PROJECT/PROGRAMME PROPOSAL TO THE ADAPTATION FUND

PART I: PROJECT/PROGRAMME INFORMATION

Project/Programme Category	**REGULAR PROJECT (DPR)**
COUNTRY/IES:	INDIA
TITLE OF PROJECT / PROGRAMME:	Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha-Pench Corridor of Madhya Pradesh
TYPE OF REQUESTING ENTITY:	NIE
NAME OF IMPLEMENTING ENTITY:	National Bank for Agriculture and Rural Development
EXECUTING ENTITY (IES):	1) RBS Foundation India – promoted by The Royal Bank of Scotland (RBS FI) 2) Madhya Pradesh Forest Department (MPFD)
AMOUNT OF FINANCING REQUESTED:	**USD 2,556,093**

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Project/ Programme Background and Context

Provide brief information on the problem the proposed project/programme is aiming to solve. Outline the economic social, development and environmental context in which the project would operate.

1. Background

Climate change, its impact and attributes have become a matter of national and international importance. Impact of climate change on life and livelihoods is increasingly becoming visible as is evident by threats on food, water and energy security, health, migration and man – animal conflicts. If one were to assess from the other side of the spectrum, human induced activities are considered to be one of the key contributors to climate change. People are at the core; as those affecting and being affected by climate change.

Though a global phenomenon, climate change is proving to be a huge problem for developing countries, especially the ones with a huge poor and marginalized population which are closely tied to a natural resource base for their livelihoods, food security and survival. Such communities are impacted the most as on one hand they are bearing the brunt of diminishing access to natural resources due to their diversion for developmental purposes and population rise and are exposed to enhanced risks from climate change due to large scale climate variability on the other.

1.1 India – National Circumstances

India, a mega diverse country with 2.4% of the world's land area, 7-8% of all recorded species, including over 45,000 species of plants and 91,000 species of animals (NBA, 2014[1]) also supports a massive population of 1.2 billion (Census, 2011[2]) which is about 17% of the global population. It also houses the largest proportion of global poor (30% or 360 million), around 300 million people without access to electricity, about 30% of the global population relying on solid biomass for cooking and around 92 million without access to safe drinking water.

It is a developing country with a per capita GDP (nominal) of around USD 1,600 per annum. However, it does not reflect the wide economic and social disparities amongst its people and regions. Census studies have revealed that about 1.77 million people are houseless and 4.9% of the population (aged 15 years and above) are unemployed in the country. Further, it also contains the largest cattle and buffalo population in the world of about 300 million, which faces multiple challenges including diseases, inadequate supply of fodder etc.

It is expected that while eradicating social and economic disparity and reducing poverty remain the foremost priorities, rapid urbanization in the country will also be one of the most dominant trends in the coming years. It is estimated that about 40% of the country's

population in 2030 would be urban as against 30% currently. As population expands and incomes grow, this shift will likely be realized alongside demographic changes that will exponentially increase the demand for urban amenities like housing, energy, transport, water, and waste disposal.

Given the country's development agenda and aspirations, its ever increasing population, the infrastructure deficit, the pressures of urbanization and industrialization and the imperative of achieving growth, India faces a formidable and complex challenge of attaining development; especially, since its vast population is dependent on the growth of its agrarian economy, its expansive coastal and forest areas and the Himalayan region and islands which also make India one of the most vulnerable countries in the world to the effects of climate change.

As India takes its first step towards being a developed nation, increased prosperity on the back of two decades of economic growth and population rise combined with the country's future developmental aspirations has boosted the demand for food, energy, water, timber, minerals etc. exponentially. To meet these demands the supply is responding through wide scale diversion and extraction of natural resources, which in turn have brought these natural resources under extreme pressure in recent times and have degraded the country's natural capital and diminished its ability to provide ecosystem services.

While India is blessed by abundant natural and mineral resources, including expansive coasts, fertile land and perennial rivers; its forests can be considered as its most important natural resource, especially because of the provisioning, regulating, supporting and cultural services they provide to its huge population. However, with the developmental and population dynamics prevalent in the country as discussed above, it's the forests that have experienced the most impact. Large scale diversion of forest areas due to mining, hydroelectricity and other developmental projects have caused widespread impact to the communities, biodiversity and the services it provides. As per data published by the Ministry of Environment and Forests (E-green watch website- MoEF&CC[3]), as much as 14,000 sq. km of forest land has been diverted in the last 30 years (mining – 4,947 sq. km, defence projects – 1,549 sq. km and hydroelectricity 1,351 sq. km) in India. To add to this, climatic variations are making more and more people adopt forests as a coping mechanism which continues to add on to the already increasing pressure on India's forests. The situation of forests in India is discussed in detail in Section 1.2.

1.2 Forests in India

According to the India State of Forest Report 2013 published by the Forest Survey of India (FSI, 2013[4]), the total forest cover in India is 21.23% of its total geographical area or around 70 million hectares (ha). This cover includes all lands which have a tree canopy density of 10% and above with a minimum coverage of 1 ha.

Forest types: The Indian forest types include tropical evergreens, tropical deciduous, swamps, mangroves, sub-tropical, montane, scrub, sub-alpine and alpine forests. These are further classified into 16 vegetative types following Champion and Seth, 1968 classification. Among these 16 types, the most common are the Tropical dry deciduous (38.7%) Tropical moist deciduous (30.9%) and Tropical thorn (6.9 %) (WWF, 2011[5]). These 3 types of tropical deciduous forests account for more than 76.5 % of forest area in India.

Forest ownership: 95% of the forests are owned by the state and the remaining 5% is divided into ownership by individuals, corporate and community groups. The administration control of the state owned forests are divided between the Forest department and the Revenue Department. Forests owned and managed by the Forest Department are legally protected as Reserve Forests, Sanctuaries and National Parks. These forests are considered as protected forests. Revenue forests present in the lands owned by the Revenue Department have multiple uses including developmental activities and thus have lesser protection and less strict rules and regulations.

Forest Communities: India has a significant human population living in and around its forests and while there is no official census figure on the forest dependent population of the country, estimates put it as approximately 200 million people (ICFRE, 2010[6]), almost all live below the poverty line. Minority groups of tribal people comprise a high proportion of the population in typical forest communities - these groups are particularly vulnerable with very low development indices with lower than average literacy rates and inadequate access to information and resources to achieve better living standards.

Agriculture, livestock rearing and collection of non timber forest produce (NTFP) are the major sources of livelihoods for these communities. They also share an inextricable link with their surrounding forest ecosystems and wholly depend on them for a variety of goods including fruits, flowers, tubers, roots and leaves for food and medicines; firewood for cooking; materials for agricultural tools, housing purposes; fodder and grazing of livestock in forest; and many other non-timber forest products.

Forest Degradation: With a population of 1.2 billion, and a total cover of about 70 million ha, the per capita availability of forests in India is 0.064 ha, which is ten times lesser than the world average of 0.64 ha (FAO, 2009[7]). Furthermore, the average growing stock of India's forest is 58 m^3/ha, and is far below the global average of 130.7 m^3/ha and the south and Southeast Asian average of 98.6 m^3/ha for the corresponding period (FAO, 2010[8]) implying that forests in India are under huge extraction pressure.

Degradation of forests in India is also made evident by data released by the Forest Survey of India. Table 1.1 shows that 1,991 sq. km of moderately dense forests have been converted to open forests which have resulted in forest areas that are severely depleted in terms of growing stock and recorded a decrease of 389.11 m3 in total growing stock, an indicator of

the ability of the forest to sequester carbon, between two assessments of 2011 and 2013 (ISFR, 2013[9]).

Table 1.1: Forest Cover of India

Class	Description	Area (sq. km)		Change
Forest Cover	**Tree canopy density**	**2011**	**2013**	**(sq. km)**
Very dense forest (VDF)	More than 70%	83,471	83,502	31
Moderately Dense forest (MDF)	More than 40%; less than 70%	320,736	318,745	(1,991)
Open forests (OF)	More than 10%; less than 40%	287,820	295,651	7,831
	Total Forest Cover	**692,027**	**697,898**	

Source: Forest Survey of India - India State of Forest Report, 2013 (ISFR, 2013[10])

Forest Conservation: Over time, in an effort to reduce the pressure on forests, India's approach to forestry management has changed from production to conservation. Enforcement of The Wildlife Protection Act (1972), The Forest Conservation Act (1980) combined with active judicial interventions has reduced diversion of forest land for non-forestry purposes and has resulted in an increased share of protected areas in the country's geographical area from 3.34% in 1988 to 5.07% in 2014 (NBA, 2014[11]). While India's protected forest area has increased as a result of strong policies and legislations in place for the conservation of forests, wildlife and biodiversity, these forests are mostly islands with very little or no connectivity with other protected areas. Also, their adjoining buffer areas enjoy limited regulation and restrictions and hence face threats of irreversible degradation.

The below dynamics can be associated with degradation/ decline of forests in India:

1. Diversion of forest areas for developmental purposes like mining, generating hydroelectricity, creating newer and bigger railways and roadways network, irrigation projects, hydrocarbon explorations etc. to meet the growing demand created by the ever increasing population and country's growth aspirations.

2. Reduced per capita availability of forests due to regulated/restricted access, diversion for developmental projects and an ever increasing population with a wide forest dependency pattern.

3. Frequent climatic variations resulting in failed agriculture and livestock making the forest community increasingly dependent on the forest resources as a coping mechanism.

To address the above situation, national policies and programmes have evolved to improve the resilience of the forest ecosystems through protection, conservation and afforestation, while still trying to enhance the livelihood security of forest dependent communities. Initiatives like the Compensatory Afforestation Management and Planning fund (CAMPA), set up from

the support of Japan International Cooperation Agency (JICA), the National Rural Employment Guarantee Act (NREGA), further complimented by the establishment of Joint forest management committees in forest villages across India, have provided a support system to the forest dependent communities for employment while reducing forest degradation pressure and meeting the country's developmental demands.

Support from international agencies like the World Bank to these Government programmes for livelihood promotion, forest management, institutional strengthening, protection and conservation of forest biodiversity have fostered a conducive environment wherein these challenges can be addressed. However, while this transition has been successful in some ways, the lack of an integrated approach for landscape management has left most forested landscapes, its biodiversity and the resident communities with numerous vulnerabilities. A collaborative landscape level approach to conservation is thus required in this scenario which not only promotes building forest landscape resilience through institutional governance; it also improves the asset accumulation ability of the resident communities to reduce their vulnerabilities and dependencies on forests as coping mechanisms.

1.3 Forests, Communities and Climate Change

A multilayered forest carries out a multitude of functions, ranging from enhanced carbon sequestration, supporting more biodiversity, to acting as a source for rivers and in providing better livelihoods, to name a few. High levels of biodiversity can provide biological insurance against losses from disturbances, making the ecosystem more resilient and likely to recover, and allowing it to continue storing carbon in the long term (Bunker et.al 2005[12]). On the contrary, degraded forests are sensitive to climate change and experience increased incidence of pests and pathogens, invasive species and landslides. Changes in climate can also affect the tree physiology and phenology, forest growth, and cause negative impacts to its biodiversity.

Forest ecosystems play an important role in protecting communities and their livelihoods against climate risks. For instance, trees on steep slopes protect rural villages from landslides when heavy rains fall, and mangroves provide protection to coastal livelihoods during storm surges (Badola and Hussain 2005[13]; Das and Vincent 2009[14]). Moreover, they contribute to climate stabilization. For example, higher forest cover helps reduce the occurrence of droughts (Bagley et al. 2013[15]; Davidson et al. 2012[16]). Furthermore, such ecosystem-based activities provide the poor with incomes from intensive ecosystem management (like crop cultivation and livestock) and from the extraction of non-cultivated ecosystem goods (like timber, plants, animals, and fish). In a study conducted by World Bank, it was found that such ecosystem based incomes made up 55 to 75 percent of incomes in a cross-section of 58 sites representing smallholder systems, with 15 to 32 percent coming from forests or other non-cultivated ecosystems. Thus, it is understandable that forest ecosystems and its communities

share an inextricable link or in other words, the healthier the forest the more resilient is the community dependent on it and vice versa. (Shock Wave[17])

However, forest ecosystems are being affected through a range of consumptive, exploitive, and other indirect anthropogenic activities, even to the extent of influencing the global climate. The major anthropogenic impacts on forest ecosystems include loss of forest area, habitat fragmentation, soil degradation, depletion of biomass and associated carbon stocks, transformation of stand age and species composition, species loss, species introductions, and the ensuing cascading effects, such as increasing risk of fire. As a result, there has long been global concern about the long-term capacity of forests to maintain their biodiversity and associated rates of supply of goods and services (including carbon storage, food, clean water, and recreation). This concern has been amplified following observed impacts occurring to forests as a result of climate change.

According to a World Bank report – ***Shock Waves*** – the complicating factor is that climate change – especially when combined with local stressors such as overuse, as seen in the Indian context, threatens ecosystems including forests, which provide subsistence production and safety nets for many people in rural areas. It is estimated that poor smallholder communities across (sub) tropical landscapes including India depend on the extractive use of ecosystems (mainly forests) for up to 30 percent of their income and often rely on these resources to keep themselves above the poverty threshold. With diminished extractive value of ecosystems including forests due to various reasons discussed above, more and more people are expected to be forced into poverty in the future.

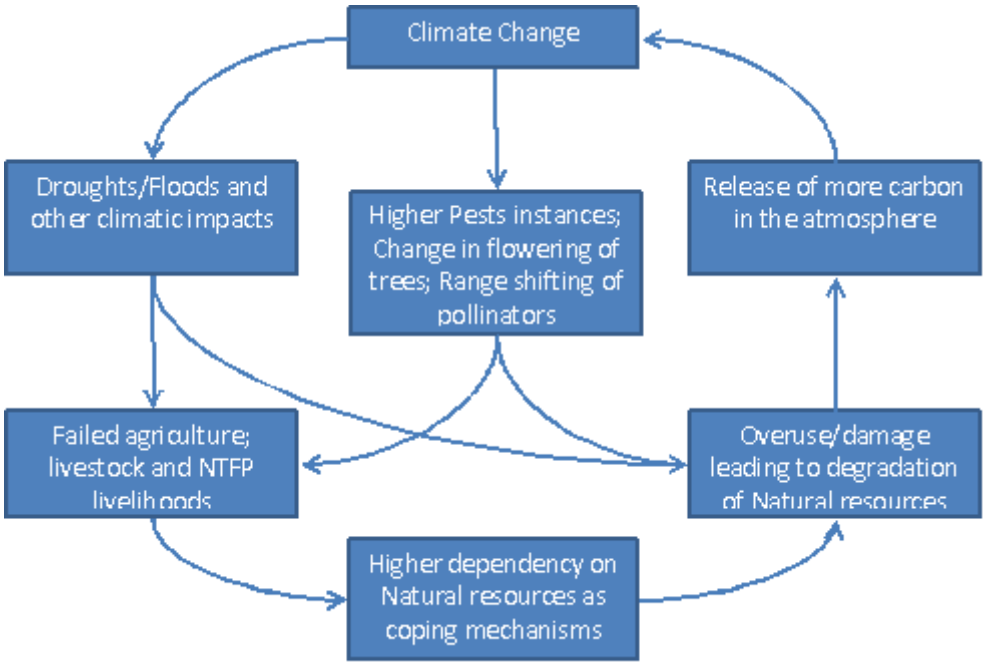


Figure 1.1 –Forests, Communities and Climate change

It is evident that in the scenario of climatic variations combined with overuse of natural resources, it is the poor and marginal communities which are dependent on ecosystem services, the most affected and most vulnerable to climate change impacts. In order to make these communities less vulnerable to climatic change a holistic adaptation approach is required.

1- **Community Based Institutions (CBOs)** – By creating and strengthening CBOs since tackling climate change can never happen in an institutional vacuum. It is important to promote collective decision making through local and robustly governed community based institutions. It is felt that a climatically informed institution has the ability to influence how households are affected by climate change (for example, by conserving village woodlots and surrounding forests, institutions increase resilience locally); capacitate households to respond to climate impacts and adopt various adaption measures; and mediate the flow of external interventions in the context of adaptation.

2- **Ecosystem Conservation** - For ecosystem based incomes, it is important to reduce the non-climate stresses (including developmental and over extraction) on ecosystems and biodiversity to make them adaptable to changes in environmental conditions. Conservation and ecosystem-based strategies are critical for making ecosystems more adaptive and resilient and for protecting the resources on which many poor people in rural areas depend. Healthy ecosystems are generally quite resilient, so protecting them and restoring degraded lands can increase their ability to withstand climate-related disturbances.

3- **Promoting climate informed and climate resistant livelihoods** – improved agricultural practices – livestock – alternatives (poultry, piggery, skill etc.) wherein the community adopts practices that are resilient to climate change yet are supported by livelihoods which reduce the strain on the flora and fauna of the corridor and thereby help to protect the landscape. The landscape's sustainability through climate change adaptation measures will ensure livelihood, food, water, energy security and wildlife protection in the long run.

1.4 Project Introduction

The objective of the proposed project is to adopt the three pronged approach described above (Institutional Building; Ecosystem Conservation and Climate resistant livelihoods) and through that build the adaptive capacities of the target community and landscape by building its economic, social and ecological resilience.

The proposed project is to be implemented in 56 villages having 7,609 households and lying in and around the Kanha-Pench Corridor (KPC) – which is a forested corridor that lies in the Central Indian state of Madhya Pradesh (MP). The KPC falls in three administrative districts of MP viz Mandla, Balaghat and Seoni and naturally connects two tiger reserves viz Kanha Tiger Reserve and Pench Tiger Reserve. The KPC is part of a larger landscape called the

Satpuda Maikal Landscape (SML). To establish a context for the project area and to explain the prevalent economic, social and environmental dynamics, an introduction of the SML; the three administrative districts; the two tiger reserves connected by KPC, the KPC and the project villages is given below:

1.4.1 The Satpuda – Maikal Landscape (SML)

Being a mega diverse country, India has multiple landscapes which constitute several important floral and faunal assemblages, support diverse land use, forest protection regimes and traditional forest dwelling tribal communities. Of these, the SML is one of India's largest strongholds of biodiversity and natural resource. The SML is situated along the Satpuda and Maikal hill ranges of Central India and spans over fifteen administrative districts of three states, viz. Madhya Pradesh, Maharashtra and Chhattisgarh. It is a unique combination of various categories of protected areas and managed forests under various ecological regimes.

The highlands comprising of the SML are primarily covered with tropical dry and moist deciduous forests and are a critical watershed and source of important rivers like the Narmada, Mahanadi, Son and their tributaries. The SML is also categorized as global-priority Tiger conservation landscape due to its potential for providing connectivity through wildlife corridors to source populations thriving in its Tiger reserves. It is estimated that the SML supports 12% of India's Tiger population and contains 13% of India's Tiger habitat (Jhala et al. 2011[18]).

