidents from FY 2069/70 to FY 2073/74 (Annex 9). In addition, National Wildlife Crime Control Coordination Committee (NWCCCC) directed central Wildlife Crime Control Bureau (WCCB) on May 2, 2017 to form district-level Wildlife Crime Control Bureau in Sunsari district. The district level WCCB was formed on 2074/5/18 BS (September 3, 2017) that comprises officer representatives from district administration office, district forest office, department of national investigation, district police office, district armed police office, district attorney general office, custom office and other district law enforcement agencies. The district level WCCB will be instrumental to curb illegal wildlife trade across Nepal – India border in Sunsari district.

3.5 Tourism and Interpretation

The reserve is the most popular destination for bird watching in Nepal and for educational tour and pleasure trip particularly in eastern region of Nepal. The number of visitors is gradually increasing from 5704 in 2012 to 11,252 in 2017. Compared to paying tourist, number of Nepali who visit information center and elephant camp kept in reserve headquarter premise freely is nearly ten times higher. Domestic elephants, Arna statue and trophy kept in visitor center are major attractions in the reserve headquarter especially for Nepali. The total revenue in last 10 years was 12.89 million rupees with average of Rs 1.29 million per annum. If the revenue of last four years is considered, then the average is Rs. 2.23 million (Annex 10). The tourism related revenue was 73.5 % and 67.67% in FY 2072-73 and 2071-72 of the total revenues respectively (KTWR, 2016). Elephant riding, jungle walk, jeep safari, bird watching, dolphin sighting at Koshi barrage area, boating in Koshi River are the major tourism activities in KTWR limited to the eastern part only. Potential tourism activities such as jungle walk, jeep safari, and elephant riding need to be promoted in western part as well. Three tented camps - Koshi Camp Pvt. Ltd., Koshi Tappu Wildlife Camp Pvt. Ltd., Koshi Tappu Bird Watching Camp for high class tourist and two homestay for budget travelers in the eastern side of the reserve provide services to tourists. Tented camps are not operating in rainy season. There are no hotels to serve all season for a group of people ranging from 10 to 40 for ecotourism-cum workshop, seminar, training, and wedding ceremony which is high demand in buffer zone. Accompanying of registered nature guide is mandatory for foreigner inside the reserve.

3.6 Research and Monitoring

The first study reported about status of Wild water buffalo was conducted by Dhamer in 1978. Further monitoring and census of Wild water buffalo was carried out periodically. Presently, studies on Wild water buffaloes and dolphin are being conducted by PhD scholars. In 2015, status of fishing cat was studied by National Trust for Nature Conservation (NTNC). From 2007 to 2016 (FY 2065/66 to FY 2073/74), total 34 researches on various aspects of wildlife were carried out (Annex 12). Periodic monitoring of Wild water buffaloes, Wild elephant, Crocodile, Vulture, Bengal florican, and wetland bird is conducted by the reserve as a part of annual programme. Annually, Wetlands International conducts mid winter water bird count with the help of nature guides of hotel Koshi camp and Kosi Bird Observatory. The Kosi Bird Observatory at Jabdi, north-east of the reserve established by Himalayan Nature, has been constantly keeping the record of birds including migratory. In 2016, a survey of

Bengal florican was conducted by a team led by a renowned orthinologist. Interested bird watcher and traveler could spend one more day to reach the place and observe the Koshi River basin in its upper reach. The majority of researches and studies were conducted by graduate students. Institutional relationship need to be built up with university and research institution to conduct long-term research and monitoring wildlife, habitat, climate change impact, land use change due to Koshi River.

3.7 Rescue and Orphanage Management

Wild animals found injured are kept for veterinary treatment until recovered. Generally, spotted deer, hog deer, vulture, brahminy ducks, owls, oriental pied hornbill, rock python are rescued and released in the wild. Presently, 3 barking deers are cared in the office premise. A rescue centre are being constructed at the reserve headquarter to keep rescued animals from eastern development region for treatment and release in suitable habitats otherwise care in the centre.

3.8 Human-Wildlife Conflict

In recent year, human wildlife conflicts surrounding the reserve have become a major challenge for wildlife conservation. Human casualties, house destruction and crop raiding mainly by Wild water buffalo, Wild elephant, Wild boar, Bluebull, Spotted deer and fish depredation in private fish pond by Marsh mugger are the major causes of conflict. Population of various wild animals, for example, Wild Water Buffalo, Wild elephant, Bluebull, Spotted deer, and Marsh mugger have been increasing due to long term conservation efforts. Population of 10-12 Wild elephant has become resident in the reserve for 5-7 years. To contain increased population of wild animals, area of the reserve is small and forest habitat is inadequate hardly 10 percent to fulfil forage need for animals. Moreover, palatable cultivated crops in the adjoining buffer zone lure wild animals. Nine persons were killed and 21 were injured by different wild animals from 2013 to 2017 (FY 2070/71 to 2073/74) (Annex 13). Majority of the human casualties were men (82.5%) of age ranging from 11-73 years. The main wildlife responsible for human casualties is *Wild water buffalo* (50%) followed by Wild Elephant (28%). Residents of Sunsari districts are more vulnerable to wildlife casualties (65%) compared to Saptari (32.5%) and Udayapur districts (2.5%). The then Paschim Kushaha (32.5%), Haripur (12.5%), Shripur (10%) VDCs of Sunsari district and Jagatpur VDC of Saptari district are more effected VDCs among 14 VDCs suffered from wildlife. In retaliation, three Wild water buffaloes and a Wild elephant were killed in 2016 and 2013 respectively. As a preventive measure, out of 55 km perimeter of the reserve, about 18 km. solar fence is constructed to contain Wild water buffaloes and Wild elephant in respective areas. Patrolling, youth mobilization, distributing hand torchlight, using fire, making vehicle noise, darting problem Wild elephant as a last resort has been applied to reduce HWC. Based on Relief guideline, 2069 wildlife victims (human casualties, livestock depredation, crop damage, house destruction) are being provided relief amount.

3.9 Administration and Organization

The Chief Conservation Officer is the incharge of administration and management of the reserve seating at reserve headquarter office at Koshi Rural municipality 3, Paschim Kushaha, Sunsari. Recently approved Organization and Management survey in 2016 (2072/3/11) has increased staff from 61 to 92 considering workload in changing context and service delivery responsibility to buffer zone community. Of the total 92 staff positions - 59 positions for reserve and 33 positions for elephant section. Presently, two-third staff of various positions are fulfilled and about one third staff positions are vacant (Table 2). There is one sector office at Pathari, Saptari district led by assistant conservation officer and 6 posts including two range post led by ranger – one at Prakashpur, Sunsari district and another at Bhagalpur, Udaypur district and four guard posts. Organization structure of the reserve is mentioned in Annex 22.

One company of Nepal Army has been deployed since 1977 for protection of the reserve. They are protecting the reserve from 7 different posts including reserve headquarter.

Table 2 Human Resources of the reserve

SN	Name of the post	positions	Post status		Remarks
			Working	vacant	
1	Chief Conservation Officer	1	1	0	
2	Assistant Conservation Officer	2	2	0	
3	Section Officer (Hattisar)	1	1	0	
4	Ranger	6	5	**1**	
5	Assistant Veterinary Technician	1	1	0	
6	Administration Assistant	2	2	0	
7	Accountant	1	1	0	
8	Computer Operator	1	1	0	
9	Administration (Hattisar)	1	1	0	
10	Kharidar	1	1	0	
11	Daroga	1	1	0	
12	Senior Gamescout	10	9	**1**	
13	Phanit	10	2	8	
15	Pachuwa	10	0	10	7 on contract basis
16	Mahaut	10	10	0	9 on contract basis
17	Driver (light vehicle)	2	0	2	1 on contract basis
18	Game Scout	30	29	**1**	
19	Boatman	1	2	-1	working one more than approved
20	Office Assistant	1	0	1	
	Total	**92**	**69**	**24**	**17**

3.10 Achievements of Preceding Management Plan (2009-2013)

The first management plan (2009-2013) was formulated to achieve four major objectives – to safeguard and restore the unique and characteristic species and habitats and secure removal of existing intrusion; to conserve and enhance the rare, endangered, endemic and common wildlife species; to build and strengthen the capacity of the Reserve and local community; and to enhance livelihood and ownership of local people for maintaining their continued support to conservation and sustaible use of biodiversity. During this period, management has been successful to conserve and increase population of threatened and common wildlife such as Wild water buffalo, Bengal florican, Dolphin, Bluebull, White rumped

vulture, fishing cat. Wildlife habitats has been safeguarded and maintained. In core area, forest has increased by 3.2% and sand and water by 11.2% whereas grassland has decreased by 14.5 % over 1992 to 2017 (Table 1). However, extent of aquatic habitat has been diminished and existing one is degraded with the invasion of exotic plants. Encroachment has been increased in the core and buffer zone in this period. The 19th land acquisition settlement committees worked but the issue remained unsettled. Moreover, it had no mandate to look into the present encroachment in the core in that the encroachers claimed that they has been living there before reserve establishment. In the buffer zone, both Koshi River flood victims and in the name of flood victims people from several districts has been settled in *Ailani* land in the hope of getting compensation or land entitlement in future. Diputes of boundary between core and buffer zone in Saptari district with local buffer zone community could not be settled that affects adversely to control infringement.

Participatory approach of conservation has been inculcated by formation of buffer zone user groups, buffer zone user committee, buffer zone management committee and conduction of buffer zone program through buffer zone institution.

Failure is maily due to rampant feral cattle and livestock grazing in the reserves that pose constant threat for conservation of wildlife and possible cross breeding of Wild water buffaloes with domestic buffaloes. In addition, the capacity of neither reserve management nor buffer zone institution has been adequately strengthened to deal with core issues such as settlement of land acquisition, encroachment in the core, livestock grazing and engaging local communities in conservation. Staffs were inadequately capacitated in technical aspect such as wildlife monitoring, handling for rescue and care of wildlife, tackling problem wildlife, wildlife crime investigation, preparation of community forest operational plan (CFOP), communication and interpretation, chasing wild elephant. Total 1300 shareholders have directly benefitted from cooperative run by biodiversity conservation fund (BCF) supported by participatory conservation project (PCP). During plan period, livelihod improvement and biodiversity conservation programs were supported by CSUWN and Darwin Initiative projects.

The lack of proper law and regulation is one of the major gaps to curb the long standing problem of feral cattle and livestock grazing in the core area. In addition, social mobilization part was lacking to transform open grazing of large number of unproductive livestock. Project programs were not targeted for improved livestock husbandary practices that would complement law enforcement on the purpose. Several attempts to evacuate age old settlement inside reserve were done. Evacuation of encroached settlement needs coordination with law enforcement agencies and policy decision that would ensure some alternatives for the people. In this issue, proactive coordination with the concerned agencies and realization of the issue in decision making level were found a serious gap.

3.11 SWOT Analysis

Strength	Weakness	Opportunity	Threat
• First Ramsar site of Nepal • prime habitat for endangered Wild water buffalo • renowned for migratory birds • nature based tourism destination in the eastern region	• local people dependent on wetland resource • poor level of awareness of buffer zone community • inadequate frontline staff • Poor infrastructure • Poor communication and no internet facility • Very few research on wildlife	• Increasing Wildlife population such as Wild water buffalo, Bengal florican • nature based tourism • research on wildlife, their habitat, Koshi River dynamics • livelihood improvement through buffer zone program	• Human Wildlife Conflicts • Possible cross-breeding of Wild water buffaloes with domestic buffalo • Very unstable habitat composition (forest, grassland, wetland) due to recurrent Koshi River flood • Excessive livestock grazing • Excessive fishing threaten birdlife and dolphin • Climate change impact particulary on wetlands • Anti erosion and flood fighting activities of Koshi project • Forthcoming Koshi High Dam

Part B

The Proposed Management

Vision, Goal and Objectives

4
CHAPTER

4.1 Vision Statement

Conserve biological diversity and maintain ecological integrity of the Koshi Tappu Wildlife Reserve

4.2 Management Goal

Conserve wildlife and enhance wise use of wetland resources of the reserve for sustainable ecosystem services and community prosperity.

4.3 Management Objectives

- To safeguard and restore the unique and characteristic wildlife species and habitats of the reserve
- To conserve the rare, endangered, endemic and common wildlife species of the reserve
- To build and strengthen the capacity of the reserve and buffer zone institution
- To conserve wetland for livelihood improvement of local people and enhance their ownership of reserve and buffer zone
- To enhance climate resilience of the area with specific focus on local communities and species of significance
- To develop biological corridor for wildlife movement
- To develop avitourism as a part of nature based tourism

4.4 Major challenges

- Feral cattle and illegal livestock grazing in the reserve
- Koshi project intervention for flood control damaging wildlife habitats
- Human wildlife conflict particularly with Wild elephant and Wild water buffalo
- Unsettled land acquisition and encroachment weakening inter-relationship with people
- Alien Invasive Species degrading wildlife habitat
- Poor biological corridors towards north, south and east
- Forthcoming Koshi High Dam

5 CHAPTER

Management Strategies

5.1 Boundaries (Legal, Administrative, Ecological)

The southern boundary of the Reserve runs parallel to the Koshi Barrage, 6.5 km to the north of the Barrage. The land between the barrage and the southern boundary of the wildlife Reserve is called '*duban'* (submerged land) and was leased to Indian Government for 199 years. The northern boundary of the Reserve is demarcated along the floodplain of the eastern embankment near Prakashpur to the village of Tapeshwori north of Trijuga River. The eastern and western boundaries of the Reserve run along the 5-7 m high eastern and western earthen embankments that bound the river floodplain and prevent water from flooding agricultural fields during rainy season.

Administratively, the reserve is divided into eastern and western part taking Koshi River as the reference line. The reserve headquarters and a range post are located in the eastern side and a sector office, a range post, and a guard post is located in the western side. The northern part of the reserve is covered with a security post and a guard post. The southern part of the reserve is administered with a post at the boundary used temporarily for sweeping and camping operation.

Ecologically, the area is contiguous towards south in the buffer zone up to Koshi Barrage. In the north and west, it links with Trijuga forest. The Koshi River in the upstream up to Chatara Bridge and Chure range provides corridor for wildlife movement.

5.2 Zonation

The reserve has been zoning into management facility zone, utility zone and core zone to facilitate management interventions based on specific objectives.

5.2.1 Management Facility Zone

The area primarily use for tourism activities in the reserve and its buffer zone. At present, tourism activities are permitted in the eastern sector along afflux bund and spurs by vehicle and elephant ride. The potential jungle safari will be opened up in the future strengthening management capacity. Tourism activities could be commenced in and along western afflux bund from Kankalini temple to Pathari sector office to Bhagalpur Post, Udayapur.

Objective

- to provide the basic facilities for wildlife tourism activities

Issues

- Inadequate facilities for wildlife tourists
- Insufficient packaging of tourism product and promotional activities
- Poor level of awareness of local community
- Lack of functional coordination between tourism entrepreneurs, BZMC and the Reserve

Strategies

- Coordinate with potential partners for the development of tourism facilities in the potential sites in buffer zone
- Enhance capacity of both reserve staff and Buffer Zone institution

Activities

- Organize coordination meeting at regional, district and local level for promotion of wildlife tourism
- Station captive elephant at Pathari sector office / Bhagalpur post for recreation and jungle safari
- Encourage adjoining BZ community to run homestay
- Facilitate private investor to build hotel/ lodge in the Buffer Zone providing services to wide range of visitor
- Provide exposure visit to BZMC / BZUC and local community in ecotourism destinations
- Publish and disseminate extension materials widely
- Post large hoarding boards at public places

5.2.2 Utility Zone

This zone includes Reserve Headquarter in Sunsari, Reserve post office in Sunsari, Saptari and Udaypur districts including security post in respective location where various services will be delivered to Buffer Zone community and visitors. West Sector Office at Pathari, Saptari serves day to day concern of local community. Similarly, Bhagalpur Range post office, Udaypur and Prakashpur Range post office, Sunsari districts will regulate Reserve entry and provide services to local community.

Objective

- To provide and facilitate service delivery to Buffer Zone community and visitors

Issues

- Inadequate number of guard post and security posts at strategic location
- Hard to deploy staff in posts in rainy season due to Koshi River flood
- Inadequate staff

Strategies

- Identify the strategic location for additional Reserve post
- Manage basic logistics to deal with Koshi River flood
- Initiate and coordinate with regional public service commission for staff recruitment

Activities

- Survey the reserve area and analyze locations of illegal activities
- Organize coordination meeting with BZMC and local stakeholders
- Pre-positioning motor boat, life jacket, gumboot, raincoat in flood affected posts
- Build bridge on Triyuga River and Mariyadhar stream for convenience of patrolling and logistic transportation

- Issue permission for driftwood collection, thatch grass collection, private tree felling and transportation
- Construct office building for officers and ranger at Kushaha
- Construct sector office at Pathari, Saptari
- Construct Ranger office at Prakashpur, Sunsari
- Renovate existing reserve posts

5.2.3 Core Zone

By legal definition, core zone refers to 175 sq.km. of the reserve area where regulated tourism activities are permitted.

Objectives

- To safeguard, maintain and restore wildlife habitats and ecosystem
- To conserve and maintain viable population of rare and endangered wildlife species

Issues

- Unclear boundary line between core and buffer zone in western sector
- Koshi project flood fighting works
- Feral cattle and illegal livestock grazing
- Encroachment in the core area

Strategies

- Coordinate with local units and concerned buffer zone community for clear demarcation of boundary line
- Initiate policy dialogue with concerned agencies for Koshi project interventions that contradicts with wildlife conservation
- Revisit legal provision for control of feral cattle and livestock
- Formulate project to transform local community for improved livestock farming with stall feeding practice
- Form high level commission to relocate the illegal settlements in the reserve
- Strengthen security measures

Activities

- Organize coordination meeting with local units and BZ communities
- Fix boundary line with GPS coordinates by cadastral survey and build demarcation pillar at 100 meter interval
- Propose policy recommendation to line Department and Ministry to initiate discourse through concerned ministry for flood control / anti erosion works in reciprocal with wildlife conservation
- Recommend line department for legal provision of onsite auction of feral cattle and livestock
- Continue daily patrolling and capture feral cattle and livestock from core area and charge fine
- Conduct feasibility study for transform target community for improved livestock farming with stall feeding practice to control illegal grazing

- Design project based on feasibility study for target community to transform livestock husbandry practice to control illegal grazing
- Survey encroached area and number of household
- Recommend line department and ministry for alternatives for their relocation

There are seven encroached areas identified in the western sector (Fig 8).

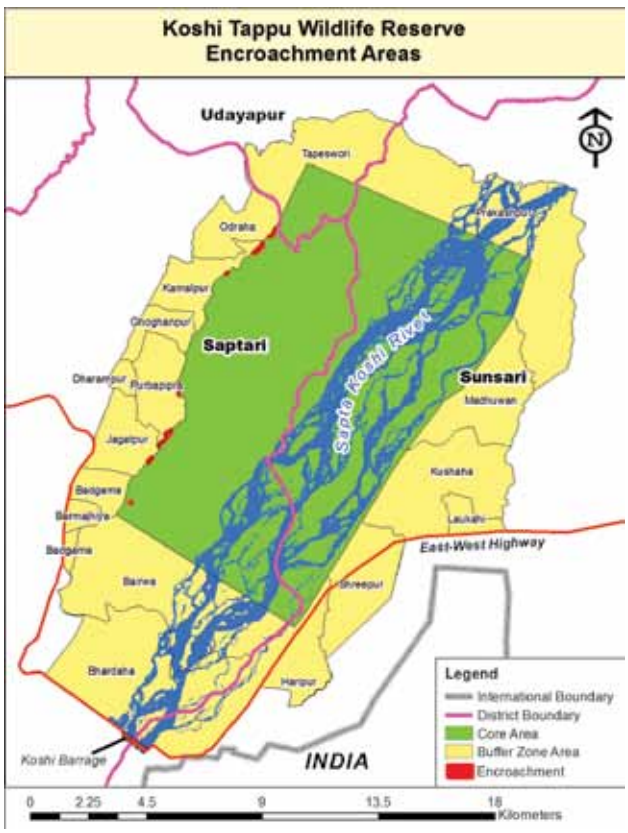

Figure 8 Locaiton of encroachment in the Reserve and buffer zone

5.3 Theme Plans

5.3.1 Protection

5.3.1.1 Hattisar Management

Issues

- Hattisar is currently centralized in reserve head office at Paschim Kushaha
- Fodder and grass shortage
- Invite male wild elephant for mating and increases conflict with local community
- Likely occurrence of disease

Strategies

- Feasibility study to station domestic elephant in other reserve posts
- Promote planting fodder species in communal lands, BZCFs as well as in utility zone such as reserve head office, post premises
- Mitigate HEC

Activities

- Conduct biophysical and social survey to assess fodder availability in the core area and in the Buffer Zone
- Encourage fodder species plantation in the Buffer Zone
- Construct power fence enclosure and concrete boundary wall for Hattisar complex
- Station domestic elephant in Pathari / Bhagalpur area for patrolling during rainy season
- Conduct health checkup for TB and other diseases at least twice in a year
- Administer medicine and provide supplement vitamins to elephants

5.3.1.2 Deployment of Nepal Army

Issues

- Inadequate resources (motor boat, truck, tractor) to negotiate with Koshi River barrier in rainy season
- Insufficient basic facilities (vehicle, bicycles, searchlight, lighting system) and maintenance of security posts
- Inadequate security post to dominate whole reserve area

Strategies

- Recommend line ministry for equipment to deal with Koshi River flood
- Recommend for basic facilities and periodic maintenance / construction of security posts
- Establish security post at strategic locations

Activities

- Renovate existing reserve posts
- Equip with basic resources and orient them to negotiate with Koshi River
- Coordinate with line department and conservation partners for logistics support
- Conduct orientation for newly deputed security unit and provide training on biodiversity conservation and controlling poaching and other illegal activities
- Continue joint patrolling in the reserve area
- Construct required infrastructure at south part of the reserve to deploy army and reserve staff
- Settle legal issue regarding Kamalpur security post with claimant and deploy army
- Construct watch tower in the core area

5.3.1.3 Anti-Poaching and Intelligence Gathering

Issues

- Occasional poaching and illegal trade of wildlife
- Death of dolphin due to fishing at south of Koshi barrage
- Illegal tree cutting and driftwood collection
- Feral cattle capturing illegally for making money
- Illegal sand mining in buffer zone

Strategies

- Operationize district level wildlife crime control bureau (WCCB)
- Form and institutionalize community based anti-poaching units in all BZUC
- Establish anti-poaching unit and rapid response team (RRT)

Activities

- Conduct periodic WCCB meeting
- Mobilize informants at strategic locations
- Provide capacity building training to anti-poaching unit and RRT
- Provide basic equipment, vehicle and logistics to anti-poaching unit and RRT
- Disseminate information of legal punishment for involvement in illegal activities
- Encourage and mobilize eco club and local youth clubs against illegal activities
- Launch real time SMART patrol

5.3.2 Habitat Management

5.3.2.1 Forest

Issues

- Only 10 percent forest cover
- Destruction of existing forest due to shifting of Koshi River course / Koshi project channel diversion works
- Degradation of forest due to overgrazing by feral cattle/ livestock grazing and NTFP collection
- Invasion of exotic species (*Lantana camara, Chromolaena odorata, Mikania micrantha, Parthenium spp.*)

Strategy

- Conserve forest regeneration by controlling overgrazing and NTFP collection
- Expand forest through seed sowing / plantation
- Regulate channel diversion works with minimum forest destruction
- Pilot methods to control invasive species

Activities

- Encourage Koshi project agency to use bioengineering methods in anti-erosion and flood fighting work where as possible
- Control collection of fuel wood, fodder and NTFP from the reserve
- Sowing / Planting tree and shrub species to enrich forest cover that would be palatable for wildlife
- Apply mechanical/ manual methods to uproot and burn invasive (*Michenia micrantha, Lantana camera, Eupatorium spp.*) species periodically

5.3.2.2 Grassland

Issue

- Trespass and overgrazing by feral cattle and livestock
- Seasonal inundation due to Koshi River flood
- Invasion of unpalatable species (*Ageratum spp*.)

Strategy

- Control feral cattle and regulate livestock grazing by legal and project intervention measures
- Pilot methods to control invasive species

Activities

- Manage grassland annually
- Capture and impose fine to control livestock grazing in the core area regularly
- Evacuate feral cattle by on site auction measures
- Regulate thatch grass cutting permitted to buffer zone community for 3 days before onset of dry season
- Construct view tower*, machan,* to monitor grassland habitat use by wildlife and fire outbreak
- Establish permanent plot for ecological study of grassland habitat
- Apply mechanical/ manual methods to uproot and burn invasive (*Michenia micrantha*, *Ageratum* spp.) species periodically

5.3.3.3 Wetlands/ Water source

Issues

- Overfishing
- Pressure on wetland for watering feral cattle and livestock
- Barrage without fish ladder blocks migration of aquatic fauna (fish, dolphin, crocodile, turtle)
- Eutrophication of wetlands due to invasive species such as water hyacinth, water lilly and *Ipomea species*
- Inadequate tree cover along the wetlands for roosting and nesting of birds
- Annual siltation and flooding of wetlands

Strategies

- Manage fishing only to traditional wetland dependent Buffer Zone community
- Encourage extension of fish farming in Buffer Zone through BZMC /BZUC
- Control feral cattle and livestock with legal measures and diminish large number of livestock in adjoining buffer zone community with improve farming projects / programs
- Make an agenda to be discussed in transboundary meeting for construction of fish ladder in Koshi barrage
- Planned cleaning and restoration of wetlands annually

- Conserve indigenous tree species on the bank of wetlands for roosting and nesting cover for birds
- Monitor wetland invasion by exotic species

Activities

- Issue fishing permit with stipulated provisions of reserve regulation to wetland dependent households
- Regulate boat for fishing and control night halt by intelligence based patrol
- Coordinate with local units and BZMC / BZUC for extension of fish farming in the fringe area of the reserve
- Facilitate BZMC / BZUC and CBOs to run projects / programs for fish farming promotion in the Buffer Zone
- Continue capture and fine policy for livestock grazing in the Reserve
- Initiate on site auction of feral cattle to control their population
- Recommend line department and ministry for making 'the issue of no fish ladder in Koshi Barrage' a transboundary meeting agenda
- Plant indigenous tree species along the wetlands for improving roosting and nesting for birds
- Maintain and restore wetlands of buffer zone in collaboration with CBOs and NGOs.
- Initiate the feasibility to establish fish ladder in the Koshi barrage
- Conduct cleaning with extraction of silt deposit of wetlands, oxbow lakes, waterholes, ponds, marshlands annually
- Conduct study on wetland vegetation to control invasive species such as Water hyacinth (*Eichhornia crassipes*) species

5.3.3 Fire Management

Issues

- Set fire occasionally by shepherds after thatch grass (*Kharkhadai)* cutting in spring season
- Inadequate fire fighting equipment
- Poor capacity of staff to control forest fire

Strategies

- Regulate buffer zone users including shepherd entry in the core area on various purpose
- Intensify patrolling in the core area in dry season
- Set up fire fighting equipment in the headquarter and in all guard posts
- Coordinate with regional training centre to provide fire fighting training to frontline staff

Activities

- Provide regulated grass cutting to buffer zone users once in a years before dry period
- Keep fire extinguisher equipment, set fire alarms in all guard posts including head quarter
- Set controlled fire in grassland to burn dry biomass
- Construct watch tower at vantage points of the Reserve

- Establish RRT for fire fighting works
- Launch awareness campaign in communities against fire hazard

5.3.4 Wildlife Health Management

Issues

- Often injured and wounded wild animals handed over to the Reserve office from communities and district forest offices
- Potential source for bird flu infestation/ transmission from migratory birds to residential birds /poultry and vice-versa
- Potential disease transmission from feral cattle / livestock to wild water buffaloes

Strategies

- Manage rescue centre for the region with veterinary services
- Coordinate with law enforcement agencies such as custom offices, Nepal police, Armed Police Force, District Administration Office including Regional Veterinary Directorate office and District Veterinary Service Office for prevention and control of Bird flu
- Establish surveillance system for accidental disease and death of birds
- Maintain healthy livestock population in the Buffer Zone

Activities

- Provide timely medication to wounded / injured wildlife
- Arrange diagnostic accessories, medicine, wildlife ambulance and dart gun in the rescue centre
- Assign and trained at least one veterinary technician to deal with wildlife disease
- Vaccination of livestock and culling of feral dogs in and around the Reserve
- Represent in Regional Bird flu control coordination committee, District Bird flu control coordination committee
- Arrange active surveillance and sample collection for diagnosis of bird flu infestation when bird flu noticed in the region
- Arrange health inspection for focal / indicator wildlife species
- Conduct regular weeding, debris cleaning and excavating siltation of wetlands
- Conduct further research on potential disease, parasite and pathogen that has potential effect on Wild water buffalo and other wildlife

5.3.5 Encroachment Management

Issues

- The land in the south of Reserve core leased to Koshi Project is cultivated by local people saying that they were deprived of getting compensation of their own land.
- The land in the north of Reserve core has been occupied by Koshi River flood victim people of Sunsari district and some encroachers from other districts as well.

- Between Badgama post and Pathari Sector office, around 105 bighas land in the core area has been encroached by 170 local inhabitants claiming that they have been living there before establishment of the Reserve
- All settlers are vulnerable to Koshi River flood and HWC

Strategies

- Form high level commission to identify types and nature of settlers and recommend further action for relocation
- Extend core area of the Reserve in the north and south part with appropriate compensation / relocation to elsewhere

Activities

- Survey illegal occupied land and settlers population
- Consult them to submit document for their claims
- Dialogue with settlers in coordination with BZMC / UC /other stakeholders for alternatives
- Recommend with alternatives to the Department and concerned agencies
- Facilitate IEE approval process for the extension
- Present extension proposal for policy decision
- Implement post extension project for execution of relocation programme

5.3.6 Climate Change Adaptation

Issue

- Inadequate knowledge and research on likely impact of climate change on species, ecosystems and human communities and their livelihood strategies
- Degradation of key resources such as grasslands because of repeated inundation and shifting river courses
- Disastrous effects on human communities and wildlife habitats from floods during the monsoon
- Formation and submergence of islands due to Koshi River course shifting that causes loss of wildlife habitats
- Changes in precipitation patterns impacting agricultural practices and productivity in the buffer zones
- High flood waters becomes the key barrier for mobility in the core zone
- Inundation and high waters limits mobility between certain communities
- Water scarcity for wildlife in some part of core area during extended dry spells
- Increased risks of forest fires due to extended dry spells
- Loss and degradation of wetlands adversely affected livelihoods of wetland dependent households

Strategy

- Strengthen research and knowledge base to support KTWR management in relation to climate change impacts on species, ecosystems and human communities

- Reduce existing threats to most climate vulnerable species such as turtles, crocodiles, Bengal florican and Fishing cats
- Maintain, conserve and secure connectivities to surrounding potential habitats
- Reduce climate vulnerabilities of local communities through community based disaster risk management
- Diversify and enhance local livelihoods and adaptive capaCITES of most vulnerable settlements around KTWR
- Improve small-scale community managed infrastructures to enhance efficiency and connectivity

Activities

- Control/ regulate grazing pressure in core areas to maintain/ enhance ecological integrity of grasslands which are highly vulnerable to climate change impacts
- Reduce existing threats that degrade habitat quality and exert additional pressure of vulnerable species under impacts of climate change
- Identify and secure potential connectivities and corridors to refugia sites for wildlife movements around KTWR
- Reforest degraded, climate vulnerable areas with fast-growing but climate resilient possibly native tree and plant species to create buffer against floods,
- Encourage establishment of forests and grazing lands in private and community lands to meet demands of fodder, fuelwood and forest products to reduce pressure in core area
- Undertake vulnerability assessments and adaptation planning in coordination with local bodies
- Build capacity of local youths as local resource persons or as citizen scientists to use them during monitoring of vulnerable species, ecosystem and habitat
- Introduce new crops varieties as adaptation interventions
- Provide support to develop and rehabilitate community infrastructure such as drinking water sources, bridges, trails, roads (rural roads connecting Jagatpur Bhagalpur) , health posts (Purandaha, Bhagalpur) and school (Sapta Koshi Secondary School) infrastructure such as Chandra irrigation canal,
- Ensure adequate measures in designing upcoming infrastructure such as park and security posts, community buildings, rural roads etc. and prevent unplanned settlements in environmentally sensitive areas and encourage resettlement away from prone zones
- Improve and introduce livestock breeds and strengthen veterinary services partnering with Government and private sectors while also training local cadres of village level livestock health workers
- Establish multipurpose community buildings to facilitate local community in the affected areas during flood disasters;
- Establish and strengthen community based disaster management committees and provide tools and equipment for disaster risk preparation (jackets, boats, tractors, belly bridge) around the most vulnerable settlements (Saptari: Bochi, Kamalpur, Pipraha, Jhankatta, Malkor, Bairawa, Sunsari: Jamuwa, Dharhara, Parti tol, Jhali, Sukrabare, Jhangad

tol, Bhutahakhal, Sri Lanka Tappu, Udayapur: Garaiya) and conduct flood rescue and preparedness trainings at large scale

- Renovate/ restore wetlands remaining within reserve area
- Construct and manage check dam in the village situated nearby the flooding river
- Create artificial highlands/ mounds leading to safe areas for wild animals during flood period as the elevation difference of reserve area is only 6 m
- Construct waterholes around water stressed areas
- Annual cleaning, excavation of silt deposition of oxbow lakes, marshland and riparian wetland
- Provide regulated access to wetland dependent households to use wetland resources

6 CHAPTER

Research, Monitoring and Capacity Building

Adequate understanding of socio-ecological systems within protected areas and buffer zones is of utmost importance to identify major threats and vulnerabilities for biodiversity conservation and community development and accordingly design effective management strategies. To ensure adequate research for use in conservation and management of the reserve, there is a need to collaborate with research and academic institutions in Nepal.

6.1 Research Priorities

As KTWR is primary habitat for Wild water buffaloes and an important bird area largely dependent on the changes in morphology of Koshi River, the research focus will be in areas related to the same along with fulfilling the past research gaps.