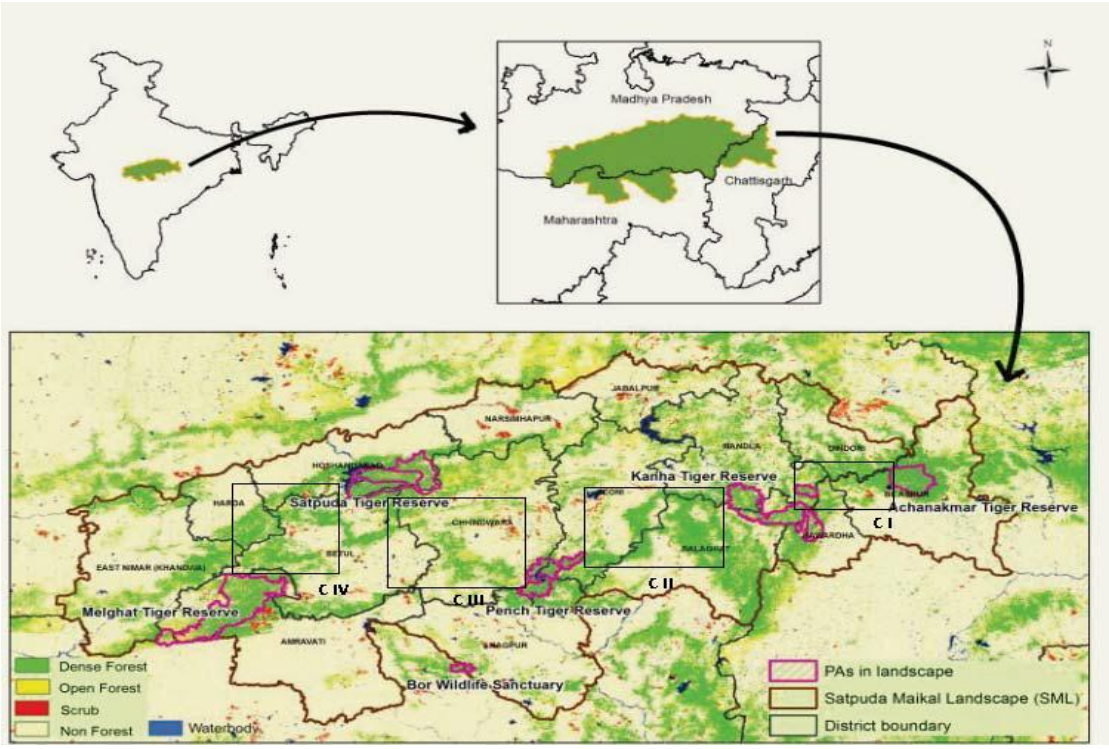
Like many other forested landscapes in India, the SML too is interspersed with human habitations. Several ethnic tribes inhabit the SML and reside in its many forest and revenue villages. The major ethnic tribes/groups in the landscape are the Baiga, Gond, Baharai, Korku, Ahir, Dhoba and Panka. Besides these scheduled tribes Yadav, Panwar, Banjara, Pardhi and Jharia communities also reside in the landscape. While farming is the major livelihood activity, most communities especially the tribals depend on forest-based resources, small-scale mining and marginal labour for their livelihoods. Thus, the SML while supporting a wide variety of biodiversity also supports some of the most poor and particularly vulnerable communities of the country and thus has a very significant economic and biological value in terms of the broad range of services it provides.

Recognizing the importance of forests in the landscape, protected areas including 5 wildlife sanctuaries and 6 Tiger Reserves have been established in the SML to protect its biodiversity and regulate/restrict extraction and diversion of the natural resources it possess. The Tiger reserves that have been created under the Project Tiger are Achanakmar, Kanha, Pench and Satpuda in Madhya Pradesh, and Pench and Melghat in Maharashtra. While these tiger reserves are islands of protected areas they also enjoy some connectivity in the form of 4 natural forested wildlife corridors viz. Achanakmar - Kanha; Kanha - Pench, Pench-Satpuda,

and Satpuda-Melghat. Once a contagious forest area, these corridors are what is left after natural and anthropogenic interventions over a period of time. Even so, these corridors play a vital role in regulating the entire ecosystem of the SML and are critical for its long term survival.

The reason why corridors are important can be understood by the below points as given by McEuen, 1993[19]. A natural corridor:

a) Enhances immigration, which supports genetic flow, increases genetic diversity and enhances overall Meta population survival in the connected patches.
b) Provides opportunity to avoid predation and is a provision of fire escape function
c) Accommodates range shifts due to climate change.
d) Maintains ecological process connectivity.



Map 1.1: The SML and the four corridors connecting Tiger reserves in the SML shown as - CI, CII, CIII and C IV. *(Source: WWF, 2012[20])*

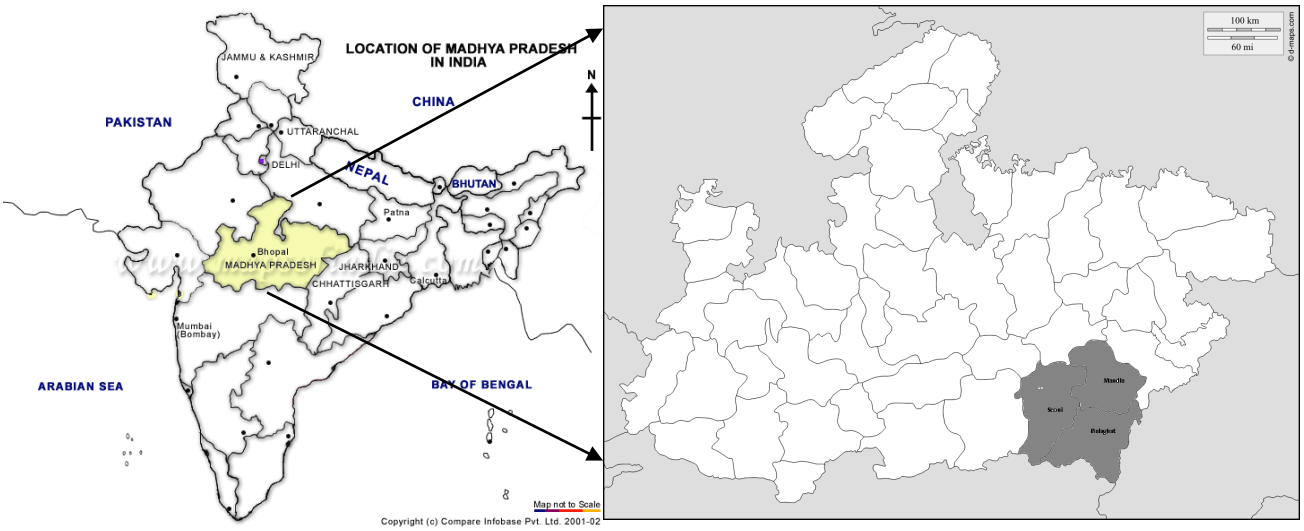
These corridors are functional structures in the SML and perform a multitude of functions – thus their connectivity is critical to ensure the long term functionality of the landscape and the survival of the flagship specie viz. Tiger, and the other important species that exist in it.

However, over time with the increase in population; changes in protection regimes and land use for developmental and tourism activities, urbanization; dependencies of vulnerable communities and impacts of climate change have resulted in degradation and fragmentation

of the forest areas and posed challenges for maintaining contiguity across this ecologically critical landscape. These challenges call for a holistic landscape approach to conservation which is required across both public and private lands to protect and manage natural ecosystems and ensure forest connectivity in the SML.

1.4.2 Administrative Districts

The KPC spreads across 3 administrative districts of the Central Indian state of Madhya Pradesh viz. Balaghat, Mandla and Seoni. These districts lie in the south eastern part of the state as shown in the Map 1.2.



Map 1.2: Location of the three project districts (*Source: Compare Infobase, 2002*[21])

Topography: The altitude in these districts varies from 400 m to 700 m from the mean sea level and gentle slopes can be observed all along the districts. The tracts in the district of Mandla are relatively plain and areas near Balaghat and Seoni have mild undulating terrain.

Climate: These districts have a sub-tropical climate; summers are dry and extend from April to June with maximum temperatures ranging between 43'C - 47' C. These are followed by the monsoon from July to September with an average annual rainfall of 1350 mm and winters are pleasant with average temperatures ranging between 10'C – 15'C during November – February but can drop to a minimum of 0'C in some parts.

Forests: The forest area in these districts is characterized by a homogenous mix of various forest types. Overall, forests ranges in Mandla and Balaghat are mixed deciduous and dominated by Sal (*Shorea Robusa);* while teak (*Tectona Grandis)* and bamboo (*Dendrocalamus strictus*) are the dominant species in the Seoni forest ranges. Table 1.2 shows the district wise forest cover with respect to its total geographical area and changes in it as per the latest assessment done by the Forest Survey of India.

Table 1.2: District Forest Cover

District	Geographical Area (GA)	2013 Assessment of FSI					
	(Sq. km)	VDF	MDF	OF	Total	% of GA	Change in sq. km since 2011
Balaghat	9,229	1,328	2,690	960	4,978	54	(19)
Mandla	5,800	751	1,204	880	2,835	49	5
Seoni	8,758	240	1,803	1,039	3,082	47	(1)
Total	**23,787**	**2,319**	**5,697**	**2,879**	**10,895**	**50**	**(15)**

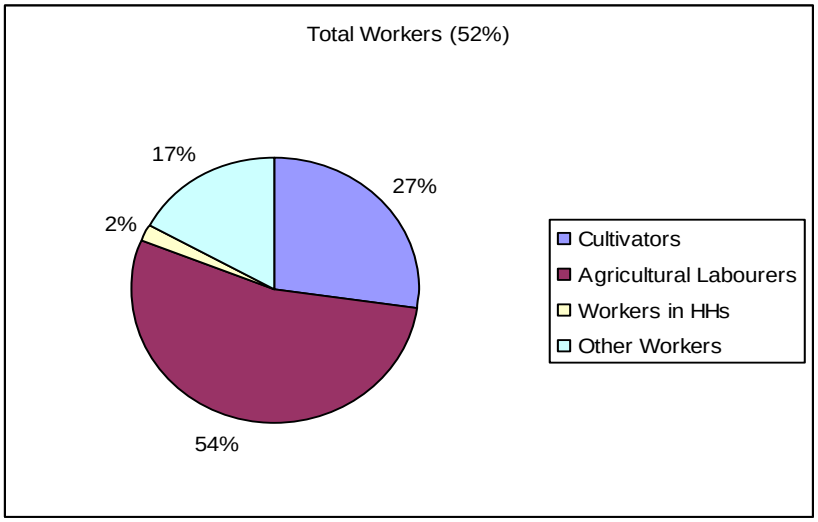
*Source: Forest Survey of India - India State of Forest Report, 2013 (*ISFR, 2013[22])

As shown in the above table 50% of the district geographical area is under forest cover. Also, there has been a decrease in forest cover in Balaghat and Seoni, the main reasons for the decrease is the encroachment on forest land, mining activities and submergence. While the increase in forest cover in Mandla is due to afforestation measures taken in the district.

Demographics: Highlights[23]

1. Total population in the 3 districts is 4.13 million. The decadal population growth rate (2001 – 2011) is 17% with an incremental population increase of 0.58 million people. The growth rates are similar to the national decadal growth rate of 17.64%
2. The population is these districts is 87% rural with a decadal growth rate of 14% and incremental population of 0.44 million. Urban population is 13% with a decadal growth rate of 33% and increment of 0.13 million (2001 – 2011)
3. Overall density is 175 people per sq. km with a decadal growth in density per sq. km of 16.6%. (2001 – 2011)
4. Sex ratio is 1003, which is high compared to the state's average of 931 and national average of 943. Literacy rate is 73.20% which is slightly lower than the national rate of 74.04%.
5. Scheduled tribes (indigenous people) in these districts comprise 37% of the total population which is extremely high as compared to the national average of 8.6%.
6. 52% of the population in these districts is working and the composition of shown in the chart below. 80% depend on agriculture (cultivators and agriculture labourers) for their livelihoods. Furthermore, more than 80% of farmers are marginal (less than 2 ha of cultivated area).
7. The total livestock population is 2.77 million *(Livestock Census, 2012);* thus, the livestock to people ratio is as much as 0.67:1 (for every 1 person there is 0.67 cattle)
8. Population living below the poverty line is 51%

Chart 1.1: Working Population in Balaghat, Mandla and Seoni Districts



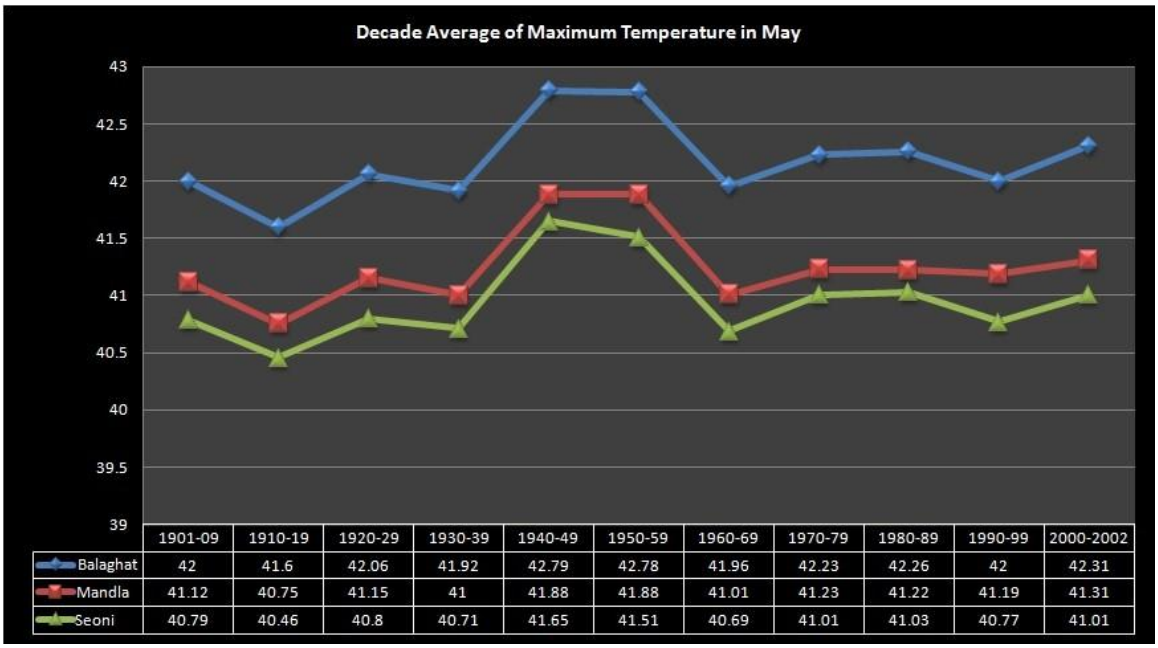
Source: National Census 2011[24]

Climate Change and Vulnerability

Analysis of past data: The meteorological data from 'Indian Water Portal[25]' has been used for the climate change pattern analysis. The analysis of this data was done in various stages. Initially, the analysis was done project districts (district-wise) for all the years. Secondly, only the months of highest temperature, (May) and the lowest temperature (December) were considered, for all the years. Then, decadal averages were calculated and considered. For the sake of a clear and a precise understanding, only the decadal data is presented here in the form of graphs. Decadal Analysis of Temperature and Precipitation for the Balaghat, Mandla and Seoni is as per the following graphs (Figures 1.2 – 1.5).

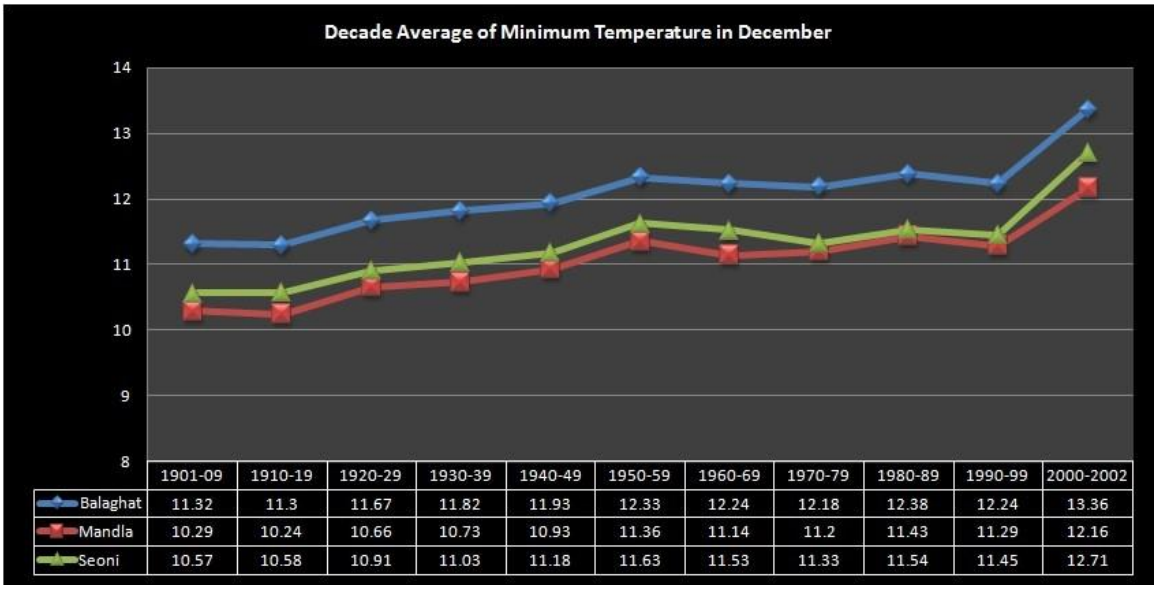
Very little movement over the last century in the region (Figure 1.2) has been noticed in the average maximum temperatures; however, variation in the maximum temperature over the decades during the month of May is noticed in the district. The minimum temperatures during the month of December show variations over the decades and a consistent rise too. (Figure 1.3)

While no studies have been conducted as to how these variations/rise in temperatures would have affected the forests and the agriculture in the region, changes in the temperature is associated with related changes in forest regeneration (most of the trees flower during December) and changes in crop phenology.



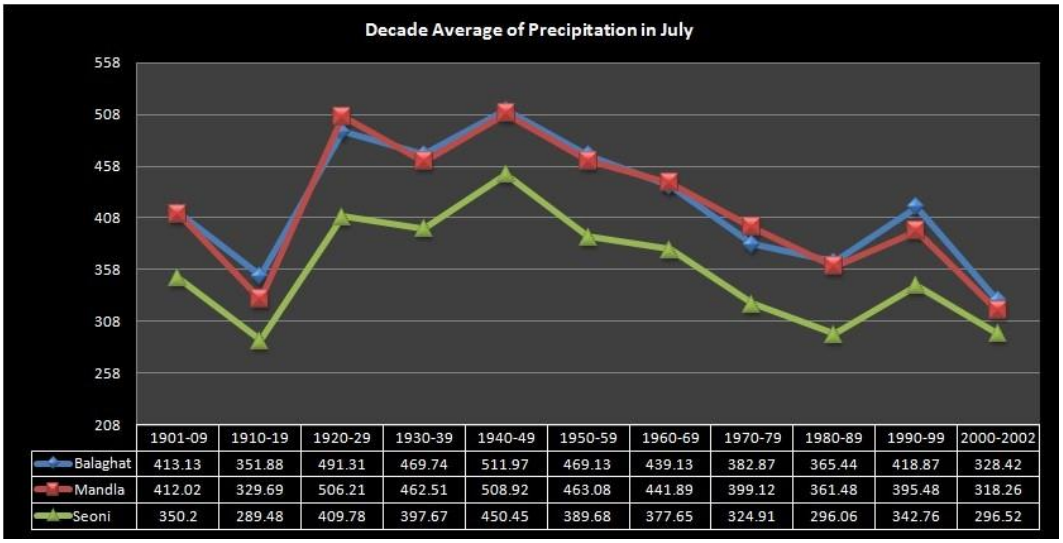
	1901-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000-2002
Balaghat	42	41.6	42.06	41.92	42.79	42.78	41.96	42.23	42.26	42	42.31
Mandla	41.12	40.75	41.15	41	41.88	41.88	41.01	41.23	41.22	41.19	41.31
Seoni	40.79	40.46	40.8	40.71	41.65	41.51	40.69	41.01	41.03	40.77	41.01

Figure 1.2 Decadal average of maximum temperature during May – 1901 – 2002 (in Celsius)



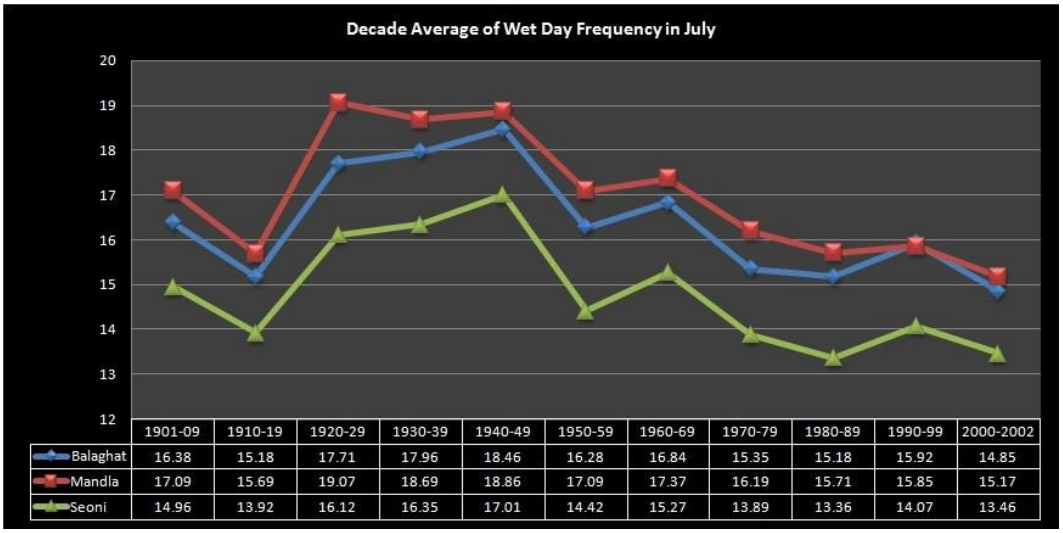
	1901-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000-2002
Balaghat	11.32	11.3	11.67	11.82	11.93	12.33	12.24	12.18	12.38	12.24	13.36
Mandla	10.29	10.24	10.66	10.73	10.93	11.36	11.14	11.2	11.43	11.29	12.16
Seoni	10.57	10.58	10.91	11.03	11.18	11.63	11.53	11.33	11.54	11.45	12.71

Figure 1.3 Decadal average of minimum temperature during December – 1901 – 2002



	1901-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000-2002
Balaghat	413.13	351.88	491.31	469.74	511.97	469.13	439.13	382.87	365.44	418.87	328.42
Mandla	412.02	329.69	506.21	462.51	508.92	463.08	441.89	399.12	361.48	395.48	318.26
Seoni	350.2	289.48	409.78	397.67	450.45	389.68	377.65	324.91	296.06	342.76	296.52

Figure 1.4 Decadal Average of precipitation during July (in mm)



	1901-09	1910-19	1920-29	1930-39	1940-49	1950-59	1960-69	1970-79	1980-89	1990-99	2000-2002
Balaghat	16.38	15.18	17.71	17.96	18.46	16.28	16.84	15.35	15.18	15.92	14.85
Mandla	17.09	15.69	19.07	18.69	18.86	17.09	17.37	16.19	15.71	15.85	15.17
Seoni	14.96	13.92	16.12	16.35	17.01	14.42	15.27	13.89	13.36	14.07	13.46

Figure 1.5 Decadal average of wet day frequency during July (days)

In Figure 1.4 except for node (peak) in the middle of the decade 1990-1999 and a rising trend from the middle of the 1980-89 and 1990- 1999, there has been a steady decrease in rainfall from 1945 onwards. Furthermore, figure 1.5 shows that there has been a constant reduction in the number of wet days during the month of July in the region, this could only mean either the water availability is going down or that the intensity of rainfall has risen. Both situations have resulted in potential damage to the forests (erosion/ regeneration) agriculture (crop failure/damage) with related impacts to the community and biodiversity in the region.

Projections: The Madhya Pradesh State Action Plan for Climate Change (MP-SAPCC) has derived climate projections for the state of Madhya Pradesh for 2030s (2021-2050) and 2080s (2071-2098) using PRECIS (Providing Regional Climate for Impact Studies). According to the projections on temperature variations it is expected that the average surface daily maximum temperatures, in the period of 2030s will rise by 1.8-2.0°C throughout Madhya Pradesh and

the daily minimum temperatures are projected to rise between 2.0°C to 2.4°C during the same period; the eastern half of the state (where the Balaghat, Mandla and Seoni districts are located) will experience more warming than the western half.

Projections of rainfall in Madhya Pradesh for the period 2021 to 2050 indicate that there is likely to be decrease in winter rainfall moving from eastern part to western part of the state. Pre – monsoon rain is expected to the rise in the southern part of the state and thus will have an effect on the Balaghat, Mandla and Seoni districts. Monsoon precipitation for the period of 2071 – 2100 is expected to be 1.45 times the current observed precipitation in Mandla and Northern Balaghat (SAPCC, 2012[26])

Also, to assess the vulnerability of the districts in Madhya Pradesh a composite index was developed by multivariate analysis of individual indicators (social, economic, agriculture, water resource, forest and climate) which are vulnerable to climate change. A Vulnerability ranking (from 1 to 50, 50 being the most vulnerable) was then assigned to all the 50 districts of Madhya Pradesh based on the Corresponding Vulnerability Index. In this exercise, the project districts ranked as:

Table 1.3: Composite Vulnerability Index of the KPC Districts

KPC Districts	Baseline	Mid Century
Balaghat	24	24
Mandla	38	40
Seoni	12	14

Source: Vulnerability Assessment (http://www.epco.in/pdfs/ClimateChange/Vulnerability_Assessment_of_MP.pdf)[27]

Table 1.3 shows that at present, Balaghat, Mandla and Seoni are the 24th, 38th and 12th most vulnerable districts in MP however, the mid century scenario tells us that while there will be no change in the vulnerability of Balaghat, Mandla and Seoni will rise to the 40th and 14th spot respectively. One thing to note here is that the composite scores of these districts are slightly misleading. Due to the ample forest resources in these 3 districts they have been ranked as the least vulnerable (top 3) in the Forest index which has resulted in a higher score for these districts, however if we consider the social indices for these three districts are ranked as 44th, 49th and 38th respectively. Similarly Socio – Economic index gives these districts 36th, 49th and 32nd ranking respectively.

One more important observation from this vulnerability assessment is the **Climate Index** provided to these districts. These districts (including one adjoining district viz. Chinddwara) have the highest variability in Baseline to Mid Century scores amongst all the 50 districts in

MP, which in simpler terms mean that these districts will experience the highest change in the rainfall and temperature indicators (table 1. 4) considered in this vulnerability assessment*.

Table 1.4: Climate Index of the KPC Districts

KPC Districts	Baseline	Mid Century	Variation
Balaghat	28	47	19
Mandla	33	49	16
Seoni	21	42	21

Source: Vulnerability Assessment (http://www.epco.in/pdfs/ClimateChange/Vulnerability_Assessment_of_MP.pdf)[28]

* Climatic Indicators used in Climatic index	Conceptual Basis	Unit
Cool nights- days when minimum temperature < 10th Percentile	Exposure	Percentage
Warm nights- days when minimum temperature > 90th Percentile	Exposure	Percentage
Cool Days - Cool nights- days when maximum temperature < 10th Percentile	Exposure	Percentage
Warm Days - Cool nights- days when maximum temperature > 90th Percentile	Exposure	Percentage
Frost Days (Annual count when TN(daily minimum)<0ºC)	Exposure	Number of Days
Warm Spell Duration Indicator (Annual count of days with at least 6 consecutive days when maximum temperature>90th percentile)	Exposure	Number of Days
Average annual rainfall	Exposure	MM
No. of Rainy Days	Exposure	Number of Days
Extremely Wet Days-Annual total rainfall when rainfall>99th percentile	Exposure	MM
Consecutive Dry Days-maximum number of Consecutive Days With Rainfall Less Than 1 mm	Exposure	Number of Days
Frequency of Drought	Exposure	Number of Days
Flood discharge	Exposure	Cumecs

Source: Vulnerability Assessment[29]

1.4.3 The Tiger Reserves

Tiger Reserves are areas notified under the section 38V of the Wildlife Protection Act, 1972 to provide inviolate habitats to the Tiger and stabilize their dwindling population and conserve the eco system in the country. The KPC connects two such Tiger reserves viz. Kanha and Pench.

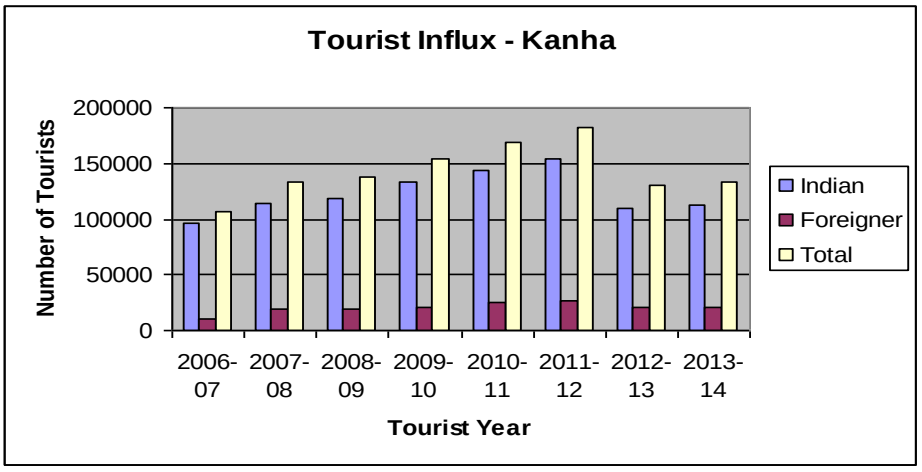
Kanha Tiger Reserve: Kanha Tiger Reserve is one of the first designated Tiger reserves under the Project Tiger, Wildlife Protection Act 1972 and is managed by the Field Director's office, Mandla. It comprises three areas, an inviolate core zone (940 sq km), a multiple use buffer zone (1,009 sq km) and a satellite micro core (110 sq km). It is internationally renowned for its typical Central Indian floral and faunal attributes and conservational measures and is a huge wildlife tourist destination.

Besides a viable population of the Tiger, and an endemic population of Hard Ground Barasingha (*Cervus duvauceli branderi*), the reserve harbours 43 species of mammals including Leopard (*Panthera pardus fusca*), Wild Dogs (*Cuon alpinus*), Sloth Bear (*Melursus ursinus*), Gaur (*Bos gaurus*), Chital (*Axis axis*), Sambhar (*Rusa unicolor*), Striped Hyena (*Hyaena hyaena)* and Jackal (*Canis aureus indicus*).

Under the tourism policy of Kanha, its management has created a small tourism zone in the reserve's core area. It consists mainly of the lower slopes and valleys of the reserve and has excellent Sal & Bamboo forests, extensive grasslands and perennial water bodies. The zone coincides with excellent wildlife habitat and is home to many ungulate species, which in turn provide substantial prey base making this zone a haven for the Tiger.

On an average 143,000 tourists visit Kanha every year (16th October – 30th June). About 14% of these tourists are foreigners. To accommodate these tourists, the tourism industry has developed significantly over the past decade in and around the TR which has had both positive and negative impacts on the landscape and communities.

Chart 1.2: Tourists in Kanha Tiger Reserve, 2006 to 2014



Source: Field Director's Office, Kanha Tiger Reserve

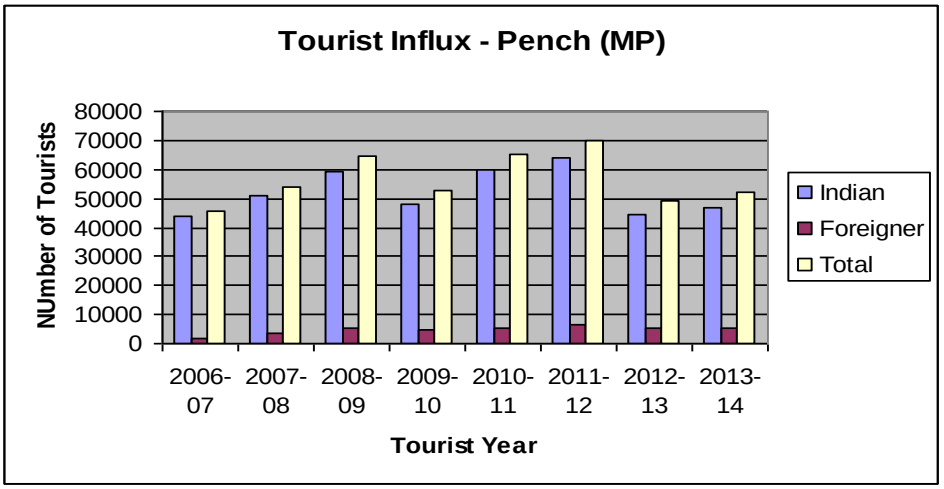
***Pench Tiger Reserve*:** Pench was declared a Tiger reserve in 1992, with an inviolate core zone of 411 sq. km and a buffer area of 768 sq km. The landscape is famous for being the inspiration behind Rudyard Kipling's 'Jungle Book' and like Kanha, is a major wildlife tourist destination. Pench Tiger reserve spreads across two states viz. Madhya Pradesh and Maharashtra, and the Pench Tiger reserve (Madhya Pradesh) is managed by the Field Director's office, Seoni.

The Pench Landscape is equally rich in biodiversity like Kanha. The undulating topography supports a mosaic of vegetation ranging from moist, sheltered valleys to open, dry deciduous forest. The high habitat heterogeneity favours high population of Chital and Sambar which

provide an ideal prey base for the thriving predator population of Tigers, Leopards and Wild Dogs.

On an average 57,000 tourists visit Pench (MP) every year (16th October – 30th June), 8% of these tourists are foreigners. The tourism industry, although not as developed as it is in Kanha, is gradually expanding in Pench as well and bringing with it both positive and negative impacts as it is in Kanha.

Chart 1.3: Tourists in Pench Tiger Reserve (Madhya Pradesh), 2006 to 2014



Source: Field Director's Office, Pench Tiger Reserve

The Interlink

In the 3 districts of Balaghat, Mandla and Seoni, the forests are spread over more than 50% of the geographical area (Table 1.2), furthermore, these districts have a population of 4.5 million people, 87% of whom are rural, and 37% of these are indigenous and share an age old relationship with forests. Also, more than 80% of the working population in these districts depends on agriculture and 80% of the farmers are small - marginal. Livestock is the other major livelihood in the districts with 0.67 cattle for every person (approximately 3 million).

Evidently people in these districts are heavily dependent on ecosystem based incomes. Moreover, prevalent poverty (51%) combined with the existing livelihood patterns suggests that these are vulnerable communities and during economic troughs retreat to the forest resources as a coping mechanism. Thus, one can say with high confidence that forests and people in these districts share an inextricable link and these forests play an important role in the day to day life of these people and the economy as a whole.

Furthermore, rising population indicated by the decadal growth rate of population (17%) combined with the increase of protected forest area has meant that the per capita availability of forests has gone down considerably in these districts over a period of time. Developmental demands coming particularly from mining activities, railway and roadway construction has led

to diversion of land in these districts which is also indicated by the decrease in forest area particularly in Balaghat and Seoni districts. Balaghat and Seoni lost 19 sq km and 1 sq km of forests respectively while Mandla, due to afforestation measures gained 5 sq km over a period of 2 years between 2011 and 2013. (FSI, 2013[30])

Past and predicted climate variations are also noted and are predicted to have direct implications and add on to forest degradation. As temperature and rainfall pattern changes, especially in the coming 30-40 years as observed in the Climate indices of these districts the forests in these 3 districts are likely to be affected. It is likely that higher rates of degradation of forests and soils would happen and cover large areas thereby affecting biodiversity and hence resulting in widespread degradation and fragmentation of forests.

Considering the important role that forests play in the economic, social and environmental aspects, and in view of the threats they face in this region, it is imperative to protect and conserve these forests. Tiger reserves like Kanha and Pench are custodians of rich wildlife and are critical for the long term survival of important species especially the Tiger. While these Tiger reserves are protected areas the forests connecting these are not and if a *Laissez-faire* approach is adopted, this connecting corridor will degrade and fragment making the landscape loose its overall functionality.

Hence, there is a need to look beyond protected areas and adopt a landscape approach with a heavy focus on working with the poor and vulnerable communities that live around protected areas. Reducing vulnerabilities of communities that live around protected areas is the way forward towards long term conservation of ecosystems. KPC is one such critical landscape that needs the same attention.

1.4.4 The KPC – Project Area

The project is proposed to be implemented in 56 villages that lie in and around the KPC which is one of the 4 forested wildlife movement corridors in the SML. The KPC forms one of the most crucial tiger conservation units of the world, as it is still a contiguous forest patch of 16,000 sq.km and connects the Kanha and Pench Tiger reserves which support a metapopulation of 67 Tigers (range 60 – 74) and 54 Tigers (range 44 – 65) respectively (WWF, 2012*[31]*). The KPC plays an important role by allowing wildlife, including tigers, to immigrate and breed with other metapopulations thriving in Kanha and Pench, thereby ensuring better genetic diversity and enhanced survival ability.

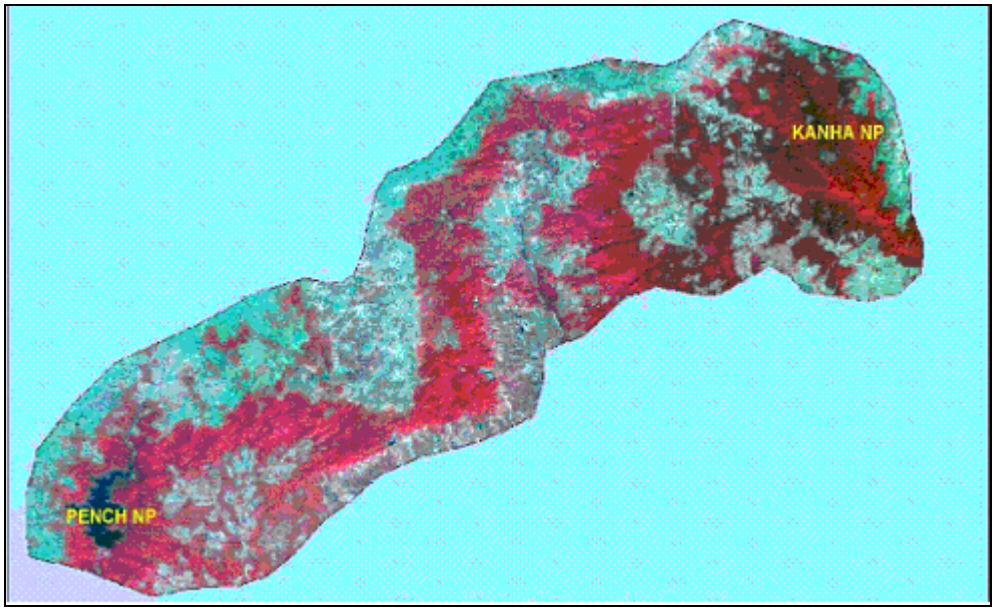


Figure 1.6: Satellite imagery of the Kanha and Pench Tiger Reserves and the KPC (*Source: KPC project report[32])*

Furthermore, the KPC provides important ecosystem services like – regulating hydrology (it constitutes a part of the watershed for the river Narmada regarded as the lifeline of central India and its tributaries like Banjar and Halon) and carbon sequestration. It also supports rich biodiversity (including the endangered and vulnerable species such as the Tiger and Hard-ground Barasingha) and plays a vital role in maintaining the overall functionality of the larger landscape – SML.