6.1.1 Issues

- Inadequate researches and regular monitoring of wildlife species
- Research and monitoring are limited to Wild Water buffaloes, Gangetic River Dolphin, Swamp francolin, Bengal florican
- Inadequate research on socio-economic impacts of conservation and tourism potentials
- Inadequate documentation-cum-library facility in the Reserve
- Inadequate facilities and equipment for researches and regular monitoring of wildlife species

6.1.2 Strategies

- Research plan formulation
- Integration of research in annual plans
- Collaboration with academic institutions and organization
- Develop monitoring protocol for major species and ecosystem
- Coordinate and collaborate with regional training centre for Reserve staff capacity building
- Infrastructure development of research

Priority thematic research areas:

Species

- Study on ecology and behaviour of small isolated Asian elephant population
- Status and threats of different fish species
- Status survey of Gangetic dolphin and its conservation threats
- Study success and failure of reintroduced Gharial crocodile
- Impacts of grazing on grasslands in relation to feral cattle

- Study on River course shifting, grassland ecology and habitat dynamics
- River diversion and its impact on wetland ecology
- Siltation of wetlands, land cover and habitat alteration
- Jackal abundance and the diversity of its prey species
- Feasibility study for introduction of One horned rhino and Swamp deer
- Feasibility study for reintroduction of Tiger and Gaur
- Genetic study of Wild water buffalo
- Impact of feral cattle and domestic buffaloes grazing on Wild water buffalo population
- Study the communicable diseases from livestock to Wild water buffalo
- Blue bull population status and crop depredation
- Population estimate of Spotted deer, Hog deer, wild boar and crop depredation
- Update and upgrade of flora and fauna of the Reserve
- Study the predation impact on fish farming by fishing cat, Mugger crocodile and Otter separately
- Study the feasibility of release of leopards for balancing prey species
- Impact of no fish ladder structure in Koshi barrage on aquatic fauna in the upstream
- Study population status of Swamp francolin, Bengal florican, Black stork, White stork, Vulture and their respective habitats
- Inter-relation of Bat population and keystone species
- Seasonal bird migration and habitat type use

Tourism

- Perception of visitors about the tourism facilities and the reserve
- Potential tourism products and their packaging
- Hoteliers aspiration and available services from the reserve
- Potential of homestay for promotion of nature-based tourism
- Marketing strategy for target visitors for ecotourism promotion

Livelihood

- Perception and limitation of stall fed livestock husbandry instead of open grazing
- Wetland types, their status and local community dependency in the buffer zone
- Ethnic community involvement in fish farming in the buffer zone and their contribution to reduce fishing in Koshi River
- Explore alternatives for wetland dependent households
- Potential income generation activities for marginalized buffer zone communities

6.2 Monitoring

Species

- Periodic monitoring of Wild water buffalo using direct count method in different strata periodically
- Periodic Wild elephant monitoring
- Annual monitoring of migratory water bird

- Periodic reptiles monitoring (monitor lizard, crocodile, python and tortoise)
- Annual Dolphin monitoring
- Periodic monitoring of aquatic and indicator species (fishes, molluscs)
- Periodic monitoring of overall conservation status of the Reserve using METT
- Periodic threatened bird monitoring (Bengal florican, Lesser florican, Vulture, Swamp francolin, Black stork, White stork)

Habitat

- Periodic grassland monitoring
- Periodic wetland monitoring
- Periodic forest cover monitoring

Wildlife health monitoring has been mentioned in section chapter 5.3.4

River

- Periodic monitoring of Koshi River channel shifting, formation of oxbow lakes, submergence of terrestrial habitat, and water quality

Tourism

- Periodic monitoring of tourism impact on ecological and social environment
- Periodic monitoring of impact of human wildlife interaction on socioeconomic of Buffer zone community

6.3 Capacity Building

- Conduct annual sharing and team building workshop
- Provide training to mid-level staff on procedural law
- Provide training to mid-level technical staff on wildlife monitoring and handling techniques, GPS, GIS, SMART, and habitat monitoring
- Provide training to rangers on anti-poaching operation
- Provide training to frontline staff on fire fighting, SMART patrol, anti-poaching, field techniques on sign and indirect evidence of wildlife
- Provide basic training to field level staff on wildlife health
- Provide veterinary care and treatment training to veterinary assistant
- Provide social mobilization and participatory planning training to staff
- Provide training to rangers and officers on CITES Act implementation
- Provide exposure visit to Rangers and Officers to other protected areas
- Provide refresher training to Hattisar Staff on elephant mobilization, tourism hospitality, elephant healthcare, elephant patrol
- Provide conservation awareness training to BZUGs, BZUCs and BZMC members
- Provide leadership training to BZUCs and BZMCs members
- Provide account and record keeping training to BZUCs and BZMCs members

Species Conservation Special Programme

7
CHAPTER

7.1 Wild Water Buffalo (*Bubalus arnee*) Conservation

Status

IUCN- Endangered, CITES -Appendix III, NPWC Act protected species

The Wild Water Buffalo *Bubalus arnee* (Kerr, 1792) also known as Arna in Nepali, is a robust animal, believed to be distributed in Europe and southern Asia in the Pleistocene age, but was later restricted to the Indian subcontinent and Southeast Asia (Khatri et.al, 2012). At present, the Asiatic Wild Water Buffalo occurs in India, Nepal, Bhutan, Myanmar, Thailand and Cambodia (Khatri et.al, 2012). In Nepal, this species are restricted to Reserve (KTWR) only. To establish second viable population, 13 Wild Water Buffalo (10 F, 3 M) were translocated to Chitwan National Park from Jan 27- Feb 7, 2017.

In Nepal it has been accorded the highest degree of protection under National Parks and Wildlife Conservation Act, 1973. Outside Nepal, Wild Water Buffalo is legally protected in Bhutan, India and Thailand. Recent census conducted in 2018 recorded 441 individuals with 191 adult females. The population is in increasing trend since the Reserve establishment from 63 in 1976 (Annex 14). This species occasionally moves into adjoining areas in the buffer zone in Saptari, Sunsari and Udaypur districts on either side of Koshi River of the reserve. The global population of Wild Water Buffalo is estimated to be less than 4,000 individuals.

Significance: Source population occurs only in the reserve in Nepal.

Conservation Efforts:

Protection of its prime habitat has been ensured through security strengthening by army deployment in the posts and regular patrolling. Sweep operation and intelligence based patrolling has been carried out to control grazing of domestic buffaloes in its habitat. Monitoring and population census has been conducted periodically to update its status.

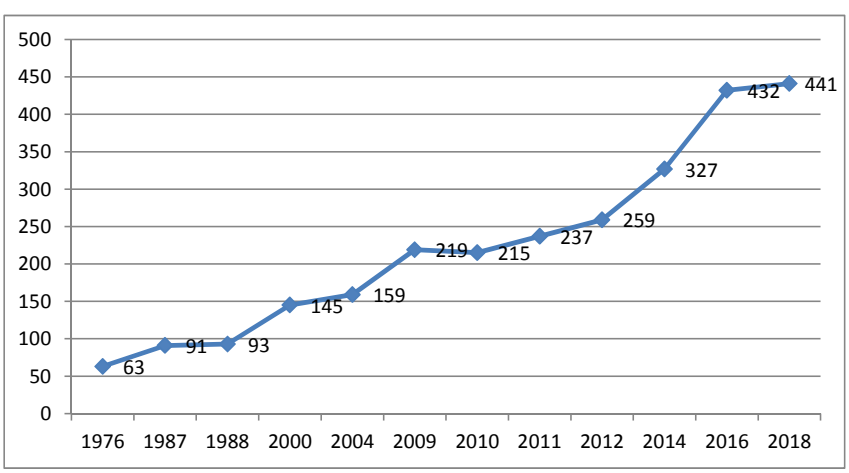

Figure 9 Population trend of Wild Water Buffalo

Issues

- Cross breeding with domestic buffaloes and genetic erosion
- Habitat degradation due to high rate of sedimentation by Koshi River flood and invasive species
- Food competition with feral cattle and livestock
- Potential disease and parasite transmission from livestock
- Retaliatory killing because of human wildlife conflicts
- Koshi River flood hazard is potential threats to its habitat, food supply and existence
- Proposed Koshi High Dam

Strategies

- Collaborate with academic institution for genetic study and potential disease
- Design project for advance genetic study to differentiate between Wild water buffalo and domestic buffalo
- Translocation and introduction of new breed from Assam, India
- Apply invasive species control measures
- Devise regulation to control feral cattle and livestock
- Establish surveillance system of disease and accidental death
- Awareness and law enforcement to deal with Human Wildlife Conflict (HWC)

Activities

- Manage grassland habitat with various treatments (uprooting, cutting, burning, ploughing) to control invasive species and palatable species cropping
- Conduct stakeholders meetings to include provisions in the regulation for livestock control in the reserve
- Conduct awareness campaign to mitigate HAC
- Construct power fence in problem area to restrict Wild water buffaloes in the reserve
- Conduct population census in every four year interval
- Conduct feasibility study to translocate to other suitable habitat of protected areas in Terai region

7.2 Dolphin *(Platanista gangetica)*

IUCN - Endangered, CITES - Appendix I, NPWC Act protected species

Status: It is a charismatic species restricted to the Koshi, Geruwa, Mohana and Narayani river systems. Distribution outside Nepal is in Bangladesh and India. The Sapta Koshi River has the highest number of fresh water dolphins and is likely the largest sub-population in the country. Khatri et al. (2010) observed 11 dolphins along the length of the Koshi River after a devastating flood in 2008. Similarly, Limbu & Subba (2011) counted 11 dolphins in the Koshi River during the same period. The maximum observed number in the south of Koshi barrage reported was 14 (KTWR, 2016). However, all of the individuals were counted in the southern section of the river (on the Nepal/India border) and none were detected in the northern segments. Dams are known to serve as barriers to movement for river dolphins (Smith et al. 1998, Dudgeon et al. 2006). Furthermore, the southern extent of the Koshi population is connected to the Indian population so individuals can emigrate and disperse to India and possibly

be lost from the Nepalese population. Even as the largest sub-population in Nepal, Dolphins of Sapta Koshi are not likely a genetically viable population without immigration from India and potential translocations of individuals (Smith et al. 1998, Zheng et al. 2005).

Significance

Prime habitat for the highest population in Nepal

Conservation Efforts

Periodic monitoring has been conducted. Surveillance of the Koshi barrage area, its critical habitat, is being carried out to deter poaching. Coordination with district administrative authority has been maintained to implement the ban of fishing on either side of Koshi barrage.

Issue

- Over fishing
- Sand mining
- Accidental killing by entrapping in fishing net
- No proper pathways in the barrage for aquatic life for upstream-downstream movement

Strategies

- Bring the Koshi barrage area within reserve jurisdiction to regulate fishing and related activities
- Plan survey and monitoring
- Impose ban on sand mining
- Implement law enforcement strictly against accidental killing by fishing activities

Activities

- Conduct standardised dolphin surveys in potential sites of Koshi river
- Make an agenda for the trans-boundary meeting with India for safe upstream movement of dolphin
- Form river dependent community group
- Conduct awareness programmes targeting river depenent community
- Provide alternative livelihood programmes to river dependent community
- Strictly prohibit anthropogenic activities in dolphin bearing Koshi barrage area

7.3 Bengal florican (*Houbaropsis bengalensis*)

Status

IUCN - Critically endangered, CITES - Appendix I, NPWC Act protected species

It is a habitat specialist, preferring alluvial grasslands especially observed in short *Imperata saccharum* patches. Male prefers moist, short, pure grassland 15–35 cm tall and females prefer moist grassland >110 cm tall (Doddy et al.2016) that requires for displaying. Study has revealed that, whilst burned grassland is selected by males during the breeding season, unburned grassland and other habitats

providing cover are selected by females, demonstrating the need for management that provides a variety of habitats (Gray et al. 2009 in BLI 2015).

The species has two distinct populations, one in the Indian Subcontinent, the other in South-East Asia (BirdLife International 2001). The former occurs from Uttar Pradesh, India, through the terai of Nepal, to Assam and Arunachal Pradesh, India, and historically to Bangladesh.

In this reserve, in 2011 Bengal Florican made a come-back, estimated 12 pairs at nine sites along a 39 km north-south stretch of the Koshi River, most birds (five to nine pairs) were recorded inside the Reserve, with only five individuals were found outside the reserve (Baral *et al*. 2012), and a further survey in April and May 2012 counted 47 birds. This represents the largest known population in Nepal, and perhaps the most densely populated area in the Indian subcontinent (Baral *et. al.* 2013 cited in Inskipp *et al.,* 2016, BirdLife International, 2015). Habitat specialists such as Bengal florican which have a narrow distribution are highly vulnerable to climate change impacts.

Significance

Prime habitat for the largest population in Nepal

Conservation Efforts

Saccharum imperata patches has been managed to maintain suitable short grasses. Conservation awareness programmes has been conducted to instill its importance among community. Population survey has been carried out in five year interval and monitoring has been carried out to assess its abundance in two year interval. Six birds were satellite-tagged so that conservationists were able to identify important areas for the species and propose suitable management regimes within the reserve where the floricans breed (Barber 2015, BirdLife International 2015).

Issues

- Habitat alteration
- Grazing pressure in its habitat during breeding time
- Fishermen movement through its habitat
- Feral dog predation
- Forest fire

Strategy

- Habitat management considering differential need of male and female in breeding, and non-breeding season
- Impose strict grazing regulation and awareness raising to shepherd and fisherman to save nest from trampling and setting fire
- Policy recommendation to kill feral dogs

Activities

- Manage grassland in blocks with combination of different treatments (cutting, burning, uprooting invasive spp, no treatment on purpose) periodically
- Conduct patrolling and sweep operation targeting to prime habitat regularly
- Conduct awareness program against grazing, unintentional trampling of nest in florican prime habitat and fire

- Permit buffer zone community for thatch grass cutting before onset of dry period
- Kill feral dogs, if found inside the reserve
- Promote grassland conservation awareness initiatives
- Prepare guideline to impose a strict ban on anthropogenic activities that have negative impacts on floricans
- Exchange best practices for conservation of bustards across Asia
- Promote community managed grasslands

7.4 Gharial Crocodile (*Gavialis gangeticus*)

Status

IUCN-Critically endangered, CITES - Appendix I, NPWC Act protected species

Gharial was once abundant in the Koshi River (Shortt, 1921) but the natural population has now been reported as extinct (Maskey 2008, Goit & Basnet 2011, Baral & Shah, 2013). The drastic decline of Gharial population in Nepal over the last 60 years (three generations for the gharial) could be attributed to a variety of causes including hunting for skins and trophies, egg collection for consumption, killing for indigenous medicine, and killing by fishermen (Biswas, 1970 and Whitaker, 1975), destruction of basking and nesting habitats, failure of eggs and hatchlings as a result of heavy flooding, accidental killing by trapping in gill nets, food shortage (due to illegal fishing and wildlife poaching), downstream migration and anthropogenic disturbances are believed to be responsible for the extinction of Gharial in the area (Paudel *et al.,* 2015b). While hunting is no longer considered to be a significant threat, the construction of dams, barrages, irrigation canals, siltation, changes in river course, artificial embankments, sand-mining, riparian agriculture, and domestic and feral livestock have combined to cause an extreme limitation to gharial range. Irrigation projects are some examples. These threats have not ceased, indeed have increased and continued to compromise the survival of the species. Gharial decline has gone hand in hand with the decline of other riverine taxa once reportedly abundant and now endangered including the Ganges River Dolphin (*Platanista gangetica*), numerous waterfowl and fish species (Chaudhary *et al.,* 2007). The construction of dams without adequate upstream and downstream fish pathways impedes seasonal migratory routes of fish, crocodiles and other aquatic animals (Shrestha, 1989). Crocodile juveniles and hatchlings are flushed below the barrage that cannot return during the post monsoon season and thus, usually perish (Whitaker & Andrews, 2003).

It could be assumed that high rate of siltation in Koshi River, frequent River course change, overfishing in Koshi River, Koshi barrage without upstream-downstream movement pathways for aquatic fauna are the major factors that could wipe out of Gharial from Koshi River system. Further, Gharial is highly vulnerable to climate change as it is narrowly distributed, sensitive to changes in temperature and seasonal triggers.

Significance

Reported to be locally exterminated from Koshi River

Conservation effort

Gharials were first reintroduced in the Koshi River in 1983 (Maskey 1984). Forty-two (42) individuals were reintroduced in Koshi River in 1983 and 1987. Ten Gharials were reintroduced in Koshi River in 2010 (Pradhan, 2016).

Issues

- Absence of suitable structure in Koshi barrage for upstream migration of aquatic fauna
- High anthropogenic disturbance in Koshi River
- Overfishing in Koshi River

Strategies

- Policy recommendation for the construction of suitable pathway for upstream migration in Koshi Barrage
- Regulate fishing in certain specified River section only
- Develop alternative livelihood options for wetland dependent community
- Reintroduce Gharial crocodile set with satellite transmitter in Koshi River

Activities

- Make an agenda for trans-boundary meeting with India about structure in Koshi barrage
- Grant permission for fishing to only traditional fishing family
- Impose ban on fishing during spawning period
- Define fishing zone in Koshi River
- Encourage wetland dependent family to construct alternative fish ponds by providing subsidy and technical knowhow
- Establish Gharial breeding centre considering water resource and fish abundance
- Introduce Gharial crocodile and fix satellite tagging for their monitoring
- Study limiting factors for Gharial survival
- Aware river dependent community about Gharial conservation value
- Link river dependent community with Gharial conservation program

7.5 Swamp francolin (*Francolin gularis*)

Status

IUCN- Vulnerable, CITES - Appendix I, Not included in NPWC Act, 2029 protected list

The Reserve is one of the global strongholds for Swamp Francolin and may have the highest concentration of the species of any protected area in Nepal. It is endemic to the Indian sub-continent being found in India, Nepal and Bangladesh. Its distribution is restricted to the low lying terai belt that lies between the Himalayan foothills to the north and the Indo-gangetic plain to the south (Ali and Ripley, 1983). It is threatened with extinction mainly because of habitat degradation and loss (BLI, 2001 and Dahal, 2009).

This species was once presumably found throughout the terai belt of Nepal but its range is now restricted to Suklaphanta National Park, Bardia National Park and Koshi Tappu Wildlife Reserve. Its estimated population was found to be 77 by call records and 33 by direct count in the Reserve (KTWR, 2010). Waterlogged situation and seepage water along the eastern and western afflux bund creates suitable habitat for the species. The species generally found inhabiting swampy grassland, dense shrubby area and tall moist grassland in clear patches within 250 m of water source. The species tolerates low-intensity grazing area but avoids moderately and heavily grazed area. However, as the species is reliant on different habitats in different seasons, deterioration in the quality or extent of either of these could

have a serious impact on the species (Dahal *et al*., 2009). As the species has a narrow distribution in the area is highly dependent on swampy areas during breeding seasons, it could be severely affected by climate change impacts in the form of prolonged droughts or deterioration of these areas by other man made causes.

Significance

The largest population in Nepal

Conservation Efforts

Periodic count and monitoring has been carried out and protection of its habitat has been ensured by regulating flood fighting and anti erosion works of Koshi project along the eastern afflux bund. Grazing of livestock has been strictly prohibited in its prime habitat.

Issues

- Habitat destruction due to anti-erosion and flood fighting activities of Koshi project
- Nest trampling and egg destruction by annual clearance of bush along afflux bund and spur for visibility
- Mobility of large number of people through its prime habitat in the nesting and breeding season to deal with Koshi River flood hazard
- Loss of swampy area during dry season

Strategies

- Define prime habitat zone
- Regulate people mobility particularly in the nesting and breeding season
- Study its population status and habitat ecology
- Maintain waterlogged in the prime habitat

Activities

- Impose restriction or limit people movement in the nesting and breeding habitat
- Survey and monitor species annually
- Irrigate prime habitat during dry period to make swampy situation
- Conduct feasibility study for translocations to other protected areas in the west eg. Chitwan National Park.

7.6 Turtle Species

Status

IUCN- Vulnerable, CITES - Appendix I, Not included in NPWC Act, 2029 protected list

Turtles are fascinating and shy creatures with possession of typical upper and lower shells (carapace and plastron respectively) that exist on earth for more than 200 million years. Unfortunately, these animals are amongst the most ignored species in Nepal. Turtles have immense ecological importance with aesthetic value as well as spiritual significance in Oriental region. According to the latest checklist forwarded by ARCO-Nepal, altogether there are total of 18 potentially occurring species (few species

are to be confirmed with voucher specimen). All turtles occurring in Nepal are included under three family; Testudinidae (1 sp.), Geoemydidae (13 spp.) and Trionychidae (4 spp.). However, 10 species of all 18 potentially occurring species are regarded as globally threatened by IUCN (Critically Endangered, Endangered, or Vulnerable).

The large flood plains, varied wetlands and seasonal marshy lands are suitable habitats for terrapins and softshells. Likewise, the adjacent forest in the northern parts of Koshi is a natural habitat of land dwelling tortoises. Nine (9) species of turtles; *Melanochelys tricarinata*, *M. trijuga*, *Pangshura flaviventer*, *P. smithii smithii*, *P. tentoria circumdata*, *Nilssonia hurum*, *N. gangetica*, *Lissemys punctata* and *Chitra indica* have been confirmed from the Reserve (Kastle, *et al*., 2013).

Numerically, the occurrence of turtles in Koshi River is exactly half (50%) of Nepal's overall turtle species found and hence Koshi River can be entitled as hotspot for turtles.

The illegal collection of turtles and degradation of their natural habitat by drying of wetlands, human disturbance, and frequent Koshi River flood are the prime causes of decreasing turtle population in the reserve area.

Significance

- Hotspot for turtle in Nepal

Conservation efforts

- Despite regular law enforcement to protect reserve area, focused efforts have neither been planned and nor implemented for conservation of turtle and tortoise in the reserve.

Issue

- Inadequate study and documentation of turtle species in the area
- Illegal trade for protein and rearing in aquarium
- Habitat degradation
- Anthropogenic activities in its prime habitat

Strategies

- Implement International Trade in Endangered Wildlife and Plant Control Act, 2074 strictly
- Recommend making a guideline for regulation of anthropogenic activities
- Study population and habitat ecology

Activities

- Survey and monitor annually
- Make a guideline for do's don'ts in its prime habitat
- Regular patrol fish marketplace to control poaching and illegal trade

7.7 Fishing Cat *(Prionailurus viverrinus)*

Status

IUCN- Vulnerable, CITES - Appendix I, not included in NPWC Act, 2029 list

The Fishing Cat (*Prionailurus viverrinus*) is a medium-sized wild cat of South and Southeast Asia. It is listed as Vulnerable on the IUCN Red List in 2006. It lives in the vicinity of wetlands, along rivers, streams, oxbow lakes, and in swamps. The fishing cat is broadly but discontinuously distributed in Asia, and is primarily found in the Terai region of the Himalayan foothills in Nepal, India, Bangladesh and Sri Lanka. Fishing cat populations are threatened by destruction of wetlands over the last decade.

Fishing Cat is known to occur within all the protected areas of the Terai. It is frequently sighted in the eastern side of the reserve. Population estimation found to be 8 – 13 cats using camera trap method in the potential fish ponds out of 260 fish ponds in the fringe area of the reserve along eastern afflux bund in 2016. The main likely threats are human disturbance at den sites and breeding areas, deterioration of wetland and riparian habitat, overfishing in wetlands and Koshi River within the reserve and direct persecution from fish farming and poultry husbandry households. As the species is closely associated with water bodies and marshlands, it is highly vulnerable to extended dry spells and changes in water bodies. Further, habitat specialist and rare species such as Fishing cats with limited distribution are under greater risks of climate change.

Significance

- The prime habitat in Nepal

Conservation Efforts

Survey has been carried out using camera traps and pugmark in 2011-2014 and using camera traps in 2016-2017. Fishing in the wetlands and Koshi River is regulated and strictly prohibited in fish spawning season. Human disturbance at potential den sites and breeding areas is minimized by intensive patrolling and imposing cash fine to trespassers.

Issues

- Disturbance and destruction of habitat due to anti erosion and flood fighting activities of Koshi project
- Granting permission for fishing in the Koshi River
- Human fishing cat conflicts

Strategies

- Define prime habitat zone and regulate Koshi project works
- Regulate people mobility particularly in breeding season
- Reduce number of households granting fishing licences with alternative livelihood options
- Develop wetlands for fishing cat in the reserve

Activities

- Study its population status and habitat ecology
- Survey and monitor species at two year interval
- Make BZCFs construct fish ponds in the potential community forest areas
- Form fishing groups as sub-committee under buffer zone user committee
- Link fishing groups to the community fish ponds
- Provide alternative income generation activities to the fishing households
- Provide fishing cat conservation awareness program targeted to fishing community

8 CHAPTER

Eco-tourism and Interpretation

8.1 Background

Ecotourism generates direct or indirect income through the consumption of local products and creating employment opportunities for the local community. Ecotourism can uplift the socio- economic conditions of local people and when people have a good living standard they depend less on the natural resources. Local biodiversity will therefore be conserved (Goit & Basnet, 2011).

Wildlife particularly birds, Wild water buffaloes, Dolphin, Fishing cat, deer species, Indian rock python, Golden monitor lizard, landscape scenic beauty, Kamal Dah, Koshi River flood plain are the major tourism attractions in this reserve. In its buffer zone and surrounding areas, many important religious sites such as *Chhinnamasta* temple and *Kankalini* temple in Saptari district, *Ramdhuni* religious forest, *Barahakshetra*, *Chatara Dham*, *Budhasubba*, *Dantakali* and *Pindeswor* temple in Sunsari district are famous for pilgrimage and attractions for travelers. The *Chandra* canal in Saptari district is the oldest canal in Nepal which has historical as well as educational value for engineering students. In addition, the reserve would be developed as the destination for bird watching tourism, stated in FY 2067/68 BS budget speech.

Tourism Scenario

Nature-based tourism in this reserve was started during early 1990s with the establishment of Koshi Tappu Wildlife Camp in Prakashpur village. This tented camp initially welcomed visitor for bird watching. Later, Koshi Camp at Madhuvan marketed the reserve as the paradise for birds. In addition, Koshi Bird village camp at Prakashpur, Aqua Bird unlimited camp and Koshi Tappu Bird watching camp at Paschim Kushaha provide services to visitors. The hotels are offering Elephant safari, Jeep Safari, Jungle walk, Cultural dance, Bird watching. They altogether have the capacity to serve more than 50 visitors. However, they are not operating in rainy season and none of the hotels can serves group of 40-50 persons separately. In recent years, few family of buffer zone have been started Homestay in Paschim Kushaha and Prakashpur to serve tourists (Annex 15). Provisions are available in Prakaspur, Madhuban, Bhagalpur, Kanchanpur and Fattepur in the buffer zone. Quality hotels are located in the city such as in Biratnagar, Itahari, Inaruwa, Rajbiraj and Fattepur.

Figure 10 Tourist trend from 2056/57 to 2073/74

For last five years, number of visitors has been constantly increasing. Overall peace and security and political stability in the country and the coming up local level development will further contribute the upsurge of tourist in the reserve.

The breakdown of the total tourists in number to SAARC and other international visitors do not add up to more than five percent but respective contribution in revenue ranges from 27- 52% (Annex 10) except from the fee paid for vehicle entry.

Interpretation Facilities

One museum has been maintained in the reserve headquarter which has reserve mural, wildlife trophy, indigenous people attire, topo map. Tourist entrance has been regulated from three post including office headquarter where informative leaflet of the reserve is distributed to the visitors. Sign posts and hoarding board along the highway and eastern afflux bund has been erected for dissemination of key information to general travelers. 17 registered nature guides, most of them provide services to the tourist in the eastern part of the reserve.

8.2 Tourism Management

8.2.1 Institutional Setup

Few hotels and homestays are in operation in the Sunsari district area of the reserve. There is visitor information center in office and five domestic elephants are housed. Of the total 5 elephants, 3 are available for the tourists for ride on demand. Hotels are not yet equipped with elephant as this does not seems to a popular demand from the international visitors.

8.2.2 Impact Minimization

There does not seem to be over crowd of the international visitors as the total of 5% of the 9 thousand spread over few months in Khushaha-Madhuban would not impact high pressure in the environment. Hotels are spaced and located in the buffer zone in local setting.

The crowd of Nepali students and picnicker may rise in number, mostly during the school's winter vacation period outside the reserve and the area near Koshi barrage.

8.2.3 Tourism Product Diversification

Few additional attractions such as short segment boat ride in Paschim Kushaha, Prakashpur, Haripur, and Madhuban may be added.

8.2.4 Nature Interpretation

Nature guide training and their refresher training have been conducted to produce local guides for the visitor. Normally, Nepali visitors do not hire guide to travel in and around the reserve. There is great need of initiating both guides and the organized Nepali visitors to use the guide as nature interpreters for visitor center, elephant camp visit and visit to the reserve.

Issues

- Poor infrastructure facilities in the western part for tourism
- Inadequate interpretation facility

- Poor capacity of hotels and homestay operators
    - very limited activities and facilities to extend tourist stay
    - no infrastructure to accommodate a group or people for seminar, workshop, training, social events, picnic, educational tour
    - poor facilities for boating, canoeing, rafting
    - no hotel provide services in all season
    - poor interest of tourism entrepreneurs
- No institutional networking of tourism entrepreneurs
- Only bird-centric foreign tourists
- Poor infrastructure for bird watching
- Poor culture of hospitality of local community
- Decling birdlife

Strategies

- Develop the reserve as a centre for avitourism in Nepal
- Plan tourism infrastructure development
- Develop modern technology based interpretation facility
- Motivate entrepreneurs following supply driven policy for tourism business
- Develop and diversify tourism products
- Devise community awareness policy

Activities

- Construct trail, bridge, upgrade forest road, guiding signage, shed house for get off and get on
- Construct infrastructure (birdhide at top of tower with high range telescope) at potential sites for bird watching
- Construct interpretation centre, produce informative leaflets, update and upgrade website
- Organize workshop, seminar for promotion of ecotourism business at different level
- Construct basic infrastructure (ticket counter, waiting room, display centre) at various potential sites of the reserve for tourism
- Launch awareness programs through buffer zone institutions for tourism promotion
- Establish Gharial crocodile breeding centre to provide additional tourism products

8.2.5 Communication Facility

A base transmission station (BTS) tower for better communication has been under construction within the premise of the Reserve headquarters. Likewise additional two communication tower – one in Pathari sector and another in Bhagalpur Range post are essential to cover most of the Reserve area with communication network.

8.2.6 Entrance Regulation

Presently, visitor entry in the Reserve is regulated from three places in the eastern part of the Reserve, namely Reserve headquarter, Prakashpur Range Post, Haripur Post. To develop tourism activities in the western part, three entrance gates – 1. Pathari sector, Saptari district 2. Badgama Post, Saptari district 3. Bhagalpur Range Post, Udaypur district, will be opened.

Special Programme

9
CHAPTER

9.1 Extension of Reserve and Buffer zone

The ecological continuity of the terrestrial ecosystem towards north-west and aquatic continuity towards north and south provides opportunity to increase the habitat of large area demanding species such as wild elephant and gaur. Gaur, which may have been restricted to the churia of Udayapur district, can be linked with the Northern part of the reserve through Belka Forest. It is shown that Gaur usually comes down to lowland area during late winter and early summer in search of water and fresh grass. Wildlife movement can be enhanced by the extension of the reserve to link the forest habitat of Churia of Udayapur district and improving the habitat. The tiger, which used to roam in this area in the past, may have disappeared due to combined effect of prey loss, hunting and reserve size.

The reserve is the smallest of all protected area in the country with no forest connectivity beyond reserve boundary. Endangered fresh water dolphin (*Gangetica platinista*) reside presently out of reserve jurisdiction at downstream of Koshi Barrage. Illegal settlers at north and south of the reserve in the flood plain of Koshi River is one of the major causing factors for long standing illegal livestock grazing problem in the reserve. Moreover, small reserve area with smallest forest habitat has become limiting factor for wild elephant conservation and face challenge to contain increased wild water buffalo population. As a result, human wildlife (wild elephant, wild water buffalo, wild boar, bluebull) conflicts have been escalating for last 3-4 years.

In this context, the Department of National Parks and Wildlife Conservation formed a nine member's feasibility study team for the extension of the reserve area. Field visit of the reserve was carried out by the team to understand its biophysical attributes, social context and landscape from 2071/10/22 to 2071/10/29. During the period, the team consulted with buffer zone community as well. The then ecologist of the Department, the Coordinator of the study team submitted feasibility report on 2071/11/08 with following recommendation:

Extension of reserve area in the south and north is necessary for biodiversity conservation and maintain its integrity. Forests in *Tapeswori, Triyuga* and *Ramdhuni* need to be developed as biological corridor for wildlife. The settlers in the north and south need to be relocated elsewhere with appropriate compensation. The positive aspects for the extension mentioned in the report – islands are prime habitat and refuse for wildlife during Koshi flood; extension area is *ailani* land facing encroachment; settlements in the islands are at risk of Koshi flood; extension will stop further encroachment; study relocate settlement at safe location; maintain corridor and connectivity with churia forest.

According to feasibility study report, the area for the extension surveyed and report submitted to the Department of National Parks and Wildlife Conservation in 2016 for extension process. In the report, the area in the north up to Chatara Bridge and in the south up to Koshi Barrage has been proposed for reserve core area and buffer zone will be extended to accommodate dolphin prime habitat at the south of Koshi Barrage. After extension as per submitted report, the reserve core area will become 319 sq.km. and buffer zone will be 205.6 sq.km.

Issues

- Reserve size too small to hold mega species such as wild elephant, gaur and large carnivore such as tiger
- Local people highly reluctant for the extension of the reserve area

Strategies

- Continue dialogue with different socio-political institutions and local stakeholders to broaden the understanding of the reserve extension
- Initiate pilot program in the buffer zone to link them with conservation benefits
- Establish the baseline information for community livelihood and biodiversity conservation perspectives

Activities

- Proceed extension process
- Follow the development of the proposal to study the details of the reserve extension to prepare the communities in favour of the reserve extension
- Carry out mass meeting through the local units, CBOs, media interaction about the importance of the reserve extension and biodiversity conservation
- Establish the buffer zone boundary in the extended area
- Form BZUGs and BZUCs in the extended buffer zone
- Conduct pilot activities related to buffer zone and biodiversity conservation
- Conduct the baseline status of gaur, carnivore prey species and baseline of the socio-political parameters
- Design long term project based on pilot program findings for mainstreaming buffer zone community for conservation

9.2. Wild Elephant Conservation and Human Elephant Conflict Mitigation

Wild elephant has become one of the flagship species of the Reserve. Until a decade ago, elephant herd used to migrate to the Reserve from India through the eastern part of Nepal. But, for last 10 years, migration of elephant herd to this Reserve has not been recorded possibly due to destruction of forest corridor which served as their migratory route.

Observation of Reserve officials shows that since 2065/66 BS, 10 – 12 individuals of immigrated elephants have become residential in the reserve. This small and isolated population is not found to move to other area far away from the Reserve/Buffer Zone and no new herd is seen to meet this sub population. Elephant, being a large mammal requires habitat as large as 200-600 sq.km whereas total core area of the Reserve is only 175 sq. km with largely unpalatable riverine tree species for elephant such as *Khair* and *Sissoo* and Buffer Zone is 173 sq.km. with only 150 ha community forest with *Sissoo* as dominant species. Human dominated land use, especially agriculture encircles the Reserve with no corridor and connectivity with Churia or other forest area. Inadequate forage and space in the Reserve enforce these elephants to raid cereal crops in the Buffer Zone and break down houses mainly to eat stored grain specially the rice. Thus, long term survival of this isolated population of elephant is of great concern to the Reserve authority and the conservation community.

As the reserve is inhabited by resident sub-population of elephants, human-elephant conflict (HEC) cases are increasing day by day in recent years. In FY 2073/74, there were 311 number of HEC cases

including 5 human death. In retaliation, an elephant was killed by electrocution on 2070/11/15. The consequences of HEC have emerged as key conservation concern and major socio-economic issue for Buffer Zone Community.

For long-term conservation of elephant, the habitat conservation and mitigation of conflict is paramount. The existing relief process and formality will require time to reach to the affected people and delay in the process will worsen the people's level of tolerance. Currently, a range of traditional methods such as erection of solar power fence at vulnerable sites, chasing by making noise of vehicle, showing fire, darting with medicine are being applied to prevent HEC. Despite these combined efforts, incidence of HEC is in increasing trend. Spontaneous response is not possible, as the time and place of possible HEC is unpredictable.

Issues

- Too small forest cover for food and shelter for wild elephant in the reserve
- Increasing human elephant conflict (HEC)
- Lengthy process for release of wildlife victims' relief amount

Strategies

- Explore alternative cropping practices that would be unpalatable for wild elephants
- Sensitize local people about wild elephant zone and precaution measures
- Policy recommendation to simplify relief release process
- Establish an operational mechanism to chase elephants back to the Reserve core area, if they move into the Buffer Zone

Activities

- Study about the conservation of small isolated sub-populations
- Set satellite radio collar to problem animals that causes frequent human casualties and damage property
- Establish HEC surveillance and monitor unit equiped with vehicle, GPS, camera, computer, internet facilities, HEC database keeping
- Monitor the movement of problem wild elephant using satellite radio collar
- Pilot alternative crop in the buffer zone
- Increase amount of relief fund in each BZUC for quick relief to be reimbursed later from the government
- Aware community people for precautionary measures to safe from elephant
- Provide orientation training to Reserve staff to tackle wild elephant
- Conduct coordination meeting with BZMC and BZUC to deal with wild elephant

9.3. Control Feral Cattle and Illegal Livestock Grazing

Local people used to graze their livestock in the islands of Koshi River flood plain for time immemorial. Once reserve declared, some of those cattle and buffaloes remained there and become feral for generations. In addition, cattle and domestic buffaloes have been illegally infiltrating in the reserve area during Koshi River flood time. Thousands of livestock have been grazing in the south and north of the reserve in the adjoining buffer zone. Other thousands of livestock have been grazing in the western afflux bund up to Triyuga River in the reserve on the basis of understanding made between local people

and reserve office. Cattle and buffaloes grazing inside reserve causes habitat degradation, scarcity of forage for wildlife, likely transmission of diseases from livestock to wildlife, genetic erosion of wild water buffaloes because of crossbreeding with domestic buffaloes. Moreover, it is hard to control other illegal activities in the reserve due to continued practice of illegal grazing and unclaimed feral cattle grazing inside reserve. Efforts to control illegal grazing by capture and fine have been proved ineffective.