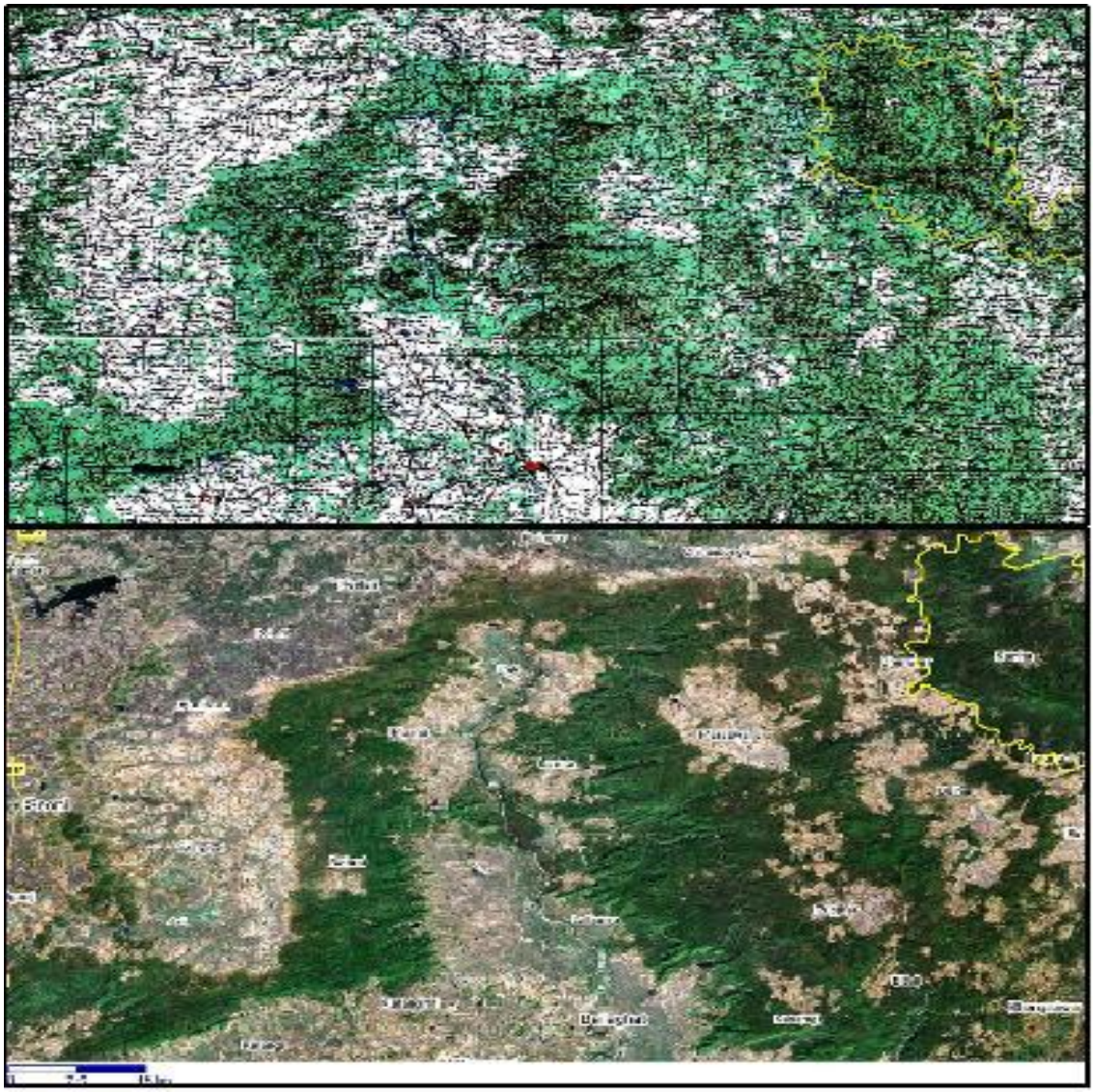
Besides its ecological functions, the KPC supports a substantial human population that is extremely vulnerable socio- economically, has inadequate access to information and resources and suffers from chronic poverty. As per a management plan prepared by the Madhya Pradesh Forest Department (MPFD), there are 442 villages settled in and around the KPC. These villages consist of about 80,000 households (almost 50% fall below the poverty line) having a population of more than 420,000 people, as much as 60% of which are belonging to indigenous tribes and share an age old inextricable relationship with the surrounding forests. The major indigenous tribal groups in the landscape are **Baigas**[1], a classified particularly vulnerable tribal group by the Government of India and **Gonds**, who are primarily agrarian. 85% of the population practices agriculture, 10-12% is labourer/landless and 3-5% practices professions like blacksmith, carpentry, masonry, etc. These communities are dependent on forest produce for meeting most of their cash income needs and as a

[1] During the 4th Five Year Development Plan a sub-category was created within Scheduled Tribes to identify groups that are considered to be at a lower level of development. This sub-category was named "Primitive tribal group" and later changed to “Particularly Vulnerable Tribal group”. The features of a such a group include a pre-agricultural system of existence, that is practice of hunting and gathering, zero or negative population growth, extremely low level of literacy in comparison with other tribal groups.

coping mechanism for failed agriculture and other livelihoods. It can be said that the survival of these communities depends on the KPC and its resources and vice-versa.

However, in the last two decades or so, this forested corridor has faced severe degradation caused by an **increase in anthropogenic pressure and climate change**. Studies of the corridor area reveal that while the forests within the corridor has excellent patches with continuous regeneration, patches which are completely/partially degraded are increasing constantly due to their diversion for developmental purposes or by over extraction of its resources (fuel wood, timber, fodder etc). This situation in the landscape is further exacerbated by climate change. There is evidence to show that the rainfall and temperature patterns in the region have undergone a change in the past few decades which have impacted both forests and other ecosystem based livelihoods like agriculture and livestock.

Map 1.3 below illustrates how the KPC has degraded/ fragmented due to the various threats being discussed. The image below contains two maps for comparison, the map above is a Survey of India Map created in 1924 while the one below is a more recent map taken from Google earth. Clearly, the overtime reduction in the forest cover is visible and depicts the level of degradation caused to the forests.



Map 1.3: Degradation and fragmentation in the KPC compared to 1924 *(Source: Survey of India)*

KPC faces threats of irreversible degradation which can not only dilute its functionality but also pose challenge to the survival of the rich biodiversity and large community it supports. It is important to note here that forests ecosystems (including KPC), if undisturbed are known to have inherent adaptive capacities and can continue to provide uninterrupted ecosystem services to the communities dependent on it. Thus, one can safely assume that higher the adaptive capacity of the forests, higher is the adaptive capacity of the dependent community (and other dependent groups) in the context of climate change. This holds true for the KPC landscape too. A thorough analysis of the prevalent dynamics/ threats and extensive experience of working in the region has led us to believe that in order to make the landscape resilient, the prevalent vulnerabilities in the community (which uses the ecosystem as a coping mechanism) needs to be addressed on a priority so as to enable the forests ecosystem improve its long term functionality for the dependent community and biodiversity.

Given the multipurpose scope and scale of the KPC in providing services to people and wildlife alike, threats that impact the functionality of the landscape have to be addressed by adopting a mutually co-beneficial approach (as discussed under section 1.3) and promote activities that help tackle these threats. It is seen that these threats to the KPC are originating from i) Overuse; ii) Climate change and iii) Development and understanding these threats in detail is the first and the most important step in this process, in view of this a detailed description of these threats is given below.

i) Threats from Overuse

Forests are an integral part of the life of the communities living in and around the KPC and their well-being is directly linked to the well-being of the forest. However, over the years, the increase in population of people and livestock in the region combined with the restricted/regulated community rights on the forests due to creation of protected areas has decreased the per capita availability of forest and agricultural land considerably.

As per the KPC management plan, the KPC forests are under huge direct extraction pressures:

- Dependency of 420,000 inhabitants/80,000 households on KPC in terms of timber for agricultural and household purposes, fruits, tubers and other NTFPs. It is important to note that NTFPs alone constitute 30-40% of total cash income of these communities.
- 287,000 cattle units in the KPC, with a fodder dependency of about 500,000 tons annually.
- Fuel wood (for household usage and sale) dependency of about 400,000 tons annually.

In order to assess the reasons for dependency and the socio – economic vulnerability prevalent in the community, a vulnerability ranking exercise was conducted under the project formulation exercise and rankings were provided to selected project villages after undertaking a sensitivity analysis using a tool called CoDRIVE- PD (further details provided under Section 1.4.6). These rankings were provided using three main categories viz.

1. Large and Medium landowning households: Farmers with landholding of 2 ha and above. (18-20% of the total households) In this category farmers having 2-4 ha of land were found to be 95%, and only 5% of the farmers had landholding of 4 ha and above.
2. Small and Marginal landowning households: Farmers with landholding pattern of less than 2 ha. (75-77% of the total households)
3. Landless households – Households with no agricultural land – (3-6% of the total households).

For each of the above household category resilience codes {1-Nil (0-10%) 2- Minimum (11-25%) 3- Low (26-45%) 4- Adequate (46- 70%) 5- High (71 %<)} were assigned for 5 capitals viz. Financial, Human, Natural, Physical and Social with various indicators, details of

indicators under each capital are discussed in detail under Table 1.15. The resilience codes were assigned for each of the respective capital indicators for the representative villages. Finally a resilience code was generated under each of the five capitals for the 3 household categories. This gave us the resilience or vulnerability codes for each of the villages studied. The major finding of the ranking exercise was that all the households under categories Small/ Marginal and Landless which comprise of more than 80% of the total households in the project villages were found to have no resilience/ minimum resilience under the five capitals. Thus, it is evident that the community residing in the region is extremely vulnerable and resorts to the most abundant resource available in the vicinity – forests – as a coping mechanism.

Furthermore, climate variations combined with the complex dynamics prevalent in the region have added on to the problems of these underdeveloped communities by adversely impacting their major livelihood sources viz. Agriculture, Livestock and NTFP. The prevalent socio-economic vulnerabilities in the community described above combined with the climate change impacts is leading to frequent failures of livelihoods have meant an ever increasing dependency pattern of communities on the surrounding forests leading to further extraction pressures. In the below section we describe the prevalent livelihood related vulnerabilities faced by the community which is leading to frequent livelihood failures and causing over extraction pressures.

Figure 1.7: Settlement theme in the KPC indicating the proximity of human settlements to its forests *Source: KPC project report*[33]

Agriculture: Agriculture is the main occupation of the communities living in the KPC, and as seen in the tables 1.5 and 1.6, 84% farmers have land holdings of less than 2 ha and 74% net

sown area is un-irrigated, evidently most of the small and marginal farmers can practice only one rain-fed crop during the year. The single crop produced is mainly paddy and the few who have irrigation availability grow wheat combined with pulses and minor millets in small areas during the Rabi season. Independent studies conducted to assess crop productivity suggest that the productivity of major crops viz. paddy and wheat, is below the state average and overall agriculture is devoid of improved agricultural practices, irrigation facilities and access to good quality inputs.

Table 1.5: District Composition of Big and Marginal farmers in the KPC

District	Big farmers (land more than 2 ha, percent)	Marginal farmers (land less than 2 ha, percent)
Balaghat	22.5	77.5
Mandla	33.5	66.5
Seoni	11.7	88.3
Average	**16.4**	**83.6**

Source: KPC Management Plan[34]

Table 1.6: District Land Classification: Dry land and Irrigation

District	Irrigated	Un-irrigated
	(percent of total agricultural land)	
Balaghat	40.1	59.9
Mandla	7.4	92.6
Seoni	24.4	75.6
Average	**26.2**	**73.8**

Source: KPC Management Plan[35]

Loss of produce to raiding by wild herbivores is another challenge faced by the farmers and as much as 90% of the households in the KPC area report 15 – 25% crop damage due to raiding (Aggarwal, 2011[36]). The loss reported was considerably higher (as much as 50%) for fields close to forested areas and even though there is a compensation scheme put into place by the government, the process is tedious and more often than not the farmers opt out of reporting damages due to the time and costs involved.

Households are forced to stay on their fields day and night to protect the crops by keeping the wild herbivores at bay. This not only increases their exposure to risks like attacks from wildlife, it also increases drudgery in these households. The impact is increased man animal conflict intensity which in extreme situations leads to retaliatory killing of wildlife. Thereby, both the communities and wildlife are vulnerable due to this complex relationship. In a Vulnerability Exercise conducted during the project formulation phase, farmers in some selected villages reported as much as 40% damage due to crop raiding.

Furthermore, to access the prevalent vulnerabilities other indicators relating to agriculture were studied during the Vulnerability assessment and community was requested to provide information on the change they have experienced over a period of 25- 30 years. The findings were as below:

Table 1.7 – Agriculture related indicators and changes noticed by the community

Indicators	Response from the community
Water resources - water bodies	• Huge increase in man made water bodies like bore wells, open wells and farm ponds is reported as against only open wells and percolation tanks that were used for irrigation and drinking water 30 years back. However, water bodies with availability throughout the year have reduced. • Water for drinking water was available throughout the years in wells. Presently, very few wells having water throughout the year are reported. People use hand pumps for drinking water 3-5 months in a year. • Forest streams were used for livestock purposes but due to lesser water and increased population of people and livestock, shared water bodies have increased. People reported higher frequency of water related diseases and some households boil water before drinking/ cooking
Ground water status (depth)	• All sample villages reported a drastic reduction in ground water levels. Community members reported depth in open wells of 8-10 feet 30 years back against the present day depth of 30-35 feet. • People also reported open wells that were perennial have started drying out by Feb – March.
Irrigation (% of HH)	• Farmers used to practice rainfed irrigation mostly, while only 5% of farmers (mostly large and medium) practiced had irrigation facilities. • Presently, 30% households in sub typology 2 have access to irrigation (lift, flood and bore wells). These are mostly, large and medium farmers. • As few as 5% of small and marginal farmers have access to irrigation and micro irrigation facilities in the villages surveyed.
Irrigation in Kharif (Paddy)	• No irrigation was required earlier, however in one (Parrapur) village, farm ponds were used to irrigate due to prolonged dry spell.
Irrigation in Rabi (Wheat)	• Farmers reported that earlier traditional crops like Kodu, Kutki (minor millets) and indigenous variety of wheat could be cultivated just on the moisture content in soil and dew. • Presently, most of the farmers having access to water bodies (less than 20%) like wells, borewells and streams reported use of diesel pumps for lift irrigation.
Irrigation facilities (all lift water from the streams)	• Most of the households having access to water bodies own/rent diesel pumps for irrigation • Water sharing was reported in 2 villages in sub typology I.
Farms area (owned by the people)	• Farms area has increased over the last thirty years. However, per capita availability of land has gone down due to increased population and division of land amongst households. • Fallow lands which were an important source of fuel wood and fodder have reduced.
Crops Cultivated	• Variety of crops cultivated were reported to be similar in all the villages however the area under cultivation for traditional crops like Kodu and Kutki (drought resistant millets which require very little/ no water) have gone down considerably. • Farmers reported that earlier Kodu Kutki were cultivated on

	50-60% farm area which has now gone down to 5-10%.
Fertilisers and organic manure	• Only farm yard manure (FYM) was used in the past. Presently, 100% large and medium farmers reported high usage of chemical fertilizers like DAP, Urea, super phosphate etc. with small quantities of FYM. • Most of the small and marginal farmers use FYM as the primary supplement. Availability of FYM is a challenge as livestock are not stall fed.
Types of seeds	• During earlier times, farmers reported usage of only indigenous seeds. Some of these indigenous seeds used for paddy like Saathiya were drought resistant. • Most of the farmers reported using hybrid and high yielding varieties (due to high yields and low crop duration) for paddy and wheat. For other crops like pigeon pea, mustard all farmers still use indigenous seeds. • High dependency on chemical fertilizers is reported across all sub typologies for hybrid and high yielding varieties.
Agriculture input costs	• Huge increase in agricultural input costs has been reported by all the farmers. Over a period of 30 years Large farmers on average reported an increase from INR 250 – INR 15,000 per ha; Medium farmers reported an increase from INR 190 – INR 12000 while small and marginal farmers reported an increase from INR 140 – INR 8,000.
Sale of crop products	• Very small quantity was sold since the main use was for subsistence, whatever sold was also sold within the village (barter system was in place). • Presently, most of the small and marginal farmers practice subsistence agriculture and 40% of the hybrid paddy is sold in the market. In case of food shortages they take grains from the Public Distribution System. • Medium and Large Farmers go to the market to sell their produce.

The above information suggests that the farming system in the area have undergone changes, farmers prefer to grow commercial crops using hybrid seeds that require high inputs (water; fertilizers) more than the indigenous seeds which were hardy and better suited to the landscape.

Moreover, another finding of the vulnerability assessment was that during earlier days due to high per capita land availability with a farmer, multi cropping using indigenous seeds was practiced. This practice minimized the agricultural risks for the farmer however in present day while the area under cultivation has increased, high population has led to reduced per capita land availability, to add on to this, agriculture practices have changed to mono cropping with high input requirements implying higher agricultural risks and impacts in case of crop failure.

Furthermore, climate variability with respect to temperature and precipitation is recent times has also impacted the agriculture in the region. During the Vulnerability Assessment and climate analysis exercise the communities reported late onset of monsoon (leading to prolonged dry spells), higher intensity rainfall (lesser number of days with rain) and hail storms as one of the major reasons of crop damage and decreased productivity in the region.

Also, there was evidence that showed water bodies including streams, ponds and wells drying up faster than what they used to 25-30 years earlier due to higher extraction and higher than average temperatures.

The same climatic observations have been identified in the MP State Action Plan for Climate Change (SAPCC, 2012[37]). The SAPCC indicates rise in temperature, increase in intensity and delay in the onset of monsoons in the KPC districts. It also indicates an increase in temperatures by 2050s and an uneven distribution of rainfall across the districts, with perceptible decrease in rainfall during winter period and almost no change in rainfall during monsoon with respect to current climate. These predicted changes are expected to lead to spatial and temporal shift of cropping centers and decline of productivity of crops. Also as the evapo-transpiration rate increases with increase in temperature, it will lead to depletion in moisture retention capacity of the different soil types and can pose a threat to agriculture in the region.

Other observations in the SAPCC include that increased intensity of rainfall is likely to lead to faster run off causing higher soil erosion in the ravine areas with little or no scope of ground water recharge in the lower catchment areas causing further depletion in the ground water tables in MP, including the 3 project districts. The status of soil health and its fertility is likely to deteriorate further with increase in soil erosion and higher temperatures, causing stored carbon to be released from the soil. Also it is likely that the onset of monsoon may shift from June to first fortnight of July in the state which would likely affect the cropping sequence and sowing time.

Furthermore, between 1998 and 2004, there has been 15.3% rise of water draft from ground water sources in Madhya Pradesh (SAPCC, 2012[38]). Analysis of observed rainfall data for the period 1961-2003 indicates an already decreasing annual trend. Also, as per the report the trends of heavy precipitation (>100mm) events in the last 50 years is increasing as compared to precipitation events less than 100mm. Which means that not only the lower rain fall receipt is decreasing the ground water recharge over the years, but the increase in heavy precipitation events leading to higher run off are also not facilitating adequate ground water recharge. Water use efficiency in irrigation is generally very low and this is an area of major concern in view of resource depletion. The challenge is to increase efficiency in irrigation and enhancing agricultural productivity through improved technologies.

Livestock: Livestock has been a traditional livelihood activity in the region, with community using this as a coping mechanism to mitigate crop failures and during times of economic stress. However, in earlier days the per capita availability of livestock was high, fodder availability was ample with large tracts of commons available and lesser restrictions on the use of forests. Overtime, livestock as a livelihood activity is noticed to have lost its

effectiveness and is no longer as a robust coping mechanism for a household. This change has added on to the vulnerabilities of the local community.

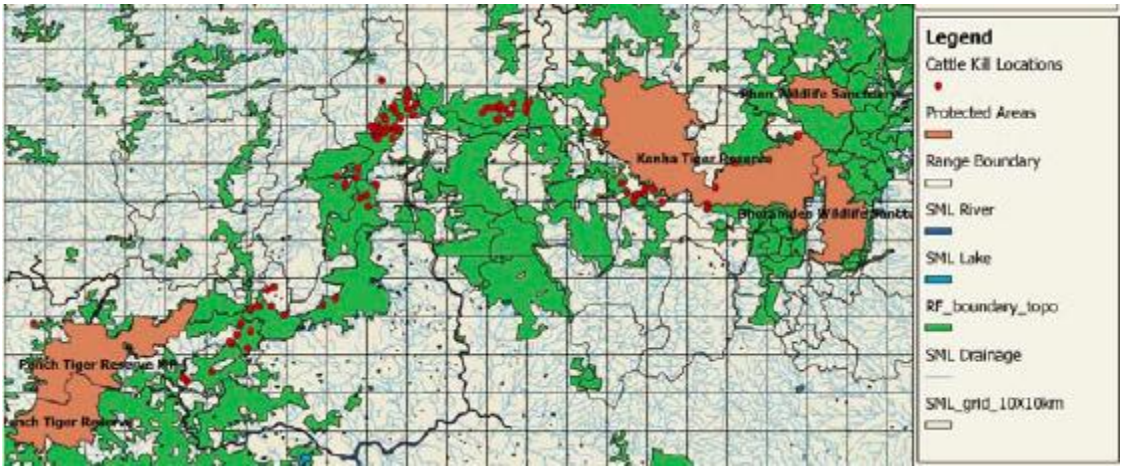
Livestock in the region are mostly of the indigenous breed and an increasing trend to acquire mix breed by the households in noticed. The indigenous breed, although mostly unproductive is an important part of subsistence of the KPC community and are used to meet the household milk requirements, provide agricultural manure and till agricultural fields. The hybrid breeds are used solely for milk production (self consumption and selling purposes).