Issues

- Population of unclaimed feral cattle in the reserve increasing day by day without controlling methods
- Infiltration of livestock grazing from south and north of the reserve particularly in rainy season when patrolling is hard due to Koshi River flood
- Practice of large number of unproductive cattle rearing by buffer zone community traditionally

Strategies

- Devise implementable legal provision to address the issues
- Extend and strengthen protection measures particularly in the south and north of the reserve
- Strengthen security measures at strategic locations
- Design project for improved livestock husbandry

Activities

- Construct guard post in the south of the reserve and deploy security force
- Extend and strengthen patrolling with means (motorboat, life jacket, elephants) during rainy season
- Recommend for legal provisions to address illegal grazing specifically
- Collect and collate socioeconomic information of target buffer zone community
- Pilot improved livestock farming project

9.4 Livelihood Program for Wetland Dependent Households

Context

There are scattered populations of wetland dependent households in the buffer zone. They are about 13 percent of the total population of buffer zone people and belong to *malaha, majhi, mushar, jhangad, bantar* ethnic community. Traditionally, they are dependent on wetland resources for living. They have been permitting regulated fishing in the core area of the reserve. Nowadays, it is hard to sustain livelihood by fishing in the River as fish abundance is drastically going to decrease day by day in Rivers because of multiple factors such as dam construction, overfishing, poisoning.

Issues

- Vulnerable livelihood due to rapidly decreasing wetland resources
- Fishing in the core of the reserve adversely diminished bird population

Strategies

- Develop alternative fish farming in buffer zone
- Explore alternative livelihood options for the ethnic community

Activities

- Form wetland-dependent household groups along River section
- Coordinate with district agriculture development office for fish farming
- Provide training for technical knowhow about fish farming
- Facilitate for branding and marketing fish product
- Provide skills for saving and credit scheme and capital mobilization through their cooperative
- Impart skills for alternative income generation activities
- Phase wise impose restriction for fishing in core area of the reserve
- Plan and implement restoration of wetlands

10 CHAPTER

Buffer Zone Management

10.1 Introduction

Buffer zone is the social protection rim around reserve core area. The main purpose of buffer zone is to develop local people ownership for wildlife conservation. Benefit sharing is the basis to ensure local people participation for the conservation. The 30 – 50 percent revenue of the reserve is allocated for conservation and community development works in the buffer zone.

An area of 173 sq. km. covering part of Sunsari, Saptari and Udaypur districts has been declared as the buffer zone in 2004 (2061). Presently, buffer zone covers 4 municipalities and 1 rural municipality (Annex 16). Buffer zone management committee is the apex body of buffer zone institution. There are 469 buffer zone user groups, 9 buffer zone user committees and 1 buffer zone management committee for planning and implementation of buffer zone programmes.

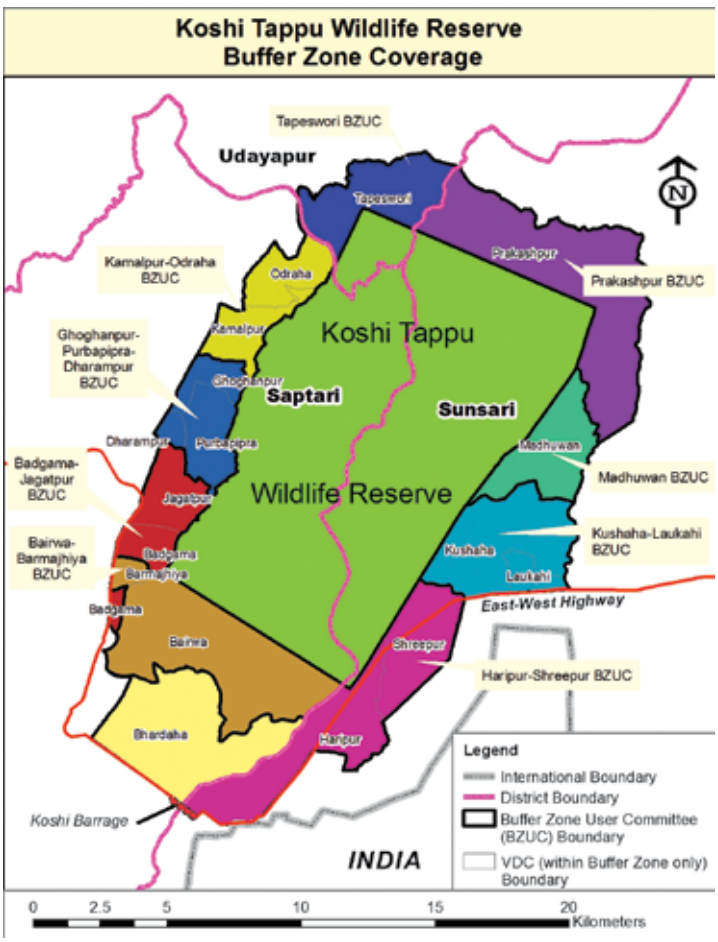

Figure 11 Location of BZUCs

The buffer zone management committee was formed initially in 2004 (2061) and the second in 2009 (2067). The present management committee is the third one, which has been reformed in 2017 (2073). Total 14865 HHs with population of 84,423 individuals are residing in the buffer zone. The ratio of male and female is almost equal (Annex 17). Forty two percent of the total population is literate (Annex 18). Only 3% of the families use LPG gas, 0.4% of electricity and 0.3% of biogas and most family's uses fuel wood and cow dung for cooking. Agriculture is the dominant economic activities for 87.3% of households. However, only 20% households are food secured for twelve months. Livestock density is very high (1.5 per household). Special privilege is given to marginalized people of buffer zone community particularly for *Bombax cieba* fur (*simal bhuwa*) collection, *Typha* (*pater*) collection. People of traditional wetland dependent community are allowed for fishing for 8 months except rainy season while fish lay eggs. Normally, people of buffer zone get permission by paying nominal charge for thatch grass cutting for three days before onset of dry period in a year. Hindu people of fringe area of the reserve grant permission for the use of driftwood lying in the floodplain for cremation of dead body.

The thirteen cooperatives had formed before phase out of UNDP supported Park People Program. The program provided Rs. 0.2 million to each cooperative as the seed money. Of them, five Cooperatives are functioning to mobilize the capital among the shareholders. (Annex 19). A community veterinary centre is on operation under Madhuvan Buffer zone user committee in Madhuvan, Sunsari which was established in 2063.

There are 15 Buffer zone community Forests (BZCFs) handed over to the local community in Sunsari district. It covers total 125.92 ha area. And, one buffer zone community forest of 31.71 ha in Udayaur district is yet to hand over to the community (Annex 20).

Driftwood brought by Koshi River is an important source of timber and fuelwood for buffer zone community. The systematic collection and distribution of driftwood in the buffer zone section of the River would generate revenue for reserve. In addition, it minimizes the dependency of local community in the reserve for forest products. Similarly, two streams namely Gangajali and Pauda in buffer zone in Saptari district is another important source for revenue generation for the reserve. The annual deposition of sand in the stream is one of the major sources for sand for various construction works for the buffer zone community. The estimated amount of deposited sand available in the buffer zone section in the two streams for extraction is 54,000 cum per year. The regulated excavation of sand in the buffer zone section of the streams would not only generate revenue for the reserve but also meet construction demand of the buffer zone users'.

The value of economic benefits generated from wetland ecosystem services of the reserve estimated to be approximately USD 16 million per year (Table 3).

This accounts into a net present value (NPV) of around USD 444 million, estimated from the future benefit over a period of 60 years at an assumed discount rate of 3% and constant flow of current benefit (i.e., no degradation and depletion of current benefit).

Table 3 Aggregate economic value of wetland ecosystem services of the Reserve

Ecosystem services	Total value (USD/yr)	Average value/ha/yr (USD)	Value ha/yr (USD)	share of ecosystem services
Provisioning services	$13,675,225	$818.40	$781.40	79.60
Regulating services	$1,152,003	$68.90	$65.80	6.71
Flood control / prevention	$952,075	$57.00	$54.40	5.54
Carbon sequestration	$199,928	$12.00	$11.40	1.16
Cultural services -ecotourism	$1,201,216	$71.90	$68.60	6.99
Total economic value	$ 17180447	**$959.20**	**$915.90**	**100.00%**

(Source: Sharma et al. 2015 cited from Chhetry et al 2015)

The estimated total value of the wetland ecosystem services accrues locally is a clear manifestation of the vital importance of wetland ecosystem for the sustainable livelihoods of the local people and protecting the global significance of the Reserve as a Ramsar site (Chhetri *et al*., 2016).

10.2 Past Management and Present Practices (Forest Management, Other Land use)

Total 14 BZCFs along narrow strip of the eastern afflux bund from Haripur guard post to Prakashpur post in Sunsari district have been handed over to the local community. One BZCF in the east of East-West highway in Haripur BZUC in Sunsari district has been managed by local community as BZCF.

Similarly, one BZCF in Tapeswori BZUC in Bandanda in Udaypur district is proposed to hand over to local community. Total area of all 16 BZCFs is 157.63 hectare which is too small to fulfill forest products need of the community. From Jagriti BZCF to Ramrahim BZCF along eastern afflux bund, forest canopy cover is hardly 10 percent. The forest of the area was washed away during devastating flood of Koshi River in 2008. Now, wetland with seepage water is dominant land use in these BZCF with potentiality of management for sustainable wetland resources.

Presently, management responsibility has been well carrying out by BZCFs in Prakashpur, Madhuvan area but similar care is still to be improved in other CFs. In some of the CFs, fences are not maintained and the planted bamboo stumps are not conserved indicating weak concurrence of the communities due to their other interests such as free grazing route, fodder and grass collection points. The area in the border of BZCFs which has high water table and good perennial source of seepage water has been developed as chain of fish ponds by private land owners. The predominant land use is agriculture in the adjoining area of BZCFs where rice, sugarcane and maize are cultivated.

Annual revenue of the reserve has been less than 3.5 million. However, it is in increasing trend for recent years. In FY 073/74, annual revenue is increased to Rs. 3.2 million. The 30-50 percent share of this amount is very small to allocate for BZ program for all 9 BZUCs (Table no 4).

Table 4 Revenue received from government for the buffer zone program in KTWR

FY	Revenue received (NRs)	Remarks
2070/71	9,30,000	
2071/72	9,60,000	
2072/73	NA	BZ institutions not reformed
2073/74	19,29,000	two FY revenue sharing
2074/75	11,25,000	

(Source: DNPWC)

10.3 Management Strategies

10.3.1 Zonation

An area of 1.58 km^2 of all 16 BZCFs is designated as sustainable use zone. Rest of 171.42 km^2 area of buffer zone having settlement, private land, agriculture, development infrastructure is intensive use zone. Potential biological corridor in the north-east and north-west that need to be developed for safe migration of long ranging wildlife could be brought under conservation zone.

10.3.2 Community Development

The priority of the community development will be to reduce human wildlife conflicts which are increasing in the recent years. Main species in conflicts are wild elephant, wild water buffalo, mugger crocodile, wild boar, migratory birds, fishing cats, bluebull. Conflict mitigation measures such as power fence in different section of reserve perimeter, solar street lamp, view tower, conservation of vegetative cover, and chain of fish ponds as wildlife movement barrier will be planned and implemented. Private plantation for supporting stall feeding and fulfilling forest product need to be encouraged. Fish pond constructions will be encouraged to provide alternate livelihood options for wetland dependent community. Community development programs will be focused to improve traditional livelihood so that their dependency on reserve resource will be diminished in the long run.

10.3.3 Biodiversity Conservation

Co-existence between buffer zone people and wildlife of the reserve is the main strategy for biodiversity conservation. Less than two square km community forest of the buffer zone is the additional habitat mainly for birds, reptiles, and small mammals. Programmes for biodiversity conservation have been in build in the management plan of the CFs. The training for the implementation of the BZCF' plan, conservation awareness will be provided to the community forest users and BZUC members. The birds and aquatic species primarily in the agriculture land use are declining due to use of pesticides and chemical fertilizer. So, use of green manure, compost, and integrated pest management will be promoted which will help conserve the avian and aquatic biodiversity.

10.3.4 Eco-tourism Promotion

Mentioned in Chapter 8

10.3.5 Functional Coordination

Buffer zone programs have not been reached to user groups (UGs) level to align them for conservation. To date, the annual revenue of the reserve is not sufficient to address whole BZUGs. Coordination with local units viz: municipality and rural municipality, I/NGOs are very crucial to synergize the resources for the overall development of buffer zone.

10.3.6 Capacity Building

Capacity building programs will be planned for BZUCs and BZMC for their role of biodiversity conservation and coordination with various stakeholders of the buffer zone. The reserve staff will be trained for facilitation skill and participatory approaches to deal with buffer zone community. Package (training, workshop, lecture, exposure visit) of capacity building programmes need to be developed to change employee' perceptions about buffer zone and improve their professionalism in reserve-people cooperation and participatory management.

10.3.7 Conflict Minimization

The extension of HWC mitigation measures particularly power fence and their maintenance are priority strategy to save the life and property of the villagers. Co-existence with wild water buffalo partly also depends upon the reduction of the domestic buffaloes in the reserve as the competition may force them to raid crop in the buffer zone. Importance to reduce the grazing pressure for conflict minimization will be internalized in the buffer zone community. Alternative crops that are not preferred by wildlife will be piloted. The amount of immediate relief fund established in all BZUCs need to be increased to provide the firsthand quick relief for affected family or individuals. The release of compensation amount according to wildlife victims compensation guideline, 2069 (second amendment, 2074) need to be channelized through local units to shorten the procedure and enhance their ownership for wildlife conservation.

10.3.8 Income Generation and Skill Development

Income generation and skill development program will be targeted to mainly marginalized community, wetland dependent community and fishing community. The saving and credit fund will be mobilized through cooperative for the weak segment of the community. Successful practices such as construction of fish ponds need to be encouraged for fishing community in private or community land. Marginalized

community is benefitting by making mats from typha spp (*pater*) and local artifact from *saccharum spp*. This income generation activities need to be develop as a community enterprise.

10.3.9 Conservation Education

The value of wildlife and unique ecosystem of the reserve will be imparted to different segment of buffer zone. Eco clubs will be formed in the school and conservation education programmes will be conducted through the clubs. Days will be celebrated in participation of community people and stakeholders. CBOs will also be mobilized for the extension of conservation education and conduction of awareness raising program.

10.3.10 Regulation of Forest Products

Total 15 BZCFs have been handed over to buffer zone community. One BZCF is yet to be handed over to the buffer zone community. The conservation and management of BZCFs is based on approved Operational plan. The collection and distribution of forest products such as fuelwood, timber and grass cutting will be regulated according to the plan.

Driftwood brought by Koshi River flood is one of the major forest products for buffer zone community. Priority will be given to buffer zone user committees for the collection of the driftwood and distribution among the users. Or, it will be managed through tender process, if BZUC would not take responsibility. According to Forest Regulation, 2051, royalty for driftwood will be charged from the respective BZUC or contractor. Then, driftwood will be distributed to buffer zone users based on BZUC decision.

There are two ephemeral streams namely Gangjali and Pauda flowing through the buffer zone of the reserve. Sand is deposited in these streams by flash flood in rainy season from Churia range. Excavation of sand from streams is on high demand for the construction works and to contain the stream within natural channel. Moreover, sand mining in these streams is necessary to minimize the risk of flash flood to adjoining villages. The estimated amount of sand that could be extracted from the streams is 67,500 cu.m. per annum. Buffer zone users have been permitting for sand excavation for domestic construction works by charging royalty, according to Forest Regulation, 2051 BS.

10.4 Implementation and Mainstreaming Strategy

Representative participation of Buffer zone community and transparency is the basic program implementation strategy. Promotion of green development, application of low carbon technology to reduce carbon footprint, protection of wildlife and their habitat will be the guiding principles for program intervention in the buffer zone. Decision will be taken by buffer zone management committee to allocate buffer zone program in different buffer zone committees. The program will be implemented through buffer zone user committees. A joint team comprising of buffer zone management committee members and reserve staff will monitor program activities for quality assurance and ownership enhancement. Regarding Koshi project run by the Government of India, discussion will be held in buffer zone management committee in participation of other relevant stakeholders. Decision will be taken about project' contradictory works such as diversion of natural course of Koshi River, cleaning of bush, vehicle mobility in day and night during rainy season in reserve area, for policy review and recommendation will be forwarded to the line ministry and the department.

Activity, Budget and Logical Framework

11 CHAPTER

11.1 Activity and Budget

A total of Rs 494.17 million has been proposed for the period of five years (2018 – 2021). Of the total, Rs. 186.823 million (37.81%) has been proposed for the buffer zone and Rs. 307.35 million (62.19%) has been for the reserve (Table 5). Reserve budget is estimated based on prescribed activities in consultation with reserve staff. Buffer zone budget is estimated in consultation with buffer zone management committee and buffer zone user committees. Detail activities and budget of the reserve and buffer zone are mentioned in Annex 24 and 25 respectively.

Table 5 Estimated budget for the implementation of plan activities of the reserve

Amount in thousand

Activity	Year I	Year II	Year III	Year IV	Year V	Total
Zonation	12,700	13,700	10,150	8,100	100	45,750
Protection						
Hattisar management	19,000	8,800	4,000			103,800
Deployment of Nepal Army	1,550	10,050	1,550	1,550	1,550	16,250
Anti-poaching and intelligence gathering	1,850	1,850	1,400	1,250	1,250	7,600
Habitat management						
• Forest	700	700	700	700	700	3,500
• Grassland	1,610	1,610	1,610	1,610	1,610	8,050
• Wetland	2,010	3,010	2,010	2,010	2,010	11,050
Fire management	1,800	1,300	800	300	800	5,000
Wildlife health management	600	850	600	600	600	3,250
Encroachment control	400					400
Climate change adaptation	1,600		1,800		1,500	4,900
Research monitoring and capacity building	**1,100**	**4,300**	**1,400**	**1,100**	**3,100**	**11,000**
• Research	300	1,300	600	300	300	2800
• Monitoring	200	1,300	200	200	1,200	3100
• Capacity building	200	200	200	200	200	1000
Species conservation special programme	**4,000**	**19,950**	**3,650**	**3,550**	**12,050**	**29,700**

Activity	Year I	Year II	Year III	Year IV	Year V	Total
• Wild Water buffalo	1,550	6,550	550	1,550	550	10,750
• Dolphin	350	450	250	250	450	1,750
• Bengal florican	1,050	1,550	2,050	1,050	10,050	2,250
• Gharial crocodile	650	10,250	550	450	250	12,150
• Swamp francolin	100	350	100	100	100	750
• Turtle	300	100	100	100	100	700
• Fishing cat	300	800	150	150	650	2,050
Tourism and interpretation	**6,050**	**16,450**	**1,050**	**1,050**	**1,050**	**25,650**
Special programme	**15,050**	**9,800**	**2,800**	**1,800**	**1,900**	**31,450**
Extension of Reserve and Buffer zone	1,500	500			100	2,000
Wild Elephant conservation and Human Elephant Conflict mitigation	7,100	2,900	1,600	600	600	13,000
Control feral cattle and illegal livestock grazing	5,500	5,500	500	500	500	12,500
Livelihood program for wetland dependent households	950	900	700	700	700	3,950
Total	**70,020**	**92,370**	**33,520**	**23,620**	**28,220**	**307,350**

Table 6 Estimated budget for the implementation of the plan activities of the buffer zone

Amount in thousand

BZMC and UCs	Year I	Year II	Year III	Year IV	Year V	Total
BZMC	9625	12710	11110	11160	7610	52215
Tapeswori	2305.25	2995	1265.25	1654	1405.25	9624.75
Kamalpur	3872	3872	2172	4242	2212	16370
Pipra	1885	1760	2035	885	1610	8175
Jagatpur	2085	1835	2100	1830	3005	10855
Bairhawa	2045	3745	1595	3065	2995	13445
Haripur	1499.8	2469.8	1009.8	977.8	1216.8	7444
Kushaha	1915	1315	1365	2815	915	8325
Madhuban	5323	8785	5159	7424	10021	36712
Prakashpur	7728	2748	7068	3138	2975.5	23657.5
Total	38283.05	42234.8	34879.05	37190.8	33965.55	186823.25
Percentage	**20.49**	**22.61**	**18.67**	**19.91**	**18.18**	**100**

Table 7 Estimated budget for the implementation of the plan activities of BZMC and BZUCs

Amount in thousand

	Conservation	Com. Dev.	IGA	Cons. Edu.	Adm.	Total
BZMC	9850	14500	18500	2365	7000	52215
Tapeswori	5360	2530	545	424.75	765	9624.75
Kamalpur	5850	5240	3045	1325	910	16370
Pipra	1800	3400	1900	475	600	8175
Jagatpur	3500	4800	1280	525	750	10855
Bairhawa	4445	5000	2425	825	750	13445
Haripur	1500	2260	2210	745	729	7444
Kushaha	3000	3120	680	600	925	8325
Madhuban	6875	16290	7209	3085	3253	36712
Prakashpur	2950	15420	3645	875	767.5	23657.5
Total	45130	72560	41439	11244.75	16449.5	186823.3
Percentage	**24.16**	**38.84**	**22.18**	**6.02**	**8.80**	**100**

Table 8 Estimated budget for the implementation of the management plan (2017-2021)

Amount in thousand

S.N.	Activities	Amount (NPR)	Percentage
A	**Reserve Sub-Total**	**307,350**	**62.19**
1	Zonation and boundary demarcation	45,750	14.89
2	Theme plans	163,800	53.29
3	Research, Monitoring and Capacity Building	11,000	3.58
4	Species conservation special programme	29,700	9.66
5	Ecotourism and Interpretation	25,650	8.35
6	Special programme	31,450	10.23
B	**Buffer zone Sub-Total**	**186,823.25**	**37.81**
7	Community development	72,560	38.84
8	Conservation	45,130	24.16
9	Income generation activities	41,439	22.18
10	Conservation education	11,244.75	6.02
11	Administrative	16,449.5	8.80
Grand Total		**494,173**	**100.00**

11.1.1 Source of Financing

The Governement regular budget for the Reserve will cover 61.77% of the total estimated amount NPR 494,173,000 based on FY 074/75 budget with 10 % increament in each subsequent year. The gap of about 38.23% is expected to be contributed by conservation partners, other non-governemnt agencies and local units (Table 9).

Table 9 Expected financing for the management plan

SN	Sources of Budget	Reserve	Buffer Zone	Total	Grand total in 5 year (increment by 10 % every year)
1	Government Budget	500,00,000	1125,000	636,25,000	30,52,55,000.00
2	Gap	Support of conservation partners, I/ NGOs, local units and provinces			188,918,000.00
	Total				473,823,000.00

11.2 Logical Framework Analysis

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
Goal: Conserved wildlife and enhanced wise use of wetland resources of the reserve for sustainable ecosystem services and community prosperity.	Population of wildlife increased	periodic monitoring report, annual report	• Government policies on protected areas conservation remain conducive.
	BZ governance improved	annual report	
	Number of illegal activities reduced by 30%	annual report	
Outcome 1. Unique and characteristic wildlife species and habitats of the reserve safeguarded and restored			
1.1 Facilitate Hattisar management	number of study about fodder availability in the core area and buffer zone (One assessment report)	assessment report	
	hectare of fodder species plantation in the buffer zone (50 ha)	annual report, BZUC report	
	length of power fencing in the perimeter of elephant camp (5km)	annual report	
	meter of elephant camp concrete boundary wall (600m)	annual report	
	number of elephant camp established (at two locations)	annual report	
	frequency of health checkup of domestic elephants (twice in a year)	annual report, medical checkup logbook	
	frequency of medication and supplement vitamins to elephants supplied (daily and monthly)	medical checkup logbook	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
1.2 Deploy Nepal Army company	seven existing post of reserve posts renovated	annual report	
	seven sets of basic equipment to deal with Koshi River provided to army	annual report	
	frequency of orientation program conducted for the protection of reserve (twice in a year)	annual report	
	frequency of training on biodiversity conservation and controlling poaching and other illegal activities (twice in a year)	annual report	
	frequency of joint patrolling events conducted (daily and monthly)	patrolling logbook	
	A set of infrastructures developed at south part of the Reserve to deploy army and reserve staff	annual report	
	Security post at Kamalpur in operation	annual report	
1.3 Strengthen anti-poaching and intelligence gathering	frequency of meetings of WCCB conducted (four times in a year)	annual report	Cooperation from local agency is continued.
	number of informants mobilized at strategic locations (twelve persons)	annual report	Cooperation from local units and CBOs will be continued
	frequency of trainings per year for capacity enhancement to anti-poaching unit and RRT (two times)	annual report	
	number of set of equipment supported to anti-poaching unit and nine set of equipment supported to RRT (twelve sets)	annual report	
	Number of vehicles provided to anti-poaching unit and RRT (one each)	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	number of sets of logistics supported to 9 anti-poaching unit and RRT under each UC (one each)	annual report	
	Frequency of awareness program conducted on legal punishment for illegal activities (four times in a year)	annual report	
	number of eco club and local youths mobilized against illegal activities (15 eco clubs and 150 youths)	annual report	
	frequency of Real time SMART patrol in operation (daily)	annual report	
1.4 Manage forest habitat	Bioengineering practiced along afflux bund and spur of the Koshi River	annual report	
	Collection of fuel wood, fodder and NTFP from reserve reduced by 10%	annual report	
	20% increased in forest cover	technical report	
	10 ha invasion area of the reserve managed to control invasive species	annual report	
1.5 Manage grassland habitat	50 % illegal livestock in the core area are captured and fined	annual report	
	Two events of on-site auction of feral cattle operationed	annual report	
	Scheduled thatch grass collection program for 3 days in each year	annual report	
	5 machan constructed for grassland monitoring	annual report	
	5 permanent plots established for ecological study	technical report, annual report	
	One event per year conducted to uproot and burn alien invasive species	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
1.6 Manage wetland habitat and water sources	250 wetland dependent households permitted for fishing	annual report	
	25 boats to wetland dependent households permitted for fishing	annual report	
	Two boats kept for intelligence based night patrol	annual report	
	Two coordination meetings conducted for fish farming in the buffer zone	annual report	
	One fish farming promotion event conducted annually	annual report	
	Two events of on-site auction of feral cattles	annual report	
	Two transboundary meetings conducted with India on agenda of suitable structure for upstream movement of aquatic fauna	DNPWC annual report	
	5 ha native tree species planted along the wetlands	annual report	
	10 wetlands are maintained and restored	annual report	
	One study about feasibility to establish fish ladder in the Koshi barrage conducted	study report, annual report	
	One time wetland cleaning events organized annually	annual report	
	One assessment conducted on wetland to control invasive species	technical report, annual report	
1.7 Conduct wild water buffalo conservation program	Wild water buffaloes population increased by 10 %	periodic monitoring report	Cooperation from academic institutions will be maintained.
	Human Wild water buffalo conflict reduced by 50 %	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
1.8 Conduct dolphin conservation program	Population increased to 20 individuals	Survey report, annual report	Inter-agency coordination will be effective to control anthropogenic activities in its prime habitat
	Alternative livelihood programs to river dependent community supported	annual report	
	Reduced anthropogenic activities in dolphin inhabited area	annual report	
1.9 Conduct Bengal florican conservation program	Population increased to 50 individuals	Survey report, technical reports, annual report	Legal measures will be effective to reduce illegal grazing in the reserve and policy will be devised to control feral dogs
1.10 Conduct gharial crocodile conservation program	Reintroduced Gharials (50 individuls) population maintained	Survey report, technical reports, annual report	Suitable structure in Koshi barrage for upstream migration of aquatic fauna will be constructed.
	One study on limiting factors for Gharial survival in Koshi River conducted		
	Population monitored by using satellite tag		
1.11 Conduct swamp francolin conservation program	Population status updated	survey report, annual report	
	Prime habitat defined	survey report, annual report	
1.12 Conduct turtle conservation program	Population status updated	technical report, annual report	
	Illegal trade reduced by 50 percent	annual report, wccb technical report	
1.13 Conduct fishing cat conservation program	Population and habitat status updated	annual report, monitoring technical report, journal article	
	Wetlands restored in the reserve	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
1.14 Demarcate the park boundary	coordination meeting organized	annual report	Cooperation from local people and local units will be obtained.
	one time cadastral survey conducted	annual report	
	number of demarcation pillar and peg constructed/established in 100 m interval	annual report	
	policy recommendation proposed for flood control / anti erosion works in reciprocal with wildlife conservation	annual report, department report	
	recommendation for legal provision of onsite auction of feral cattle and livestock	annual report	
	regular livestock captured from core area and fined	annual report	
	regular patrolling events conducted	annual report	
	one feasibility study for transforming improved livestock farming	annual report, study report	
	recommendations to line department and ministry for relocation	survey report, annual report	
Outcome 2. Threatened, endemic and common wildlife species of the reserve conserved			
2.1 Manage fire in reserve and BZ	Scheduled thatch grass collection program for 3 days in each year	annual report	Cooperation from local people will be ensured
	a set of fire extinguisher equipment established at each post	annual report	
	set controlled fire in grassland before onset of dry season	annual report	
	number of fire watch tower constructed at vantage points	annual report	
	RRT for firefighting works established at HQ and sector office	annual report	
	events of awareness campaign about fire hazard launched	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
2.2 Maintain wildlife health	number wounded / injured wildlife medicated on time	checkup logbook, annual report	
	set of diagnostic accessories; medicine; number of wildlife ambulance; and dart gun available	checkup logbook, annual report	
	number of veterinary technicians available	checkup logbook, annual report	
	times of vaccination programs for livestock organized	checkup logbook, annual report	
	feral dogs in and around the Reserve were culled	annual report	
	times of coordination meetings about Bird flu attended by officials of KTWR	annual report	
	a system of surveillance and sample collection for diagnosis of bird flu infestation in place	annual report	
	a system of health inspections for focal / indicator wildlife species in place	annual report	
	frequency of weeding; debris cleaning; and excavating siltation of wetlands events arranged	annual report	
	number of researches on potential disease, parasite and pathogen to wildlife conducted	technical report, annual report	
2.3 Control encroachment	hectare of land illegally occupied by 170 households	annual report	Cooperation from local people will be maintained.
	frequency of consultation meetings to submit legal document for the claims of their land	annual report	
	times of dialogues with settlers for alternatives	annual report	
	a set of recommendations with alternatives submitted to the concerned agencies	annual report	
	approved IEE for the Reserve extension	annual report	
	times of presentation of extension proposal for policy decision	annual report	
	Post extension proposal for execution of relocation program	extension report, annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
2.4 Conduct species specific monitoring program	in four year interval monitoring events of Wild Water Buffalo	monitoring report, annual report	
	in five year interval monitoring events of Wild elephant	monitoring report, annual report	
	every year monitoring events of migratory water bird	monitoring report, annual report	
	in four year interval monitoring events of reptiles	monitoring report, annual report	
	in every year monitoring events for Dolphin	monitoring report, annual report	
	in two year interval monitoring events of aquatic and indicator species	monitoring report, annual report	
	in five year interval monitoring events of overall conservation status of the Reserve	monitoring report, annual report	
	in two year interval monitoring of threatened birds	monitoring report, annual report	
2.5 Conduct habitat monitoring	every year monitoring events for grassland	monitoring technical report, annual report	
	every year monitoring events for wetland	monitoring technical report, annual report	
	in five-year interval monitoring events for forest cover	monitoring technical report, annual report	
2.6 Conduct river monitoring	in five-year interval, km Koshi River channel shift	monitoring technical report, annual report	Cooperation from local units, line agencies will be obtained.
	number of oxbow lakes formed	monitoring technical report, annual report	
	ha terrestrial habitat submerged	monitoring technical report, annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
2.7 Assess tourism impact	in five-year interval monitoring events of tourism impact on ecological environment	monitoring technical report, annual report	
	in five-year interval monitoring events of tourism impact on social environment	monitoring technical report, annual report	
	in five-year interval monitoring events of impact of human wildlife interaction on socio-economy	monitoring technical report, annual report	
Outcome 3. Capacity of the reserve and buffer zone institution built and strengthened			
3.1 Conduct research on species conservation	a study on ecology and behavior of small isolated Asian elephant population	technical report, annual report	
	an assessment on fish species, population status and threats	technical report, annual report	
	an assessment of population of gangetic dolphin and conservation threats	technical assessment report, annual report	
	a study about the reintroduced gharial crocodile	technical study report, annual report	
	an assessment of grassland ecology and relation with feral cattle	technical assessment report, annual report	
	a study on River course shifting	technical study report, annual report	
	a study of habitat dynamics	technical study report, annual report	
	an assessment of river diversion and impact on wetland ecology	technical assessment report, annual report	
	an assessment of siltation in wetlands	technical assessment report, annual report	
	an assessment of land cover and habitat alteration	technical assessment report, annual report	
	a study on Jackal ecology	technical report, annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	feasibility studies for translocation of rhino and swamp deer	technical feasibility report, annual report	
	feasibility study for reintroduction of tiger and bison	technical feasibility report, annual report	
	a study on the genetics of wild water buffalo	study report, annual report	
	an assessments of feral livestock grazing impact on wild water buffalo population	assessment report, annual report	
	a study the communicable diseases to wild water buffalo	study report, annual report	
	a study on blue bull ecology	study report, annual report	
	a study on the ecology of spotted deer, hog deer, wild boar with crop depredation	study report, annual report	
	a study to update floral and faunal species of the Reserve	study report, annual report	
	an assessments of the predation impact on fish farming by fishing cat, mugger crocodile and otter	assessment report, annual report	
	an assessment for releasing leopards	assessment report, annual report	
	an study about the impacts of no fish ladder in Koshi barrage on aquatic fauna	study report, annual report	
	studies on status of Swamp francolin, Bengal florican, black stork, white stork and vulture	study report, annual report	
	a study about the inter-relation of bat population and keystone species	study report, annual report	
	a study on seasonal bird migration and habitat use	study report, annual report	
3.2 Support for tourism related research	studies about the visitors' perception on tourism entrepreneurship	visitor perception study report, annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	studies about potential tourism products	study report, annual report	
	an assessments for potential of homestay	homestay assessment report annual report	
3.3 Conduct livelihood related study	an assessment regarding the perception and limitation of stall fed livestock conducted	assessment report, annual report	Cooperation from local people will be obtained.
	a study on wetland types, status and community dependency carried out	study report, annual report	
	a study on community involvement in fish farming in the buffer zone and their contribution to reduce fishing in Koshi River carried out	fish farming study report, annual report	
	a study about alternatives for wetland dependent community	wetland dependent livelihoods study report, annual report	
	an assessment about the potential IGA for marginalized buffer zone communities carried out	assessment report about potential IGA, annual report	
3.4 Conduct capacity building activities related to the reserve management	10 times sharing and team building workshop conducted	annual report	
	5 events of training to mid-level staff on procedural law	training report, annual report	
	5 times training for mid-level technical staff on wildlife monitoring and handling techniques, GPS, GIS, and SMART, habitat monitoring	training report, annual report	
	5 times training to rangers on anti-poaching operation	training report, annual report	
	5 times training to frontline staff on firefighting, SMART patrol, anti-poaching, field techniques on sign and indirect evidence of wildlife	training report, annual report	
	5 times training to field level staff on wildlife health	training report, annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	2 times training about veterinary care and treatment to veterinary assistant	training report, annual report	
	2 times training about social mobilization and participatory planning to staff	training report, annual report	
	2 times training to rangers and officers on CITES Act implementation	training report, annual report	
	2 times exposure visit to Rangers and Officers to other protected areas	exposure visit report, annual report	
	5 times refresher training to Hattisar Staff	training report, annual report	
	5 times training about conservation awareness	training report, annual report	
	2 times leadership training	training report, annual report	
	5 times training about account and record keeping	training report, annual report	
Outcome 4. Wetland conserved for livelihood improvement of local people and their ownership of reserve and buffer zone enhanced			
4.1 Conduct study on livelihood enhancement	studies on ethnic community involvement in fish farming in the buffer zone and their contribution to reduce fishing in Koshi river	study report, annual report	Cooperation from local people will be obtained.
	studies on perception and limitation of stall-fed livestock husbandry instead of open grazing	study report, annual report	
4.2 Enhance prosperity of local people	soft loan / revolving fund mobilized for dependent families on livestock rearing	annual report	Cooperation from local people will be obtained.
	13 established cooperatives strengthened	cooperative report, annual report	
	3 promotional events for local artifact enterprise organized	annual report	
4.3 Conduct elephant conservation & human wildlife conflict mitigation program	study about conservation of small isolated sub-populations	monitoring eport, annual report	Cooperation from local people
	at least four problematic elephants radio collared for behavior study	annual report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	three different sites piloted for unpalatable cropping	annual report	
	nine user committees provided fund for quick relief disbursement	bz progress report, annual progress report	
	buffer zone community people awared how to be safe from problematic elephants	annual progress report	
	at least three studies on human wildlife conflicts and local technology for its' minimization conducted	HEC study report, annual report	
4.4 Implement wetland dependent livelihood program	5 fish farming cooperatives supported	cooperative progress report, annual report	Cooperation from local people will be obtained.
	5 fishermen and wetland dependent functional groups mainstreamed supporting to construct fish ponds in buffer zone	annual report	
4.5 Support for potential biological corridor development in BZ	biological corridor in the north-east and north-west part of buffer zone developed	annual report	
	long term project based on pilot program designed and implemented	project progress report, annual report	
	buffer zone boundary established in the extension area	annual progress report	
4.6 Implement community development programs	340 solar street lamps installed	bz progress report, annual report	Cooperation from local people will be obtained.
	5 view tower constructed	bz progress report, annual report	
	300 chain of fish ponds constructed	bz progess report, annual report	
	50,000 seedlings supported for private plantation	annual progress report	
	at least two coordination meetings with local units organized annually	annual progress report	
	at least two events of training for the implementation of the BZCF' plan conducted	training report, annual progress report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
4.7 Conduct biodiversity conservation program in BZ	at least four conservation awareness programs conducted annually	annual progress report	Cooperation from local people will be obtained.
	at least two events for the promotion of organic farming organized annually	annual progress report	
	90 staffs trained to deal with wildlife and buffer zone community	annual progress report	
4.8 Support for capacity building	10 training packages developed and concucted.	annual progress report	
	at least 10 eco clubs formed	annual progress report	
4.9 Conduct conservation education program	at least 4 conservation education programs conducted annually	annual progress report	Cooperation from local people will be obtained.
	at least two special days celebrated annually	annual progress report	
	16 BZCFs collected forest products as per plan	CF progress report, annual report	
4.10 Develop regulation on forest products use	driftwood collection in Koshi River regulated	bz progress report, annual report	Cooperation from local people will be obtained.
Outcome 5. Climate change adaptation techniques for wildlife conservation and community safety developed			
5.1 Implement climate change adaptation techniques	studies about land cover / land use change in 5 years interval conducted	change detection report, annual report	
	5 artificial hillocks for emergency shelter constructed	annual progress report	
	25 ha flood prone area planted	annual progress report	
	Five flood prone sites stone filled gabion constructed	annual progress report	
	Eight sets of pre-positioning boat, life jackets, two tractor available for mobility	annual progress report	
	Ten waterholes constructed at different location of the reserve	annual progress report	
	At least once in a year deposited silt from oxbow lakes, marshland and riparian wetland cleaned	annual progress report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
	regulation for access to wetland dependent community applied	regulation, annual progress report	
Outcome 6. Biological corridor for wildlife movement developed			
6.1 Maintain corridor and connectivity	reserve extension proposal studied	extension proposal, annual report	Cooperation from local people and stakeholder will be obtained.
	dialogues for reserve extension and biodiversity conservation initiated with local units, media and CBOs	annual progress report	
	10600 ha buffer zone in extended area	extension report	
	6 new BZUCs formed	annual progress report	
	post extension pilot activities conducted in the extended buffer zone	annual progress report	
	baseline survey for gaur, carnivores prey species and socio-political parameters conducted	study report, annual progress report	
Outcome 7. avitourism as a part of nature based tourism developed			
7.1 Develop infrastructures for the ecotourism promotion	two view tower constructed for bird watching	annual progress report	Cooperation from local people
	two places basic infrastructure constructed for ecotourism	annual progress report	
	10 private investor built hotels / lodges	annual progress report	
	one interpretation center constructed	annual progress report	
7.2 Construct/upgrade information facility	4 large billboards posted	annual progress report	
	1000 informative leaflets produced	annual progress report	
7.3 Produce information materials	two times updated and upgraded the website	website, annual progress report	
	5 sets of extension materials published and disseminated	extension material, annual progress report	
	one time workshop and seminar organized for ecotourism promotion	seminar report, annual progress report	