During the Vulnerability assessment indicators relating to livestock studied gave the below findings over a period of 25- 30 years.

Table 1.8 – Livestock related indicators and changes noticed by the community

Indicators	Response from the community
Livestock	• Earlier, per household holding of livestock was high as it was easier to keep cattle since fodder availability was not an issue. Presently lack of fodder due to limited forest access, lack of commons and crop failures is the main challenge and the average per household livestock holding is reported as 2-3 large ruminants and 2-3 goats only. • The livestock was of indigenous variety and was apt to the local conditions however, at present most of the livestock is mix breed which is susceptible and requires much attention.
Farms area (owned by the people)	• Farms area has increased over the last thirty years. However, per capita availability of land has gone down due to increased population and division of land amongst households. Land under forest has remained constant. • Fallow lands which were an important source of fuel wood and fodder have reduced considerably.
Water resources - water bodies	• Forest streams were used for livestock purposes but due to lesser water and increased population of people and livestock, shared water bodies have increased. People reported higher frequency of water related diseases and some households boil water before drinking/ cooking.
Water bodies in forest	• Villages reported perennial water bodies which were available for all (people, livestock and wildlife) have become seasonal. • Seasonal streams that had water for 8-9 months are drying out in 4-5 months in the region. • Increase in protected areas have also restricted access to water bodies, forest department constructs/maintains water bodies for wildlife which is not available for livestock. Increased competition and conflicts

Also, with the predicted climate variability, frequency of crop failures is expected to rise which in turn will result in even lesser fodder availability for the livestock. Expected increase in local temperatures will result in grasses and water bodies drying faster and making livestock move deeper into the forest for grazing. This may further augment the cattle killing in the region by predators like Tiger and Leopard (Map 1.4) and will lead to increase in livestock related failures. In earlier days due to high livestock per capita, these killings were not as impactful but in the present scenario wherein the household has ownership of only 2-3 livestock such losses are major and end up adding to the vulnerabilities of the household.



Map 1.4: Cattle kill locations in the KPC *(Source: WWF, 2012[39])*

Another aspect to consider with regards to livestock is that even though the per capita availability of livestock has reduced, as per the KPC management plan the ratio of human population to that of cattle population in the corridor area is 1.28:1, that is, for every 100 people, there are 78 cattle. The population of the corridor area is about 0.42 million, making the cattle population in the 442 villages an estimated 0.29-0.30 million. These cattle required 2.5 tons fodder annually for one cattle unit. Thus, a total of 0.5 million tons of fodder is required for all the cattle in the villages falling in the corridor. (KPC Management Plan[40])

As mentioned earlier fodder availability from agriculture is very limited, hence the fodder requirement is mostly met through open grazing in the surrounding forests. It is estimated as much as 95% of these cattle are left to graze openly in the forests and they exert tremendous pressure on the KPC and results in low fodder and water availability for the wild ungulates. Increased infiltration by cattle in the forests also reduces the regeneration capacity of the forests by stamping and increases cattle kill instances which is a major cause of retaliatory killing of endangered species like the tiger and the leopard.

Non Timber Forest Products (NTFPs): NTFPs form a significant part of the annual income of a typical household in the KPC and on average contributes about 30% of the total cash income per year (Sushant, 2013[41]). Communities practice collection of Tendu (*Diospyros melonoxylon*) leaves and Mahua (*Maduca indica*). Tendu plants are pruned in the months of February and March and the mature leaves are collected after about 45 days. The leaves are collected in bundles of 50 leaves and are sold to the Madhya Pradesh Minor Forestry Produce Cooperative Society. Mahua is collected from April end throughout May. The income from sale of Mahua flowers varies from Rs.1, 000-1,200 per household per season, with 15-20 days of hard work. (Thakur & Srinu[42]) Mahua flowers are collected, distilled and consumed as liquor, or dried and eaten, sometimes with corn-flour, in periods of extreme drought.

Like in other forested landscapes, a complex combination of economic and other factors affect the rate of NTFP extraction in KPC. Studies elsewhere in India suggest that the rate of extraction of NTFPs is linked to the degree of agricultural stress. When low agricultural productivity occurs in a drought year, forest communities tend to extract and sell more NTFPs to meet the food security needs of their households. Since NTFPs like Mahua *(Maduca indica)*, Harra *(Terminalia chebula)*, Behera *(Terminalia bellirica)*, Chironji (*Buchanania lanzan*) have a ready and accessible local market, income from NTFPs helps compensate for lean harvests. Moreover, the typical flowering season of many of the major NTFPs coincides with the agricultural post-harvest period in March. Consequently, not only do communities have sufficient time to go to forest areas to extract NTFPs, but they can also determine the level of extraction based on the results of the agricultural harvest.

Under the Vulnerability exercise, community reported that collection of NTFPs is both a major livelihood and a cultural activity for the communities and even though the access to forests and number of NTFP bearing trees have reduced considerably, they still continue to collect NTFP from the forests. Community reported that as much as 30% of their cash income is made up from the NTFPs and they store NTFPs like Mahua and trade them during times of cash requirements. They also reported that the quantity of NTFP collected per household have also reduced drastically (mahua collection has gone down by as much as 50%), and that the income from NTFPs is on the decline.

Thus, in view of the rising population and forest access, declining agricultural productivity and number of NTFP bearing trees, and predicted climate changes expected to cause crop failures and changes in tree phenology in the region, the NTFP extraction is expected to become an unsustainable livelihood practice, cause degradation to the KPC and add to the vulnerabilities of the local community.

Table 1.9: Decline in Harvest of NTFPs per Household

NTFP Species	Local Name	Uses	Years		
			1995	2005	2010
Anogeissuslatifoloa	Dhaora	Construction, gum used as medicine	100	50	10
Buchnanialanzan	Chironji	Food	100	80	50
Chlorophytumtuberosum	Safed Musli	Medicine	100	50	10
Cassia tora	Charonta	Medicine (snake bite, food	100	70	40
Celastruspaniculatus	Malkangni	Medicine (head ache)	100	50	10
Curculigoorchioloides	Kali musli	Medicine (jaundice, asthma)	100	80	75
Diospyrosmelanoxylon	Tendu	Bidi, Medicine (snake bite), Edible fruit	100	80	70
Emblicaofficinalis	Aonla	Medicine, Edible fruit	100	40	10
Madhucaindica	Mahua	Liquor, Oil, Food	100	90	75
Schleicheraoleosa	Kusum	Medicine (arthritis), edible fruit, oil	100	75	50

Terminalia belerica	Bahera	Medicine (bronchitis, asthma), Food	100	50	25
Terminalia chebula	Harra	Medicine (cough)	100	50	25

Source: Sushant, 2013[43]

Fuel Wood: As a livelihood activity sale of fuel wood was practiced earlier to earn additional cash income, households used to store dry wood and sell it by head loads in the local market or as and when they could get a buyer. However in the present scenario, very few households (<5%) reported selling fuel wood for as much as INR 30 per kg). The major reason for the same is the reduction in village commons/woodlots and restrictions over the forest imposed by the forest department.

But reduction in sale of fuel wood hasn't translated into lesser extraction. With increasing population the extraction pressures have only increased. As per a study conducted by the World Wildlife Fund (WWF, 2012[44]) it was found that average household consumption of fuel wood in the KPC is 4,760 kg per annum. Considering the fact that about 80,000 households live in and around the KPC, the total fuel wood extracted annually comes to about 38,000 tons. The fuel wood extracted is mainly used for cooking, heating and selling purpose. While extraction of only dead wood is allowed legally from the forests, communities often resort to cutting trees to meet their fuel wood requirements when dead wood in not available easily. This adversely impacts the regeneration capacity of the forests and undermines the forests ability to adapt to climate change and provide uninterrupted ecosystem services.

The main tree species extracted are Saaja (*Terminalia tomentosa*), Dhawa (*Anogeigus latifolia*), Ledia (*Eucalptus globules*), Harra (*Terminalia bellarica*), Palash (*Butia monosperima*), Sal (*Shorea robusta*) and Girchi (*Alnus nitida*). Some of these are also important NTFP species and thus form an important source of cash income for the communities; thus cutting of these NTFP bearing species due to cooking/ selling purposes have also adversely affected the availability of NTFPs to the community and impact their livelihoods adding to the vulnerabilities in the households residing in the KPC.

The challenges discussed above in terms of local livelihoods are expected to rise and if no measures are adopted to address these, the households will continue to get increasingly vulnerable, even more so in the backdrop of frequent climatic variations predicted in the region. The local community has little access to necessary information/resources and their traditional knowledge has no or little use against frequent and unexpected variations in the climate. There is also a lack of cottage industries and non land based activities such as vocational skills, poultry, and value addition to NTFPs, etc. Furthermore, due to low literacy levels in the region technology uptake is poor. Thus, as a response/coping strategy these communities either end up extracting more and more resources or practice distress migration to nearby towns and cities to earn cash income.

While no specific studies have been conducted with respect to the impacts of extraction/overuse against the regenerative capacity of the KPC forests, the fragmentation/degradation to the landscape as seen in Map 1.3 can be strongly associated to the presence of habitations and their extraction patterns. Discussions with the inhabitants also indicate that once plentiful forests resources are shrinking and they have to go further away to gather fuel wood fodder and NTFPs, which is also leading to increased drudgery, especially amongst women and high instances of man- animal conflict.

ii) Threats from Climate Change

The forests in the KPC describe an ecotone of Sal central Indian forests to Teak dominated peninsular forests. Ecotones affect distant and larger areas: They regulate interactions between biomes by modifying flows between them; they generate evolutionary diversity; and they serve as repositories of genetic diversity to be used for rehabilitation of ecosystems in adjacent ecoclimatic regions if and when these ecosystems lose species because of climate change. Although ecological changes in response to climate change will occur everywhere, the signals will be detectable first in ecotones. This sensitivity makes them indicators that provide early warning for other regions.

The impact of climate change on ecotones is supposed to be most drastic as the nature of higher canopy changes impact the availability of light, rain and moisture for the undergrowth and forest floors. Thereby, they impact availability of grasses, shrubs and fruiting of different species which are closely related human populations living in adjacent villages. Shadangi and Nath (2008) have pointed out the changes in sal-teak ecotones due to climate changes and length of dry period. In IPCC's IV report, chapter on impacts and vulnerability specifically underlined need for recognizing ecotones as key for adaptation for forests.

In case of KPC, a few sensitivities have been noticed and recorded by Foundation for Ecological Security (FES), one of the implementing partners of the project, which suggests that forests in KPC are responding ecologically to climate change. FES conducted a two year long study (2013-14) and noted rising abundance of *Lagerstroemia Parviflora*, a tree species which is hardy to impacts of climate change and anthropogenic pressures and is a pioneer species of the ecosystem. Its preponderance is itself an indication of degradation of forests. The invasion of species like *Lantana Camara*, *Parthenium* and *Cassia tora* was also noticed in the study which covered the KPC region. Also, regeneration of two major NTFPs, Mahua (*Madhuca Indica*) flowers and Tendu leaves (*Diospyros Melanoxylon*) were noticed to being suppressed and affected every year due to untimely rains and hailstorms in winter. Communities have also noticed changes in the flowering patterns of many local trees including Mahua which has started flowering earlier in the year during Feb – March compared to late March – April. Early onset of flowering during the harvest period leaves less time for

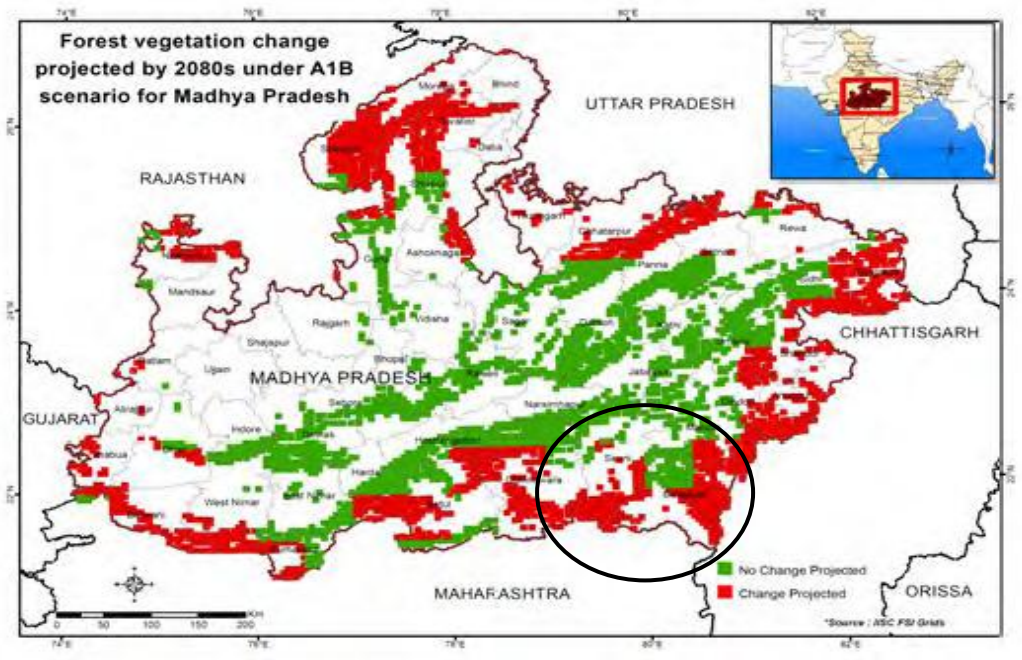
the community to collect this NTFP. Such situations have a direct implication for the food security of the region. As the availability of major NTFPs diminishes, the number of livelihood alternatives for meeting subsistence needs decreases.

These observations can be further supported by the MP SAPCC which suggests that predicted changes in temperature and rainfall will result in change in flowering time, higher rates of degradation of forests and soils covering large areas in South Eastern Madhya Pradesh (see Map 1.5). The plan indicates rise in temperature, increase in intensity and delay in the onset of monsoons in the KPC districts. A further increase in temperatures by 2050s and an uneven distribution of rainfall across the state is predicted, with perceptible decrease in rainfall during winter period and almost no change in rainfall during monsoon with respect to current climate.

With such variations predicted, the direct climatic threats to KPC forests can be described as below:

- Change in flowering time will lead to irregular fruiting of NTFP and other economically and ecologically important trees of the KPC. For short-lived seeds, the condition of the ground is of utmost importance and it becomes receptive just before the seed fall in a normal ecological cycle. For e.g. the seeds of Sal *Shorea robusta* have a viability of just one week. If the seeds fail to find the receptive substratum, they will die which is expected to adversely impact its regeneration. The same holds true for other tree species as well. Thus changes in climatic conditions can alter flowering cycles and receptivity of forest grounds and impact the regenerative ability of the KPC forests.
- Expected increase in temperature in the KPC districts can lead to faster drying of grasses and other vegetation. This both reduces palatability and acts as a secondary source material for fire. The early drying of grasses can affect the movement and population of the prey-base populations who mainly feed on grasslands and meadows that exist in Kanha and Pench Tiger reserves which in turn can have impact on the Tiger and other predator population. Furthermore, high fire material availability on the forest floor can enhance the risk of causing higher damage in case of forest fires and lead to widespread forest degradation.
- With the change in moisture and temperature regime in the region, there is a high probability that there will be a shift in the ranges of the pollinators leading to absence of required pollinators in the corridor area which in turn will affect natural regeneration. Furthermore, changes in climate can also result in increased outbreak of epidemic in the forest areas of KPC, and while there are no specific studies showing correlation on the same in KPC, several studies across the globe have proved that insects are prone to adapting to climate change and warmer temperatures work to their favour. Generally rising temperatures around the world as a consequence of climatic change are increasing the frequency and intensity of pest outbreaks accompanied by range shifts of pests (Bale

et al. 2002; Gitai et al. 2002; Jepsen et al., 2008). If this is the case, insects like Sal Borer which have previously destroyed Sal (*Shorea Robusta*) forests in the region previously can prove to be devastating for the forests of KPC and cause irreversible damage to the forests.



Map 1.5: Forest Vegetation Change Projected towards 2080s with respect to 1970s (*Source: SAPCC, 2012*[45])

iii) Threats from Development

With increased population there are increased developmental demands in the KPC, and these developmental activities also pose a fragmentation challenges. The major developmental activities in KPC are:

Road construction and widening: A number of new roads have been constructed in the KPC over the past few years to connect its many villages and nearby towns. Also, the earlier single-lane roads are being converted into two-lane and four-lane roads. Development in the road network has led to increase in the number of vehicles and speed. This on one hand has led to diversion of forests it has also impacted animal movement and has increased the road kills of wild animals. While there are many roads inside and passing through the corridor (Figure 1.8) the major fragmentation threat is being posed by the recent developments on the widening of the National Highway 7 which will result in clearance of forests, cause fragmentation and hinder animal movement, the widening of this road is on hold as per stay given by National Green tribunal during May, 2015. Besides this there are two other roads viz. Keolari – Balaghat and Nainpur – Balaghat that are major threats to the animal movement.

Figure 1.8: Expanding Road Network inside the KPC (*Source: KPC project report[46]*)

Railway gauge widening: A narrow gauge railway line from Jabalpur to Gondia via Nainpur and Balaghat exists from pre independence times. It passes through Mandla and Seoni districts and then enters the Balaghat district. The length of the railway line passing through the KPC is 49.70 km. Of this distance, 17.98 km of the line lies in the forest areas of the corridor while 31.72 km in the revenue areas. The line crosses forest land on 10 patches, 9 of which lie in the Balaghat district. Presently, trains on this narrow gauge run at 40 km/hr, and are low in frequency, thus cause minimal or no impact to animal movement. However, if the gauge conversion of this railway line changes from narrow to broad gauge the speed of trains is expected to rise from 40 km/h to 100 km/h. The frequency of trains is also expected to rise substantially as it will cut the distance between two major cities viz. Jabalpur and Nagpur by 150 km's.

Thus, the conversion is expected to have major implications on the animal movement as development of the railway track will fragment the corridor as it will involve clearing of forests, noise from the high speed trains, elevated construction of railway tracks and high speed of the trains will restrict animal movement and may lead to an increase in accidents causing deaths to the wildlife.

Figure 1.9: Railway line - Narrow gauge passing through KPC (*Source: KPC project report*[47])

Tourist Facilities: Kanha and Pench Tiger Reserves are famous wildlife destinations and attract tourists from all over India and the world. The tourists' influx to these Tiger reserves has stabilized in the recent years due to carrying capacity revisions/ entry fee hikes by their management. However, tourism has brought along development of tourist facilities that might have already created long term implications of animal movement. The mushrooming of resorts especially around Kanha has led to fragmentation of the corridor and is become a major bottleneck in animal movement from Kanha to the corridor landscape. These resorts have boundary walls and barbed wire fencing around them which act as hurdles for animal movement.

The resorts also contribute to environmental impacts on the surrounding ecosystem. Solid waste generated by these resorts (including plastic, tin and even glass) is burned in piles on the ground which burns at low temperatures and produces air pollution and particles. It tends to smoulder and release toxic smoke over long periods, especially when wet. Also, the burning of these wastes produces bottom and fly ash. Bottom ash is relatively coarse, non-combustible, generally toxic residue of burning waste that accumulates in the open pit. This is a major source of Leachate formed by accumulation of bacteria and other possibly harmful dissolved or suspended materials. If uncontrolled, leachate can contaminate both groundwater and surface water sources.

Fly ash is made of light particles which is carried out by combustion gas and is laden with toxic metals, dioxin/furan and other products of incomplete combustion. This can easily enter the water cycle and contaminate the streams and rivers.