Activities	Objectively Verifiable Indicators (OVIs)	Means of Verifications	Assumption
7.4 Organized promotional events for ecotourism	two times awareness programs launched for tourism promotion	annual progress report	Cooperation from local people will be obtained.
	two coordination meeting organized for ecotourism promotion	annual progress report	
	two exposure visit for buffer community and staff organized	visit report, annual progress report	
	one crocodile breeding center functional	breeding center, annual progress report	
7.5 Diversify the tourism products	two location domestic elephant stationed for recreation and jungle safari	Observation, annual progress report	
	10 home stay facilities available	annual progress report	
	one motor boats for ecotourism on operation	motor boat, annual progress report	
	two times monitoring events organized for the assessment of illegal activities	annual progress report	
7.6 Minimize impact of tourism	a system of code of conducts for the visitors in place	code of conduct, annual progress report	

11.3 Gender Equity and Social Inclusion

The total human population of the buffer zone is 84,423. Of them, 51.57 percent is female (CBS 2011). There are ~50 percent i.e. 234 female chairpersons out of 469 in buffer zone user groups (Annex 21). Fifty percent women members are in all nine buffer zone user committees. One woman chairperson from a buffer zone user committee represents in the 9-member buffer zone management committee. There are 6 women staff out of total 92 staff working in the reserve. The organizational structure of buffer zone has been fully recognized women representation in all decision making process. Likewise, the representation of women in reserve staff has been increased in recent years. The leadership capacity of women is raising due to several factors such as national policy, media advocacy, education, awareness programs. In the social inclusion process, marginalized and indigenous community of the buffer zone are represented in buffer zone user committee on purpose. The planning of buffer zone program and their implementation need to be further addressed gender equity and social inclusion with due priority through the empowerment of women representatives of buffer zone institution.

11.4 Monitoring and Evaluation

The management of the reserve will do progress monitoring of the plan implementation at the end of each fiscal year of the plan period. The gap of the plan implementation will feed to upcoming annual planning. At the end of the plan, an independent multidisciplinary team including local stakeholders will carry out monitoring and evaluation of the management plan broadly under the framework of the vision and objectives of the management plan. The outcome level of objectively verifiable indicators of the log frame will be used as a yardstick to assess the success and failure of plan implementation.

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Annexes

Annex-1

Details of Consultation for drafting management plan

SN.	Main steps	Participants	No	Location	UC/UGs	Date
1	Consultation meeting for Plan Preparation process	KTWR officials NA deputed at KTWR, Project Staff, and Existing BZMC	1	Paschim Kushaha	Prakashpur, Madhuban	
2	Consultation meeting with BZUC	Prakashpur BZUC	1	Prakashpur Post	UC	2073/7/8
		Madhuwan BZUC	1	Veterinary Center Madhuwan		2073/7/8
		Kushaha Lauki BZUC	1	Kushaha	P.Kushaha Loukahi UC,	2073/7/10
		Shreepur Haripur BZUC	1 (for 3 BZUCs)	Haripur Post	Shreepur haripur UC	
		Bairwa Barmajia BZUC	1	Badgama Post	Bairwa Barmaja UC	2073/7/12
		Badgama Jagatpur BZUC		Pathari Sector Office	Badgama Jagatpur BZUC	2073/7/5
		Purwa Pipra Dharampur Ghoghanpur BZUC	1	Pathari Sector Office	Purwapipra Dharampur Ghoghanpur	2073/7/7
		Odraha Kamalpur BZUC	1	Kamalpur Post	Odraha Kamalpur	2073/7/11
		Tapeswori BZUC	1	Tapeshwori School	Tapeswori	2073/7/14
3	District level stakeholder consultation meeting	UCs of Sunsari and line agencies	1	Chief District Office, Inaruwa, Sunsari		2073/8/3
4	Consultation meeting	Hotel and homestay proprietor	1	Reserve head Office		2073/8/6
5	District level consultation meeting	Saptari for UCs of Saptari + Line agencies	1	Local Development Office, Saptari		2073/8/7

SN.	Main steps	Participants	No	Location	UC/UGs	Date
6	Consultation Workshop	Reserve Staff, Elephant staff, BZMC, Nepal Army, project and Local UC	1	KTWR Head Office		2073/8/9
7	Log frame preparation workshop	Reserve staff BZMC, NA, project staff and Local UCs	1	KTWR Head Office,		2073/8/10
8	Presentation at DNPWC			DNPWC		2074/1/15
9	Review by experts					

Annex-2

List of mammals

Family	Scientific Name	*Common Name*	Status				Number	
			NPWC Act (1973)	NRDB (1995)/2011	IUCN	CITES (NP)		
Bovidae	1.*Bos gaurus* *2.Bubalus arnee* *3.Boselaphus tragocamelus*	Gaur Wild Water Buffalo(Wild water buffalo) Blue Bull Antelope(Nilgai	P P	E/VU C/EN V/V	V EN LC	I III	KTWR-stray animal; 432 KTWR	Origin suspected in Trijuga
Canidae	*4. Canis aureus* *5. Vulpes bengalensis*	Golden Jackel Bengal Fox		-/LC S/VU	LC LC	- -	KTWR KTWR	
Cercopithecidae	6.*Macaca mulatta* *7.Semnopithecus schistaceus*	Rheus Macaque Hanuman Langur		S/LC S/LC	LC LC	II I	KTWR	
Cervidae	*8.Axis axis* *9.Axis porcinus* *10.Muntiacus Vaginalis*	Spotted Deer Hog Deer Barking Deer		-/VU S/EN -/VU	LC EN LC	- - -	KTWR KTWR KTWR	
Elephantidae	*11.Elephas maximus*	Asiatic Elephant	P	E/EN	E	I	KTWR	
Felidae	*12.Felis chaus* *13.Prionailurus viverrinus*	Jungle cat Fishing cat		S V/EN	LC Vu	II II	KTWR KTWR	
Hystricidae	*15.Hystrix indica*	Indian Crested Porcupine		-/DD	LC	-		

Family	Scientific Name	*Common Name*	Status				Number	
			NPWC Act (1973)	NRDB (1995)/2011	IUCN	CITES (NP)		
Herpestedae	*16.Herpestes edwardsii* *17.Herpestes javanicus* *18. Herpestes urva*	Indian Grey Mongoose Small Asian Mongoose Crab-eating Mongoose		-/LC -/LC -/Vu	LC LC LC	- - -	KTWR KTWR KTWR	Jnawali et al 2001
Leporidae	*19.Lepus nigricollis*	Indian Hare		-/LC	LC	-		
Lutranae	*20. Lutra lutra* *21. Lutragale perspicillata*	Common Otter Smooth Coated Otter		S/NT S/EN	NT VU	I II	KTWR Previously-KTWR	
Mustilidae	*22.Martes flavigula*	Yellow- Throated Marten		-/LC	LC	-		
Platanistidae	*23. Platanista gangetica*	Gangetic Dolphin	P	C/CR	EN	I		
Pteromyidae	*24. Petaurista petaurista*	Red flying Squirrel		-/LC	LC	-		
Pteropodidae	*25. Pteropus giganteus*	Indian Flying Fox		-/LC	LC	II		
Sciuridae	*26.Ratufa bicolor* *27.Funambulus palmarum* *28.Funambulus pennati*	Black Giant Squirrel Three Striped Squirrel Five Striped Squirrel		-/En - -/LC	NT LC LC	II - -		
Suidae	*29.Sus scrofa*	Wild boar		-/LC	LC	-		
Vespertilionidae	*30. Pipistrellus coromandra*	Indian Pipistrelle		-/LC	LC	-		
Viverridae	*31. Viverra zibetha* *32. Viverricula indica*	Large Indian Civet Small Indian Civet		-/NT -/LC	LC LC	-		

(Source: KTWR 2009, updated with Jnawali et al.2011)

Family	Scientific Name	*Common Name*	Status				Number	
			NDWCA (1923)	NRDB (1995)/2011	IUCN	CITES (NP)		
Muridae	*33. Golunda ellioti*	Indian Bush-rat		-/LC	LC	-		
	34. Mus saxicola	Brown Spiny Mouse		-/LC	LC	-		
	35. Mus terricolor	Earth-colored Mouse		-/LC	LC	-		
	36. Tatera indica	Indian Gerbil		-/LC	LC	-		
	37. Bandicota indica	Greater Bandicoot Rat		-/DD	LC	-		
Spalacidae	*38. Cannomys badius*	Bay Bamboo Rat		-/DD	LC	-		
Pteropodidae	*39.Cynopterus sphinx*	Greater Short-nosed Bat		-/LC	LC	-		
Vespertilionidae	*40.Scotophilus heathii*	Greater Asiatic Yellow Bat		-/LC	LC	-		

(Source: Jnawali et al.2011)

Annex-3

Checklist of Birds

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
	Galliformes	**Phasianidae(Game birds)**				
1.	*Francoplinus francolinus*	Black francolin	R			
2.	*Francoplinus pondericerianus*	Grey Francolin	R			
3.	*Francoplinus gularis*	Swamp Francolin VU	R			
4.	*Coturnix coturnix*	Common quail	WM			
5.	*Coturnix chinensis*	King Quail, Blue breasted Quail				
6.	*Gallus gallus*	Red jungle Fowl	R			
7.	*Pavo cristatus*	Indian Peafowl	r,5			
	Anseriformes	**Anatidae(Ducks & Gees)**				
8.	*Dendrocygna javanica*	Lesser Whistling Duck	RM			
9.	*Dendrocygna bicolor*	Fulvous Whistling-Duck	m,5			
10.	*Anser anser*	Greylag goose	WM		S	
11.	*Anser albifrons*	Greater White-fronted Goose				
12.	*Anser indicus*	Bar headed goose	WM		S	
13.	*Sarkidiornis melanotos*	Knob-billed Duck				
14.	*Tadorna ferruginea*	Ruddy Shelduck	WM		S	
15.	*Tadorna tadorna*	Common Shelduck	V			
16.	*Sarkidiomis melanotus*	Knob-billed duck	RW		V	
17.	*Nettapus coromandelianus*	Cotton Pigmy Goose	RS		S	
18.	*Anas Penelope*	Eurasian Wigeon	WM		S	
19.	*Anas falcata*	Falcated duck	WM		V	
20.	*Anas strepera*	Gad wall	WM			
21.	*Anas crecca*	Common Teal	WM			
22.	*Anas formosa*	Baikal Teal	V			
23.	*Anas platyrhynchos*	Mallard	WM			
24.	*Anas poecilorhyncha*	Indian Spot-billed Duck	r,4			
25.	*Anas zonorhyncha*	Eastern Spot-billed Duck	w,3			
26.	*Anas acuta*	Northern Pintail	WM			
27.	*Anas querquedula*	Garganey	WM			
28.	*Anas clypeata*	Northern shoveler	WM			
29.	*Netta rufina*	Red crested Pochard	WM			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
30.	*Aythya ferina*	Common Pochard	WM			
31.	*Aythya baeri*	Baer's Pochard CR	WM			
32.	*Aythya nyroca*	Ferruginous Duck	WM			
33.	*Aythya fuligula*	Tufted duck	MS			
34.	*Aytha marila*	Greater Scaup				
35.	*Clangula hyemalis*	Long-tailed Duck VU				
36.	*Bucephala clangula*	Common Goldeneye				
37.	*Mergellus albellus*	Smew				
38.	*Mergus merganser*	Goosander	SM			
39.	*Mergus serrator*	Red-brested Merganser				
Gaviidae						
40.	*Gavia stellate*	Red-throated Diver	vagrant			
Podicipedidae(Grebes)						
41.	*Tachybatus ruficollis*	Little Grebe	RM			
42.	*Podiceps cristatus*	Great Crested Grebe	WM			
43.	*Podiceps nigricollis*	Black Nacked Gerbe	WM			
44.	*Phoenicopterus roseus*	Greater Flamingo	vagrant			
	Ciconiformes	**Ciconiidae**(Storks)				
45.	*Mycteria leucocephala*	Painted Stork	SM		V	
46.	*Anastomus oscitans*	Asian Open-bill Stork	RM	S		
47.	*Ciconia nigra*	Black Stork	WM		E	
48.	*Ciconia episcopus*	Wooly-necke VU	RM	S		
49.	*Ciconia ciconia*	White Stork	V		E	
50.	*Ephippiorhynchus asiaticus*	Black Necked Stork	RW	C		
51.	*Leptoptelis dubius*	Greater Adjutant Stor EN	SM		C	E
52.	*Leptoptelis javanicus*	Lesser Adjutant Stork VU	R		V	V
Threskiornithidae(Ibis)						
53.	*Plegadis falcinellus*	Glossy Ibis	V			
54.	*Pseudibis papillosa*	Red-naped Ibis	R		S	
55.	*Threskiomis melanocephalus*	Black-headed lbis, Oriental White Ibis	r,3		V	
56.	*Platalea leucorodia*	Eurasian Spoonbill	WM		V	
Ardeidae (Bitterns, Herons, Egrets)						
57.	*Botaurus stellaris*	Great Bittern, Eurasian Bittern	w,5		S	
58.	*Ixobrychus sinensis*	Yellow Bittern	SM			
59.	*Ixobrychus cinnamomeus*	Cinnamon bittern	RS			
60.	*Dupetor flavicollis*	Black Bittern	R			
61.	*Nycticorax nycticorax*	Black-crowned night heron	RS			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
62.	*Butorides striata*	Striated Heron, Green-backed heron	r,3			
63.	*Ardeola grayii*	Indian Pond Heron	R			
64.	*Bubulcus ibis*	Cattle egret	R			
65.	*Egretta garzetta*	Little Egret	R			
66.	*Egretta intermedia*	Intermediate Egret	R			
67.	*Egretta alba*	Great Egret	R			
68.	*Ardea cinerea*	Grey Heron	WM			
69.	*Ardea purpurea*	Purple Heron	R			
Pelicanidae(Pelicans)						
70.	*Pelecanus philipensis*	Spot- billed Pelican	m,4		S	
71.	*Pelecanus onocrotalus*	Great White Pelican	m,5			
Phalacrocoracide(Cormorants)						
72.	*Phalacrocorax carbo*	Great Cormorant	R			
73.	*Phalacrocorax niger*	Little Cormorant	WM			
74.	*Phalacrocorax fucicollis*	Indian Cormorant	vagrant			
		Anhingidae				
75.	*Anhinga melanogaster*	Darter				
Falconidae						
76.	*Microhirex caerulescens*	Collared Folconet, Red-thighed falconet	M,5			
77.	*Falco tinnunculus*	Common kestrel	RW			
78.	*Falco chicquera*	Red-necked Falcon	R			
79.	*Falco amurensis*	Amur Falcon	M			
80.	*Falco columbarius*	Merlin	M			
81.	*Falco subbuteo*	Eurrasian Hobby	RW			
82.	*Falco severus*	Oriental hobby	WM			
83.	*Falco naumanni*	Lesser Kestral	WM			
84.	*Falco jugger*	Lagger Folcon	WM			
85.	*Falco cherrug*	Saker Folcon EN	WM			
86.	*Falco peregrines*	Peregrine Folcon	WM			
Accipitridae(Birds of prey)						
87.	*Pernis ptilorhyncus*	Oriential Honey Bizzard	RM			
88.	*Aviceda leuphotes*	Black Baza	s,5			
89.	*Elanus caeruleus*	Black winged Kite	R			
90.	*Milvus migarns*	Black Kite	RM			
91.	*Haliastur Indus*	Brahminy Kite				
92.	*Haliaeetus leucoryphus*	Pallas's Fish Eagle VU	RW			
93.	*Haliaeetus indus*	Brahmini Kite	R			
94.	*Haliaeetus albicilla*	White tailed eagle	WM			
95.	*Ichthyophaga nana*	Lesser fishing eagle	R			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
96.	*Ichthyophaga ichthyaetus*	Grey headed fishing eagle	R			
97.	*Neophron percnopterus*	Egyptian vulture EN	R			
98.	*Gyps bengalensi*	Oriental white blacked vulture CR	R			
99.	*Gyps tenuirostris*	Slender-billed Vulture CR				
100.	*Gyps himalayansis*	Himalayan Vulture				
101.	*Gyps fulvus*	Eurasian Griffon Vulture	R			
102.	*Sarcogyps calvus*	Red headed vulture	R			
103.	*Aegypius monachus*	Eurassian Black Vulture	WM			
104.	*Circaetus gallicus*	Short toed eagle	WM			
105.	*Spilornis cheela*	Crested Serpent Eagle	WM			
106.	*Circus aeruginosus*	Eurasian Marsh Harrier	WM			
107.	*Circus cyaneus*	Hen Harrier	WM			
108.	*Circus macrourus*	Pallid Harrier	WM			
109.	*Circus pygargus*	Montagu's Harrier	WM			
110.	*Circus melanoleucus*	Pied Harrier	WM			
111.	*Accipiter gentilis*	Northern Goshawk	W,4			
112.	*Accipiter virgatus*	Besra	M,4			
113.	*Accipiter nisus*	Eurasian Sparrowhawk	RW			
114.	*Accipiter trivigatus*	Crested Goshawk	w,4			
115.	*Accipiter badius*	Shikra	R			
116.	*Butastur teesa*	White eyed Buzzard	R			
117.	*Buteo burmanicus*	Himalayan Buzzard	w,3			
118.	*Buiteo rufinus*	Long legged buzzard	WM			
119.	*Buteo hemilasius*	Upland buzzard	WM			
120.	*Ictinaetus malaensis*	Black Eagle	WM			
121.	*Aquila hastate*	Indian Stopped Eagle VU				
122.	*Aquila nipalensis*	Steppe Eagle	WM			
123.	*Hieraaetus pennatus*	Booted Eagle	WM			
124.	*Aquila rapax*	Tawny Eagle	R			
125.	*Aquila chrysaetos*	Golden Eagle				
126.	*Aquila fasciata*	Bonelli's Eagle				
127.	*Aquila heliacal*	Eastern Imperial Eagle VU	WM			
128.	*Nisaetus cirrhatus*	Changeable hawk eagle	R,5			
129.	*Nisaetus nipalensis*	Mountain Hawk Eagle	WM			
130.	*Pandion haliaetus*	Osprey	RW			
***Gruiformes* Otididae**						
131.	*Houbaropsis bengalensis*	Bengal Florican CR	R			
132.	*Sypheotides indicus*	Lesser florican EN	SM			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
Rallidae (Rails & Crakes)						
133.	*Porzana pucilla*	Bailon's crakes	WM			
134.	*Porzana porzana*	Spotted Crake				
135.	*Porzana fusca*	Ruddy breasted Crake	R			
136.	*Gallirallus striatus*	Slaty-breated Rail				
137.	*Rallus aqaticus/ indicus*	Water Rail/Brown-cheeked Rail				
138.	*Amaurornis akool*	Brown crake	R			
139.	*Amaurornis phoenicurus*	White brested water hen	R			
140.	*Gallinula chloropus*	Common moorhen	RW			
141.	*Porphyrio porphyria*	Purple Gallinule	WM			
142.	*Gallicrex cineria*	Water cock	SM			
143.	*Fulica atra*	Common Coot	WM			
Gruidae (Cranes)						
144.	*Grus grus*	Common Crane	WM			
145.	*Grus virgo*	Demoisella Crane	WM			
Turniciformes **Turnicidae(Button quails)**						
146.	*Turnix tanki*	Yellow legged button quail	R			
147.	*Turnix suscitator*	Barred Button Quail(Common Bustard)R				
Burhindae (Thick-knee)						
148.	*Burhinus indicus*	Indian Thick-Knee				
149.	*Esacus recurvirostris*	Great Thick-knee				
Charadriidae(Waders)						
150.	*Charadrius dubius*	Little ringed plover	Br,1			
151.	*Charadrius alexandrinus*	Kentish Plover	WM			
152.	*Charadrius mongolus*	Lesser sand plover	WM			
153.	*Charadrius leschenaultii*	Greater Sand Plover				
154.	*Pluvialis fulva*	Pacific Golden Plover	WM			
155.	*Pluvialis squatarola*	Grey Plover				
156.	*Himantopus himantopus*	Black winged stilt	M			
157.	*Recorvirostra avosetta*	Pied avocet	M			
158.	*Vanellus vanellus*	Northen Lapwing				
159.	*Vanellus duvaucelii*	River Lapwing				
160.	*Vanellus malabaricus*	Yellow-wattled Lapwing				
161.	*Vanellus cinereus*	Grey-headed Lapwing				
162.	*Vanellus indicus*	Red-wattled Lapwing				
Rostratudilae (Painted snipe)						
163.	*Rostratula benghalensis*	Greater-painted snipe	br,3			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
Jacanidae (Jacane)						
164.	*Hydrophasianus chirurgus*	Pheasant tailed Jacana	WM			
165.	*Metopidius indicus*	Bronze winged Jacana	R			
		Scolopacidae				
166.	*Calidris alba*	Sanderling	V			
167.	*Calidris canutus*	Red knot	vagrant			
168.	*Calidris minuta*	Little stint	WM			
169.	*Calidris temminckii*	Temminck's Stint	WM			
170.	*Calidris subminuta*	Long toed Stint	V			
171.	*Calidris ferruginea*	Curlew Sandpiper	WM			
172.	*Calidris alpine*	Dunlin	WM			
173.	*Philomachus pugnax*	Ruff	WM			
174.	*Gallinago gallinago*	Common snipe	WM			
175.	*Gallinago stenura*	Pintail snipe	WM			
176.	*Limosa limosa*	Black tailed godwit	WM			
177.	*Numenius phaeopus*	Whimbrel	WM			
178.	*Numenius arquata*	Eurasian curlew	WM			
179.	*Tringa erythropus*	Spotted redshank	WM			
180.	*Tringa tetanus*	Common Redshank	w,3			
181.	*Tringa stagnatilis*	Marsh Sandpiper	WM			
182.	*Tringa nebularia*	Common Greenshank	WM			
183.	*Tringa ochropus*	Green sandpiper	w,1			
184.	*Tringa glareola*	Wood sandpiper	WM			
185.	*Xenus cinereus*	Terek Sandpiper	V			
186.	*Actitis hypoleucos*	Common sandpiper	WM			
		Glaereolidae(Pratincole)				
187.	*Cursorius coromandelicus*	Indian courser	R			
188.	*Glareola maldivarum*	Oriental Pratincole	M			
189.	*Glareola lacteal*	Small Pratincole	RW			
		Laridae(Gulls, Terns)				
190.	*Larus ichthyaetus*	Pallas's gull, Great black headed Gull	WM			
191.	*Larus ridibundus*	Black-headed gull, Common black headed Gull	WM			
192.	*Larus brunnicephalus*	Brown-headed Gull	WM			
193.	*Larus genei*	Slender-billed gull	V			
194.	*Larus canus*	Mew Gull	V			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
195.	*Larus cachinnans/ barabensis*	Caspian/Steppe Gull	m,4			
196.	*Larus ichthyaetus*	Pallas's Gull				
197.	*Gelochelidon nilotica*	Gull-billed Tern	WM			
198.	*Hydroprogne/Sterna caspia*	Caspian Tern	WM			
199.	*Sterna aurantia*	River Tern	RM			
200.	*Sterna hirundo*	Common Tern	WM			
201.	*Sterna acuticauda*	Black bellied Tern	RS			
202.	*Sternula albifrons*	Little Tern	SM			
203.	*Chlidonias hybrid*	Whiskered Tern	WM			
204.	*Chlidonias leucopterus*	White winged Black Tern	MW			
205.	*Rynchops albicollis*	Indian Skimmer	SM			
	Columbiformes	**Columbidae (Doves, Pigeons)**				
206.	*Columba livia*	Common Pigeon	R			
207.	*Columba palumbus*	Common Wood Pigeon				
208.	*Streptopelia decaocto*	Eurasian collared Dove	RM			
209.	*Streptopelia tranquebarica*	Red turtle dove	R			
210.	*Streptopelia orientalis*	Oriental(Rufous) Turtle dove	WM			
211.	*Stigmatopelia chinensis*	Spotted Dove	R			
212.	*Spilopelia senegalensis*	Laughing Dove	R			
213.	*Chalcophaps indica*	Emerald dove	R			
214.	*Treron bicinctus*	Orange breasted green pigeon	R			
215.	*Treron pompadora*	Pompador green pigeon	R			
216.	*Treron phoenicopterus*	Yellow footed green pigeon	R			
217.	*Treron curvirostra*	Thick billed Green Pigeon	R			
218.	*Treron sphenurus*	Wedge*-tailed Green Pegion*	W,5			
	Psittaciformes	**Psittacidae(Parakeets)**				
219.	*Psittacula eupatria*	Alexandrine Parakeet	R			
220.	*Psittacula krameri*	Rose-ringed Parakeet	R			
221.	*Psittacula himalayana*	Slaty headed Parakeet	WM			
222.	*Psittacula cyanocephala*	Plum-headed Parakeet	R			
223.	*Psittacula alexandrii*	Red-breasted Parakeet	R			
224.	*Psittacula roseate*	Blossom headed Parakeet	R			
	Cuculiformes	**Cuculidae(Cuckoos)**				
225.	*Clamator coromandus*	Chestnut-winged Cuckoo	SM			
226.	*Clamator jacobinus*	Jacobin Cuckoo				

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
227.	*Hierococcyx varius*	Common Hawk cuckoo	R			
228.	*Hierococcyx fugax*	Hudgson's Hawk Cuckoo	m,5			
229.	*Cacomantis passerinus*	Grey bellied Plaintive Cockoo	SM			
230.	*Cacomantis merulinus*	plaitive Cockoo	V			
231.	*Cuculus micropterus*	Indian Cuckoo	SM			
232.	*Cuculus canorus*	Common Cuckoo	SM			
233.	*Cuculus saturatus*	Oriental Cuckoo	SM			
234.	*Cacomantis sonneratii*	Banded Bay Cuckoo				
235.	*Surniculus lugubris*	Drongo Cuckoo	SM			
236.	*Eudynamys scolopaceus*	Common koel	SM			
237.	*Rhopodytes tristis*	Green-billed Malkoha	r,4			
238.	*Taccocua leschenaultii*	Sirkeer Cuckoo	SM			
239.	*Centropus sinensis*	Greater Coucal	R			
240.	*Centropus bengalensis*	Lesser Coucal	R			
	Strigiformes	**Tytonidae (Owl)**				
241.	*Tyto longimembris*	Eastern Grass Owl	r,4			
242.	*Tyto alba*	Barn Owl	r,5			
		Strigidae(Owls)				
243.	*Otus bakkamoena*	Indian Scops Owl				
244.	*Otus lettia*	Collared scops owl	R			
245.	*Otus sunia*	Oriental Scops Owl				
246.	*Bubo coromandus*	Dusky eagle owl	R			
247.	*Ketupa zeylonensis*	Brown fish owl	R			
248.	*Glaucidium radiatum*	Jungle owlet	R			
249.	*Ninox scutulata*	Brown Hawk owl	R			
250.	*Athene brama*	Spotted little owl	R			
251.	*Asio flammeus*	short eared owl	WM			
	Caprimulgiformes	**Caprimulgidae(Nightjars)**				
252.	*Caprimulgus affinis*	Savanna nightjar	WM			
253.	*Caprimulgus asiaticus*	Indian Nightjar	WM			
254.	*Caprimulgus maharattensis*	Sykes's Nightjar				
255.	*Caprimulgus macrurus*	Large tailed Nightjar	WM			
		Apopidae(Swifts)				
256.	*Collocalias brevirostris*	Himalayan Swiftlet	M,3			
257.	*Hirundapus cochinchinensis*	Silver-backed needletail	MW			
258.	*Tachymarptis melba*	Alpine Swift	SM			
259.	*Apus pacificus*	Fork-tailed swift,Pacific Swift	WM			

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
260.	*Apus affinis*	Little Swift	R			
261.	*Apus nipalensis*	House Swift				
262.	*Cypsiurus balasiensis*	Asian Palm Swift	R			
		Hemiprocnidae				
263.	*Hemiprocne coronata*	Crestred treeswift	M,4			
		Coracidae (Rollers)				
264.	*Coracias benghalensis*	Indian Roller				
265.	*Coracias affinis*	Indochinese Roller				
266.	*Eurystomus Orientalis*	Dollarbird				
		Alcedinidae(Kingfishers)				
267.	*Halcyon smyrnensis*	White-throated kingfisher	Br,1			
268.	*Halcyon pileata*	Black capped kingfisher	V			
269.	*Pelargopsis capensis*	Stork billed kingfisher	R			
270.	*Alcedo atthis*	Common kingfisher	R			
271.	*Ceryle rudis*	Pied kingfisher	R			
		Meropidae (Bee eaters)				
272.	*Nyctornis athertoni*	Blue bearded bee eater	R			
273.	*Meropes orientalis*	(Little) Green bee eater	R			
274.	*Merops phillipinus*	Blue tailed bee eater				
275.	*Meropes leschenaulti*	Chestnut headed bee eater				
		Upupidae(Hoopoes)				
276.	*Upupu epops*	CommonHoopoe				
	Bucerotiformes	**Bucerotidae (Hornbills)**				
277.	*Ocyceros biristris*	Indian Grey hornbill				
278.	*Anthracoceros albirostris*	Oroentail Pied Hornbill				
	Piciformes	**Megalaimdae (Barbets)**				
279.	Megalaima *lineate*	Lineated barbet				
280.	Megalaima *asiatica*	Blue throated Barbet				
281.	Megalaima *haemacephala*	Coppersmith Barbet				
		Picidae (Wood peckers)				
282.	*Jynx torquilla*	Eurasian Wryneck				
283.	*Dendrocopos nanus*	Brown-capped Pygmy Woodpecker				
284.	*Dendrocopos canicapillus*	Grey-capped Pygmy woodpecker				
285.	*Picus xanthopygaeus*	Streak throated woodpecker				
286.	*Celeus brachyurus*	Rufous woodpecker				
287.	*Dinopium benghalense*	Lesser Goldenback				