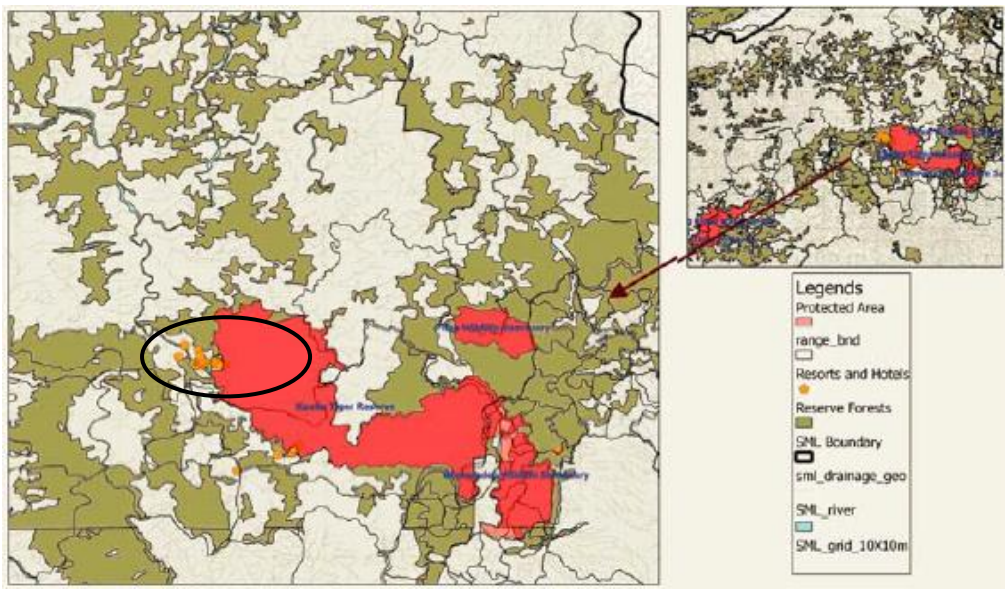
Table 1.10: Pollutants released by Burning of Waste

Pollutants	Environmental Impacts
Aldehydes; Dioxins and Furans; Heavy metals such as mercury; Hydrochloric acid; Particulate matter (PM); Polynuclear Aromatic Hydrocarbon	Increases toxic loading on the environment; leads to contaminated water/soil, affects animals' health. Some of these pollutants can enter the food chain of livestock and wild animals.
Volatile Organic Compounds (VOC's) & Sulphur Oxides	Causes vegetative damage, can contaminate soil/water; contributes Sulphur Oxides to acid rains.

Source: Sen, 2011[48]

Liquid waste generated by the resorts is primarily domestic sewage which is released directly into the forest area/streams without treatment. Domestic sewage contains concentrations of suspended and dissolved organic and inorganic substances. Among the organic substance present are carbohydrates, lignin, fats, soaps, synthetic detergents, proteins and their decomposition products. The inorganic substances include a variety of toxic elements such as arsenic, cadmium, chromium, copper, lead, mercury and zinc. The toxic material present in domestic sewage is not only harmful at phytotoxic levels; they can also harm the faunal life by contaminating the aquifers and other water bodies. (FAO[49])

The resorts also have unsustainable practices of sourcing fuel wood. They are allowed to buy fuel wood to meet their requirements only from a forest department managed wood depot. However, the resorts often resort to sourcing wood from locals as it is cheaper which adds to the pressure on the surrounding forests.



Map 1.6: Bottleneck Created by Resorts at the start of the KPC near Kanha Tiger Reserve (*Source: WWF, 2012*[50]*)*

It is evident that conservation of the KPC is a huge challenge as it falls under various protection regimes; supports a substantial human and livestock population; and faces diverse fragmentation pressures from the vulnerable dependent communities, developmental projects

as well as climate change. Tackling the threats discussed above is seen as essential for ensuring the contiguity of the KPC and maintaining the ecological balance in the landscape.

In the recent past there have been efforts by various institutions (independently and in partnership) to document, plan and implement methods that can lead to the long term conservation of the KPC. Understanding these initiatives, especially the experience gained by various management units while working in the region is felt to be extremely important. These learning are envisaged to be the cornerstone of future conservation and developmental initiatives in the region. Some recent and important efforts taken in the KPC region for reference are described in detail in **Annexure 1**.

1.4.5 The Project villages

The KPC is a vast landscape spanning 16,000 Kms and as per the KPC Management plan prepared by the forest department contains over 440 villages with over 80,000 households and an estimated total population of 420,000 individuals. With the objective to achieve maximum impacts for the landscape considering the capacities and resources available, the project is proposed to be implemented in 56 villages having 7,609 households. These 56 villages have been selected to ensure that maximum benefit is realized for the landscape and community. The below parameters have been adopted:

- Villages in and around the weak links identified in the KPC Management plan of the MPFD are given priority. These villages are located in areas with heavily degraded forest patches and thus require immediate forest protection/ conservation measures.
- Villages having high scheduled tribes and scheduled castes population concentrations are given priority as these communities are highly vulnerable (tribal communities residing in the landscape include Gonds and Baigas, the latter classified as a “Particularly Vulnerable tribal group by the Government of India). More than 40% households in the selected villages belong to ST/SC categories.
- A landscape approach is adopted – villages which do not meet the parameter 2 are taken as project villages so that continuity in project area is maintained. 3 such villages are selected.

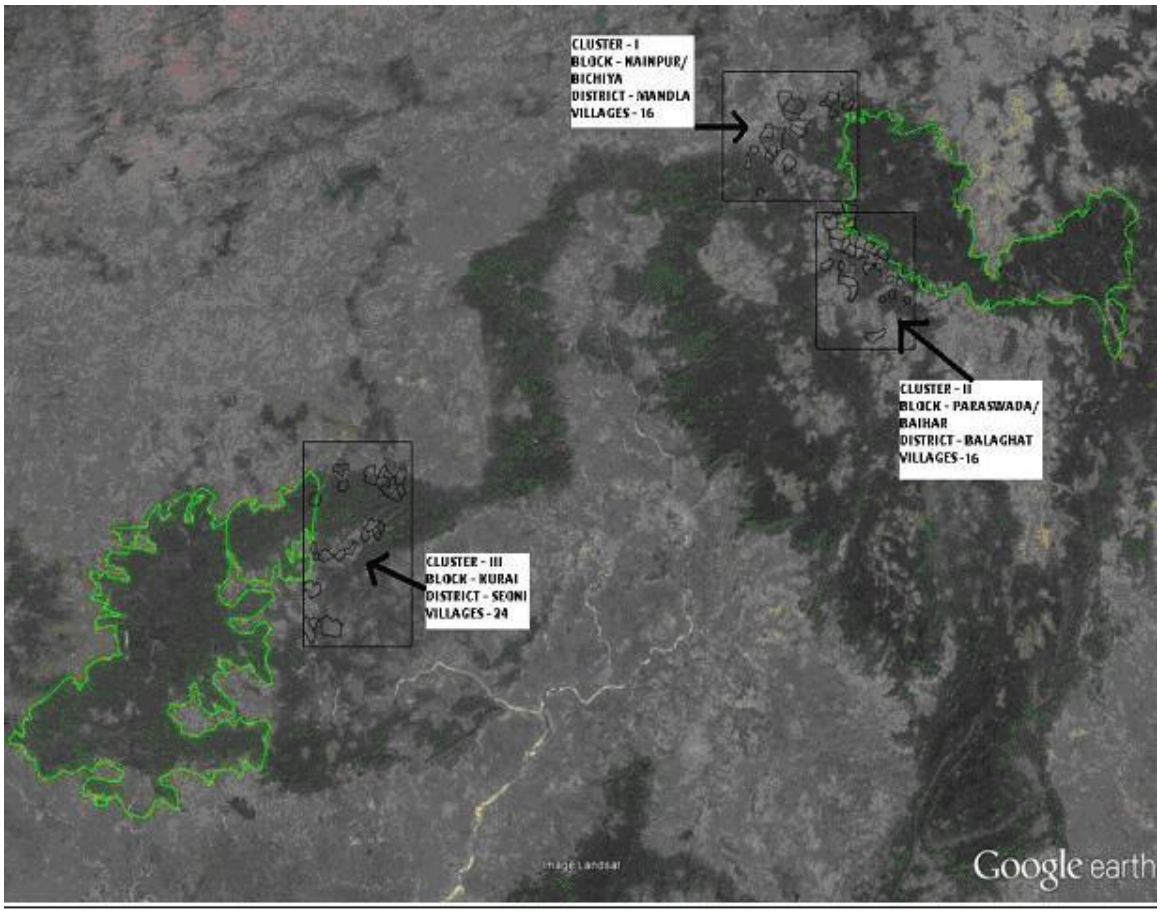
Steps followed in selecting the project villages:

1. Villages located in and around the corridor were identified using the latitudinal and longitudinal range of the KPC provided in the KPC management plan of the forest department. These villages are spread across 5 blocks viz. Baihar, Paraswada (Balaghat) Bichiya, Nainpur (Mandla) and Kurai (Seoni) blocks. Census data for these villages was extracted.
2. Of these villages identified, villages where RBS FI and its partners are working under their existing programme were found to be 137 and removed. **These villages were removed to avoid any overlap/duplication.**

3. Villages with less than 40% of ST/SC population were removed.
4. Using the KPC map and the list of its villages prepared by MPFD, critical areas/clusters that are considered as **weak links** in the corridor were identified. This exercise led to identification of 3 clusters – Cluster I – Nainpur-Bichiya Cluster (Mandla); Cluster II Paraswada-Baihar Cluster (Balaghat) & Cluster III – Kurai Cluster (Seoni).
5. Villages in these clusters were then identified from the list of villages remaining after Step 3. These villages were mapped on the KPC map to ascertain their proximity to weak links areas. The villages settled on the weak links or in the closest proximity to these weak links were selected.
6. Discussions were held with the MPFD, the Implementing partners and later with the community through 'Focused group discussions (FGD's). These FGD's were conducted in 2 sample villages from each of these 3 clusters identified. Scanned copy of the key discussion held with the community is attached as '**Annexure – 2'**.
7. Final result was a total of 56 villages basis the above steps and FGD's, they are as under:
    a. 16 villages in Cluster I – Nainpur-Bichiya Cluster (Mandla);
    b. 16 villages in Cluster II - Paraswada-Baihar Cluster (Balaghat) &
    c. 24 villages in Cluster III– Kurai Cluster (Seoni)
8. As per Census, 2011, total number of households in these 56 villages* is 7,609 HHs, with a total population of 32,292 individuals, with more than 72% population belonging to the Scheduled tribes (68%) and Scheduled Castes (4%).

***Exception**: 3 villages that did not meet the criteria set in **step 3** were included in the list of 56 project villages; this was done to ensure that a landscape approach is followed while implementing the project. Exclusion of these villages would have caused discontinuity to the project area.

The below image gives the demarcation of the villages on the KPC landscape, the villages have been categorized in 3 clusters. A list of the villages selected is provided under '**Annexure - 3**'.



Map 1.7 – Demarcation of project villages on the KPC map

1.4.6 Vulnerability assessment

Post selection of the villages, a Vulnerability Assessment was undertaken as part of the project formulation in order to assess the status of the community in terms of their exposure, sensitivities and adaptive capacities. The main objective of the exercise was to ascertain the specific interventions that are required to enhance the resilience of the landscape, community and its biodiversity in the 56 villages identified. The assessment was undertaken using a tool developed by one of the implementing partners – Watershed Organization Trust. The tool is called CoDrive – PD.

CoDriVE-PD is community-engaging, easy-to-use, sensitive enough to capture the different types and degrees of vulnerabilities across communities and regions, and it is oriented towards adaptive action. It includes all the key resources that people and communities depend upon for their survival, takes into account the various drivers and pressures that impact them, and results in clear and specific qualitative and quantitative indications of areas of vulnerabilities that need to be acted upon. It has been rigorously tested and validated in different social, economic and agro-ecological contexts in four different Indian states – Maharashtra, Andhra Pradesh, Rajasthan, and Madhya Pradesh. More information on the tool

and its processes and techniques can be found on the following link: *http://www.wotr.org/sites/default/files/WOTR-PD-handbook-Final-Web-Version.pdf*

The assessment using CoDrive – PD was undertaken in 10 sample villages out of the total 56 selected and followed the below process:

Based on the biophysical factors – location, vegetative cover, and water bodies, two main typologies were identified using GIS.

Typology A: These are villages located in the upper catchment having a low vegetative cover less than 10% of the total area and comparatively lower than in Typology B villages. They have a good distribution of water bodies and water spread area. There are 11 villages that fall in Typology A, of which 2 villages fall in the Bichhya block of Mandla district and remaining 9 villages fall in the Kurai block of Seoni district. Of the villages in Typology A, 4 villages had CoDriVE-PD conducted. These are Jhalagondi, Karakoti and Khapa in Kurai block of Seoni and Chargaon in Bichhya of Mandla district.

Typology B: These villages are located in the lower and middle catchment regions. They have good vegetative cover (of >70% of the total area). The water spread area is less and rapidly declining. The water spread area is far less than that of typology A (<1hectare in most villages). However, there are 3 other villages that fall in the upper catchment (Bakrampur, Nayegaon and Rukhad in Seoni district), but have other characteristics (land cover and water bodies) similar to that of Typology B. The villages that fall in this typology are located in (a) Mandla district – Bichhya block 7 villages; Nainpur Block – 7 villages; (b) Balaghat – Paraswada block 10 villages; Baihar block 6 villages and Seoni – Kurai block 15 villages. Of the villages in Typology B, 6 villages had CoDriVE-PD conducted. These are: Bargi and Dhanora in Mandla; Khapa, Parrapur and Mohgaon in Bhalagat and Bhilma in Seoni.

Table 1.11 Land Use and Land Cover description

Typology (bio-physical)	Total area	Forest Area	Area Under non-agriculture use	Barren Uncultivable land	Permanent Pasture / Grazing	Net Sown Area	Total Un-irrigated area	Number of villages
A	2,777	267	238	36	76	1,633	1,223	11
B	14,582	4,413	923	233	666	5,614	5,111	45
Total	17,359	4,680	1,161	269	742	7,247	6,334	56

Source - Census, 2011[51]

The main typologies – A & B were further sub-divided into 4 sub-typologies based on demographic characteristics - the percentage of population that are Scheduled Tribes (STs) and according to percentage of agriculture workers. This data was obtained from the Census 2011. In each of these sub typologies Representative Villages (RV) were selected for a

detailed study of the vulnerability status of the resource base and the groups of people according to their livelihoods.

Sub-typology 1: where the population has a high (>70%) of ST population and a high (>70% agricultural workers). The RVs identified were: Chargaon and Bargi in Mandla; Parrapur in Balaghat and Karkoti in Seoni.

Sub-typology 2: having a high ST population, but a relatively lower (<70%) agriculture workers; The RVs identified were: Dhanora in Mandla; Khapa in Balaghat and Bhilma in Seoni.

Sub-Typology 3: Low ST (<70%) population, but a relatively high (>70%) agriculture workers. The RVs identified were – Mohagaon in Balaghat and Jhalagondi in Seoni.

Sub-typology 4: Low ST population and Low agriculture workers. The RV identified was Khapa in Seoni.

Table 1.12: Demographic description of the 4 Sub-typologies

Typology (bio-physical)	Sub-typology (social-eco)	Number of Villages	Households	Population	Indigenous people population	Indigenous people %
A	1	6	602	2,488	2,151	86.00
	3	3	542	2,248	841	37.00
	4	2	599	2,557	846	33.00
B	1	10	1,213	5,013	3,980	79.00
	2	22	2,918	12,854	10,165	79.00
	3	8	1,009	4,115	2,138	52.00
	4	5	726	3,017	1,725	57.00
Total		**56**	**7,609**	**32,292**	**21,846**	**68.00**

The exercise started with conducting Focused Group Discussions (FGDs) with the community members in the RVs to gather information on the status of resources available under 6 thematic areas viz. Biophysical, Agriculture, Livelihoods, Market linkages, Food Security and Institutions for Sub typology I - IV. Indicators were assigned to each thematic area and the community was requested to give information on the change they have experienced over a period of 30 years. The below information on each indicator was received and is summarized in table 1.15

Table 1.13 Thematic Areas and Indicators and findings

Thematic Area	Indicators	Common responses across sub – typologies I – IV
Biophysical	State of the forests and biodiversity	• Reduction in forest area access by as much as 50% in some villages. Restrictions imposed by the forest department as these forests have been declared protected areas. • Reduction in availability of Bamboo as a raw material has led to huge economic loss. Bamboo basket making - reported as the main livelihood of the Baiga tribe especially in typology 1 and 2 villages is badly affected.
	Flora (Trees species)	• While most of the naturally occurring tree species exist (Sal,

		Teak, Saja, Mahua, Harra, Beheda,Tendu etc) their numbers have greatly reduced particularly in the areas around village settlement and agriculture land. It is more in some than others.
	Fauna	• The number of wildlife sightings has reduced considerably. However, the conflicts have increased due to increased competition over resources (forest, fodder, water). • Crop raiding by wild herbivores has increased manifold and was reported as a major challenge. Farmers in sub typology I reported raiding damage has gone up from 40% to 50% over the period of 20-25 years.
	Traditional knowledge on biodiversity	• While earlier most of the people (especially Scheduled Tribes) were aware of the medicinal uses of surrounding flora, presently the traditional knowledge has become limited to only a few village elders. • Some people also reported that knowledge of mitigating animal conflicts/ attacks was available with village elders, and is not available presently.
	Forest dependent livelihoods- NTFP	• Common NTFPs like Tendupatta, Mahua, Charoli, Aonla are still extracted and sold but extraction has reduced due to reduced/ restricted access. However, some people still collect illegally even after fear of getting caught by forest guard and animal attacks. • Selling of fuel wood and Bamboo was common in earlier days but has reduced considerably since availability of Bamboo and wood has reduced and cutting them is illegal. In village Parrapur some community members have been even caught and jailed.
	Water bodies in forest	• Villages reported perennial water bodies which were available for all (people, livestock and wildlife) have become seasonal. • Seasonal streams that had water for 8-9 months are drying out in 4-5 months in the region. • Increase in protected areas have also restricted access to water bodies, forest department constructs/maintains water bodies for wildlife which is not available for livestock. Increased competition and conflicts
	Land use, land cover	• Population rise has led to increase in average cropped area. Villages in sub typology I & II reported increase of 15-20% in cropped area over a period of 30 years, while villages in sub typology III & IV reported over 50-75% increase in average cropped area over the same period. • While area under forests has remained stable in all of the sub typology, commons have reduced.
	Water resources - water bodies	• Huge increase in man made water bodies like bore wells, open wells and farm ponds is reported as against only open wells and percolation tanks that were used for irrigation and drinking water 30 years back. However, water bodies with availability throughout the year have reduced. • Water for drinking water was available throughout the years in wells. Presently, very few wells having water throughout the year are reported. People use hand pumps for drinking water 3-5 months in a year. • Forest streams were used for livestock purposes but due to lesser water and increased population of people and livestock, shared water bodies have increased. People reported higher frequency of water related diseases and some households boil water before drinking/ cooking.
	Ground water status (depth)	• All villages reported a drastic reduction in ground water levels. Community members reported depth in open wells of 8-10 feet 30 years back against the present day depth of 30-35 feet. • People also reported open wells that were perennial have started

		drying out by Feb – March.
	Irrigation (% of HH)	• Farmers in sub typology I, III & IV used to practice rainfed irrigation mostly, while only 5% of farmers (mostly large and medium) practiced had irrigation facilities. • Presently, 30% households in sub typology 2 have access to irrigation (lift, flood and bore wells). These are mostly, large and medium farmers. • As few as 5% of small and marginal farmers have access to irrigation and micro irrigation facilities across the 4 sub typologies.
	Irrigation in Kharif (Paddy)	• No irrigation was required earlier, however in one sub typology I (Parrapur) village, farm ponds were used to irrigate due to prolonged dry spell.
Agriculture	Irrigation in Rabi (Wheat)	• Farmers reported that earlier traditional crops like Kodu, Kutki and indigenous variety of wheat could be cultivated just on the moisture content in soil and dew. • Presently, most of the farmers having access to water bodies (less than 20%) like wells, borewells and streams reported use of diesel pumps for lift irrigation. Farmers in sub typology IV reported practicing flood irrigation on 20 Ha (total area 140 ha).
	Irrigation facilities (all lift water from the streams)	• Most of the households having access to water bodies own/rent diesel pumps for irrigation • Water sharing was reported in 2 villages in sub typology I.
	Farms area (owned by the people)	• Farms area have increased over the last thirty years 209 ha – 238 ha; 137 ha– 184 ha; 43 ha – 66 ha; 100 ha – 140 ha for sub typology I to IV respectively. However, per capita availability of land has gone down due to increased population and division of land amongst households. • Fallow lands which were an important source of fuel wood and fodder have reduced.
	Crops Cultivated	• Variety of crops cultivated were reported to be similar in all the sub typologies however the area under cultivation for traditional crops like Kodu and Kutki (drought resistant millets which require very little/ no water) have gone down considerably. • Farmers reported that earlier Kodu Kutki were cultivated on 50-60% farm area which has now gone down to 5-10%.
	Mechanization in agriculture	• No mechanization of agriculture was reported for the earlier period. Presently, 70% of large farmers, 30% of medium farmers and 10-15% of small and marginal farmers use tractors and other modern equipments. • Broadcasting method is still used for sowing of seeds and most of the marginal farmers use livestock draught power.
	Fertilisers and organic manure	• Only farm yard manure (FYM) was used in the past. Presently, 100% large and medium farmers reported high usage of chemical fertilizers like DAP, Urea, super phosphate etc. with small quantities of FYM. • Most of the small and marginal farmers use FYM as the primary supplement. Availability of FYM is a challenge as livestock are not stall fed.
	Types of seeds	• During earlier times, farmers reported usage of only indigenous seeds. Some of these indigenous seeds used for paddy like Saathiya were drought resistant. • Most of the farmers reported using hybrid and high yielding varieties (due to high yields and low crop duration) for paddy and wheat. For other crops like pigeon pea, mustard all farmers still use indigenous seeds. • High dependency on chemical fertilizers is reported across all sub typologies for hybrid and high yielding varieties.

	Agriculture infrastructure	• Medium farmers were dependent on the local markets which were few and inaccessible earlier while small and marginal farmers practiced subsistent agriculture. Presently, markets are accessible to all farmers. • Storage of grains was done in earthen pots which were kept at an elevation of 20 inches using wooden platforms which was prone to insects and worms. Presently, steel/plastic containers and gunny bags are being used which are better compared to the earthen pots. • Farming was done mostly using indigenous seeds and FYM and there was no dependency for inputs. Presently, input supplies (seeds and fertilizers) are required and more accessible due to government operated societies.
	Govt. schemes	• Very little information about government schemes was present across all villages. Govt. schemes like Large-scale Adivasi Multi-Purpose Societies (LAMPS) which is a one point stop to avail credit facility at 0% interest for 6 months, procurement of low cost inputs were known and availed by few. • Most of the farmers are connected with govt. schemes like LAMPS, Farmer Credit Card and National Rural Employment Guarantee Act.
	Agriculture input costs	• Huge increase in agricultural input costs has been reported by all the farmers. Over a period of 30 years Large farmers on average reported an increase from INR 250 – INR 15,000 per ha; Medium farmers reported an increase from INR 190 – INR 12000 while small and marginal farmers reported an increase from INR 140 – INR 8,000.
	Agriculture	• Agriculture is the primary livelihood for all, the landless too earn primarily through agricultural laborers.
	Livestock	• Earlier, per household holding of livestock was high as it was easier to keep cattle since fodder availability was not an issue. Presently lack of fodder due to limited forest access, lack of commons and crop failures is the main challenge and the average per household livestock holding is reported as 2-3 large ruminants and 2-3 goats only. • The livestock was of indigenous variety and was apt to the local conditions however, at present most of the livestock is mix breed which is susceptible and requires much attention.
Livelihoods	NTFP	• Collection of NTFP is both a livelihood and a cultural activity for the communities and all the sub typologies reported that even though the access to forests have reduced and NTFP trees have reduced in number considerably, they still continue to collect NTFP from the forests. However, the quantity of NTFP collected per household have also reduced drastically. • People reported that as much as 30% of their cash income is made up from the NTFPs and they store NTFPs like Mahua and trade them during times of cash requirements. However, since collection of Mahua has gone down it is difficult for them to manage cash requirements in the lean period. • 100% households reported collection of tendupatta (a leaf that is used in making smoking bidis)
	Non-farm livelihoods	• As much as 90% Households in sub typology I & III reported selling milk and milk produce was a major livelihood activity however presently they get no income from dairy. • Being a road construction laborer has become the most common alternate livelihood for the households with as much as 70% households migrating to nearby cities during summers. • As much as 70% households used to be involved in traditional activities like bamboo basket making but overtime due to lack of

		raw material a very few households (0-5%) pursue the same. • Lack of skilled laborers especially mason, carpenter, barbers and blacksmith was reported across all typologies. • A few households reported having grocery, liquor shops and some other small enterprises like 1 milk collection centre was reported in sub typology 4.
	Fisheries	• Earlier fishery was not practiced as a livelihood but as a source to meet the food security and for subsistence purposes only. • Presently, few households (10%) in sub typology I, II & III reported practicing small scale fisheries in the village ponds.
	Other services etc	• NA
	Migration	• Earlier migration was less and only limited to a few landless households since ample livelihoods were available for subsistence like dairy and NTFP collection even during summers but presently 100% of the landless migrate to nearby cities like Nagpur and Jabalpur for daily wage labor for most of the year and a high percentage of small and marginal foundation (30-50%) are reported to be migrating during lean economic periods (March – June)
	Accessibility	• All sub typologies reported better access to markets with reduction in distances from as much as 50 Kms earlier to just 5-10 Kms presently.
	Sale of crop products	• Very small quantity was sold since the main use was for subsistence, whatever sold was also sold within the village (barter system was in place). • Presently, most of the small and marginal farmers practice subsistence agriculture and 40% of the hybrid paddy is sold in the market. In case of food shortages they take grains from the Public Distribution System. • Medium and Large Farmers go to the market to sell their produce.
Market	Non-timber forest products	• No formal markets were available for NTFPs like Tendupatta, presently Tendu leaves procurement and sale is managed by the forest department. • Households reported collecting a wider variety of NTFPs which was traded locally, however presently only a few marketable NTFP especially the Mahua, Aonla (Gooseberries) and Charoli are collected and sold to traders who visit villages from nearby towns.
	Cooking fuel (household)	• Fuel wood and cow dung has been consistently used across all the sub typologies with no change reported in cooking fuel.
	Cooking fuel (sale)	• Sale of fuel wood was practiced to earn additional cash income, households used to store dry wood and sell it by head loads in the local market or as and when they could get a buyer. • Presently, very few households (<5%) reported selling fuel wood for INR 30 per KG.
	Food security in months	• Most of the households reported having food security for 9-10 months in earlier times, the remaining period they would exchange NTFPs as barter for the remaining 2-3 months. In present day 95% households have year round food security, the main reason being the PDS • Large farmers always had year round food security with surplus produce to sell to small and marginal farmers.
		• Most of the large and medium farmers below to the General and OBC community while the small and marginal farmers belong to the Scheduled Tribes. No change in the composition is reported.
Food Security	Functioning	• Previously, the gram panchayat was defunct, however, the Gram Panchayat (local administrative village level institution) is

		functioning now and across the sub typologies 15-20% presence of women is reported. However, the participation is passive.
Community composition	Local institutions	• Apart from Gram Panchayat, women are involved in Self Help Groups and there are a few farmer clubs existing too. The effectiveness of these institutions needs to be ascertained.
Institutions	Information of Government programmes	• Village societies (PDS) and anganwadi workers are responsible for spreading information on the government programs. Households reported having information to most of the government schemes.
	Knowledge of traditional practices	• People only reported using Neem (*Azadiracta Indica)* leaves in food grains while storing to protect them from worms, however previously the households also used to have traditional medicinal knowledge.
	Toilets /sanitation facilities	• No toilets exist in most of the households (95%) and open defecation is practiced across all sub typology villages.
	Source of water for drinking	• Villages reported having drinking water security throughout the year with no requirements of water treatment during earlier times. However, presently the villages reported drinking water security of 9-10 months and they have to travel to get drinking water from nearby places. • Water treatment is limited to boiling of water in the villages while earlier it was not required.

The information collected under each indicator was organized and was used to assess the impact and coping mechanism for each sub typology under various climatic risks the landscape is exposed to. The climatic risks against which the impacts and coping mechanisms assessed were:

Table 1.14: Climatic Risks, Impacts and Coping Strategies for all typologies combined

S.N.	Climate Risk	Impacts	Coping Strategies/ response
1	**Drought**	Agriculture and Environment: 1. Depletion of ground water 2. Reduction in stream flow 3. Reduction in soil moisture 4. Crop failure 5. Drying of forest plants and trees	Agriculture and Environment: 1. Distress Migration 2. Well deepening 3. Construction of new wells 4. Land mortgage 5. Construction of farm bunds
		Livestock: 1. Water scarcity 2. Fodder scarcity 3. Incidences of diseases	Livestock: 1. Make do with home remedies or go to para-vet (very less in region). 2. Open grazing/ Buy feed-fodder 3. Selling of livestock
		Communities: 1. Crop losses leading to economic losses 2. Food insecurity 3. Drinking water scarcity	Communities: 1. Food for work in drought mitigation programs under forest department 2. Work under MGNREGA scheme 3. Travel to nearby villages/ water bodies or treat locally available water
2	**Delayed onset of monsoon**	Agriculture and Environment: 1. Streams in forest dry faster 2. Trees in forest and the village get dried up. 3. Kharif season cycle gets delayed 4. Water scarcity for agriculture due to drying of wells 5. Decrease in cropping area during	Agriculture: 1. If the kharif crop season is delayed then short duration crop like Saathiya variety is cultivated. 2. Farmers having irrigation facilities can only do the sowing 3. Distress Migration to nearby towns and cities

		kharif 6. Reduced crop yields 7. Temperature increase leading to incidents of pest and disease in crops	
		Livestock: 1. Reduced fodder for livestock	Livestock: 1. Open grazing in the forest 2. Purchase expensive cattle feed 3. Sell livestock
		Communities: 1. Economic losses as input costs increase	Communities: 1. Distress Migration
3	**Prolonged dry-spells**	Agriculture and Environment: 1. Natural drains and wells dry 2. Reduction in forest biodiversity thus affecting NTFP outputs 3. Reduced crop yields 4. Reduction in soil moisture coupled with decrease in soil quality 5. Increase in pest attacks	Agriculture and Environment: 1. Construction of nala plugs to store water which can provide protective supply to some crop 2. Increase in construction of open wells 3. Change in choice of seeds- use of drought resistant seeds for the second crop, use of hybrid varieties that give a better yield 4. Increase in the use of fertilizers and pesticides 5. Migration 6. Taking loans (leading to indebtedness)
		Livestock: 1. Increase in livestock diseases 2. Low availability of fodder and water	Livestock: 1. Do home remedies or go to para-vet 2. Purchase special feeds from markets 3. Selling of livestock
		Communities: 1. Quantity of food grains consumed at home is reduced 2. Increase in diseases	Communities: 1. Do home remedies or go to a doctor 2. Take loan for medication/ hospitalization.
4	**Less rainfall in rainy season**	Agriculture and Environment: 1. Drying of forest plants and trees 2. Migration of wild animals outside the jungle 3. Reduced yields resulting in economic losses and food insecurity 4. Water scarcity increases	Agriculture: 1. Distress Migration 2. Taking loans (leading to indebtedness) 3. Not much done in the face of wildlife destroying the fields
		Livestock: 1. Water and fodder scarcity	Livestock: Number of livestock reduce as people sell them during stress period
		Communities: 1. Economic losses 2. Mental stress for farmers (men and women) 3. Expenditure on health care increases	Communities: 1. Changes in food consumption – reduced quality and quantity 2. Borrow money
5	**High intensity rainfall**	Agriculture and Environment: 1. Crop losses resulting in food insecurity 2. Soil erosion in farmland, common	Agriculture: 1. Early harvesting of crops which are not much affected by the rains 2. Distress Migration

		land and forests 3. Decrease in the MFP (minor forest produce)	3. Undertaking more MGNREGA works to arrest soil losses and creating bunds where necessary
		Livestock: 1. Increase in livestock diseases in small and large ruminants and poultry.	Livestock: 1. Go to para-vet, higher expenses on medicines
		Communities: 1. Economic losses 2. Kutcha houses destroyed due to rains 3. Increase in water borne diseases due to contamination of drinking water 4. Transportation/mobility within and outside the village affected	Communities: 1. Distress Migration 2. Borrow money /loans 3. Take shelter in neighbor's house/ school. 4. Use cloth to strain drinking water/ adds chlorine to the common drinking water sources.
6	**Rain during summers/ unseasonal rainfall**	Agriculture and Environment: 1. Loss of flowering in mahua and aonla, mango etc 2. Loss of income from forest in summer season 3. Damage to rabi crops like vegetables (when crops are in harvesting stage)	Agriculture and Environment: 1. Migration 2. Taking loans (leading to indebtedness)
		Communities: 1. Economic losses 2. Increase in health problems leading to increase in health expenditure	Communities: 1. Migration 2. Do home remedies or go to a doctor
7	**Heavy hailstones**	Agriculture and Environment: 1. Withering of tree leaves- in forests and village 2. Small ruminants are affected/ injured 3. Rabi crop losses leading to economic losses	Agriculture and Environment: 1. Migration 2. Taking loans (leading to indebtedness) 3. Do not cultivate Bengal gram crop
		Livestock: 1. Injury to livestock 2. Livestock mortality in few cases 3. Increase in diseases like foot and mouth disease	Livestock: 1. Sell livestock 2. Go to a paravet[2] – increase in expenditure leads to failed livestock livelihoods.
		Communities: 1. Economic losses 2. Increase incidences of illnesses due to sudden temperature fluctuations 3. Damage to kutcha houses	Communities: 1. People demand for compensation from government 2. Migration 3. Do home remedies or go to a doctor
8	**Frost**	Agriculture and Environment: 1. Vegetative Loss 2. Newly planted plants doesn't survive 3. Heavy economic loss due to crop loss	Agriculture and Environment: 1. Spread ash on crops 2. Migration 3. Taking loans (leading to indebtedness)
9	**Limited cold days in winter**	Agriculture and Environment: 1. Decrease in yield of rabi crops	Agriculture and Environment: 1. Distress migration due to economic losses

[2] Paravets are village level resource persons who would be trained for working as technical support at grass root level for providing basic veterinary services.

Finally a sensitivity analysis was conducted basis the primary and secondary information collected and post assessments of climatic risks, its impacts; coping mechanism. The sensitivity analysis was conducted basis the 3 categories of households as mentioned above (Large/Medium landowning; Small and Marginal landowning; and Landless) present in each of the 11 representative villages.

For each of the above household category resilience codes {1-Nil (0-10%) 2- Minimum (11-25%) 3- Low (26-45%) 4- Adequate (46- 70%) 5- High (71 %<)} were assigned for 5 capitals viz. Financial, Human, Natural, Physical and Social. The resilience codes were assigned for each of the below indicators for the representative villages. Finally a resilience code was generated under each of the five capitals for the 3 household categories. This gave us the resilience or vulnerability codes for each of the sub typology villages.

Table 1.15 – Indicators considered under the 5 capitals

Indicators	Parameter
Financial Capital	
Agriculture	Crop production in the Kharif season
	Crop production in Rabi season
	Credit for Agriculture – Kisan credit card
	Credit from money lenders
	Agriculture Subsidies (fertilizers)
	Subsidies (seeds)
	Mechanization
Livestock	Sale of milk based products
	Sale of animals (goats, sheep, poultry and pigs)
	Animal services for agriculture operations
	Farm yard manure
	Livestock insurance
Forest	NTFP Collectors
Market Access	Weekly market
	Non-farm livelihoods
	Health Insurance
Food Security	Public Distribution System
	Cereals
	Pulses
	Oil seeds
Credit & saving schemes	For women
	For men
Human Capital	
Education	Children in schools
	Literacy of adults

Agriculture	Agriculture operations (fertilizer land preparation)
	Harvesting and threshing
	Non-pesticide management
	Crop Seed selection (other than paddy)
	Crop production practices (seed density, improved methodologies (sowing, transplantation)
	Livestock based farming
	Dryland and rainfed farming
	Mechanized farming
	Commercial farming
Food Security	Storage methods
	Kitchen gardens & poultry
	Knowledge of healthy diet
	Sanitation and hygiene
Livestock management	Cattle rearing and Dairy
	Fishing
	Poultry rearing
	Small ruminant rearing
	Piggery
	Management of livestock diseases
Traditional knowledge	Traditional healing system
	General information of forest systems and human interaction
	Action against forest fire
General	Capacity
Natural capital	
Forest Tree Species	Number of tree species
Forest produce	Number of tree species used for livelihoods
	NTFP (minor produce)
Fauna	Number of species
Natural water bodies	Streams, rivers,
	Lakes, ponds
	Drinking water
Seed and planting material	Indigenous varieties (seed and planting material) for all other crops, except paddy
	High-yielding varieties & not native (paddy)
	Drought resistant varieties
Land use	Total cultivable land
	Fallows (rabi) (not cultivated in rabi)
	Fallows (Kharif) (not cultivated in kharif)
	Cultivable waste land (not being cultivated, nor used as tree cover = low resilience)

	Village common lands
	Rainfed land (large area = low resilience)
Food Security	From Forest (forest edibles)
Livestock	Buffaloes, cattle (indigenous)
	Goats (indigenous)
	Water for livestock (rivers and streams, wells)
	Fodder (crop straw)
	Fishery
	Piggery
	Backyard poultry (native)
Farm inputs	Chemical inputs
	Organic / FYM inputs
Physical capital	
Watershed structures	Farm bunds
	Other watershed structures
Water Resources	Open and dug wells
	Bore wells
	Farm ponds (household)
	Percolation tanks
	Panchayat farm ponds
Farm infrastructure	Irrigation support equipment (lift and micro irrigation)
	Agriculture (improved equipment)
	Manual operations
	Infrastructure for fishery
Livestock	Shed
Vet services	Clinics / govt services
	Govt health care / hospital / PHC infrastructure
	Private Health care infrastructure
	Child care centre
Market	Access
	Collection points
	Livestock market
	Public Distribution System
Sanitation	Toilets /sanitation facilities
	Drainage system
Housing	Infrastructure
	Grain storage facilities
Social	
SHGs	Women
	Men
	Farmer groups

	Producer companies
	Youth groups
Cooperative & Societies	Membership (milk federation etc)
Services provided	Health services Anganwadi sevika / ASHA
Village institutions	Gram Panchayat Functioning
	Forest protection committee
Traditional	Traditional organizations (tribal)

The resilience codes generated for sub typology villages under the 3 household categories are:

Table 1.16 Sub Typology 1 –High ST population (>70%) and High number of agriculture workers (>70%)

Households	Typology	RV	Financial	Human	Natural	Physical	Social
Large and Medium land owners	A	Karkoti (Seoni)	2	2	2	2	2
	A	Chargaon (Mandla)	2	2	2	2	2
	B	Bargi (Mandla)	3	2	3	3	2
	B	Parrapur(Balaghat)	3	2	2	3	2
Small and Marginal Landowners	A	Karkoti (Seoni)	1	2	2	2	1
	A	Chargaon (Mandla)	1	2	2	2	1
	B	Bargi (Mandla)	2	2	2	2	2
	B	Parrapur(Balaghat)	1	2	2	2	1
Landless poor	A	Karkoti (Seoni)	1	1	2	1	1
	A	Chargaon (Mandla)	1	1	2	1	1
	B	Bargi (Mandla)	1	1	2	1	1
	B	Parrapur(Balaghat)	1	1	2	1	1

Table 1.17 Sub typology – II High ST population (>70%), but a relatively lower number of (<70%) agriculture workers;

Household	Typology	RV	Financial	Human	Natural	Physical	Social
Large and medium landholders	B	Khapa (Balaghat)	3	2	3	3	2
	B	Bhilma (Seoni)	2	2	3	2	2
	B	Dhanora (Mandla)	2	2	2	2	1
Small and Marginal Landowners	B	Khapa (Balaghat)	1	2	2	2	1
	B	Bhilma (Seoni)	1	2	2	2	1
	B	Dhanora (Mandla)	1	2	2	1	1
Landless poor	B	Khapa (Balaghat)	1	1	2	1	1
	B	Bhilma (Seoni)	1	1	2	1	1
	B	Dhanora (Mandla)	1	1	2	1	1

Table 1.18 Sub Typology – III Low ST (<70%) population, but a relatively high (>70%) agriculture workers population

Household	Typology	RV	Financial	Human	Natural	Physical	Social
Large and medium landholders	A	Mohagaon	2	2	3	2	2
	A	Jhalagondi	3	2	3	2	2
Small and Marginal Landowners	A	Mohagaon	1	1	2	1	1
	A	Jhalagondi	1	2	3	2	2
Landless poor	A	Mohagaon	1	1	1	1	1
	A	Jhalagondi	1	2	2	2	1

Table 1.19 Sub Typology – IV Low ST (<70%) population, low (<70%) agriculture workers

Household	Typology	RV	Financial	Human	Natural	Physical	Social
Large and medium landowners	B	Khapa	2	2	2	2	2
Small and Marginal landowners	B	Khapa	1	2	2	1	1
Landless poor	B	Khapa	1	1	2	1	1

The vulnerability assessment exercise provided clarity on the specific issues being faced by the communities and their degree of resilience under each of the 5 capitals. In terms of interventions required in the project, the classification of villages under typology A & B done basis the Bio – Physical factors indicated that focus on watershed development activities is necessary in typology's A 11 villages. Further, it also indicated that due to rapidly declining water spread area in the remaining 45 villages under Typology B, more water storage structures are required.