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288.	*Dendrocopos macei*	Fulvous breasted woodpecker				
289.	*Dendrocopos mahrattensis*	Yellow-crowned Woodpecker				
	Paserifores	**Pittidae (Pitta)**				
290.	*Pitta sordida*	Hooded Pitta				
291.	*Pitta brachyura*	Indian Pitta				
		Campaphagadae (Cuckoo-shrikes, Minivets)				
292.	*Coracina melanoptera*	Black headed Cuckoo shrike				
293.	*Coracina melaschistos*	Black winged Cuckoo shrike				
294.	*Coracina macei*	Large Cuckoo shrike				
295.	*Tephrodornis pondicerianus*	Common Woodshrike				
296.	*Pericrocotus cinnanomeus*	Small Minivet				
297.	*Pericrocotus cantonensis*	Swinhoe's Minivet	w,4			
298.	*Pericrocotus flammeus*	Scarlet minivet				
299.	*Pericrocotus roseus*	Rosy minivet				
300.	*Pericrocotus divaricatus*	Ashy minivet				
301.	*Hemipus picatus*	Bar-winged Flycatcher-shrike				
		Artamidae(Wood swallow)				
302.	*Artamus fuscus*	Ashy wood swallow				
		Aegithinidae(lora)				
303.	*Aegithina tiphia*	Common lora	Br,1			
		Laniidae (Shrikes)				
304.	*Lanius cristatus*	Brown Shrike				
305.	*Lanius vittatus*	Bay backed Shrike				
306.	*Lanius tephronotus*	Grey-backed Shrike				
307.	*Lanius isabellinus*	Rufous-tailed Shrike				
308.	*Lanius schach*	Long tailed Shrike				
309.	*Lanius meridionalis*	Southern Grey Shrike				
Corvidae(Orioles)						
310.	*Rhipidura albicollis*	White-throated Fantail				
311.	*Rhipidura aureola*	White-browed Fantail				
312.	*Terpsiphone paradisi*	Asian paradise Flycatcher				
313.	*Hypothymis azurea*	Black naped Monarch				

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
314.	*Oriolus xanthornus*	Black hooded Oriole				
315.	*Oriolus Kundoo*	Indian Golden Oriole				
316.	*Orilus tenuirostris*	Slender-billed Oriole				
317.	*Orilus Chinensis*	Black-naped Oriole				
318.	*Orilus traillii*	Maroon Oriole				
319.	*Dicrurus macrocercus*	Black Drongo				
320.	*Dicrurus caerulescens*	White bellied Drongo				
321.	*Dicrurus annectans*	Crow billed Drongo				
322.	*Dicrurus paradiseus*	Greater Racket tailed Drongo				
323.	*Dicrurus leucophaeus*	Ashy Drongo				
324.	*Dicrurus aeneus*	Bronzed Drongo				
325.	*Dicrurus remifer*	Lesser-Racket-tailed Drongo				
326.	*Dicrurus hottentottus*	Spangled Drongo				
327.	*Urocissa erythrorhyncha*	Red billed Blue Magpie				
328.	*Dendrocitta vagabunda*	Rufous Treepie				
329.	*Dendrocitta formosae*	Grey Treepie				
330.	*Corvus splendens*	House crow				
331.	*Corvus macrorhynchos*	Indian Jungle crow				
Paridae(Tits)						
332.	*Parus major*	Great tit				
Hirundinidae(Swallows)						
333.	*Riparia paludicola*	Plain Martin				
334.	*Riparia riparia*	Sand Martin				
335.	*Hirundo rustica*	Barn Swallow				
336.	*Hirundo smithii*	Wire tailed Swallow				
337.	*Ceropis daurica*	Red rumped Swallow				
338.	*Petrochelidon fluvicola*	Streaked-throated Swallow				
339.	*Delichon dasypus*	Asian House Martin				
340.	*Delichon nipalense*	Nepal house Martin				
341.	*Delichon urbica*	Northern house Martin				
Alaudidae (Lark)						
342.	*Eremopterix griseus*	Ashy crowned Sparrow lark				
343.	*Calendrella brachydactyla*	Greater short-toed lark				
344.	*Calendrella acutirostris*	Hume's Short toed Lark				
345.	*Calendrella raytal*	Sand Lark				
346.	*Galerida cristata*	Crested Lark				
347.	*Alauda gulgula*	Oriental sky Lark				

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Cisticlidae						
348.	*Cisticola exilis*	Golden-headed Cisticola				
349.	*Prinia burnesii*	Rufous-vanted Prinia				
350.	*Cisticola juncidis*	Zitting Cisticola				
351.	*Prinia gracilis*	Graceful Prinia				
352.	*Prinia inornata*	Plain Prinia				
353.	*Prinia socialis*	Ashy Prinia				
354.	*Prinia hodgsonii*	Grey breasted Prinia				
355.	*Prinia flaviventris*	Yellow bellied Prinia				
356.	*Prinia criniger*	Striated Prinia				
357.	*Prinia sylvatica*	Jungle Prinia				
358.	*Prinia cinereocapilla*	Grey-crowned Prinai				
359.	*Orthotomus sutorius*	Common Tailor bird				
Pycnonotidae (Bulbul)						
360.	*Pycnonotus jocosus*	Red whiskered Bulbul				
361.	*Pycnonotus cafer*	Red vented Bulbul				
362.	*Pycnonotus leucogenys*	Himalayan Bulbul				
363.	*Hypsipetes leucocephalus*	Asian Black Bulbul				
364.	*Pycnonotus melanicterus*	Black crested Bulbul				
Sylvidae (Warblers)						
365.	*Cettia pallidipes*	Pale fotted Bush Warbler				
366.	*Cettia major*	Chestnut crowned Bush Warbler				
367.	*Cettia flavolivacea*	Aberrent Bush Warbler				
368.	*Cettia brunnifrons*	Grey sided Bush Warbler				
369.	*Bradypterus thoracicus*	Spotted Bush Warbler				
370.	*Bradypterus tacsanowskius*	Chinese Bus Warbler				
371.	*Bradypterus davidi*	David's Bus Warbler				
372.	*Locustella lanceolata*	Lanceolated Warbler				
373.	*Locustella naevia*	Grasshopper Warbler				
374.	*Locustella certhiola*	Rusty-rumped Warbler				
375.	*Phylloscopus xanthoschistos*	Grey-hooded Warbler				
376.	*Phylloscopus occipitalis*	Western Crowned Warbler				
377.	*Seicercus whistleri*	Whistler's Warbler				
378.	*Sylvia hortensis*	Orphean Warbler				
379.	*Sylvia curruca*	Lesser Whitethroat				
380.	*Sylvia althaea*	Hume's Whitethroat				
381.	*Megalurus palustris*	Striated Marsh Warbler				
382.	*Acrocephalus bistrigiceps*	Black browed Reed Warbler				

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
383.	*Acrocephalus agricola*	Paddyfield Warbler				
384.	*Acrocephalus concinens*	Blunt-winged Warbler				
385.	*Acrocephalus dumetorum*	Blyth's Reed Warbler				
386.	*Acrocephalus stentoreus*	Clamorous Reed Warbler				
387.	*Phragamaticola aedon*	Thick billed Warbler				
388.	*Iduna caligata*	Booted warbler				
389.	*Seicercus burkii*	Golden spectacled Warbler				
390.	*Phylloscopus reguloides*	Blyth's Leaf Warbler				
391.	*Phylloscopus trochiloides*	Greenish warbler				
392.	*Phylloscopus cantator*	Yellow vented Warbler				
393.	*Phylloscopus magnirostris*	Large billed Leaf Warbler				
394.	*Phylloscopus inornatus*	Yellow-browed Warbler				
395.	*Phylloscopus fuscatus*	Dusky's Warbler				
396.	*Phylloscopus fuligiventer*	Smoky Warbler				
397.	*Phylloscopus griseolus*	Sulphur bellied Warbler				
398.	*Phylloscopus affinis*	Tickell's Warbler				
399.	*Phylloscopus collybita*	CommonChiff Chaff				
400.	*Phylloscopus humei*	Hume's Warbler				
401.	*Chaetornis striata*	Bristled Grass bird VU				
402.	*Tesia cyaniventer*	Grey-bellied Tesia				
403.	*Malacocincla abbotti*	Abbott's Babbler				
404.	*Macronous gularis*	Pin-striped Tit Babbler				
405.	*Chrysomma sinense*	Yellow-eyed Babbler				
406.	*Turdoides earlei*	Striated Babbler				
407.	*Turdoides striata*	Jungle Babbler				
Zosteropidae						
408.	*Zosterops palpebrosus*	Oriental white eyed				
Regulidae						
409.	*Regulus regulus*	Gold crest				
Sittidae (Nuthatch)						
410.	*Sitta castanea*	Chestnut-bellied Nuthatch				
Sturnidae(Mynah)						
411.	*Sturnus malabaricus*	Chestnut tailed Starling				
412.	*Sturnus pagodarum*	Brahminy Satarling				
413.	*Agropsar sturninus*	Daurian Straling				
414.	*Sturnus sinensis*	White-shouldered Starling				
415.	*Pastor roseus*	Rosy Starling				
416.	*Sturnus vulgaris*	Common Starling				
417.	*Aplonis panayensis*	Asian Glossy Starling				

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418.	*Saroglossa spiloptera*	Spot-winged Starling				
419.	*Gracupica contra*	Asian Pied Starling				
420.	*Acridotheres tristis*	Common Mynah				
421.	*Acridotheres fuscus*	Jungle Mynah				
422.	*Gracula religiosa*	Common Hill Myna				
423.	*Acridotheres grandis*	Great Myna				
424.	*Acridotheres ginginianus*	Bank Myna				
Muscicapidae (Ruby throats)						
425.	*Luscinia calliope*	Siberiane Rubythroat				
426.	*Luscinia svecica*	Blue throat				
427.	*Luscinia pectoralis*	White tailed buby throat				
428.	*Luscinia brunnea*	Indian Blue Robin				
429.	*Copsychus saularis*	Oriental Magpie Robin				
430.	*Copsychus malabaricus*	White rumped Shama				
431.	*Phoenicurus ochruros*	Black Redstarts				
432.	*Phoenicurus hodgsoni*	Hodgson's Redstarts				
433.	*Phoenicurus auroreus*	Daurian Redstarts				
434.	*Rhyacornis fuliginosa*	Plumbeous Water Redstsrt				
435.	*Saxicola torquatus*	Common Stonechat				
436.	*Saxicola leucurus*	White tailed Stonechat				
437.	*Saxicola insignis*	Hodgson's Bushchat				
438.	*Saxicola caprata*	Pied Bushchat				
439.	*Saxicola jerdoni*	Jerdon's Bushchat				
440.	*Saxicola ferreus*	Grey Bushchat				
441.	*Cercomela fusca*	Brown Rock chat				
442.	*Oenanthe isabellina*	Isabelline Wheatear				
443.	*Oenanthe deserti*	Desert Wheatear				
444.	*Oenanthe picata*	Variable Wheatear				
445.	*Chaimarrornis leucocephalus*	White capped Redstart				
446.	*Saxicoloides fulicatus*	Indian Robin				
447.	*Tarsiger indicus*	White-browed Bush Robin				
448.	*Myiomela leucura*	White-tailed Robin	w,4			
449.	*Luscinia burnnea*	Indian Blue Robin				
450.	*Enicurus scouleri*	Little Forktail				
451.	*Monticola cinclorhynchus*	Blue headed Rock Thrus				
452.	*Monticola solitaries*	Blue Rock Thrus				
453.	*Myophonus caeruleus*	Blue Whistling Thrus				
454.	*Zoothera dauma*	Scaly(White's) Thrus				
455.	*Zoothera citrine*	Orange headed Grond Thrus				
456.	*Zoothera Marginata*	Dark-sided Thrush				

SN	Order/Scientific Name	Family /Common Name	Habitat	NPWC Act (1973)	NRDB 1995)	IUCN
457.	*Turdus unicolor*	Tickell's Thrus				
458.	*Turdus eunomus*	Dusky Thrush				
459.	*Turdus boulboul*	Gray winged Blackbird				
460.	*Turdus albocinctus*	White-collared Blackbird				
461.	*Turdus merula*	Common Blackbird				
462.	*Turdus atrogularis*	Black-throated Thrush	W,5			
463.	*Turdus ruficollis*	Dark throated (Red black throated)Thrus				
464.	*Eumyias thalassinus*	Verditer Flycatcher				
465.	*Muscicapa sibirica*	Dark-sided Flycatcher				
466.	*Muscicapa dauurica*	Asian Brown Flycatcher				
467.	*Muscicapa ruficauda*	Rusty-tailed Flycatcher				
468.	*Ficedula hodgsonii*	Slaty-backed Flycatcher				
469.	*Ficedula albicilla*	Taiga Flycatcher				
470.	*Ficedula subrubra*	Kashmir Flycatcher VU				
471.	*Ficedula westermanni*	Little Pied Flycatcher				
472.	*Ficedula superciliaris*	Ultramarine Flaycatcher				
473.	*Ficedula tricolor*	Slaty Blue Flycatcher				
474.	*Ficedula hyperythra*	Snowy-browed Flycatcher				
475.	*Ficedula strophiata*	Rufous-gorgeted Flycatcher				
476.	*Ficedula parva*	Red breasted Flycatcher				
477.	*Cyornis rubeculoides*	Blue throated flycathcer				
478.	*Cyornis poliogenys*	Pale-chinned Flycatcher				
479.	*Muscicapella hodgsoni*	Pygmy Blue Flycatcher				
480.	*Culicicapa ceylonensis*	Grey headed Flycatcher				
481.	*Niltava sundara*	Rofous-bellied Niltava				
482.	*Niltava macgrigoriae*	Small Niltava				
		Chloropseidae				
483.	*Chloropsis aurifrons*	Golden throated leafbird				
		Nectarinidae(Sunbirds)				
484.	*Cinnyris asiaticus*	Purple Sunbird	Br,2			
485.	*Dicaeum agile*	Thick billed Flowerpecker				
486.	*Dicaeum erythrorhynchos*	Pale billed Flowerpecker				
		Passeridae				
487.	*Passer domesticus*	House sparrow				
488.	*Passer montanus*	Eurasian Tree Sparrow				
489.	*Passer hispaniolensis*	Spanish Sparrow				
490.	*Passer rutilans*	Russet Sparrow				
491.	*Gemnoris xanthocollis*	Chestnut-shouldered Petronia				

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		Plocidae				
492.	*Ploceus philippinus*	Baya weaver				
493.	*Ploceus benghalensis*	Black breasted Weaver				
494.	*Ploceus manyar*	Streaked weaver				
495.	*Ploceus mergarhynchus*	Finn's Weaver VU				
		Estrildidae (Munias)				
496.	*Amandava amandava*	Red Avadavat				
497.	*Eudice malabarica*	Indian silverbill				
498.	*Lonchura striata*	Striated Munia				
499.	*Lonchura punctulata*	Scaly breasted Munia				
500.	*Lonchura Malacca*	Black-headed Munia				
501.	*Lonchura atricapilla*	Chestnut Mania				
		Motacillidae(pipits, Wagtails)				
502.	*Anthus richardi*	Richard's Pipit				
503.	*Anthus rufulus*	Paddyfield Pipit				
504.	*Anthus godlewskii*	Blyth's Pipit				
505.	*Anthus campestris*	Tawny Pipit				
506.	*Anthus similis*	Long-bille Pipit				
507.	*Anthus cervinus*	Red-throated Pipit				
508.	*Anthu rubescens*	Buff-bellied Pipit				
509.	*Anthus hodgsoni*	Olive backed pipit				
510.	*Anthus trivialis*	Tree pipit				
511.	*Anthus roseatus*	Rosy pipit				
512.	*Anthus spinoletta*	Water Pipit				
513.	*Motacilla flava*	Yellow wagtail				
514.	*Dendronanthus indicus*	Forest wagtail				
515.	*Motacilla citreola*	Citrine wagtail				
516.	*Motacilla cinerea*	Grey wagtail				
517.	*Motacilla alba*	White wagtail				
518.	*Motacilla madaraspatensis*	White browed Wagtail				
		Fringillidae				
519.	*Carpodacus erythrinus*	Common Rose Finch				
		Emberizidae(Bunting)				
520.	*Emberiza spodocephala*	Black faced Bunting				
521.	*Emberiza fucata*	Chestnut eared Bunting				
522.	*Emberiza aureola*	Yellow breasted Bunting				
523.	*Emberiza pusilla*	Little Bunting				
524.	*Emberiza bruniceps*	Red-headed Bunting				
525.	*Emberiza melanocephala*	Black headed Bunting				
526.	*Melophus lathami*	Crested Bunting				

Annex-4

List of Fishes

SN	Species	Family	Local Name
1	*Amblyphorygnodon mola*	Cyprinidae	Mada, Dhawai, Pale Carplet
2	*Aspidoparia jaya*	Cyprinidae	Mara
3	*Aspidoparia morar*	Cyprinidae	Harda, Bhenga
4	*Barilius bwild water buffalo*	Cyprinidae	Fakate ,Bwild water buffalo Baril
5	*Barilius bendelisis*	Cyprinidae	Gudasi, Fakate Hamilton's Baril
6	*Barilius jalkapoorie*	Cyprinidae	Jalkapoor, Burmese trout
7	*Barilius barila*	Cyprinidae	Chachale , Fakate, Karo ,Barred Baril
8	*Barilius bola*	Cyprinidae	Goha ,Bola , Trout
9	*Barilius guttatus (syn.Raiamas guttatus)*	Cyprinidae	Jalkapoor
10	*Barilius radiolatus*	Cyprinidae	Gunther's baril,
11	*Barilius tileo*	Cyprinidae	Faketa tileo Baril
12	*Barilius vagra vagra*	Cyprinidae	Vagra Baril
13	*Barilius shacra*	Cyprinidae	
14	*Chagunius chagunio*	Cyprinidae	Rewa, Chaguni
15	*Chela laubuca*	Cyprinidae	Deduwa, Chalwa Glass Barb
16	*Cirrhinus mrigala*	Cyprinidae	Naini, Mrigal
17	*Cirrhinus reba*	Cyprinidae	Rewa
18	*Danio devario*	Cyprinidae	Chitahari, Pothi
19	*Danio acquipinnatus*	Cyprinidae	Bhitti Giant Danio
20	*Danio dangila*	Cyprinidae	Nepti
21	*Danio rerio*	Cyprinidae	Zebra macha Zebra fish
22	*Securicula gora*	Cyprinidae	Gora-chela
23	*Salmostoma acinaces*	Cyprinidae	Deduwa or chalwa
24	*Salmostoma bacaila*	Cyprinidae	Chilwa
25	*Garra lamta*	Cyprinidae	Buduna,
26	*Garra annandalei*	Cyprinidae	Buduna lohari
27	*Garra gotyla gotyla*	Cyprinidae	Sucker Head
28	*Garra rupecola*	Cyprinidae	
29	*Garra nasuta*	Cyprinidae	
30	*Labeo rohita*	Cyprinidae	Rohu
31	*Labeo calbasu*	Cyprinidae	Kalbasu, Black Rohu
32	*Labeo angra*	Cyprinidae	Thed ,Angra Labeo
33	*Labeo dero*	Cyprinidae	Gerdi kalabans
34	*Labeo dyocheilus*	Cyprinidae	Kalanch, Brahmaputra Labeo

SN	Species	Family	Local Name
35	*Labeo gonius*	Cyprinidae	Kursa, Gurdi
36	*Labeo boga*	Cyprinidae	Boga
37	*Neolissochilus hexagonolepis*	Cyprinidae	
38	*Puntius sophore*	Cyprinidae	Pothi (Spot fin swamp Barb)
39	*Puntius sarana*	Cyprinidae	Kande, Bhitti Olive barb
40	*Puntius ticto*	Cyprinidae	Sidre, Fire Fin Barb
41	*Puntius conchonius*	Cyprinidae	Pothia Sidre Rosy Barb
42	*Puntius phutunis*	Cyprinidae	
43	*Puntius chola*	Cyprinidae	Sidre, Pothi Swamp barb
44	*Puntius gelius*	Cyprinidae	Golden Barb
45	*Puntius terio**	Cyprinidae	
46	*Shizothorax richardsonii*	Cyprinidae	
47	*Shizothorax esocinus*	Cyprinidae	
48	*Shizothorax sinuatus*	Cyprinidae	
49	*Shizothoraichthys macropthalmus*	Cyprinidae	
50	*Shizothorax curvifrons*	Cyprinidae	
51	*Shizothorax labiatus*	Cyprinidae	
52	*Shizothorax progastus*	Cyprinidae	
53	*Tor putitora*	Cyprinidae	Mahaseer
54	*Tor tor*	Cyprinidae	Sahara
55	*Crossocheilus latius*	Cyprinidae	Dhurla, Gangetic Latius
56	*Oxygaster bacaila*	Cyprinidae	Darai Large Razor Belly Minnow
57	*Psilorhyncus sucatio*	Cyprinidae	
58	*Psilorhynchus gracilis**	Cyprinidae	
59	*Psilorhynchoides pseudechenes*	Cyprinidae	
60	*Psilorhynchoides homaloptera*	Cyprinidae	
61	*Naziritor chelynoides*	Cyprinidae	
62	*Schistura rupecola inglisi*	Cyprinidae	
63	*Schistura multifaciatus*	Cyprinidae	
64	*Balitora brucei*	Balitoridae	
65	*Colisa fasciatus*	Anabantidae	Katara, Striped Gourami
66	*Anabas testudinius*	Anabantidae	Kabai, Climbing perch
67	*Anguilla bengalensis*	Anguillidae	Rajbam, Long fresh water eel
68	*Mystus aor*	Bagridae	Kanti, Long whiskered catfish
69	*Mystus cavasius*	Bagridae	Tengra, Gangetic Mystus
70	*Mystus tengra*	Bagridae	Tengra, Mystus
71	*Mystus bheekerie*	Bagridae	
72	*Mystus vittatus*	Bagridae	Tengra, Striped dwarf mystus

SN	Species	Family	Local Name
73	*Rita rita*	Bagridae	Rita, Chona
74	*Batasio batasio*	Bagridae	
75	*Bagarius bagarius*	Sisoridae	Gounch Gangetic Gounch
76	*Gagata cenia*	Sisoridae	Tikthi Gogta Gagata
77	*Gagata viridescens*	Sisoridae	
78	*Glypothorax cavia*	Sisoridae	Capree
79	*Glyptothorax annandalei*	Sisoridae	Kapre
80	*Glyptothorax indicus*	Sisoridae	
81	*Glyptothorax sulcatus*	Sisoridae	
82	*Glyptothorax telchita telchitta*	Sisoridae	Kotel, Telchitta, Telcapre
83	*Glyptothorax botius**	Sisoridae	
84	*Glyptosternum blythi*	Sisoridae	
85	*Glyptothorax pectinopterus*	Sisoridae	
86	*Glyptothorax trilineatus*	Sisoridae	
87	*Pseudecheneis sulcatus*	Sisoridae	Kabri Sulcatus Catfish
88	*Pseudecheneis crassicauda*	Sisoridae	
89	*Nangre assamensis**	Sisoridae	
90	*Sisor rheophilus**	Sisoridae	
91	*Myersglanis blythi*	Sisoridae	
92	*Erethistes pussilus*	Erethistidae	
93	*Xenentodon cancila*	Belonidae	
94	*Chanda nama*	Centropomidae	Nata Elongated glass perchlet
95	*Chanda ranga*	Centropomidae	Chanari Glassy fish
96	*Channa gachua*	Ophiocephalidae	Bhoti, Hile, Asiatic murrel
97	*Channa punctatus*	Ophiocephalidae	Garahi, spotted Murrel
98	*Channa striatus*	Ophiocephalidae	Saura, Striped Murrel
99	*Channa morulius*	Ophiocephalidae	Saul, Saura, Giant Murrel
100	*Channa stewartii*	Ophiocephalidae	Hile, Assamese Murrel
101	*Clarias batrachus*	Clariidae	Mungri ,Mugar
102	*Semiplotus gongota*	Cobitidae	Latai, Gongaota loach
103	*Botia lohachata*	Cobitidae	Loach
104	*Botia Dario*	Cobitidae	
105	*Botia almorhae*	Cobitidae	
106	*Botia histrionica*	Cobitidae	Baghi
107	*Lepidocephalichthys guntea*	Cobitidae	Lata, Nakata, Goira, Guntea loach
108	*Lepidocephalichthys menomi**	Cobitidae	
109	*Neoeucirrchthys maydelli**	Cobitidae	
110	*Acanthocephala pangia*	Cobitidae	
111	*Nemacheilus beevani*	Cobitidae	
112	*Nemacheilus rupicola*	Cobitidae	

SN	Species	Family	Local Name
113	*Nemacheilus elongates*	Cobitidae	
114	*Semiloptes gongota*	Cobitidae	
115	*Setipina phasa*	Engraulidae	
116	*Nandus nandus*	Nandidae	Dhala Mottled Nandus
117	*Notopterus chitala*	Notopteridae	Mohi, Chital, Humped Feahterback
118	*Tetrodon cutcutia*	Tetrodontidae	Pokcha, Ocellated Pufferfish
119	*Amblyceps mangois*	Amblycipitidae	Pichhi
120	*Clupisoma garua*	Schilbeidae	Jalkapoor, Garua Bachhwa,
121	*Pseudeutropius atherinoides*	Schilbeidae	Jalkapoor,Patasi Potasi
122	*Pseudeutropius murius batarensis*	Schilbeidae	
123	*Ailia coila*	Schilbeidae	Patasi, Patangu ,Gangetic Aila
124	*Eutropiichthys vacha*	Schilbeidae	Bachora, Bachawa, Goonwaree Vaccha
125	*Heteropneustes fossilis*	Saccrobranchidae	Singhi, Stinging Catfish
126	*Glossogobius giuris*	Gobidae	Bulla, Tank Goby
127	*Macrognathus aculeatus*	Mastacembelidae	Gainchi
128	*Mastacembelus armatus*	Mastacembelidae	Chsi Bam,Spiny Eel
129	*Siror rhabdophorus*	Sitoridae	
130	*Chaca chaca*	Chacidae	Pauna, Pauwa
131	*Gudusia godanhiaii*	Clupidae	Suhiya Burmese River Shad
132	*Gudusia chapra*	Clupidae	Suiya, River shad
133	*Ompok bimaculatus*	Siluridae	Pabata, Butter Catfish
134	*Wallago attu*	Siluridae	Buhari, Padani
*New fish species reported by Edds & Ng (2007)			
List of exotic fishes in Koshi Basin			
No.	**Scientific name**	**Common name**	**Family**
135	*Aristichthys nobilis*	Bighead carp	Cyprinidae
136	*Ctenopharyngodon idella*	Grass carp	Cyprinidae
137	*Cyprinus carpio*	Common carp	Cyprinidae
138	*Hypophthalmichthys molitrix*	Silver carp	Cyprinidae
139	*Oreochromis niloticus*	Gift Tilapia	Cichlid
140	*Clarias gairipinus*	African catfish	Clariidae
141	*Pangasius* sp.	Pangas	Pangasiidae

Annex-5

List of Butterfly

Family Name	Scientific Name	Common Name
Amathusiidae	*1.Discophora sondaica zal*	
Danaidae	*2.Euploea core core* *3.Euploea klugii kollari* *4.Euploea mulciber mulciber* *5.Danaus genutia* *6.Danaus chryssipus* *7.Danaus aglea melanoides* *8.Tirmalala limniace leopardus*	Common Indian Crow King Crow Striped Blue Crow Common Tiger Plain Tiger Glassy Tiger Blue Glassy Tiger
Hesperiidae	*9.Pelopidas sinensis* *10.Pelopidas mathias mathias* *11.Metapa aria* *12.Borvo bevani* *13.Spialia galba* *14.Tagiades litigiosa* *15.Pwild water buffalora guttata* *16.Potanthus pseudomaesa clio* *17.Notocrypta curvifascia curvifascia* *18.Erionota thrax trax* *19.Telicota bambusae bambusae* *20.Odontoptilum angulata angulata*	Large Branded Swift Small Branded Swift Common Red Eye Bevan's Swift Indian Skipper Water Snow Flat Straight Swift Common Indian Dart Restricted Demon Palm Redeye Dark Palm Dart Chestnut Angle
Lycaenidae	*21.Celastrina puspa* *22.Zizeeria maha maha* *23.Zizeeria karsandra* *24.Freyeria putli* *25.Castalius rosimon rosimon* *26.Caleta caleta decida* *27.Jamides celeno aelianus* *28.Lampides boeticus* *29.Zizina otis otis* *30.Prosotas nora ardates* *31.Catachrysops strabo* *32.Anthene emolus emolus* *33.Acytolepsis puspa gisca* *34.Ramelana jangala ravata* *35.Tajuria maculata*	Common Hedgeblue Pale Grassblue Dark Grass Blue Least Grass Jewel Common Pierrot Angled Pierrot Common Cerulean Pea Blue Lesser Grass Blue Common Line Blue Forget-me-not Blue Common Ciliate Blue Common Hedge Blue Chocolate Royal Spotted Royal

Family Name	Scientific Name	Common Name
Nymphalidae	*36.Precis lemonias persicaria*	Lemon pansy
	37.Precis almana almana	Peacock Pansy
	38.Precis atlites atlites	Gray Pansy
	39.Precis orithya ocyale	Blue Pansy
	40.Precis iphita	Chocolate Pansy
	41.Precis hierta hierta	Yellow Pansy
	42.Neptis hylas kamarupa	Common Sailor
	43.Athyma perius	Common Sergeant
	44.Athyma opalina orientalis	Himalayan Sergeant
	45.Phalanta phalanta	Common Leopard
	46.Hypolymnas bolina jacintah	Great Egg Fly
	47.Vagrens egista	Vagrant
	48.Ariadne merione	Common Castor
	49.Hestina nama	Circe
	50. Pantoporia hordonia	Common Lascar
Papilionidae	*51.Papilio polytes romolus*	Common Marmon
	52.Papilio demoleus demoleus	Lime Swallowtail
	53.Papilio helenus helenus	Red Helen
	54.Graphium sarpedon	Common Blue Bottle
Pieridae	*55.Catopsilia pyranthe pyranthe*	Mottled Emigrant
	56.Catopsilia pomana pomana	Lemon Emigrant
	57.Gonepteryx rhamni nepalensis	Common Brimstone
	58.Catophaga lyncida eleonara	Chocolate Albatross
	59.Eurema hecabe contubernalis	Common Grass Yellow
	60.Eurema brigitta	Small Grass Yellow
	61.Anaemorphadescombesi leucacantha	Red Spot Jezebel Painted Jezebel
	62.Cathaemia hyparete	Red Breast Jezebel
	63.Delias acalis pyramus	Redbase Jezebel
	64.Delias pasithoe thyra	Common Gull
	65.Cepora nerissa	Common Wanderer
	66.Pareronia valeria hippia	Small Grass Yellow
	67.Terias brigitta sikkima	
Satyridae	*68.Melanitis leda leda*	Common Evening Brown
	69.Mycalesis persius blassiu	Common Bushbrown
	70.Orsotrioena medus medus	Jungle Brown
	71.Mycalesis malsara	White Line Blue
	72.Ypthima baldus	Common Fivering
	73.Ypthima newara	Newar Threering
	74.Ypthima huebneri	Common Fourring
	75.Lethe confusa confusa	Banded Tree Brown
	76.Lethe verma sintica	Straight Banded Tree Brown
	77..Elymnias malelas	Spotted Palm Fly

(Source: DNPWC 2009 verified/improved by Khanal 2016)

Annex-6

List of Herpetofauna

Family	Scientific name	Common name	Status			
			NPWC Act (1973)	NRDB (1995)	IUCN	CITES
Bufonide	*1.Bufo melanosticus* *2.Bufo stomatictus*	Black spined toad Marbled toad				
Microhylidae	*3.Kaloula taprobanica*	Sri lanka bull frog				
Ranidae	*4.Amolops afghanus* *5.Hoplobatrachus crassus* *6.Euphlyctis cynophylictis* *7.Rana humeralis* *8.Limnonectes limnocharis* *9.Rana nigrovittata* *10.Hoplobatrachus tigerinus* *11.Tomopteme breviceps*	Meghalaya stream frog Jerelon's bull frog Skittering frog Burmese frog Cricket frog Black spotted frog Indian bull frog Short headed burrowing frog				
Rhacophoridae	*12.Polypedatus taeniatus* *13.Polypedatus leucomystax*	Six lined Tree frog Java whipping frog				
Crocodylidae	*14.Crocodylus palustris*	Marsh mugger		V	V	I
Gavialidae	*15.Gavialis gangeticus*	Gharial	P	E	E	I

Family	Scientific name	Common name	Status			
			NPWC Act (1973)	NRDB (1995)	IUCN	CITES
Bataguridae	*16.Batagur kachuga*	Painted roofed turtle		V	I	II
	17.Pangshura smithii pallidipes	Brown roofed turtle		S		II
	18.Pangshuratecta	Indian roffed turtle		S		II
	19.Hardella thurgii	Brahminy river turtle		S		II
	20.Melanochelys trijuga	Peninsular black turtle		S		II
	21.Pangshura smithii smithii	Brown footed roofed turtle				II
	22.Pangshura flaviventer	Yellow-bellied tent turtle				II
	23.Melanochelys tricarinata	Tricarinate hill turtle				I
Testudinidae	*24.Indotestudo elongata*	Elongated tortoise		S	K	II
Trionychidae	*25.Chitra indica*	Narrow headed softshell turtle		S		II
	26.Lissemys punctata andersoni	Indian flap shell turtle		S		II
	27. Nilssonia gangeticus	Ganges soft-shell turtle		V	I	
	28.Nilssonia hurum	Peacock soft-shell turtle		S	I	I
	29.Aspideretes leithi	Brown roofed turtle		S		I
Agamidae	*30.Calotes versicolar*	Garden Lizards				
Gekkonidae	*31.Hemidactylus flviviridis*	Saffron-bellied wall Gecko				
	32.Hemidactylus frenatus	Bridled house Gecko				
Scincidae	*33.Riopa punctata*	Dotted garden skink				
	34. Asymblepharus sikimmensis	Sikkim skink				
Varanidae	*35.Varanus flavescens*	Golden monitor	P			I
	36.Varanus begalensis	Bengal monitor		S	I	I
Typhlopidae	*37.Rhamphotyphlops braminus*	Blind snake		S		
Boidae	*38.Python morulus bivittatus*	Burmese Rock Python	P			II

Family	Scientific name	Common name	Status			
			NPWC Act (1973)	NRDB (1995)	IUCN	CITES
Colubridae	*39.Ahaetulla nasuta*	Short nosed vine snake				
	40.Amphiesma stolata	Buf striped keelback				
	41.Boiga trigonata	Common cat snake				
	42.Enhydris enhydris	Smooth water snake				
	43.Ptyas mucosus	Asian rat snake				
	44.Xenocrophis piscator	Checkered keelback		S		II
	45.Xenochrophis sanctijohannis	Checkered keelback				
	46. Psammophis condanarus	Western/Asian sand racer				
Elapidae	*47.Bungarus caerulus*	Common krait				
	48.Bungarus fasciatus	Banded krait				
	49.Ophiophagus hannah	King cobra		V		II
	50.Naja kaouthia	Monocellate cobra				II
	51.Naja naja	Binocellate cobra				II
Viperidae	*52.Trimeresurus albolabris*	White lipped tree viper				

Sources: Kastle *et al.*, Field Guide to Amphibians and Reptiles of Nepal, ARCO-NEPAL 2013. KTWR, Management Plan 2009.

Legends: P= NPWC Act protected, C= Critically Endangered, E=Endangered, I= Intermediate, K= Insufficiently Known,
S= Susceptible, I, II, III = CITES Appendices, IN =India, NP= Nepal

Annex-7

Species Habitat Matrix (Source: Modified from Chettri et al., 2013)

Species	Status*			Land cover / land use				
	IUCN	CITES	NPWC Act	Grass land	Forests	River /lakes	Sand/ gravels	Agriculture
Wild Water Buffalo (*Bubalus arnee*)	EN	III	Yes	√		√		
Ganges River Dolphin (*Platanista gangetica*)	EN	I	Yes			√		
Black Giant Squirrel (*Ratufa bicolor*)	NT	I		√	√			
Hog Deer (*Axis porcinus*)	EN	I		√	√			
Smooth coated Otter (*Lutrogale perspicillata*)	VU	I I			√	√		
Fishing Cat (*Prionailurus viverrinus*)	EN	I I			√	√		
Asian Elephant (*Elephas maximus)*	EN	I	Yes	√	√	√		
Common Leopard (*Panthera pardus*)	NT	I		√	√			
Gharial (*Gavialis gangeticus*)	CR	I	Yes			√		
Mugger *(Crocodylus palustris)*	VU	I				√		
Rock Python *(Python molurus)*	NT	I I	Yes	√	√	√	√	
King Cobra (*Ophiophagus hannah*)	VU	I I		√	√			
Red-crowned Roof Turtle *(Batagur kachuga)*	CR	I I		√	√	√		
Yellow-headed Tortoise *(Indotestudo elongata)*	EN	I I		√	√	√		
Indian Softshell Turtle *(Nilssonia gangetica)*	EN	I				√		
Greater Adjutant *(Leptoptilos dubius)*	EN				√	√		√
Pallas's Fish Eagle *(Haliaeetus leucoryphus)*	VU	II		√	√	√		
Bengal Florican *(Houbaropsis bengalensis)*	CR	I	√	√	√	√		
Swamp Francolin *(Francolinus gularis)*	VU	III		√	√	√		√
White stork (*Ciconia ciconia*)			√			√		
Black stork (*Ephippiorhynchus asiaticus*)			√			√		

Annex-8

Details of cases from Fiscal Year 059/060 to FY 2073/74

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
1	Electrocuted wild buffalo and disguised by excavating land	029/ 2059-10-14		1	Bacchalal alias Baldev Mandal, P.Kushaha-04, Sunsari		Discharged from offence by delivering verdict on 2072/09/16
2	Regarding theft and transferring of wood from the preserve area.	10/ 2064-03-06		3	Debu alias Devnarayan Das, Dharmpur-06, Saptari Birendra Kumar Mahato, Laxmipur-04, Dhanusha Kebal Raut, Mahendranagar V.D.C. District Dhanusha	Numbers of 159 Sisau (25 Chatta) Numbers of 284 Sisau (429.73 q.ft.)	Released on bail / transferred into Saptari District Court
3	Death of preserved wildlife animal wildlife buffalo hitting by truck	01/ 2066-11-03		1	Deepak Bahadur Kumal, New Belhani-02, Nawalparashi	Truck having No. Lu1Kha 4354	Verdict delivered fixing fine Rs. 49,125/- from Sunsari District Court On 2073/1/23 B.S.
4	Theft and hunting by entering with weapon	08/ 2068-01-22		7	Harkit Chaudhary, Purbapipra-04, Saptari Sunil Sardar Dipendra Kumar Sardar, same address		Verdict delivered by Sunsari District Court, ordering imprison of 2 months & 18 days and fine Rs. 5000/-

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
					Purna Sardar alias Bise Sardar (absconded) same address Ramesh Sardar alias Babari Sardar (absconded) same address Jageshwor Sardar (absconded) same address Tiruhutiya Sardar absconded) same address		
5	Regarding sell and exporting theft of fire wood in the name of fishing	01/ 2068-07-07 B.S.		4	Jugeshwor Mallah, Jagatpur-04, Saptari Tetar Mukhiya, Same address Birendra Mukhiya, Same address Ranu Mukhiya, same address	Number of boat 1, number of net to be used for fishing -1	Discharged from offence by Sunsari Disttict Court delivering verdict on 2072/12/21
6	Theft & hunting by entering preserved zone with weapon	02/ 2069-01-14		6	Jaya Bahadur Limbu Rampur,Thoksila-7 Udayapur Jayanarayan B.Ka., same address Tek Bahadur Khatri, Same address Lalit Rai, Same address Bishnulal Majhi, same address Domi Chaudhari, Tapeshwori-4, Udayapur	Numbers of loaded gun -3, Numbers of mobile phone -7, Motorcycle having no. Sa 3 Pa 272 and Ko 7 Pa 4527- 2, Number of Knife 01, lighter-01 skleton of Salak-01, Net- 02, Khukuri made of iron-02, mouths of crocodile -01, Gun powder ½ kg.	Sent to custody on 2072/03/17 B.S. later on decision affirmed according to order by appellate court in the case of Domi Chaudhary being imprisoned and others are released on bail.

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
7	Theft and hunting by entering with weapon	03/ 2069-01-14 B.S.		3	Bal Bahadur Tamang, Mahendranagr-06 Sunsari Jangalu Uraua, Prakashpur-04 Sunsari, Sudhir Rai (absconded) Praskarpur -05 Sunsari	Numbers of loaded gun-02, Mobile -01, Knife -01,Small Saw -01, gunpowder box -7 bag-01, Cap-08	Fined Rs. 5000/- to every person by Sunsari Districti Court, on 2073/2/6 B.S.
8	Theft and hunting of wildlife animal	04/ 2069-02-28		4	Ram Prasad Limbu, Marekkatahare-08, Dhankuta Ashok Limbu, Thegabari-5, Sunsari Binodbega Limbu, Chyangthapu-06, Panchthar Haripur-01 South Duban, Sunsari	Numbers of Net-02, Iron rod -01, Knife -01, Rope -06 ft.	Fine and forfeiture the bail amount Rs. 84,750 in the case of Ram Prasad Limbu, Ashok Limbu and Binodbega Limbu by delivering verdict from Sunsari District Court on 2073/01/23 B.S.
9	Harming and destruction of byproduct – forest	01/ 2069-10-07		5	Jagadish Mahto, Bhardaha-03, Saptari Dambar Rajdhob, Bhardah-4 Saptari Polai Sharma Bhardaha-01 Saptari Sadanand Rajdhob, Bhardah-1 Saptari Debsunar Ishwor, Bhardah-2 Saptari	Spade -1 Small Saw -2 Nylon rope 20 ft.	Verdict delivered with fine Rs. 2000/- by Sunsari District Court on 2072/12/09 B.S.

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
10	Hunting of wildlife animal	02/ 2070-01-16 B.S.		5	Sakuntala Rai, Kamalpur-05, Saptari Dambarmaya Magar same address Nirmala Tamang Same address Smita Tamang Same address Sande Rai, same address	Numbers of iron Knife - 2, Basket made of thin bamboo stick which is used for carrying killed_ Chittal_by cutting. Whole body part of dear except separated three parts of horn	Verdict delivered with fine Rs. 1000/- to every person separately dated 2072/03/17 B.S.
11	Harming /destruction of forest-byproduct without having license	01/ 2071-01-05		7	Babulal Mukhiya, Saptari Rohit Mandal (absconded) Saptari Bharoshi Mndal (absconded) Saptari Renu Iser (absconded) Saptari Subash Mandal (absconded) Saptari Daraki Majhi (absconded) Saptari Nitesh Mandal (absconded) Saptari		6 persons absconded/ 1 person remained in due date by depositing demanded bail. Transferred to District Court Saptari

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
12	Taken away the wood in order to make pieces by cutting more than permission	02/ 2071-02-06 B.S.		2	Bishnu Prasad Chulagain, Sunsari		Verdict delivered with fine Rs. 5000/- from District Court Sunsari dated 2073/02/27 B.S
13	Theft and taken away by cutting Sisau Tree illegally in preserved zone	01/ 2071-7-20 B.S.		4	Darpan Yadav, Sunsari Ramchandra Meheta (absconded) Sunsari Jabar Ram (absconded) Sunsari		Verdict delivered with fine Rs. 5000/- to every person separately from Sunsari District Court on 2072/03/17 B.S.
14	Kipping illegal Akhetopahar of Chittal	01/ 2071-7-24 B.S.		1	DamodarsYadav, Paschim Kushaha-09 Sunsari		
15	Theft and hunting of Bird	03/ 2071-11-03 B.S.		3	Ojib Sekh, Saptari Kyamudin Sekh, Saptari Nurul Sekh, Saptari		Verdict delivered with fixing fine Rs. 3333/- from Sunsari District Court on 2073/03/6 B.S.
16	Illegal transferring of bird,Parrot	04/ 2071-11-03 B.S.		1	Mohamad Sabir Khan		Verdict delivered with fine Rs. /- 2000 from Sunsari District Court on 2072/12/02 B.S.
17	Grazing within preserved zone without permission.	05/ 2071-11-04 B.S.		1	Umesh Yadav		Discharged from offence as per the verdict of Sunsari District Court datted 2073/03/6 B.S.

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
18	Grazing within preserved zone without permission.	06/ 2071-12-10 B.S.		3	Satya Narayan Yadav Rajdev Raita (absconded) Ram Bahadur Tamang		Fined Rs. 500/- to Mr. Rajdev Raita and Rs. 4000/- to Ram Bahadur Tamang from Sunsari District Court dated 2073/03/5 B.S.
19	Grazing within preserved zone without permission	06/ 2071-12-10 B.S.		3	Rajendra Bharkhair Manoj Bharkhair Raghu Bharkhair		
20	Hunting of wildlife animal (Chittal)	08/ 2072-03-04 B.S.		12	Rambir Urau Ganga Pal (absconded) Dinesh Pal (absconded)) Gaina Pal (absconded)) Shiva Mahto (absconded)) Bhuka Chandrabansi (absconded)) Laxman Yadav (absconded)) Ramananda Pasman (absconded)) 12 persons et.al.		Verdict delivered with fine Rs. 5000/- to Mr. Rambir Urau and Rs. 2000/- to other five persons individually and discharged from offence to remaining 6 persons from Sunsari District Court dated 2073/01/7 B.S.
21	Death of wild buffalo due to hitting of bus	2073-06-18 B.S.		1	Ramu Chaudhary, Dist. Udayapur Tapeshwori-8	Ambulance	Discharged from offence by Sunsari District Court delivering verdict dated 272-09-01 B.S.

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
22	Illegal entrance into preserved zone with vehicle Motorcycle	2072-09-12 B.S.		1	Tuntun Yadav Kanchanrup Municipality-06 Saptari	Motorcycle	Discharged from offence by Sunsari District Court delivering verdict dated 273-01-12 B.S.
23	Harming by cutting wood named Sisau illegally from buffer zone	2072-09-15 B.S.		1	Bahadur Chandrabansi, Prakashpur-08, Sunsari	Tractor, five pieces of round Sisau wood.	Discharged from offence by Sunsari District Court delivering verdict dated 2073-09-05 B.S.
24	Cutting tree named Sisau illegally within Preserved zone	2072-09-30 B.S.		1	Ahasan Ansari Badhuban-05, Sunsari		Verdict delivered with fine Rs. 5000/- to Mr. Ahasana Ansari and Salauddin Khan individually and discharged from accuse to Mr.Kumar dated 2073-4-25 B.S.
25	Carrying out sand from preserved area of buffer zone.	01/ 2073-08-06 B.S.		6	Akshya Ram, Chandeshwor Ram, Nagendra Prasad Shah, Umesh Prasad Das, Debu Sardar, Rajendra Sada resident of Saptari District Kanchanrup Municipality Ward No. 09		Fined Rs. 10,000/- 7000/- and Rs.5000/- every person accordingly from office of Koshitappu wildlife Preservation dated 2073/08/20 B.S.
26	Killing of two male adult wild buffalo around age of 12 and 14 by electric shot.	2073-09-01 B.S.			Mugalal Shah resident of Kanchanrup Municipality Ward No. 10		Registered Case in Sunsari District Court

S. N.	Types of Case/ Name	Registered No./Registered Date	Number of Offender		Defendant / Offender	Seized Goods	Remarks
			Female	Male			
27	Theft and carried out sand from buffer zone.	2073-12-21 B.S.			Asharam Sada, Musharu Raya, Birendra Chaudhary, Shyam Mondal, Raju Sada, Jayaram Sada		Fined Rs. 7000/- to Mr. Raju Sada, Asharam Sada and Birendra Chaudhary and fined Rs.5000/- to Mr. Jayaram Sada, Shyam Mandal and Musharu Ray from the office of Koshitappu wildlife preservation dated 2073-12-28
28	Transferred of woods illegally without stitching from buffer zone	2074-3-6			Tej Narayan Mehata and Harikrishna Mehata		Registered case in office of Koshitappu wildlife preservation and yet to be decided.

Annex-9

Wild Animal Casualties

S.N	Animal	Date	Cause of death	Location	Remarks
1	1 Male Arna	073/9/1	Natural death	Core area	
2	1 Male Arna	073/8/9	Death by electric shock	Buffer zone/ Kusaha-4 Sunsari.	
3	2 Male Arna	073/7/13	Killed by electric shock	Buffer zone/ Kanchanrup Municipality-10, Saptari.	
4	Adult wild male Elephant	072/10/18	Retaliations killed by sharp instrument	Core area near to Moriya river, Saptari.	
5	Male baby Dolphin	072/10/16	Fishing net	Outside of core and buffer zone area/ Southern part of Koshi Barrage, Haripur Sunsari	
6	Vulture	072/9/28	Eaten poisoned carcasses	Buffer zone	
7	5 years of female Arna	072/6/18	Hit by ambulance	Buffer zone	
8	5 years of female Arna	071/10/7	Road accident	Buffer zone	
9	4 years of Laguna (Hog deer)	071/10/21	Killed by feral dog	Core area	
10	5 years of Chital (Axis Axis)	071/11/4	Killed by feral dog	Core area	
11	10 Years of female Arna	071/11/7	Road Accident	Buffer zone.	
12	Arna	070/1/8	Natural death	Core area.	
13	Elephant	070/5/4	Found in decomposed condition.	Forest at Urlabari-7, Morang.	
14	Baby Chital	070/6/13			
15	Male Arna	070/8/28		Buffer zone/ Shripur-7, Sunsari.	

S.N	Animal	Date	Cause of death	Location	Remarks
16	Male Laguna (Hog deer)	070/9/22		Buffer zone/ Prakashpur, Sunsari.	
18	Male Arna	070/11/2	Road accident at Haripur, Sunsari		
19	Wild Elephant	070/11/15	Due to electric shock	Buffer zone/ Haripur-5 Sunsari.	
20	Indian Civet Cat	070/11/25	Road accident while trying to cross the Highway in Kusaha	Core area/ Kusaha-4, Sunsari	
21	Elephant	069/4/15	Unknown	Forest/ Tarahara, Sunsari	
22	Arna	069/9/24	Unknown	Buffer zone/ Kusaha-9 Sunsari	

Annex-10

Tourist number and revenue generation (FY 2071/72 and 2073/74)

Particulars	Tourists	FY 2072-73	FY 2071-72	FY 2073/74
Tourist number and revenue (NRs)	Nepali	9058	8242	11002
	Revenue	452907	412100	562100
	SAARC	31	29	54
	Revenue	15500	14500	27000
	Non-SAARC Foreigner	148	386	196
	Revenue	158000	448000	196000
Revenue from elephant safari (NRs)	Nepali	45750	32000	
	SAARC	0	7500	
	Non-SAARC Foreigner	15000	16500	
Tourism related revenue (excluding vehicle fee) (NRs)	Nepali	498657 (72.6%)	444100 (47.7%)	
	SAARC	15500 (2.2%)	22000 (2.3%)	
	Non-SAARC Foreigner	173000(25.2%)	464500 (49.9%)	
Total revenue		**687157**	**930600**	

(Source: Annual reports DNPWC and KTWR)

Annex-11

Captive elephants in the Reserve

SN	Elephant Name	Source of Elephant	Gender	Age (years)	Calf details
1	Sobhakali	Purchased from India Sitamadhi in 2040 B.S.	F	52	In 2060/4/20 Barahgaj and Laxmikali in 2066/6/22
2	Ambikakali	Nepal Government gave the 4 Rhino in 2042 B.S.to the Indian Government as souvenior and Indian Government gave the Abmikakali to Nepal. Ambikakali was brought from CNP.	F	60	No Calves born
3	Dam Dami Kali	Transferred from CNP in 2073	F	13	
4	Sarswati Kali	Transferred from CNP in 2073	F	13	
5	Laxmikali	In 2066/6/22 born by sobhakali	M	7.5	No Calves born
		Deputed in CNP			
1	Prithvikali	In 2035 BS purchased from Dakailabahuari Sarlahi and Came from Chitwan to KTWR	F	52	No Calves born
2	Barahgaj	In 2060/4/20 progeny of Sobhakali	M	11	
3	Parbatikali	In 2042 B.S. received in exchange of rhino from India, came from CNP	F	65	No Calves born
4	Thirthman Kali	Transferred from CNP but still in CNP	F	13	
5	kush Prasad	Transferred from CNP but still in CNP	M	14	

M=Male, F=Female

Annex-12

List of research conducted from FY 2065/66 to 2073/74

Year	No	Title of research	Degree	Affiliated Organisation
2065/66	1	Status Distribution and local initiatives taken to conserve Koshi River Dolphin *Platanista gangetica*	M.Sc.	CDES,TU
	2	Analysis Trend of potentially Dangerous Glacial lakes to outburst, Dudh-Koshi Basin	B.Sc	IOF Pokhara
	3	Direct use values of Wetland Resources to Inhabitants in the Buffer Zone of Koshi Tappu Wildlife Reserve, Nepal	M.Sc.	Mahidol Univ. Thailand
	4	Production of Molecular Markers of Micro chiropterans of Eastern Nepal		CDZ,TU
2066/67	1	Bird serring		
	2	Status of Critically Endangered Valtur Species in KoshiTappu Wildlife Reserve	B.Sc	KAFCOL
	3	Population Distribution, Habitat Mapping and Conservation threats of Lesser Adjutant stork *Leptoptilos javanicus* in Eastern Lowland of Nepal	M.Sc	T.U.
	4	Wild Edible Mushrooms of teral and siwaliks of Nepal :Diversity Food value and Growth	Ph.D	T.U
2067/68	1	Determination of nutrient intake from grazing in Wildlife Reserves and National Parks	Official	Pashu Aahara Mahasakha
	2	Objectives method and expected outputs in research on birds	Official	BCN
	3	Status, distribution and threats to Otter in Koshi Tappu Wildlife Reserve	M.Sc.	T.U.
	4	Study of population distribution patterns and breeding success of Lessor adjutant stork (*Leptopticos javanicus*) in Koshi Tappu Wildlife Reserve	M.Sc.	T.U.
2068/69	1	Use of Breeding Habitat and Conservation of Swamp Francolin at Koshi Tappu Wildlife Reserve, Nepal	M.Sc	CDZ,TU

Year	No	Title of research	Degree	Affiliated Organisation
	2	Impact of Biogas Plant on People's Livilihood and Environment at Buffer Zone of Koshi Tappu Wildlife Reserve	M.Sc	CDES,TU
	3	Present Status of Wild Buffalo of Koshi Tappu Wildlife Reserve	M.Sc	CDES,TU
	4	Rapid Assessment of Key Wildlife Habitats under changing Environment and Human Dependence in Koshi Tappu Wildlife Reserve	Official	ICIMOD / Teri Univ.
	5	Survey of Bengal Florican in Koshitappu and other lowland protected areas of Nepal	Offi cial	Himalayan Nature
	6	Threats to Wild Buffalo : A Case of Koshitappu Wildlife Reserve	M.Sc	CDES,TU
	7	Assessment of Ecosystem Services of Koshitappu Wildlife Reserve	M.Sc	GGIC
	8	Vulnerability of rural households to flood hazard in the international koshi watershed : Local strategies, public policies and international relationship	Ph.D	CDG,TU
	9	Human Security of Wetland Community in Koshi Tappu	Master degree	Aarhus Univ., Denmark
2070/71	1	Assessment of Greenhouse Gases Emissin from the High Altitude Peatland Ecosystem in the HinduKush Himalayan Region	Official	ICIMOD
	2	Understanding population of Ganges River dolphins platanista gangetica in Nepal and initiating local effort to conserve remaining population	Official	Forest reserch and nature development Society
	3	Conservation Issues and Sustainable Utilization of Wetlands in Nepal : A case study from Koshi Tappu Wildlife Reserve	M.Sc	Norwegian Univ. of Science &Technology, NTNU
	4	Ecology and Conservation approaches of wild water buffalo (*Bubalus arnee*) in the Koshi Tappu Wildlife Reserve, Nepal		

Year	No	Title of research	Degree	Affiliated Organisation
	5	A Surveillance study of H7N9 in migratory (wild) birds in Nepal		FAO of US
2071/72	1	Examining ecological factors infl uencing distribution, abundance and surfacing behaviors of endangered river dolphins in Sapta Koshi, Narayani and Karnali river systems of Nepal		The Himalaya
	2	Management of Invasive Alien species in two different Ramsar sites of Nepal		GGIC
	3	Wetland Flora Documentation		CDB
2072/73				
2073/74		Human-Wildlife Conflicts In Koshi Tappu Wildlife Reserve, Nepal (A study focusing with wild water buffalo)	M.Sc.	Khwopa, TU
	1	Habitat and distribution of Wild Water Buffalo in Koshi Tappu Wildlife Reserve	B.Sc.	CDES,TU
	2	Study on Population Status and Threats of Wild Water Buffalo in Koshi Tappu Wildlife Reserve, Sunsari	B.Sc.	IOF, TU
	3	Status of Wild water Buffalo in Koshi Tappu Wildlife Reserve	B.Sc.	SchEMS, PU
	4	A stud on Habitat pattern, Threats and conservation of Asiatic Wild Water Buffalo in Koshi Tappu Wildlife Reserve	B.Sc.	Tri-Chantra,TU
	5	Conservation of Fishing Cat Felis viverrina in Koshi Tappu Wildlife Reserve and Buffer zone		NTNC

Annex-13

Human casualties records from FY 2070/071 to 2073/74

SN	Date	Name	Address	Location of incident	Gender/Age	Death	Injured	Relief	Casual animals
1	074-3-20	Utim Lal Mandal	Koshi Rural Municipality 3, Sunsari	Koshi Rural Municipality 3, Sunsari		1		yet to be released	Wild Water Buffalo
2	073-12-14	Satya Narayan Mandal	Koshi Rural Municipality 3, Sunsari	Koshi Rural Municipality 3, Sunsari		1		500,000	Wild Water Buffalo
3	073-12-7	Lalo Mandal	Koshi Rural Municipality 3, Sunsari	Koshi Rural Municipality 3, Sunsari	M/48	1		500,000	Wild Elephant
4	073-9-10	Raghunath Khang	Bhardah 9, Saptari	Dakshini Duban area, Bhardah 9, Saptari	M/62	1		500,000	Wild Elephant
5	073-7-18	Alauddin Khan	Bairawa 8, Saptari	Dakshini duban area, Bairawa 8, Saptari	M/65	1		500,000	Wild Elephant
6	073-7-14	Lalan Kumar Mehta	Barah Municipality 10, Sunsari		M		1	10,000	Wild Water Buffalo
7	073-7-10	Dil Mahamad Miya	Koshi Rural Municipality 3, Sunsari		M		1	64,975	

SN	Date	Name	Address	Location of incident	Gender/Age	Death	Injured	Relief	Casual animals
8	073-11-17	Dil Bahadur Limbu	Barah Municipality 9, Sunsari		M		1	99,000	Wild Elephant
9	073-9-7	Sahbun Khatun	Bairawa 8, Saptari	Bairawa 8, Saptari	M		1	14,899	Wild Elephant
10	073-8-4	Chadraful Devi Yadav	Koshi Rural Municipality 5, Sunsari		F		1	100,000	Wild Water Buffalo
11	073-11-16	Hema Pokharel Limbu	Barah Municipality 9, Sunsari		F		1	21400	Wild Elephant
12	073-9-11	Lila Devi Kunwar	Barah Municipality 11, Sunsari		F		1	72900	Wild Elephant
13	073-7-12	Inar Kumari Yadav	Koshi Rural Municipality 3, Sunsari		F		1	51,997	Wild Water Buffalo
14	073-7-8	Hem Narayan Yadav	Rajganj 5, Sunsari	Rajganj 5, Sunsari	M		1	100,000	Wild Elephant
15	073-7-3	Bisnu Dev Yadav	Koshi Rural Municipality 5, Sunsari	Koshi Rural Municipality 5, Sunsari	M		1	6,621	Wild Water Buffalo
18	073-6-11	Jaynav Khatun	Koshi Rural Municipality 3, Sunsari	Koshi Rural Municipality 3, Sunsari	F		1	29,352	Wild Water Buffalo

SN	Date	Name	Address	Location of incident	Gender/Age	Death	Injured	Relief	Casual animals
19	073-6-6	Musharu Yadav	Koshi Rural Municipality 3, Sunsari	Koshi Rural Municipality 3, Sunsari	M/62	1		500,000	Wild Water Buffalo
20	072-3-30	Sangita Kumari Yadav	Kamalpur-4,Saptari	Kamalpur-4,Saptari, Near Triyuga river	F/12	1		500000	Wild Elephant
21	072-1-7	Prem B.Magar	haripur-5,sunsari	haripur-5, Sunsari	M/73	1		300000	Wild Elephant, Addl 2 lakh released later in FY 73-74
22	072-12-28	Lila B.Basnet	Kema-4 Okhaldhunga	Purbapipra-6, Pathri, Saptari	M/NA	1		300000	Wild Water Buffalo caused dronning in Triyuga river
23	072-10-15	Siba N.Yadav	Pschim Kushaha-5,Sunsari	Paschim Kushaha-5, Sunsari	M/43		1		Wild pig, while working in the field
24	070-10-29	Rudal Yadav	Pschim Kushaha-1,Sunsari	Paschim Kushaha-1,Sunsari	M/40		1	50000	injured during grass cutting
25	070-10-09	Dulichanda Sada	Haripur-2, Sunsari	Haripur-2,sunsari	M/55		1	50000	injured byWild Water Buffalo in front of house
26	070-10-08	Ramchandai Khatwe	Madhuban-5 Sunsari	Madhuban-5 Sunsari	M/29		1	50000	injured by Wild Water Buffalo

SN	Date	Name	Address	Location of incident	Gender/Age	Death	Injured	Relief	Casual animals
27	070-09-11	Sahadev Majhi	Paschim Kushaha-4, Sunsari	Pschim Kushaha-4, Sunsari	M/47		1	50000	injured by Wild Water Buffalo
28	070-09-11	Mangaladevi Majhi	Paschim Kushaha-4, Sunsari	Paschim Kushaha-4, Sunsari	F/45		1	50000	injured by Wild Water Buffalo
29	070-07-23	Kailidevei Biswash	Paschim Kushaha-4, Sunsari	Paschim Kushaha-4, Sunsari	F/35		1	50000	injured by Wild Water Buffalo in the field
30	070-03-25	Ganga Urau	Paschim Kushaha-8, Sunsari	Paschim Kushaha-8, Sunsari	M/40		1	9700	injured leg by Wild Elphant

Annex-14

Population trend of Wild Water Buffalo since 1976

Year	Adults		Calves		Total	Calves to she buffaloes ratio
	Male	Female	2nd year	1st year		
1976	12	18	22	11	63	0.61
1987	32	29	14	16	91	0.55
1988	37	33	8	15	93	0.45
2000	56	53	17	19	145	0.36
2004	54	63	24	18	159	0.29
2009	55	119	22	23	219	0.19
2010	57	108	24	26	215	0.22
2011	66	117	15	39	237	0.33
2012	67	119	37	36	259	0.30
2014	128	142	25	32	327	0.23
2016	120	182	49	81	432	0.45
2018	137	191	75	38	441	0.20

KTWR 2018

Annex-15

List of home stay cum hotels in buffer zone

S.N.	Name of homestay / Proprietor	Address	Rooms /Bed capacity
	Sudip Homestay	Paschim Kushaha, Sunsari	4/8
	Khejendra Magar	Prakashpur, Sunsari	1/2
	Arjun Karki	Madhuban, Sunsari	1/2
	Karki Homestay and Hotel	Paschim Kushaha, Sunsari	4/8
	Satpakoshi Community Homestay	Prakashpur, Sunsari	10/20
	Jeevan Homestay	Paschim Kushaha, Sunsari	2/4
	Bridilal Sardar	Paschim Kushaha, Sunsari	2/4
	Tharu Community Homestay	Jamuwa, Saptari	12/24
	Koshi Home Stay	Pathari, Saptari	5/10
	Tapeswari Community Homestay	Tapeswari, Udaypur	20/40

Hotel and tented camp of BZUC, KTWR

S.N.	Name of hotel	Address	No of Rooms	No of Beds	Trained Guide	Land area of Hotel
1	Koshi camp pvt. Ltd.	Madhuwan, Sunsari	12	24	√	6 Bigaha
2	Koshi Tappu Bird watching camp	Kusaha, Sunsari	7	12	√	17 Katha
3	Aqua Birds onlimited camp	Kusaha, Sunsari		20	√	2 Bigaha
4	Koshi Tappu wildlife camp	Prakaspur, Sunsari		16	√	

Annex-16

Details of the KTWR-BZUC and their area

SN	Name of BZUC	Local Units	No. of BZUG
1	Prakashpur	Baraha Municipality ward no. 9 and 10	69
2	Madhuban	Baraha Municipality ward no 11	76
3	Kushaha-Laukahi	Koshi Rural Municipality ward no 1,2 and 3	98
4	Haripur-Shreepur	Koshi Rural Municipality ward no 5,6 and 7	46
5	Bairwa-Barmajhia	Kanchanrup Municipality Ward no. 1 and 2	35
6	Badgama-Jagatpur	Kanchanrup municipality ward no. 2,4 and 10	37
7	Ghoghanpur-Purbapipra-Dharampur	Kanchanrup municipality ward no. 4,5,6 and 7	35
8	Odraha- Kamalpur	Saptakoshi municipality ward no. 6,7,8,9,10 and 11	41
9	Tapeshwori	Belka Municipality ward no. 1 and 2	32

Annex-17

Population of Buffer Zone

SN	Name of BZUC		Population		
		No of HHs	Total Pop	Male	Female
1	Haripur-Shreepur BZUC	1046	4753	2285	2468
2	Kusaha-Lauki BZUC	2180	9980	4775	5205
3	Madhuban BZUC	1269	6973	3335	3638
4	Prakashpur BZUC	3,206	14,105	6,359	7,746
5	Tapeshori BZUC	1453	8239	4026	4213
6	Odhraha-Kamalpur BZUC	2015	9,828	4,750	5,078
7	Pipraha-Dharmapur-Ghoghanpur BZUC	1253	9013	4356	4687
8	Bairawa-Barmajhiya BZUC	1103	13189	7039	6150
9	Badgamma-Jagatpur BZUC	1340	8346	3960	4353
	Total	**14865**	**84423**	**40885**	**43538**
	In percent			**48.43**	**51.57**

Annex-18

Literacy and energy use status in Buffer zone

SN	Name of BZUC	Current VDC/Municipality	Literacy status		No of Livestock	Energy use (family)				Remarks
			Literate	Illiterate		Fuel wood, Dung	Elec	Gas	Biogas	
1	Haripur-Shreepur BZUC	Koshi Rural municipality ward no 5,6 and 7	1096	1951	1455	1028	0	1	1	VDC profile 2070
2	Kusaha-Lauki BZUC	Koshi Rural municipality ward no 1,2,3	3152	1659	2524	2090	1	39	0	missing popln from Laukahi, VDC profile 2068 P.K
3	Madhuban BZUC	Baraha Municipality ward no. 11	3621	2127	1700	1192	0	19	33	VDC profile 2070
4	Prakashpur BZUC	Baraha Municipality ward no. 9 and 10								
5	Tapeshori BZUC	Belka Municipality 2 and 3	3674	1792		1451		2		
6	Odhraha-Kamalpur BZUC	Saptakoshi Municipality 6, 7,8,9,10 and 11.								
7	Purwa Pipraha Dharmapur Ghoghanpur BZUC	Kanchanrup Municipality 6, 9 and 10	1531	2872	3098	1274	7	74	10	data missing from Ghoghanpur, literacy rate missing from Dharampur
8	Bairawa-Barmajiya BZUC	Kanchanrup Municipality	993	666	574	365	0	0	0	Data missing from Bairawa
9	Badgamma-Jagatpur BZUC	Kanchanrup 1,3 and 4	2982	4013	3072	1734	8	31	0	missing data about animals from Jagatpur
	Total		**5506**	**7551**	**6744**	**3373**	**15**	**105**	**10**	

Annex-19

List of Cooperatives being run

SN	Name	Address	Date of Registration	No of Share holders	Remarks/ financial status
1	Tapeshwary	Tapeshwary-Udaypur	2058/6/20	264	
2	Majurnee	Odraha-Saptari	2058/6/20	169	
3	Kamal Dah	Kamalpur-Saptari	2059/1/15	51	
4	Saptakoshi	Ghoghanpur-Saptari	2058/7/18	89	
5	Shree Shakti	E.pipra-Saptari	2063/1/18	106	
6	Jagat	Jagatpur—saptari	2063/1/19	57	
7	Janshakti	Bairwa-Saptari	2063/1/17	28	
8	Haripur	Haripur –Sunsari	2058/12/3	244	
9	Shreepur	shreepur-Sunsari	2058/12/3	123	
10	Koshi Simsar	West -Kushaha Sunsari	2062/5/2	77	
11	Laukahi	Laukahi-Sunsari	2062/5/25	36	
12	Madhuwan	Madhuwan-sunsari	2062/10/27	28	
13	Prakashpur	Prakashpur-Sunsari	2062/10/27	28	
	Total			**1300**	

Annex-20

List of Buffer Zone Community Forest

S. N.	Name of Buffer Zone Community Forest	Addres	Area (ha)	Date of Registered	No.of Household	Population	Remarks
1	Dharhara BZ CF	Prakaspur -4,8,9 Sunsari	2.759	2062/4/14	149	724	Renewed
2	Saptakoshi BZCF	Prakaspur -9 Sunsari	5.379	2063/8/27	122	800	Renewed
3	Janajagaran BZCF	Prakaspur -6,7,9 and Madhuban-5,6,8 Sunsari	12.828	2062/1/25	390	1694	Renewed

S. N.	Name of Buffer Zone Community Forest	Addres	Area (ha)	Date of Registered	No.of Household	Population	Remarks
4	Samajsewa BZCF	Madhuban-1 and 6 Sunsari	7.389	2062/1/30	320	702	Renewed
5	Jagriti BZCF	Madhuban-1,2,9 Sunsari	7.191	2062/4/14	181	1050	Renewed
6	Siddakali BZCF	Paschim Kusaha-4,8 and Madhuban-9 Sunsari	9.74	2061/12/25	106	615	Renewed
7	Simsar BZCF	Paschim Kusaha-4,8,9 Sunsari	13.389	2061/1/6	118	485	Renewed
8	Urawan BZCF	Paschim Kusaha-4,8,9 Sunsari	2.748	2062/4/13	78	202	Renewed
9	Shivashakti BZCF	Paschim Kusaha-4 Sunsari	4.338	2062/5/19	70	350	Renewed
10	Ramrahin BZCF	Paschim Kusaha-4 Sunsari	5.331	2062/11/15	110	615	Renewed
11	Ramsar BZCF	Paschim Kusaha-4 Sunsari	11.494	2062/11/15	55	311	Renewed
12	Tetrigachi BZCF,	Shripur-8,9 Sunsari	12.753	2062	120	297	Renewed
13	Shri Durga BZCF	Shripur-9 Sunsari	18.053	2062/3/12	110	297	Renewed
14	Shiva BZCF	Haripur- 2,3,4	3.451	2062/2/20	141	856	Renewed
15	Koshi BZCF	Shripur-9 Sunsari	9.077	2062/2/25	60	200	Renewed
16	Batabaran BZCF	Tapeswari -1,Udayapur	31.708	2063/2/20	125	375	to be handovered
			157.63				

(Source: KTWR, 2017)

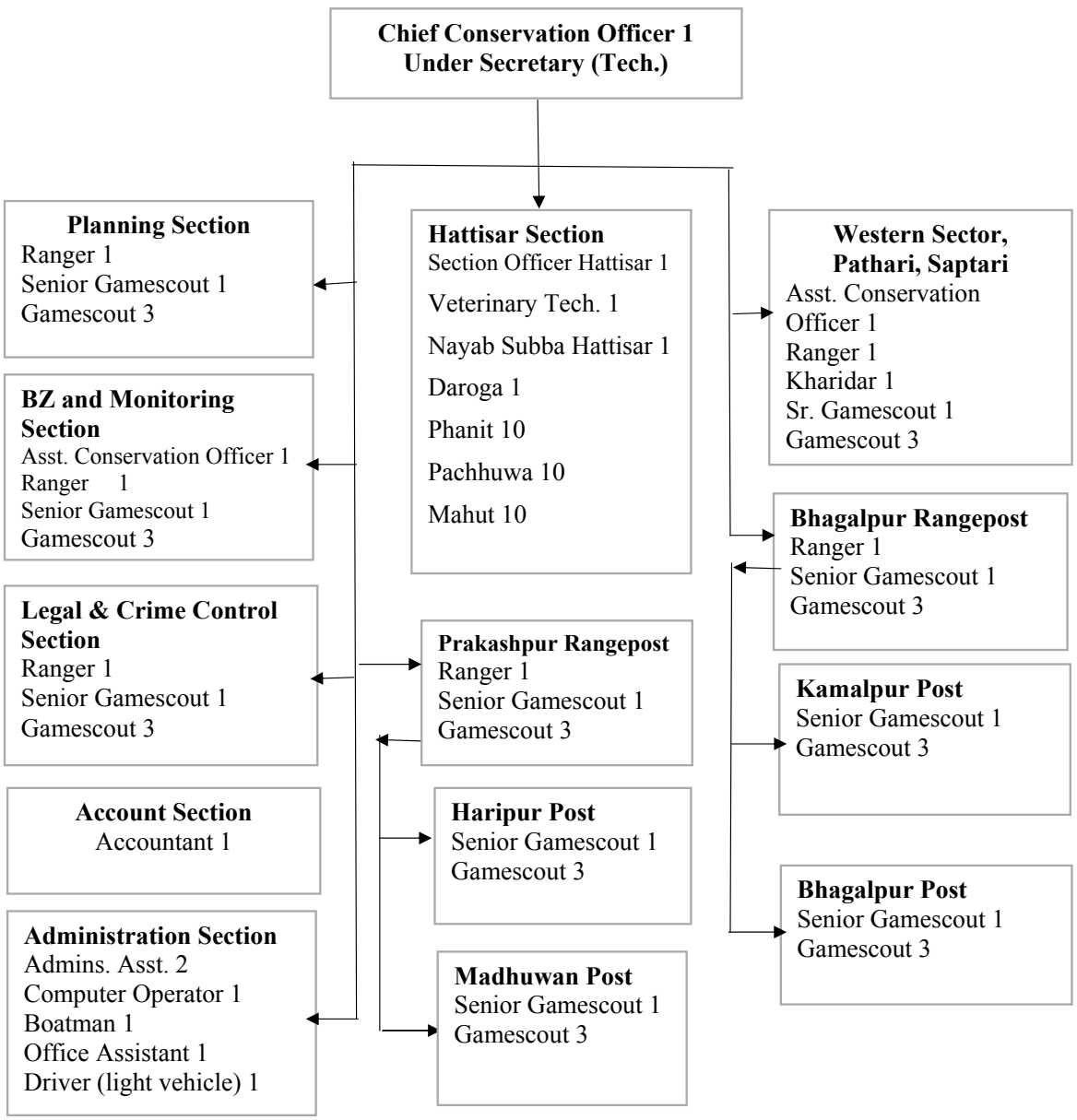
Annex-21

Buffer Zone User Committees and User Groups

S.N	Buffer Zone User Committee	No of Male User Group	No of Female User Group	Total User Group	Female Chairperson
1	Prakashpur UC	33	36	69	36
2	Madhuwan UC	38	38	76	38
3	Kushaha Lauki UC	50	48	98	48
4	Shreepur Haripur UC	23	23	46	23
5	Bairwa Barmajia UC	19	16	35	16
6	Badgama Jagatpur UC	16	21	37	21
7	Purwa pipara Dharampur Ghoghanpur UC	16	19	35	19
8	Odraha Kamalpur UC	23	18	41	18
9	Tapeshwori UC	17	15	32	15
	Total	**235**	**234**	**469**	**234**

Annex-22

Organization and Management Structure



Annex-23

Maximum Discharge of Koshi River, at Barahkshetra

Year	Date of Maximum Discharge	Maximum Discharge in Cusecs	Year	Date of maximum Discharge	Maximum Discharge in cusecs
1947	31 July	3,12,338	1982	18 July	246106
1948	13 July	4,73,640	1983	04 July	311403
1949	10 July	3,95,640	1984	17 September	464437
1950	20 August	3,49,661	1985	05 September	457000
1951	24 August	2,56,243	1986	02 August	259875
1952	24 August	3,05,443	1987	11 August	505800
1952	20 July	1,91,418	1988	19 September	472913
1954	24 August	8,55,237	1989	01 &25 August	351580
1955	07 August	2,50,000	1990	12 August	509500
1956	29 August	1,92,000	1991	17 August	330500
1957	12 August	2,66,000	1992	25 August	243500
1958	25 August	3,73,000	1993	15 August	290650
1959	10 August	2,11,000	1994	09 August	243500
1960	28 August	2,34,000	1995	30 august	267500
1961	20 August	3,29,000	1996	20 July	327500
1962	02 August	3,71,000	1997	18 August	284950
1963	16 August	2,70,000	1998	31 August	315500
1964	22 August	2,00,000	1999	30 July	361500
1965	14 August	2,05,000	2000	02 August	315500
1966	24 August	3,02,000	2001	23 August	300750
1967	09 August	3,12,000	2002	24 July	`345750
1968	05 August	9,13,000	2003	09 July	300750
1969	28 July	2,87,000	2004	10 July	286375
1970	15 July	4,89,000	2005	26 august	234750
1971	12 June	4,30,000	2006	16 July	152000
1972	28 July	3,70,205	2007	05 September	256050
1973	18 October	3,24,950	2008	07 august	183000
1974	05 August	4,50,000	2009	27 July	189600
1975	28 July	3,24,950	2010	24 August	266250
1976	23 August	3,24,000	2011	06 august	209350
1977	27 August	2,74,640	2012	03 August	199500
1978	28 July	3,47,106	2013	22 July	202800
1979	24July	4,71,196	2014	15 August	266250
1980	30 July	2,72,096	2015	3 September	179850
1981	22 August	3,82,180	2016	26 July	214200

Maximum Discharge of Koshi River, At Koshi Barrage

Year	Date	Discharge in cusecs				Guge in Left side	
		D/S Barrage	W.K.M.C	E.K.M.C	Total	U/S	D/S
1964	04.08.64	281946			281946	246.40	
1965	10.08.65	239309			239309	245.00	
1966	25.08.66	391042			391042	245.00	
1967	09.07.67	316094			316094	247.00	
1968	05.10.68	788200			788200	247.00	
1969	28.07.69	315020			315020	247.00	
1970	15.07.70	450400			450400	247.00	
1971	12.06.71	418100			418100	248.00	
1972	29.07.72	337361		10218	347579	249.00	
1973	13.10.73	401935			401935	248.60	
1974	05.08.74	387818			387818	248.00	
1975	28.07.75	325384		6090	331474	248.00	
1976	23.08.76	291183			291183	247.80	
1977	26.08.77	270610		8676	279286	249.60	
1978	28.07.78	332483		7582	340065	248.40	
1979	24.07.79	406813			406813	248.00	
1980	20.07.80	282500		8910	291410	248.20	
1981	22.08.81	253828		10288	264116	249.00	
1982	19.08.82	197219		11146	208365	249.00	
1983	05.07.83	279157		7527	286684	246.00	
1984	17.09.84	501787			501787	251.00	
1985	17.09.85	332884		10476	334320	250.00	
1986	02.08.86	274158	1000	7805	282963	250.00	
1987	11.08.87	523771			523771	249.50	
1988	26.08.88	400190			400190	249.50	
1989	19.09.89	472413	500		472913	249.80	
1990	12.08.90	393475	500	6700	400675	248.60	
1991	16.08.91	352009	500	8500	361009	248.90	
1992	24.07.92	284729	1000	5857	291586	249.70	
1993	15.08.93	311482	500	5400	317382	249.60	
1994	19.08.94	243212	800	8000	252012	250.50	

Year	Date	Discharge in cusecs				Guge in Left side	
		D/S Barrage	W.K.M.C	E.K.M.C	Total	U/S	D/S
1995	30.08.95	238314	600	6500	245414	250.00	
1996	20.07.96	331229			331229	249.10	
1997	18.08.97	284868			284868	249.00	
1998	31.08.98	311629			311629	249.00	
1999	03.07.99	380358			380358	249.20	
2000	02.08.00	316917			316917	250.00	
2001	23.08.01	354771	1000	7225	262996	249.00	
2002	23.07.02	386910			386910	250.00	
2003	10.07.03	386970			386970	250.00	
2004	11.07.04	389669			389669	250.00	
2005	07.08.05	335316			335316	249.80	
2006	23.07.06	191948	1000	8500	201448	248.80	
2007	05.09.07	335298			335298	248.80	
2008	07.08.07	225227	1000	6000	232227		
2009	27.07.09	312780			246.40	249.00	
2010	24 August	340460			340460		
2011	6 August	240460			240460		
2012	26 July	246230			246230		
2013	5 September	279465	3500	10000	292965		
2014	15 August	341390			341390	250.00	247.30
2015	3 September	235330	2500	10000	247830		
2016	13 September	298215			298215		

Annex-24

Activities and Budget of core area of the Reserve

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Total				307,350,000	70,020,000	92,370,000	33,520,000	23,620,000	28,220,000
5.2	**Zonation**				45,750,000	12,700,000	13,700,000	10,150,000	8,100,000	100,000
	Fix boundary line with GPS coordinates by cadastral survey and build demarcation pillar at 100 meter interval	times	1	1,000,000	1,000,000	1,000,000	-	-	-	-
5.2.1	**Management Facility Zone**				**750,000**	**200,000**	**200,000**	**150,000**	**100,000**	**100,000**
	Post large billboards at public places	no	5	50,000	250,000	100,000	100,000	50,000	-	-
	Publish and disseminate extension materials	times	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Station captive elephant at Pathari sector office / Bhagalpur post for recreation and jungle safari	cost mentioned in hatisaar heading								
	Provide exposure visit to BZMC / BZUC	cost mentioned in BZ heading								
5.2.2	**Utility Zone**				**44,000,000**	**11,500,000**	**13,500,000**	**10,000,000**	**8,000,000**	**-**
	Build bridge on Triyuga River and Mariyadhar stream for convenience of patrolling	no	1	8,000,000	8,000,000	-	8,000,000	-	-	-

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Pre-positioning motor boat, life jacket, gumboot, raincoats	set	1	2,000,000	2,000,000	1,500,000	500,000	-	-	-
	Construct office building for officers and ranger at Kushaha, Sunsari	set	1	15,000,000	15,000,000	10,000,000	5,000,000	-	-	-
	Renovate existing reserve posts	post	6	500,000	3,000,000	-	-	-	-	-
	Construct sector office at Pathari, Saptari	set	1	10,000,000	10,000,000	-	-	10,000,000	-	-
	Construct Range office at Prakashpur, Sunsari	set	1	6,000,000	6,000,000	-	-		8,000,000	-
5.2.3	**Core Zone**									
	Conduct feasibility study for transform target community for improved livestock	mentioned in special programme headings								
	Design project based on feasibility study									
	Survey encroached area and number of household	mentioned in special programme headings								
5.3	Theme plans				163,800,000	31,120,000	28,170,000	14,470,000	8,020,000	10,020,000
5.3.1	Protection				**127,650,000**	**22,400,000**	**20,700,000**	**6,950,000**	**2,800,000**	**2,800,000**
	Haatisar				**103,800,000**	**19,000,000**	**8,800,000**	**4,000,000**	**-**	**-**
	Establish and operate seasonal hattisar at Pathari sector for patrolling during monsoon	post set	1	10,000,000	10,000,000	5,000,000	5,000,000	-	-	-

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Construct elephant ration storage house	no	1	4,000,000	4,000,000	4,000,000	-	-	-	-
	Construct hatisar staff quarter at Kushaha	set	1	9,000,000	9,000,000	5,000,000	-	4,000,000	-	-
	Construct and maintenance of power fence for captive elephant	km	1	800,000	800,000	-	800,000	-	-	-
	Construct and maintenance of power fence for mitigation of HEC	km	10	8,000,000	80,000,000	5,000,000	3,000,000	-	-	-
	Deployment of security force				**16,250,000**	**1,550,000**	**10,050,000**	**1,550,000**	**1,550,000**	**1,550,000**
	Motor boat purchase for patrolling in raining season	no	1	1,500,000	1,500,000	1,500,000	-	-	-	-
	Provide orientation on conservation issues to security force	times	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Construct watch tower in the core area	no	3	1,500,000	4,500,000	-	-	1,500,000	1,500,000	1,500,000
	Construct guard post in the south part of the reserve	set	1	10,000,000	10,000,000	-	10,000,000	-	-	-
	Anti-Poaching and Intelligence Gathering				**7,600,000**	**1,850,000**	**1,850,000**	**1,400,000**	**1,250,000**	**1,250,000**
	Form RRT	no	9	50,000	450,000	200,000	200,000	50,000	-	-
	Conduct periodic WCCB meeting	times	15	50,000	750,000	150,000	150,000	150,000	150,000	150,000
	Mobilize informants at strategic locations	no	25	120,000	3,000,000	600,000	600,000	600,000	600,000	600,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Provide capacity building training to anti-poaching unit and RRT	times	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Provide basic equipment (GPS, mobile, binocular) to RRT	set	9	100,000	900,000	400,000	400,000	100,000	-	-
	Form and mobilize eco club and local youth clubs for awareness raising	no	10	100,000	1,000,000	200,000	200,000	200,000	200,000	200,000
	Launch real time SMART patrol	annual	5	200,000	1,000,000	200,000	200,000	200,000	200,000	200,000
5.3.2	Habitat Management				22,600,000	4,320,000	5,320,000	4,320,000	4,320,000	4,320,000
	Forest				**3,500,000**	**700,000**	**700,000**	**700,000**	**700,000**	**700,000**
	Apply mechanical/ manual methods to uproot and burn invasive species	times	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000
	Sowing / Planting tree and shrub species	times	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Regulate forest product extraction (thatch grass cutting, typha cutting, semal fur collection, driftwood collection)	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000
	Grassland				**8,050,000**	**1,610,000**	**1,610,000**	**1,610,000**	**1,610,000**	**1,610,000**
	Grassland management	ha	250	25,000	6,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
	Invasive species control	ha	50	25,000	1,250,000	250,000	250,000	250,000	250,000	250,000
	Evacuate livestock from grasslands	times	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Construct permanent monitoring system-transect (east-west) and plots in systematic distance	transects	5	10,000	50,000	10,000	10,000	10,000	10,000	10,000
	Wetland/water resources				**11,050,000**	**2,010,000**	**3,010,000**	**2,010,000**	**2,010,000**	**2,010,000**
	Plant tree cover along the wetlands for improving roosting and nesting of birds	seedlings	1000	50	50,000	10,000	10,000	10,000	10,000	10,000
	Maintain and restore wetlands of core area	no	5	1,000,000	5,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	Construct and maintain waterholes in the core areas	no	1	1,000,000	1,000,000	-	1,000,000	-	-	-
	Maintain and restore wetlands of buffer zone in colllaboration with CBOs and NGOs.	no	5	1,000,000	5,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
5.3.3	**5.3.3 Fire Management**				**5,000,000**	**1,800,000**	**1,300,000**	**800,000**	**300,000**	**800,000**
	Continue grass cutting as a means to reduce forest fire	times	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Continue controlled burning thoroughly on alternate blocks and on rotational basis in the blocks	times	10	25,000	250,000	50,000	50,000	50,000	50,000	50,000
	Construct fire watch tower at vantage points of the Reserve	no	3	500,000	1,500,000	500,000	-	500,000	-	500,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Maintain existing watch towers	no	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Equip RRT with tools for fire fighting works - one in east and the other in west	RRT	2	1,000,000	2,000,000	1,000,000	1,000,000	-	-	-
	Provide training on fire fighting to RRT	times	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
5.3.4	**Wildlife Health Management**				**3,250,000**	**600,000**	**850,000**	**600,000**	**600,000**	**600,000**
	Continue wildlife medication to wounded wildlife like Asiatic rock pythons, hog deer and birds	annual	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Conduct further research on potential disease, parasite and pathogen that has potential effect on Wild water buffalo.	times	1	250,000	250,000	-	250,000	-	-	-
	Conduct regular weeding, debris cleaning and excavating siltation in lentic water	times	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000
5.3.5	**Encroachment**				**400,000**	**400,000.00**	**-**	**-**	**-**	**-**
	Survey illegal occupied land and settlers population		1	100,000	100,000	100,000	-	-	-	-
	Stakeholder consultation meeting		5	50,000	250,000	250,000	-	-	-	-

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Lobby the encroachers to leave the Srilanka tappu and process for the appropriate decision for the illegal settlers		1	50,000	50,000	50,000	-	-	-	-
	Implement post extension project for execution of relocation programme	post extension project will cover the cost					-	-	-	-
5.3.6	**Climate change adaptation**				**4,900,000**	**1,600,000**	**-**	**1,800,000**	**-**	**1,500,000**
	Prepare land cover / land use map using satellite image	set	1	300,000	300,000	-	-	300,000	-	-
	Build artificial hillocks for emergency shelter of wild animals	site	3	1,000,000	3,000,000	1,000,000	-	1,000,000	-	1,000,000
	Plantation at flood prone area proximity to BZ	site	3	500,000	1,500,000	500,000	-	500,000	-	500,000
	Equip RRT with life jacket to deal with flood disaster	no	50	2,000	100,000	100,000	-	-	-	-
	Construct waterholes at water scarce area		metioned in habitat management heading							
	Cleaning and excavation of oxbow lakes									
6	**Research, Monitoring and Capacity Building**				**11,000,000**	**1,100,000**	**4,300,000**	**1,400,000**	**1,100,000**	**3,100,000**
	Research				**2,800,000**	**300,000**	**1,300,000**	**600,000**	**300,000**	**300,000**

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Study on species	no	5	300,000	1,500,000	300,000	300,000	300,000	300,000	300,000
	Study on tourism	times	1	500,000	500,000	-	500,000	-	-	-
	Study on livelihood	times	1	300,000	300,000	-	-	300,000	-	-
	Feasibility study for introduction of One horned rhino, swamp deer, gaur, large carnivores	times	1	500,000	500,000	-	500,000	-	-	-
	Monitoring				**3,100,000**	**200,000**	**1,300,000**	**200,000**	**200,000**	**1,200,000**
	Conduct ungulate monitoring periodically (in two year)	times	2	1,000,000	2,000,000	-	1,000,000	-	-	1,000,000
	Monitoring of wetland birds	annual	5	200,000	1,000,000	200,000	200,000	200,000	200,000	200,000
	Monitoring of toursim	times	1	100,000	100,000	-	100,000	-	-	-
	Capacity building				**1,000,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**
	Capacity building training to staff	annual	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
	Sharing and team building workshop to staff	refer 5.3.3	5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
7	**Species conservation special programme**				**29,700,000**	**4,000,000**	**19,950,000**	**3,650,000**	**3,550,000**	**12,050,000**
7.1	**Wild Water Buffalo**				**10,750,000**	**1,550,000**	**6,550,000**	**550,000**	**1,550,000**	**550,000**
	Evacute domestic livestock from the reserve core	annual	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000
	Improve habitat	mentioned in grassland heading								

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Collect, compile and analyse human-wildlife conflict data	times	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Develop a mitigation plan involving stakeholders	seed fund	1	1,000,000	1,000,000	1,000,000	-	-	-	-
	Establish veterinary clinic, animal orphanages and rescue service	no	1	5,000,000	5,000,000	-	5,000,000	-	-	-
	HAC awareness and mitigation									
	Establish and operate a RRT	refer 5.3.3			-					
	Arna count once every four years	times	2	1,000,000	2,000,000	-	1,000,000	-	1,000,000	-
7.2	**Dolphin**				**1,750,000**	**350,000**	**450,000**	**250,000**	**250,000**	**450,000**
	Conduct standardised dolphin surveys (visual/ acoustic and community interviews) in all potential river habitats	times	2	200,000	400,000	-	200,000	-	-	200,000
	Form river dependent community group	site	2	50,000	100,000	100,000	-	-	-	-
	Conduct awareness program to the target river dependent community	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000
	Provide alternative livelihood programs to river dependent community	annual	5	150,000	750,000	150,000	150,000	150,000	150,000	150,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
7.3	**Bengal florican**				**2,250,000**	**1,050,000**	**1,550,000**	**2,050,000**	**1,050,000**	**10,050,000**
	Conduct annual monitoring	times	5	100,000	500,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	Promote grassland conservation awareness initiatives	times	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Devise and promote a conservation strategy for all Asian bustards.	times	1	1,000,000	1,000,000	-	-	1,000,000	-	1,500,000
	Prepare guideline to impose a strict ban on anthropogenic activities that have negative impacts on floricans	times	1	500,000	500,000	-	500,000	-	-	7,500,000
7.4	**Crocodile**				**12,150,000**	**650,000**	**10,250,000**	**550,000**	**450,000**	**250,000**
	Research on the Koshi River's water quality, depth and availability of basking and nesting habitats for crocodiles	times	1	300,000	300,000	-	-	300,000	-	-
	Continue release in further upper areas and keep in temporary enclosure adjacent to the main river channel for 1 to 2 weeks prior to release.	times	2	200,000	400,000	200,000	-	-	200,000	-
	Continue annual monitoring to trace the movement downward	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Awareness & communications	times	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Study to determine why reintroduction of Gharials has failed in the past, is it related to flow and habitat availability ?	times	1	300,000	300,000	300,000	-	-	-	-
	Monitor the released individuals for at least the next 2-3 years (survival rate)	times	4	100,000	400,000	-	100,000	100,000	100,000	100,000
	Establish a crocodile breeding centre	complex	1	10,000,000	10,000,000	-	10,000,000	-	-	-
7.5	**Swamp francolin (*Francolin gularis*)**				**750,000**	**100,000**	**350,000**	**100,000**	**100,000**	**100,000**
	Survey and monitor species annually		5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Irrigate prime habitat during dry period to make swampy situation		5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Conduct feasibility study for translocations to other protected areas		1	250,000	250,000	-	250,000	-	-	-
7.6	**Turtle species**				**700,000**	**300,000**	**100,000**	**100,000**	**100,000**	**100,000**
	Survey and monitor annually		5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Make a guideline for do's don'ts in its prime habitat		1	200,000	200,000	200,000	-	-	-	-

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Regular patrol fish marketplace to control poaching and illegal trade		5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
7.7	**Fishing cat** *(Prionailurus viverrinus)*				**2,050,000**	**300,000**	**800,000**	**150,000**	**150,000**	**650,000**
	Survey and monitor species in two year interval		2	500,000	1,000,000	-	500,000	-	-	500,000
	Form fishing groups as sub-committee under buffer zone user committee		6	50,000	300,000	150,000	150,000	-	-	-
	Conduct fishing cat conservation awareness program		5	50,000	250,000	50,000	50,000	50,000	50,000	50,000
	Support for fish pond construction in potential BZCFs		5	100,000	500,000	100,000	100,000	100,000	100,000	100,000
8	Eco Tourism and Interpretation				25,650,000	6,050,000	16,450,000	1,050,000	1,050,000	1,050,000
	Organize workshop, seminar for promotion of ecotourism	times	1	400,000	400,000	-	400,000	-	-	-
	Construct interpretation centre	no	1	10,000,000	10,000,000	-	10,000,000	-	-	-
	Construct infrastructure (birdhide at top of tower with high range telescope)	1	1	5,000,000	5,000,000	5,000,000	-	-	-	-
	Upgrade forest road	km	10	500,000	5,000,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
	Guiding signage	no	5	50,000	250,000	50,000	50,000	50,000	50,000	50,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Shed house for get off and get on (ticket counter, waiting room, display centre)	no	1	5,000,000	5,000,000	-	5,000,000	-	-	-
	Establish Gharial crocodile breeding centre	mentioned in crocodile species conservation heading								
9	Special Programme				31,450,000	15,050,000	9,800,000	2,800,000	1,800,000	1,900,000
9.1	**Extension of Reserve and Buffer zone**				**2,000,000**	**1,500,000**	**500,000**	**-**	**-**	**100,000**
	Establish the buffer zone boundary of the extension area	times	1	200,000	200,000	200,000	-	-	-	-
	Form the BZUCs in extension area	times	1	500,000	500,000	500,000	-	-	-	100,000
	Conduct the pilot activities related to buffer zone and biodiversity conservation in extension area	times	5	200,000	1,000,000	500,000	500,000	-	-	-
	Conduct the baseline survey of socio-economic parameters	times	1	300,000	300,000	300,000	-	-	-	-
9.2	**Wild Elephant conservation and Human Elephant Conflict mitigation**				**13,000,000**	**7,100,000**	**2,900,000**	**1,600,000**	**600,000**	**600,000**

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
	Study how the small isolated elephant sub-population increasing in short term can be kept without raising human wildlife conflict in the reserve and its BZ	times	1	300,000	300,000	-	300,000	-	-	-
	Collar the problem elephant to study its behavior and ranging areas	times	1	2,500,000	2,500,000	2,500,000	-	-	-	-
	Establish HEC surveillance and monitor unit equipped with vehicle, GPS, camera, computer, internet facilities, HEC database keeping	set	1	5,000,000	5,000,000	3,000,000	1,000,000	1,000,000	-	-
	Monitor the movement of problem wild elephant using satellite radio collar	days	200	1,000	200,000	-	-	-	-	-
	Pilot alternative crop not favoured by elephant and water buffalo	site	2	1,000,000	2,000,000	1,000,000	1,000,000	-	-	-
	Establish fund in most suffered BZUCs for quick relief to be reimbursed later from the government	times	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000
	HEC awareness and mitigation									
	Educate people on how to be safe from problem elephants	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000

S.N.	Activities	Unit	Qnty	Rate (NPR)	Amount (NPR)	Year 1	Year 2	Year 3	Year 4	Year 5
9.3	**Control feral cattle and illegal livestock grazing**				**12,500,000**	**5,500,000**	**5,500,000**	**500,000**	**500,000**	**500,000**
	Pilot improved livestock farming project	site	1	10,000,000	10,000,000	5,000,000	5,000,000	-	-	-
	Castrate male feral livestock	annual	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000
9.4	**Livelihood program for wetland dependent households**				**3,950,000**	**950,000**	**900,000**	**700,000**	**700,000**	**700,000**
	Form wetland-dependent household groups along River section	no	9	50,000	450,000	250,000	200,000	-	-	-
	Provide training for saving and credit scheme and capital mobilization through their cooperative	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000
	Provide training for alternative income generation activities	times	10	50,000	500,000	100,000	100,000	100,000	100,000	100,000
	Restoration of wetlands	no	5	500,000	2,500,000	500,000	500,000	500,000	500,000	500,000

Annex-25

Activities and Budget of User Committees

१. कुशाहा लौकही उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पांचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	मचान निर्माण	वटा	४	५००००	५००००	५२५००		५७५००	६००००	२२००००
२	सामुदायिक वनमा बृक्षारोपण	हेक्टर	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
३	सोलार (चोक चोकमा)	वटा	७	८५०००	८५०००	१७००००	१७८५००	१८७०००	१९५५००	८१६०००
४	गोबर ग्यांस	वटा	१८	३००००			५४००००			५४००००
	जम्मा				१८५०००	२७५०००	७७३५००	३०२०००	३१५५००	
ख	**सामुदायिक विकास**									
२	पुस्तकालय निर्माण	वटा	१	३०००००			३०००००			३०००००
३	मन्दिर /मस्जिद मरमत	वटा	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
४	हयूमपाईप	वटा	२०	१५०००	६००००	६३०००	६६०००	६९०००	७२०००	३३००००
५	बाटो मरमत	कि.मि.	१५	५००००	१५०००००	१५७५००	१६५०००	१७२५००	१८०००००	८२५०००
६	उपभोक्ता समितिको भवन निर्माण	वटा	१	१००००००		१००००००				१००००००
७	चौतारा निर्माण	वटा	३	५००००		५००००		५५०००	५७५००	१६२५००
					१२६००००	३२३०००	५८६०००	३५४०००	३६९५००	

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पांचौ वर्ष	जम्मा रकम
ग	**संरक्षण शिक्षा**									
१	होडिङ बोर्ड निर्माण	वटा	५	२००००	२००००	२१०००	२२०००	२३०००	२४०००	११००००
२	रेडियो कार्यक्रम	पटक	१०	१००००	२००००	२१०००	२२०००	२३०००	२४०००	११००००
३	टि.भि. कार्यक्रम	पटक	५	२००००	२००००	२१०००	२२०००	२३०००	२४०००	११००००
४	स्कूल कार्यक्रम (चित्रकला, हाजिरी जवाफ, निवन्ध प्रतियोगिता)	पटक	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
५	अध्ययन अवलोकन कार्यक्रम	पटक	१	३०००००		३०००००				३०००००
६	आदीबासी जनजातिको सांस्कृतिक कार्यक्रम	पटक	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
	जम्मा				१६००००	४६८०००	१७६०००	१८४०००	१९२०००	
घ	**आयआर्जन**									
१	नेचरगाईड तालिम	जना	१०	१००००	१०००००					१०००००
२	पलम्बीङ,वायरिड, मोवाईल, टि.भि.मर्मत तालिम	जना	४०	१००००	१०००००		११००००	११५०००	१२००००	४४५०००
३	व्यूटी पार्लर तालिम	जना	१०	१००००			१०००००			१०००००
४	उन्नतजातको बोका खरिद	वटा	१०	१०००००			१०००००			१०००००
	जम्मा				२०००००		३१००००	११५०००	१२००००	

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पांचौ वर्ष	जम्मा रकम
ङ	**प्रशासनिक**									
१	पञ्चबर्षिय कार्ययोजना निर्माण	पटक	१	५००००	५००००					५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
३	कार्यालय व्यवस्थापन (अडिट,विद्युत, खाजा, स्टेशनरी	वर्ष	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
४	कम्प्युटर खरिद	वटा	१	५००००		५००००				५००००
	जम्मा				५००००	१०२५००	५५०००	१५७५००	६००००	
	कुल जम्मा				१८५५०००	११६८५००	१९००५००	१११२५००	१०५७०००	७०९३५००

२. प्रकाशपुर उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	विद्युतीय तारवार मरमत	कि.मि.	४	५००००	१०००००	५२५००	५५१२५			२०७६२५
२	विद्युतीय तारवारको मेसिन खरिद	मिटर	२	२०००००	२०००००				२४००००	४४००००
३	मचान निर्माण	वटा	२	५०००००		५०००००		५५००००		१०५००००
४	वांस र आवश्यक विरुवा वृक्षारोपण	हेक्टर	२	५००००	५००००			५७५००		१०७५००
५	सिमसार क्षेत्र व्यवस्थापन	हेक्टर	२०	५००००	२०००००	२१००००	२२००००	२३००००	२४००००	११०००००
६	लेखा व्यवस्थापन तालिम	जना	६०	१५००००	१५००००					१५००००
	जम्मा				७०००००	७६२५००	२७५१२५	८३७५००	४८००००	
ख	**सामुदायिक विकास**									
१	बाटो गग्राभेल	कि.मि.	१	२०००००			२०००००			२०००००
२	कलभर्ट निर्माण	वटा	२	७०००००				७०००००	७३५०००	१४३५०००
३	हयूमपाईप	वटा	५	१००००			५००००			५००००
४	कलभर्ट मरमत	वटा	१	१००००	१००००					१००००
५	उपभोक्ता समितिको भवन निर्माण	वटा	१	१२०००००	१२०००००	१२६००००				२४६००००
					१२१००००	१२६००००	२५००००	७०००००	७३५०००	
ग	**संरक्षण शिक्षा**									
१	होडिङ बोर्ड निर्माण	वटा	५	१५०००			७५०००			७५०००
२	टि.भि.बाट प्रशारण कार्यक्रम	पटक	३	२००००		२००००	२१०००		२३०००	६४०००
३	स्कूल कार्यक्रमस									

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
४	डकुमेन्ट्री प्रर्दशन	पटक	५	५०००	५०००	५२५०	५५००	५७५०	६०००	२७५००
५	बक्तिवकला अन्तरक्रिया कार्यक्रम	पटक	५	१००००	१००००	१०५००	११०००	११५००	१२०००	५५०००
६	अध्ययन अवलोकन कार्यक्रम	पटक	१	३०००००			३०००००			३०००००
					१५०००	३५७५०	४१२५००	१७२५०	४१०००	
घ	**आयआर्जन**									
१	माछा पालन (भुरा खरिद अनुदान)	पटक	१	१५०००		७५०००	७८७५०			१५३७५०
२	उन्नत जातको गाई भैंसी पालन अनुदान	वटा	२०	५००००		५००००	५२५००			१०२५००
३	पलम्बीङ, ड्राईभिङ, मोवाईल मर्मत तालिम	जना	३०	१००००			३०००००			३०००००
४	उन्नतजातको बोका खरिद (बोयर)	वटा	२	७५०००	७५०००	७८७५०				१५३७५०
					७५०००	२०३७५०	४३१२५०			
ङ	**प्रशासनिक**									
१	चौथो वर्षमा पञ्चबर्षिय कार्ययो जना बनाउने	पटक	१	१५०००				१५०००		१५०००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
३	कार्यालय व्यवस्थापन (अडिट, जिद्यत, खाजा, स्टेशनरी)	वर्ष	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
४	बार्षिक कार्ययोजना बनाउने	पटक	५	७०००	७०००	७३५०	७७००	८०५०	८४००	३८५००
	जम्मा				३७०००	३८८५०	४०७००	५२५५०	४४४००	
	कुल जम्मा				२०३७०००	२३००८५०	१४०९५७५	१६०७३००	१३००४००	८६५५१२५

३. मधुवन उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	पशु सेवा केन्द्र व्यवस्थापन	वटा	१	१५०००	१५०००					१५००००
२	बाटा मरमत, निर्माण	कि.मि.	५	११५००००	४६००००	२३००००	२३००००	२३००००		११५००००
३	सिंचाई	कि.मि.	१०	९५०००००	१९०००००	१९०००००	१९०००००	१९०००००	१९०००००	९५०००००
४	कलभर्ट	वटा	३	१३०००००	४३३३३३		४३३३३३		४३३३३३	१२९९९९९
५	स्टेट बोरिड	वटा	५	६५००००	१३००००	१३००००	१३००००	१३००००	१३००००	६५००००
६	पुल निर्माण	वटा	२	९५००००		४७५०००	४७५०००			९५००००
७	बाटो ग्राभेल, मरमत	कि.मि.	५	८५००००	१७००००	१७००००	१७००००	१७००००	१७००००	८५००००
८	ह्यूम पाईप जडान	वटा	१५	६५००००	१३००००	१७३३३३।३	१३००००	१३००००	८६६६६।६६	६४९९९९।९९
९	एमबुलेन्स खरिद	वटा	१	३१०००००		३१०००००				३१०००००
१०	विद्यालय भवन निर्माण मर्मत	वटा	५	३७००००	७४०००	७४०००	७४०००	७४०००	७४०००	३७००००
११	खानेपानी (कल)	वटा	४०	४५००००	११२५००	११२५००	११२५००	५६२५०	५६२५०	४५००००
१२	प्रतिक्षालय निर्माण	वटा	३	६५००००		२१६६६६।७	२१६६६६।७	२१६६६६।७		६५०००।१
१३	सहकारी संस्थाको भवन मर्मत	वटा	१	१०००००		१०००००				१०००००
१४	रिजर्भायर पोखरी निर्माण (सिपेज यरिया)	वटा	१	८०००००		८०००००				८०००००
१५	टेलीफोन	वटा	१	९००००					९००००	९००००
१६	मलामी विश्रामालय	वटा	१	३०००००			३०००००			३०००००
१७	डुंगा निर्माण	वटा	२	३८००००	१९००००	१९००००				३८००००
१८	सामुदायिक हल निर्माण	वटा	१	८५००००		८५००००				८५००००

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
१९	पम्पसेट	वटा	२	१८००००		९००००	९००००			१८००००
२०	मन्दिर जिर्णाद्धार	वटा	५	३०००००	६००००	६००००	६००००	६००००	६००००	३०००००
२१	बजार क्षेत्र व्यवस्थापन	वटा	१	३२००००	३२००००					३२००००
२२	ढल निकास	कि.मि.	३.५	१२०००००		६८५७१४।३	५१४२८५।७			१२०००००
२३	उपभोक्ता समितिको भवन निर्माण	वटा	१	१२०००००		१२०००००				१२०००००
	जम्मा				४१२९८३३	१०५५७२१४	४८३५७८५	२९६६९१७	३०००२५०	२५४८९९९९।०९
ख	**सामुदायिक विकास**									
	तारवार तथा पिल्लर निर्माण	कि.मि.	६	३००००००	५०००००	५०००००	५०००००	५०००००	१००००००	३००००००
	सामुदायिक वनमा वृक्षारोपण	हेक्टर	५	३८५०००	१५४०००	७७०००	७७०००	७७०००		३८५०००
	विरुवा गोडमेल	हेक्टर	५	२७५०००	११००००	५५०००	५५०००	५५०००		२७५०००
	सार्वजनिक चर्पी निर्माण	वटा	१०	८०००००	१६००००	१६००००	१६००००	१६००००	१६००००	८०००००
	गोवर ग्यांस निर्माण	वटा	४६०	१७८००००	३५६०००	३५६०००	३५६०००	३५६०००	३५६०००	१७८००००
	नर्सरी स्थापना तथा विरुवा उत्पादन -भ	वटा	१७	५१००००	९००००	९००००	९००००	९००००	१५००००	५१००००
	मचान निर्माण	वटा	२	५०००००		२५००००		२५००००		५०००००
	सुलभ चर्पी	वटा	५	३०००००	१८००००	६००००	६००००			३०००००
	कान्जिहाउस निर्माण	वटा	२	१५००००		७५०००	७५०००			१५००००
	सुधारिएको चुलो	वटा	११०	३४५०००	१५६८१८।२	१५६८१८।२	३१३६३।६४			३४५०००।०४
	वाढी नियन्त्रण	वर्ष	५	४५००००	९००००	९००००	९००००	९००००	९००००	४५००००
	आगलागी नियन्त्रण	वर्ष	५	३७००००	७४०००	७४०००	७४०००	७४०००	७४०००	३७००००
	जम्मा				१८७०८१८	१९४३८१८	१५६८३६४	१६५२०००	१८३००००	८८६५०००।०४

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
ग	**आयआर्जन तथा शिप विकास**									
	चिलिड भ्याट खरिद	वटा	१	४५००००		४५००००				४५००००
	बंगुर पालन	जना	५०	४३००००	१७२०००	८६०००	८६०००	८६०००		४३००००
	बाख्रापालन	जना	६५	२१५०००	६६१५३८५	६६१५३८५	३३०७६१९२	३३०७६१९२		१९८४६१५४
	भैंसी पालन	जना	१०	३०७०००	९२१००	९२१००	१२२८००			३०७०००
	गाई पालन	जना	१०	२०००००				८००००	१२०००००	२०००००
	कुखुरा पालन	जना	५८	१०५०००	१९९१३७९	१९९१३७९	१९९१३७९	१९९१३७९	२८९६५४६	१०८६२०६२
	हांस पालन	जना	५३	१०००००	१८८६७९२	१८८६७९२	१८८६७९२	१८८६७९२	२४५२८३	९९९९९९८
	मौरीपालन	जना	१८	८००००	१७७७७८	१३३३३३३	१३३३३३३	१३३३३३३	२२२२२२	७९९९९९९
	ह्याचीड सेन्टर	वटा	१	१०८००००		१०८००००				१०८००००
	पम्पसेट तालिम	जना	९	३०००००	६६६६६६७	६६६६६६७	६६६६६६७	१०००००		३०००००७
	कम्प्युटर तालिम	जना	१८	१५००००	३३३३३३३	३३३३३३३	३३३३३३३	३३३३३३३	१६६६६६६	१४९९९९९८
	गाईड तालिम	ज्ना	१४	३५००००	७५०००	७५०००	७५०००	७५०००	५००००	३५००००
	होटेल व्यवस्थापन तालिम	जना	७	१०००००				१०००००		१०००००
	मोटर साईकल तालिम	जना	९	४२०००	९३३३३३३	९३३३३३३	९३३३३३३	९३३३३३३	४६६६६६६	४१९९९९८
	रेडियो घडी, टि भि तालिम	जना	१०	२२००००	४४०००	४४०००	४४०००	४४०००	४४०००	२२००००
	सिलाई कटाई तालिम	जना	४३	२७००००	५०२३२१५६	५०२३२१५६	५०२३२१५६	५०२३२१५६	६१०६९१७६	२६२०००
	सुधारिएको चुलो बनाउने तालिम	जना	२	३००००		३००००				३००००
	गोवर ग्यांस तालिम	जना	२	५००००		५००००				५००००
	कृषि कार्यकर्ता तालिम	जना	६	२८००००	९३३३३३३	४६६६६६६	४६६६६६६	४६६६६६६	४६६६६६६	२७९९९९९८

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
	भेटेरीनरी तालिम	जना	२	१५००००		७५०००	७५०००			१५००००
	माछा पालन तालिम	जना	१८	३२५०००	७२२२२।२२	७२२२२।२२	७२२२२।२२	७२२२२।२२	३६१११।११	३२४९९९।९९
	उद्घोषण ताालिम	जना	५	८००००				८००००		८००००
	च्याउ खेती	जना	१६	१२००००	२२५००	२२५००	२२५००	२२५००	३००००	१२००००
	नेतृत्व तथा लेखा व्यवस्थापन तालिम	वटा	२०	२८००००	५६०००	५६०००	५६०००	५६०००	८४०००	३०८०००
	साबुन अगरवत्ती,मैनबत्ती बनाउने तालिम	जना	४२	१८००००	३४२८५।७१	३४२८५।७१	३४२८५।७१	३४२८५।७१	४२८५७।१४	१७९९९९।९८
	मुजको सामाग्री बनाउने तालिम	जना	४३	१५००००	३४८८३।७२	३४८८३।७२	३४८८३।७२	४५३४८।८४		१५००००
	आलु चिप्स, टमाटर, सिन्कीको अचार बनाउने तालिम	जना	८३	३५००००	७५९०३।६१	७५९०३।६१	७५९०३।६१	७५९०३।६१	४६३८५।५४	३४९९९९।९८
	फ्रेविक पेन्टीड तालिम	जना	५८	१३५०००	२३२७५।८६	२३२७५।८६	२३२७५।८६	२३२७५।८६	४१८९६।५५	१३४९९९।९९
	जुट कार्पेट तालिम	जना	१७	१९००००	३३५२९।४१	३३५२९।४१	३३५२९।४१	३३५२९।४१	५५८८२।३५	१९०००००
	हाउस वायरिड तालिम	जना	१६	८५०००	१५०००	१५०००	१५०००	१५०००	१२०००	७२०००
	हस्तकला तालिम	जना	६	९५०००			३१६६६।६६	३१६६६।६६	३१६६६।६६	९४९९९।९८
	पलम्वर तालिम	जना	२	१५०००	१५०००					१५०००
	भुजिया बनाउने तालिम	जना	५	४५०००					४५०००	४५०००
	टिका तथा माला तालिम	जना	१६	३२०००	६०००	६०००	६०००	६०००	८०००	३२०००
	बेमौसमी तरकारी तालिम	जना	२४	६५०००	१३५४१।६७	१३५४१।६७	१३५४१।६७	१३५४१।६७	१०८३३।३३	६५०००।०१
	डोको नाम्ले बनाउने तालिम	जना	१५	४००००	१३३३३।३३	१३३३३।३३	१३३३३।३३			३९९९९।९९
					११७४१८८	२७०७०७७	११२६३६७	१२१९०३२	८६३४१८	७०९००८१।९८

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
घ	**संरक्षण शिक्षा**									
	समुदाय स्तरीय संरक्षण शिक्षा	वटा	५	१५००००	३००००	३००००	३००००	३००००	३००००	१५००००
	अध्ययन भ्रमण	वटा	५	६५००००	१३००००	१३००००	१३००००	१३००००	१३००००	६५००००
	अतरक्रिया कार्यक्रम	वटा	५	१७५०००	३५०००	३५०००	३५०००	३५०००	३५०००	१७५०००
	जनचेतना संरक्षण गोष्ठि	वटा	५	८५०००	३४०००	३४०००	१७०००			८५०००
	विद्यालय स्तरीय संरक्षण शिक्षा	वटा	५	१५००००	३००००	३००००	३००००	३००००	३००००	१५००००
	चरा महोत्सव	वटा	५	१०००००	२००००	२००००	२००००	२००००	२००००	१०००००
	वन्यजन्तु सप्ताह	वटा	५	३०००००	६००००	६००००	६००००	६००००	६००००	३०००००
	सिमसार व्यवस्थापन तालिम	ज्ना	२०	१०००००	५००००	५००००				१०००००
	चरा अवलोकन	पटक	५	७००००	१४०००	१४०००	१४०००	१४०००	१४०००	७००००
	कृषि उत्पादन प्रदर्षनी	वटा	५	२२५०००	४५०००	४५०००	४५०००	४५०००	४५०००	२२५०००
	हाजिरी जवाफ प्रतियोगिता	वटा	५	४५०००	९०००	९०००	९०००	९०००	९०००	४५०००
	निवन्ध प्रतियोगिता	वटा	५	४५०००	९०००	९०००	९०००	९०००	९०००	४५०००
	वादविवाद प्रतियोगिता	वटा	५	४५०००	९०००	९०००	९०००	९०००	९०००	४५०००
	चित्रकला प्रतियोगिता	वटा	५	४००००	८०००	८०००	८०००	८०००	८०००	४००००
	वकृत्वतकला प्रतियोगिता	वटा	५	४००००	८०००	८०००	८०००	८०००	८०००	४००००
	लोकगित प्रतियोगिता	वटा	५	३५०००	७०००	७०००	७०००	७०००	७०००	३५०००
	वाल शिक्षा	वटा	१२	६००००	१५०००	१५०००	१५०००	१५०००		६००००
	छात्रवृति कार्यक्रम	वटा	४०	४००००	८०००	८०००	८०००	८०००	८०००	४००००
	कविता प्रतियोगिता	वटा	१	३००००	३००००					३००००
	पर्चा पम्पलेट	पटक	५	३०००००	६००००	६००००	६००००	६००००	६००००	३०००००

सि.नं.	कार्यक्रमहरु	इकाई	संख्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
	सांस्कृतिक कार्यक्रम	वटा	५	६००००	१२०००	१२०००	१२०००	१२०००	१२०००	६००००
	श्रव्यदृष्य कार्यक्रम	वटा	५	१२००००	२४०००	२४०००	२४०००	२४०००	२४०००	१२००००
	सडक नाटक	वटा	५	७००००	१४०००	१४०००	१४०००	१४०००	१४०००	७००००
	प्रौढ शिक्षा	वटा	३०	४७००००	९४०००	९४०००	९४०००	९४०००	९४०००	४७००००
					७५५०००	७२५०००	६५८०००	६४१०००	६२६०००	३४०५०००
ङ	**प्रशासनिक खर्च**									
	मसलन्द सामाग्री खर्च	वर्ष	५	२७५०००	५५०००	५५०००	५५०००	५५०००	५५०००	२७५०००
	मान्छे मारेमा घाईते बनाएमा	वर्ष	५	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
	समिति बैठक भत्ता	पटक	६०	२२५०००	४५०००	४५०००	४५०००	४५०००	४५०००	२२५०००
	सामुदायिक वन गोष्ठी	वटा	१०	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
	सहकारी तालिक गोष्ठी	वटा	१०	५०००००	१०००००	१०००००	१०००००	१०००००	१०००००	५०००००
	संघसंस्था समन्वय गोष्ठी	वटा	१०	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
	बैठक भत्ता	पटक	३०	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
	बालीनाली क्षती रकम	वर्ष	५	३९८०००	७९६००	७९६००	७९६००	७९६००	७९६००	३९८०००
	यातायात खर्च	वर्ष	५	१०५०००	२१०००	२१०००	२१०००	२१०००	२१०००	१०५०००
	चन्दा दान सेवा शुल्क	वर्ष	५	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
					६३०६००	६३०६००	६३०६००	६३०६००	६३०६००	३१५३०००
					८५६०४३९	१६५६३७१०	८८१९११६	७१०९५४९	६९५०२६८	४८००३०८१

४. श्रीपूर हरिपुर उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	मचान निर्माण	वटा	२	५०००००	५०००००		५५०००००			१०५०००००
२	सामुदायिक वनमा बृक्षारोपण	हेक्टर	५	२५००००		२५००००				२५००००
३	सामुदायिक वन व्यवस्थापन (पुर्नगठन,तालिम)	पटक	१	५००००	५००००					५००००
४	सामुदायिक वनमा तारवार	कि.मि.	१।५	१०००००	१५००००					१५००००
५	टर्चलाईट खरिद	वटा	५०	१०००	१००००	१००००	१००००	१००००	१००००	५००००
					१६००००	२५००००			१००००	४२००००
ख	**सामुदायिक विकास**									
१	बाटो गग्राभेल	कि.मि.	०।५	२०००००			१०००००			१०००००
२	धर्मशाला निर्माण	वटा	१	१०००००					१०००००	१०००००
३	कुलो मरमत	मि.	२००	१५०		३००००				३००००
४	हयूमपाईप	वटा	२	२५०००				२५०००	२६२५०	५१२५०
५	बाटो मरमत	कि.मि.	२	५००००			१०००००			१०००००
६	उपभोक्ता समितिको भवन निर्माण	वटा	१	१००००००					१००००००	१००००००
७	दिनभद्री मन्दिर मरमत	वटा	३	१००००	३००००					३००००
८	मदरसा,पुस्तकालय मरमत	वटा	२	५००००				१०००००		१०००००
					३००००	३००००	२०००००	१२५०००	११२६२५०	१५११२५०
ग	**संरक्षण शिक्षा**									
१	होडिङ बोर्ड निर्माण	वटा	५	५००००			२५००००			२५००००
२	टि.भि./रेडियो कार्यक्रम	पटक	५	१५०००	१५०००	१५७५०	१६५००	१७२५०	१८०००	८२५००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
३	स्कूल कार्यक्र चित्रकला, हाजिरी जवाफ, निवन्ध	पटक	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
४	अध्ययन अवलोकन कार्यक्रम	पक	१	३०००००		३०००००				३०००००
५	संरक्षण सम्वन्धि तालिम	पटक	२	५००००		१०००००				१०००००
					४५०००	४४७२५०	२९९५००	५१७५०	५४०००	८९७५००
घ	**आयआर्जन**									
१	उन्नत जातको गाई भैंसी पालन अनुदान	वटा	१०	५००००	२५००००	२६२५००				५१२५००
२	पलम्बीङ, वायरिङ, मोवाईल मर्मत तालिम	जना	३०	१००००	३०००००					३०००००
३	उन्नतजातको बोका खरिद	वा	१	८००००		८००००				८००००
४	माछा पोखरी निर्माण	वटा	२	३००००			३०००००	३०००००		६०००००
					५५००००	३४२५००				८९२५००
ङ	**प्रशासनिक**									
१	पञ्चबर्षिय कार्ययोजना निर्माण	पटक	१	५००००				५००००		५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
३	कार्यालय व्यवस्थापन (अडिट,विद्युत, खाजा, स्टेशनरी)	वर्ष	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
	जम्मा				३००००	३१५००	३३०००	१३४५००	३६०००	२६५०००
	कुल जम्मा				१३६५०००	१४४३७५०	८३२५००	६११२५०	१२२६२५०	५४७८७५०

५. बैरवा बरमजिया उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	मचान निर्माण	वटा	५	५०००००	५०००००	५२५०००	५५०००००	५७५०००	६०००००	२७५०००००
२	सोलार (चोक चोकमा)	वटा	५०	२००००	२०००००	२१००००	२२०००००	२३०००००	४८०००००	१३४०००००
३	सामुदायिक वनमा बृक्षारोपण	हेक्टर	२	५००००		५००००	५२५००			१०२५००
४	सामुदायिक वनमा तारवार	मि.	६००	२००		१२००००				१२००००
५	हात्ति भगाउने टर्चलाईट	वटा	१५	१००००	१५०००००					१५०००००
६	हात्ति भगाउने साईरन	वटा	१	६०००००	६०००००					६०००००
७	पोखरी सरसफाई, भुरा उत्पादन	वटा	२	१००००				१०००००	१०५०००	२०५०००
					१४५०००००	९०५०००	८२२५००	९०५०००	११८५०००	
ख	**सामुदायिक विकास**									
१	बाटो मर्मत	कि.मि.	४	१०००००	१०००००	१०५०००	११०००००	११५०००		४३०००००
२	बाटो निर्माण	कि.मि.	२	५०००००				५०००००	५२५०००	१०२५०००
३	कलभर्ट निर्माण	वटा	५	५०००००	५०००००	५२५०००	५५०००००	५७५०००	६०००००	२७५०००००
४	उपभोक्ता समितिको भवन निर्माण	वटा	१	१००००००			१००००००			१००००००
५	कुलो मरमत	कि.मि.	३	३००००		३००००	३१५००	३३०००		९४५००
६	आरक्ष क्षेत्र प्रवेश द्धार	वटा	१	७०००००				७०००००		७०००००
७	मन्दिर मर्मत	वटा	४	१०००००					४०००००	४०००००
८	हयूमपाईप	वटा	५	४००००	२०००००					२०००००
९	खानेपानी ट्युवेल निर्माण	वटा	३०	१००००	६००००	६३०००	६६१५०	६९३००	७२४५०	३३०९००
					८६००००	७२३०००	१७५७६५०	१९९२३००	१५९७४५०	
ग	**संरक्षण शिक्षा**									
१	स्कूल कार्यक्रम. चित्रकला, हाजिरी जवाफ, बत्तित्वकला	पटक	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
२	होडिङ बोर्ड निर्माण	वटा	१०	३००००	६००००	६३०००	६६०००	६९०००	७१०००	३२९०००
३	सुचना प्रसारण (रेडियो/ टि.भि/पत्रिका)	पटक	५	२५०००	२५०००	२६२५०	२७५००	२८७५०	३००००	१३७५००
४	अनौपचारिक किशोरी शिक्षा कार्यक्रम	जना	१००	१०००				१०००००		१०००००
५	अध्ययन अवलोकन कार्यक्रम	पटक	१	३०००००			३०००००			३०००००
	जम्मा				१३५०००	१४१७५०	४४८५००	२५५२५०	१६१०००	
घ	**आयआर्जन**									
१	व्यूटी पार्लर, गुन्द्री बनाउने, मोटर साईकल, कम्प्युटर मर्मत तालिम,	जना	५०	१५०००	१५०००००	१५७५००	१६५०००	१७२५००	१८००००	८२५०००
२	बेमौसमी तरकारी खेति तालिम	जना	१०	१५०००		१५०००००				१५०००००
३	उन्नतजातको बोका खरिद	वटा	१	१०००००		१०००००				१०००००
४	सिकर्मी डकर्मी तालिम	जना	१५	१५०००			२२५०००			२२५०००
५	कुखुरा, बंगुर पालन तालिम	जना	१०	१००००				१०००००		१०००००
६	उन्नत जातको गाई भैंसी पालन अनुदान	वटा	१०	७००००					७०००००	७०००००
					२३००००	४९१५००	४७८०००	३६४५००	९७६०००	
ड	**प्रशासनिक**									
१	चौथो वर्षमा पञ्चबर्षिय कार्ययो जना बनाउने	पटक	१	५००००				५००००		५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००					५००००	५००००
३	कार्यालय व्यवस्थापन (अडिट,विद्युत, खाजा, स्टेशनरी)	पटक	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
	जम्मा				३००००	३१५००	३३०००	८४५००	८६०००	
	कुल जम्मा				२७०५०००	२२९२७५०	४७०६	३६०१५५०	४००५४५०	१६१४४४००

६. बदगामा जगतपुर उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	मचान निर्माण	वटा	४	३५००००	७०००००	७३५०००				१४३५०००
२	सामुदायिक वनमा तारवार र बृक्षारोपण	विगाह	५	३०००००			३०००००			३०००००
३	भेटेरीनरी सेवा (भवन निर्माण र कर्मचारी)	वटा	१	१०००००					१०००००	१०००००
४	घुम्ति राहत कोष स्थापना	वटा	१	१०००००	१०००००					१०००००
					८०००००	७३५०००	३०००००		१०००००	१९३५०००
ख	**सामुदायिक विकास**									०
१	कलभर्ट निर्माण	वटा	५	१०००००	१०००००	१०५०००	११०००००	११५०००	१२००००	५५०००००
२	ट्युवेल धारा निर्माण	वटा	३०	१००००	६००००	६३०००	६६०००	६९०००	७२०००	३३०००००
३	उपभोक्ता समितिको भवन निर्माण	वटा	१	१०००००			१०००००			१०००००
४	चर्पी निर्माण	वटा	२०	५००००	२०००००	२१००००	२२००००	२३००००	२४००००	११०००००
५	सोलार वत्ती जडान	वटा	१०	१५०००					१५००००	१५००००
					३६००००	३७८०००	१३९६०००	४१४०००	५८२०००	३१३०००००
ग	**संरक्षण शिक्षा**									०
१	विद्यालयमा ईको क्लवलाई सहयोग	वटा	५	२५०००	२५०००	२६२५०	२७५००	२८७५०	३००००	१३७५००
२	अनऔपचारिक शिक्षा	वटा	१०	२००००	२००००	२१०००	२२०००	२३०००	२४०००	११०००००
३	एफ एम , स्थानी टि.भि. कार्यक्रम	पटक	१०	२००००	२००००	२१०००	२२०००	२३०००	२४०००	११०००००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
४	खेल मैदान व्यवस्थापन	स्थान	१	१०००००				१०००००		१०००००
					६५०००	६८२५०	७१५००	१७४७५०	७८०००	४५७५००
घ	**आयआर्जन**									०
१	माछापालन	विगाहा	२	१०००००	१०००००	१०५०००				२०५०००
२	उन्नन गाई भैसी पालन (बंधुवा)	वटा	१०	५०००००			५०००००			५०००००
३	वायरिड तलिम	ज्ना	१०	१५०००				१५०००००		१५०००००
४	मेकालिनकल तालिम	ज्ना	१०	१५०००					१५०००००	१५०००००
५	स्वीटर बुन्ने तालिम	ज्ना	२०	१००००				२०००००		२०००००
६	मुढा बनाउने तालिम	ज्ना	८	१००००	८००००					८००००
					१८००००	१०५०००	५०००००	३५००००	१५०००००	
ड	**प्रशासनिक**									
१	चौथो वर्षमा पञ्चबर्षिय कार्ययो जना बनाउने	पटक	१	५००००				५००००		५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
३	संचार, बैठक भत्ता, खाजा खर्च, स्टेशनरी, विद्युत, यातायात	वर्ष	५		३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
					३००००	३१५००	३३०००	१३४५००	३६०००	
					१४३५०००	१३१७७५०	२३००५००	१०७३२५०	९४६०००	७०७२५००

७. पूर्वपिपरा धरमपुर घोघनपुर उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	तटवन्ध पोराखोला	मिटर	५०	५०००	२५००००					२५००००
२	मचान निर्माण	वटा	२	३५००००		३५००००	३६७५००			७१७५००
३	गोही ताल संरक्षण व्यवस्थापन									
					२५००००	३५००००	३६७५००			
ख	**सामुदायिक विकास**									
१	बाटो मर्मत	मिटर	२००	२००	२००००		२००००			४००००
२	विद्यालय सहयोग (निर्माण, मरमत)	वटा	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
३	कलभर्ट,हयूमपाईप	वटा	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
४	उपभोक्ता समितिको भवन निर्माण	वटा	१	१००००००	१००००००					१००००००
					१०८००००	६३०००	८६०००	६९०००	७२०००	
ग	**संरक्षण शिक्षा**									
१	एफ एमबाट रेडियो कार्यक्रम	पटक	४	५०००		५०००	५२५०	५५००	५७५०	२१५००
२	टि.भि.बाट प्रशारण कार्यक्रम	पटक	४	१५०००		१५०००	१५७५०	१६५००	१७२५०	६४५००
३	स्कूलमा संरक्षण शिक्षा कार्यक्रम	पटक	५	१५०००	१५०००	१५७५०	१६५००	१७२५०	१८०००	८२५००
४	अध्ययन अवलोकन कार्यक्रम		१	२५००००				२५००००		२५००००
					१५०००	३५७५०	३७५००	२८९२५०	४१०००	
घ	**आयआर्जन**									
१	माछा पालन (भुरा खरिद, पोखरी मर्मत र दाना)	वटा	३	१०००००		१०००००	१०५०००	११००००		३१५०००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
२	उन्नत जातको गाई भैंसी पालन सहयोग	वटा	१०	५००००			५०००००			५०००००
३	विद्युत,टि.भि.,मोटर साईकल, मो वाईल मर्मत तालिम	जना	२०	१००००				२०००००		२०००००
४	कुखुरा पालन तालिम	जना	१०	५००००		५०००००				५०००००
५	भेटेरीनरी (तालिम ३ महिने)	जना	२	५००००		१०००००				१०००००
	जम्मा					७०००००	६०५०००	३१००००		
ड	**प्रशासनिक**									
१	चौथो वर्षमा पञ्चबर्षिय कार्ययो जना बनाउने	पटक	१	५००००				५००००		५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
	संचार, बैठक भत्ता, खाजा खर्च, स्टेशनरी, विद्युत, यातायात			१०००००	१०००००	१०००००	१०००००	१०००००	१०००००	५०००००
					१३४५०००	११४८७५०	१४०६	७६८२५०	११३०००	४४७१०००

८. ओद्राहा कमलपुर उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षीय कार्यक्रम तथा बजेट (कार्ययोजना २०७५-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा
क	**संरक्षण कार्यक्रम**									
१	कमलदह व्यवस्थापन	हेक्टर	१०	१००००००		३०००००	३०००००	३०००००	१०००००	१००००००
२	कमलदह व्यवस्थापन (डयाम निर्माण)	मिटर	१५०	७५००००			७५००००			७५००००
३	सामुदायिक वनमा तारवार निर्माण (कमलदह)	मिटर	१४००	७०००००	७०००००					७०००००
४	वन्यजन्तु धपाउन मचान निर्माण	वटा	३	१५०००००	५०००००	५०००००			५०००००	१५०००००
५	ग्यावियन जाली भरी बाटो, कुलो संरक्षण	मिटर	५०	५०००००				५०००००		५०००००
				४४५००००	१२०००००	८०००००	१०५००००	८०००००	६०००००	४४५००००
ख	**सामुदायिक विकास**									०
१	स्कुल मरमत	वटा	५	१५०००००	३०००००	३०००००	३०००००	३०००००	३०००००	१५०००००
२	बाटो ग्राभेल	कि.मि.	३	९०००००			३०००००	३०००००	३०००००	९०००००
३	गोलघर निर्माण	वटा	३	७५००००			२५००००	२५००००	२५००००	७५००००
४	सोलार बत्ती निर्माण सडक छेउ र कमलदह	वटा	१५	७५००००	१५०००००	१५०००००	१५०००००	१५०००००	१५०००००	७५००००
५	कलभर्ट निर्माण	वटा	४	२००००००	५०००००	५०००००		५०००००	५०००००	२००००००
६	ह्यूमपाईप निर्माण	वटा	७	२१००००	६००००	६००००	६००००		३००००	२१००००
७	उपभोक्ता समितिको भवन निर्माण	वटा	१	१५०००००			१००००००	५०००००		१५०००००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा
८	भेटेरीनरी कार्यालय निर्माण	वटा	१	१००००००				५०००००	५०००००	१००००००
				८६१००००	१०१००००	१०१००००	२०६००००	२५०००००	२०३००००	८६१००००
ग	**आयआर्जन शिप विकास**									
१	खतवे,वांतरको लागि पटेरबाट वन्ने सामाग्री उत्पादनको लागि समूहको घर र तालिम	वटा	१	५०००००		५०००००				५०००००
२	पलम्बीड, कुक, वेटर, विद्युत, मो वाईल घडी, व्युटीपार्लर तालिम	जना	१००	१००००००	२०००००	२०००००	२०००००	२०००००	२०००००	१००००००
३	भेटेरीनरी तालिम	जना	३	४५००००	४५००००					४५००००
४	उन्नन जातको गाई र भैसी खरिद र वितरण	वटा	२०	१५०००००			५०००००	५०००००	५०००००	१५०००००
५	उन्नत जातको वोका खरिद (वोअर)	वटा	१	१०००००	१०००००					१०००००
				३५५००००	७५००००	७०००००	७०००००	७०००००	७०००००	३५५००००
घ	**संरक्षण शिक्षा**									
१	जेहेन्दार विद्यार्थीलाई छात्रबृति	जना	२५	२५००००	५००००	५००००	५००००	५००००	५००००	२५००००
२	खेलकुद सामाग्री खरिद	पटक	५	५००००	१००००	१००००	१००००	१००००	१००००	५००००
३	पुस्तकालय निर्माण	वटा	३	६०००००			२०००००	२०००००	२०००००	६०००००
४	होडिडवोर्ड निर्माण	वटा	२५	२५००००	५००००	५००००	५००००	५००००	५००००	२५००००
५	रेडियो , टि.भि कार्यक्रम	पटक	१०	२५००००	५००००	५००००	५००००	५००००	५००००	२५००००

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा
६	धार्मिक वन हस्तान्तरण	वटा	५	२०००००	४००००	४००००	४००००	४००००	४००००	२०००००
७	वन्यजन्तु धपाउन टर्चलाईट खरिद	वटा	१०	१०००००	३००००	३००००	२००००	२००००		१०००००
				१७०००००	२३००००	२३००००	४२००००	४२००००	४०००००	१७०००००
ड	**प्रशासनिक खर्च**									
१	संचार, बैठक भत्ता, खाजा खर्च, स्टेशनरी, विद्युत, यातायात	वर्ष	५	२५००००	५००००	५००००	५००००	५००००	५००००	२५००००
२	कार्यालय सहायक र मोविलाईजर	जना	१	६०००००	१२००००	१२००००	१२००००	१२००००	१२००००	६०००००
३	समूह समिति पुनर्गठन	पटक	१	५००००					५००००	५००००
४	पञ्चबर्षीय कार्ययोजना निर्माण	पटक	१	५००००				५००००		५००००
				९५००००	१७००००	१७००००	१७००००	२२००००	२२००००	
	कूल जम्मा			१९२६००००	४३७००००	२९१००००	४४०००००	४६४००००	३९५००००	२०२७००००

९. तपेश्वरी उपभोक्ता समितिको समष्टिगत विस्तृत पञ्चवर्षिय कार्यक्रम तथा बजेट (कार्ययोजना २०७४-२०७९)

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
क	**संरक्षण कार्यक्रम**									
१	मचान निर्माण	वटा	२	४०००००	४०००००				४८००००	८८००००
२	विद्यतीय तारवार मरमत	कि.मि.	६	१०००००	१०००००	१०५०००	११००००	११५०००	२४००००	६७००००
३	विद्यतीय तारवार निर्माण	कि.मि.	३	६००००		६००००	६३०००		६९०००	१९२०००
४	हात्ति धपाउने टर्च वितरण	वटा	१०	१००००	५००००		५५०००			१०५०००
	सुधारिएको चुलो निर्माण	वटा	५००	१०००	१०००००	१०५०००	११००००	११५०००	१२००००	५५००००
५	गोबर ग्यांस	वटा	२५०	१००००	५०००००	५२५०००	५५००००	५७५०००	६०००००	२७५००००
					११५००००	७९५०००	८८८०००	८०५०००	१५०९०००	
ख	**सामुदायिक विकास**									
१	बाटो मर्मत	कि.मि.	५	५००००	५००००	५२५००	५५०००	५७५००	६००००	२७५०००
२	विद्यालय सहयोग (निर्माण, मर्मत)	वटा	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
३	कलभर्ट निर्माण	वटा	२	५०००००		५०००००		५५००००		१०५००००
४	उपभोक्ता समितिको भवन निर्माण	वटा	१	१५०००००		५०००००	५२५०००	५५००००		१५७५०००
	कुलो मर्मत	कि.मि.	१	५००००					५००००	५००००
	पम्प सेट	वटा	५	४००००	४००००			४६०००	१४४०००	२३००००
	जम्मा				१२००००	१०८४०००	६१३०००	१२३८०००	२९००००	
ग	**संरक्षण शिक्षा**									
	खुल्ला चरिचरण नियन्त्रण गोष्ठि	वटा	३	२५०००	२५०००	२६२५०	२७५००			७८७५०

सि.नं.	कार्यक्रमहरु	इकाई	संस्या	दर	प्रथम वर्ष	द्वितीय वर्ष	तृतीय वर्ष	चतुर्थ वर्ष	पाँचौ वर्ष	जम्मा रकम
	लेखा तालिम	जना	४६	१०००	४६०००					४६०००
४	अध्ययन अवलोकन कार्यक्रम	पटक	१	३०००००			३०००००			३०००००
					७१०००	२६२५०	३२७५००			
घ	**आय आर्जन**									
३	विद्युत,मोटर साईकल, मोवाईल मर्मत,नेचरगाईड तालिम	जना	२०	२००००	८००००	८४०००	८८०००	९२०००	९६०००	४४०००००
४	माछा पालन तालिम	जना	५	१००००			५००००			५००००
५	भेटेरीनरी (तालिम ३ महिने)	जना	२	१०००००	२०००००					२०००००
	चउमिन बना	जना	५	१५०००		७५०००				७५०००
	पोखरी मर्मत सुधार	वटा	५	५००००	२८००००	१०००००	५२५००	११००००		५४२५००
					५६००००	२५९०००	१९०५००	२०२०००	९६०००	
ङ	**प्रशासनिक**									
१	चौथो वर्षमा पञ्चबर्षिय कार्ययो जना बनाउने	पटक	१	५००००				५००००		५००००
२	उपभोक्ता समूह र समिति पुर्नगठन	पटक	१	५००००				५००००		५००००
	कार्यालय व्यवस्थापन (अडिट,विद्युत, खाजा, स्टेशनरी)	पटक	५	३००००	३००००	३१५००	३३०००	३४५००	३६०००	१६५०००
	जम्मा				३००००	३१५००	३३०००	१३४५००	३६०००	
	कुल जम्मा				१९३१०००	२१९५७५०	२१०६	२३७९५००	१९३१०००	१०४८९२५०

Annex-26

Management Plan Review Team

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2.	Mr. Gopal Prakash Bhattarai	Deputy Director General	Department of National Parks and Wildlife Conservation
3.	Mr. Shersingh Thaguna	Deputy Director General	Department of National Parks and Wildlife Conservation
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5.	Prof. Santosh Rayamajhi, PhD	Research Director	Institute of Forestry, Pokhara, Tribhuvan University
6.	Mr. Siddhartha Bajra Bajracharya, PhD	Executive Director (Programme)	National Trust for Nature Conservation
7.	Mr. Hem Sagar Baral, PhD	Country Representative	Zoological Society of London, Nepal

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