Similarly, classification of villages under sub typologies helped set an indicative priority in terms of selection of households/villages for specific interventions – for e.g. it is seen that Landless poor are the least resilient in all the capitals – thus require most amount of focus in terms of building entrepreneurship and vocational skills. Likewise, villages in sub typologies that have received a least resilient score in Natural capital (low/degraded village woodlots) will get more focus on community based natural resource management.

In addition to the vulnerability assessment, a Livelihood assessment study was also conducted in 8 sample villages, details of which are provided in '**Annexure - 4**'. The livelihood assessment study provided agri and agri allied interventions that are required to be promoted to enhance the resilience in the community and the landscape. The project plan has been developed keeping the vulnerability and livelihood assessment in the hindsight and it is

envisaged that findings from these will become the basis of village and household level planning once the project is initiated.

1.5 Objective of the Project

While the landscape faces multidimensional challenges including developmental pressures, the focus of the project is to build the adaptive capacity of the KPC community and the landscape in the backdrop of declining functionality of the ecosystem due to the degradation. It proposes to adopt a community centric three pronged approach of: i) building and strengthening community based institutions. ii) Community led ecosystem conservation and lastly iii) promotion of climate informed and climate resistant livelihoods; Using this approach the project's objective is to manage the threats that have been discussed in detail under section 1.4.4.

Table 1.20 Management of threats to increase community and landscape resilience

Threats from	Measures	Impact
Overuse due to : 1. Failed agriculture 2. Failed livestock 3. NTFP 4. Fuel wood extraction	1. Promote improved and climate informed agricultural practices, hardy crops; adopt watershed activities/ micro irrigation techniques to improve productivity. 2. Adopt improved livestock rearing/ management practices; promote stall feeding through incentivizing cultivation/storage of fodder. Promote indigenous poultry, piggery. 3. Promote sustainable harvesting of NTFP through community institutions and by promoting other cash generating livelihoods/ vocational skills. 4. Promote alternate energy/ energy efficient mechanisms for cooking like biogas plants and high efficiency cooking stoves.	1. Higher resistance to climatic stress. Reduced loss of agricultural produce, more fodder for livestock. 2. Higher income from dairy and other livestock. 3. Diversified income earning through alternative vocational livelihoods. 4. Less extraction pressure on the KPC forest by the community 5. Reduced drudgery for women and man animal conflict.
1. Climate change	1. Community based conservation of village woodlots to promote	1. Improved forest cover, resilient ecosystem

	regeneration. 2. Attach alternate economic values to ecosystems, for e.g. through promoting ecotourism. 3. Reducing extraction pressures through creating alternate coping mechanisms (alternate livelihoods) 4. Creating environmental and socio economic baseline profile of the KPC, with specific climatic threats and measures to be adopted.	against climatic variations 2. Sustainable harvest of forest resources. 3. Enhanced community ownership towards the forests resources 4. Improved decision making by the KPC management units especially MPFD.
1. Development	1. Raising awareness levels and sensitivity of stakeholders (community members, school children) towards the importance of the KPC. 2. Facilitating dialogue for efficient management of threats through knowledge management and bringing stakeholders groups to a common platform	1. Increased sensitivity in the stakeholders towards KPC 2. Improved wildlife movement in the corridor 3. Improved decision making in the stakeholders towards protecting KPC.

Project Component and Financing

S No	Project Components	Expected Outcomes	Expected Outputs	Budget (in USD)
1	Integrated socio - economic - ecological planning and assessment	Improved understanding of prevalent dynamics and changes in area of interventions	1.1 Socio economic baseline report with village level detailed analysis in the project villages	**44,538**
			1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS.	
2	Community mobilization for building adaptive capacities	Enhanced capability of the community to take collective action, practice adaptive	2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	**303,089**

		livelihoods and conservation	2.2 Participatory Impact monitoring	
3	Integrated approaches for ecosystem resilience and sustainable livelihoods as a means for adaptation	Improved adaptive capacity of the community and landscape	3.1 Adoption of climate resilient agricultural practices by 5,000 households	**1,530,646**
			3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households.	
			3.3 Enhanced vocational skills in 500 individuals.	
			3.4 Adoption of energy efficient mechanisms by households to reduce fuel wood dependency and drudgery amongst women.	
4	Knowledge management	Improved understanding on threats and climate change impacts on the landscape and enhanced involvement of stakeholders	4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	**273,409**
			4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools.	
			4.3 Local and National Level Campaigns/Workshops for dissemination	
5. Total Component Cost				**2,151,683**
6. Project Execution Cost				**204,410**
6. Total Project Cost				**2,356,093**
7. Project Cycle Management Fee				**200,000**
8.Amount of Financing Requested				**2,556,093**

PROJECT CALENDER

MILESTONES	**EXPECTED DATES**
START OF PROJECT IMPLEMENTATION	JANUARY 2017
MID TERM REVIEW	JANUARY 2019
PROJECT CLOSING	DECEMBER 2021
TERMINAL EVALUATION	SEPTEMBER 2021

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. *Describe the project / programme components, particularly focusing on the concrete adaptation activities of the project, and how these activities contribute to climate resilience. For the case of a programme, show how the combination of individual projects will contribute to the overall increase in resilience.*

The overall goal of the project is to build economic, social and ecological resilience of the target community and landscape in the KPC to adapt to the threats through individual and collective capacity building of stakeholders and by promoting sustainable, climate resilient livelihoods. The project is proposed to be implemented in 56 villages.

Component 1 Integrated socio - economic - ecological planning and assessment

The project envisages taking a landscape approach encompassing social, economic and ecological aspects of adaptation while focusing on the communities' ability to build capacities for long term sustainability. A holistic integrated approach is required for its planning, implementation and evaluation. The output of this exercise will be used in designing household, village and landscape level interventions. Under the component, the village level baseline adaptive capacity of the community will be assessed through focused group discussions. Also, mapping of the surrounding ecosystem will be done using GIS at baseline and at regular intervals to measure changes to these ecosystem service providers.

Output 1.1 Socio economic baseline report with village level detailed analysis in the project villages.

Building adaptive capacities for communities and landscape includes understanding the interface between the social, economic and ecological aspects of living. For this, an exercise covering 56 project villages will be undertaken which will provide baseline information on the prevalent issues mainly on livelihoods, gender and institutions. The project team has already visited the project villages during the project formulation stage and has also conducted a detailed vulnerability assessment in 11 representative villages as described under Section 1.4.6. This has provided the team with information on the prevalent landscape level adaptive capacities in a detailed manner. This component will aim to further build on the information gathered during the vulnerability assessment exercise and aim to create village level baselines including the adaptive capacities through focused group discussions in all the project villages.

The output will be a baseline report which is expected to serve as an important document for local management units to help take informed decision making for future climate change resilience enhancing community initiatives.

Activity 1.1.1 Collection of primary data

Primary data will be collected from 56 project villages for baseline aspects through conducting Focused Group Discussion and Participatory Rural Appraisals. To ascertain the baseline adaptive capacities there will be discussions with the community so as to develop an understanding of the level of community knowledge and attitudes towards climate change; this will be followed by a climate change awareness session for the community post which an assessment of the current status of livelihood sectors/ village resources and community response to climatic variations will be done; an assessment of the most prominent community concerns for long term sustainability will also be conducted.

The process will draw on the knowledge, experiences and aspirations of the community and will be completed using a combination of community workshops and field assessments to gather village level information (both quantitative and qualitative). The information from these assessments will help ascertain the current livelihoods practices and challenges faced by the community, with women in particular in terms of agriculture, forest harvests, livestock rearing and other local service based occupations. It would further be useful to develop an understanding of the baseline resilience of the surrounding ecosystem; the magnitude of community's dependencies on eco system services; and help understand the current adaptive capacity, impact and / or vulnerability in the backdrop of climate change. Findings will be incorporated in the capacity building and livelihood interventions with the communities. This comprehensive and participatory process to collect baseline data will also be used for participatory monitoring and evaluation purposes.

Activity 1.1.2 Baseline report and village development plans

A village wise baseline report will be prepared with information collected during activity 1.1.1. This baseline report will serve as an important document for the community and the project team in prioritizing and designing interventions at the village level. These 56 Village development plans will be prepared as an extension to the baseline report and will include hand drawn maps of the village by the community (containing village woodlots and other bio physical resources). Also, first steps to form/ revive village community based institution will be taken under this activity.

Furthermore, these plans will also act as local milestones for the community to be achieved during the project period. It is expected that village developmental plans will give direction to development activities at the village level; it will instill a feeling of collective action in the village community and will keep them motivated by having clearly defined goals and responsibilities. Combined overall, the village development plans will include the conservation (atleast 3,000 ha of community conservation of forests) and the livelihood targets (atleast 1,800 ha of watershed development; 75% household covered under atleast one of the activities under component 3).

Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS

Activity 1.2.1: GIS Mapping & Analysis

Mapping of the 56 project village woodlots and other village level ecosystem services providers will be done using GIS and incorporated as part of the baseline report/ village developmental plans. Further analysis of the maps would be done at regular cycles over the duration of the project to assess the changes to village woodlots and other bio-physical resources in the project villages due to project interventions.

Component 2 Community Mobilization for building adaptive capacities

Climate change adaptation is inherently local and therefore it is critical to attend to local institutions while thinking about effective adaptation. It is believed that without adequate attention to local institutions and their role in adaptation efforts of different kinds, the adaptation interventions envisaged under the project will be unable to achieve sustainable impacts.

Thus, community mobilization into robust community based organizations is seen essential to build adaptive capacities and be the cornerstone to address the climate change issues in the landscape. This approach is adopted to strengthen and take advantage of already existing strategies that many households and social groups use collectively or individually. Examining the climatic risks faced by the community historically, including their cultural responses to these risks, and the institutional configurations that facilitate individual and collective adaptation strategies is thus seen important for generating effective coordination with project interventions. Also, it is felt that long term impact cannot be created in institutional vacuum and therefore the presence of these Community Based Organizations (CBOs) will help in driving the implementation of the village and household level interventions planned under the project.

Under the component CBOs will be formed/revived and strengthened in the 56 project villages with the aim to promote collective action on a) protection and sustainable use of natural resources including water and forests; b) village developmental activities like treatment of watersheds {using village developmental plans created under Component I} and c) facilitating household level livelihoods interventions. Furthermore, to address gender issues and empower women, self help groups will be promoted.

Output 2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.

Activity 2.1.1 Community awareness, sensitization and mobilization

At this activity inception stage, it is envisaged that formation of village institutions and village developmental plans will have progressed and discussions on village's sensitivity towards the forests, key challenges, prevalent risks and ability to cope during economic stress at the household and community level would have been completed as part of baseline component.

Under this activity, community awareness and sensitization sessions would be facilitated for the village institutions on a monthly basis during the entire project period. Orientation towards understanding development that is inclusive of an ecosystem approach, learning from the implementation of climate resilient livelihoods and climatic information collected under the project would be made part of the regular and ongoing dialogue with the community.

These village level sessions will primarily focus on handholding and sensitizing the community to implement the activities and achieve the targets as per the village development plan. Overall, the village development plans will include the conservational (atleast 3,000 ha of community conservation of forests) and the livelihood targets (atleast 1,800 ha of watershed development; minimum 75% household covered by activities under component 3).

It is envisaged, that gradually with continuous capacity building of CBOs and subsequent development of leadership overtime, these sessions/ meetings will become platforms wherein household /village/ landscape level issues under conservation, development and livelihood aspects including climate change are discussed and collective action is taken to address these issues in a participatory manner. It is also envisaged that these sessions will lead to improved governance in the institutions which will create a sense of ownership around project interventions and drive the post project developmental and adaptation activities at the village/landscape level.

Plate 1 – Village level planning in RBS FI project village in Mandla district

Activity 2.1.2 Formation and strengthening of CBOs through exposure visits and training

Based on the outcomes derived from the Focused Group Discussions undertaken under the Component 1, the community would be organized into relevant CBOs. The nature of the institution would be determined by the combination of baseline findings, adaptation needs, existing village resources, administrative classification, and community cohesiveness. It would be a systematic and intensive exercise. The key activities would include identifying the key objectives, formation and leadership identification (with community consultations) of the CBO. For example – there are CBOs already in existence with the objective of achieving community led conservation such as the Joint Forest Management committees, Biodiversity Management Committees, Eco Development Committees. However, due to lack of a formal vision and monitoring process, several of these have become defunct. As part of the project, efforts will be made to revive, strengthen and integrate these with the village/cluster level` CBO's since these institutions have created much awareness on ecosystem conservation, resulting in community taking ownership and participate in sustainable management and harvest of ecosystem resources.

Furthermore, to strengthen the CBOs and to build their capacities on driving the implementation of the village development plans, 1 classroom training (of 3 days each) per year for 4 years and 1 exposure visit (of 2 days) every 2 years of the CBOs covering 56 project villages will be conducted and its members will be taken to other established CBO's (that exist in other RBS FI projects in KPC). The exposure trainings/visits will help new/revived CBOs to understand practices, challenges, successes and governance model of institutions that have set examples by collectively addressing village developmental, conservational and livelihood related challenges in the landscape and has increased their adaptive capacities over a period of time.

Such trainings and visits will primarily focus on enhancing knowledge and capacity of the community representatives to foster a behavioral change as these will give exposure to them on various success cases of community based protection and conservation, watershed management, alternate and sustainable livelihood practices and best practices for livestock rearing and energy usage. It is important to note that the livelihood specific trainings will be covered under component 3 and this component will focus on training/ building capacity of institutions to undertake collective action as an institution to address conservation, livelihood and developmental issues at the village level. Furthermore, regular training workshops will be conducted (under activity 2.1.1) to reiterate learning's from the exposure visits and success stories showcased for the CBOs. The selection of members for the trainings will be jointly done by decision in the village institutions and the project team. The selection will focus on identifying individuals that have the ability (having a minimum level of reading and writing ability) and the willingness (will be identified by continuous involvement) to disseminate maximum knowledge gained through these trainings to the other members of the village institutions.

Activity 2.1.3 Gender focused activity

Women share equal involvement in the workforce in rural areas, yet their contribution from an economic and social standpoint is undervalued. Having said this gender equity is most visible in all aspects in the tribal regions across India and in the project area as well. Women have a strong voice in the decision making process of a household and 50% of the population contributes to the workforce indicating a higher involvement of women contributing to the income generation of the family.

Also, the Self Help Group (SHG) movement has played an important role in rural India creating platforms for empowerment and a common voice. At least 150 SHGs are envisaged to be supported under the project. Defunct SHGs will be revived and new SHGs will be created under the project. The selection basis of women will be done using the PRAs exercise and will focus on selection of women belonging to the household from the low – medium, income ranking households. Cohesiveness between the women members will be given priority as per the existing social fabric of the village. 1 exposure visit every 2 years (of 2 days) and 4 class room trainings per year for 4 years per SHG will be conducted for the SHGs to promote robust and sustainable SHGs.

Plate 2 – SHG meeting with women updating their individual SHG pass books

Furthermore, the project design would integrate the SHG leaders in the capacity building and village planning exercise to ensure gender focused plans and their representation in the village level CBOs. The discussion with the community at different stages would attempt to bring to the fore the role of women, specific challenges faced by them, requirement to develop their adaptive capacities, focus on women headed household and their challenges. Specific drudgery related issues would be discussed in the meetings and addressing these would be factored in the village planning exercise and through interventions around provision of alternate cooking fuel i.e. Biogas by constructing bio gas plants and through provision of efficient cooking stoves to reduce the dependency on cooking fuel wood.

Plate 3 – SHG training on accounting and book keeping in a village in Balaghat district

The project aims to build on the inherent social characteristics of the region and address any gender equity issues during the course of project implementation, if any. These will be addressed through CBOs wherein strong representation of the women beneficiaries will be ensured. Furthermore, many livelihood activities and trainings will be designed within the approach that requires women to take the lead such as managing backyard poultry enterprise and livestock.

Output 2.2 Participatory impact monitoring (PIM)

Activity 2.2.1 Participatory impact monitoring

The proponents are aware that understanding and analyzing outcomes and impacts at the primary stakeholder level are crucial for the community to appreciate a specific intervention and ensure sustainability of the same. As part of building ownership on project activities within the community and CBO's, one of the activities under the project would be to undertake participatory impact monitoring of the village activities.

At completion of every 2 years of project implementation, the project team will re-convene community workshops and using the village developmental plans (created under the baseline component by adopting a consultative process) as a benchmark for the community, will assess the impact of the activities implemented in the village during that period.

The community will be trained and facilitated in understanding the impacts envisaged by the project interventions and will then be provided with an opportunity to understand, evaluate and measure the impacts that the project implementation has had on the natural resource base, livelihoods, social and gender aspects and also their overall resilience against climate

change and otherwise. It is expected that the PIM will give qualitative information which will be useful in analyzing and understanding the community's perspective on the outcomes and impacts envisaged under the project.

Furthermore, as part of the capacity building component, the community would be made to understand the importance of building capacity to review the progress, assess the impact and share their learnings with the larger community. This is an important component to bring in sustainability of the CBO. A structured impact monitoring process of 2 days is envisaged which will happen twice during the project period of 4 years covering 56 project villages.

Component 3 Integrated approaches for ecosystem resilience and sustainable livelihoods as a means for adaptation

Adaptive strategies for natural resource dependent communities need to be based on an approach that is able to integrate livelihood needs and capacity of eco system / natural resource to regenerate. Current agriculture practices are noticed to be non- resilient against climate change creating a production gap between actual and potential and sometimes leading to complete crop failures. Household survey in the region have revealed that 75% farmers perceive that soil fertility, based on their agriculture experiences, had degraded over the last ten years. Correspondingly, fertilizer consumption over the past ten years has increased by more than 50% for more than 40% respondents surveyed (Sushant 2013[52]). Agriculture practices like System of Rice Intensification and Organic Farming proposed in the MP SAPCC, 2014 that are relatively more climate resilient, involve good quality inputs and technical assistance are not available to the target community. The project will aim to promote and enable the communities to adopt improved agriculture practices through provision of inputs, technical assistance and robust market linkages.

Output 3.1: Adoption of climate resilient agricultural practices by 5,000 households

Agriculture is the primary source of sustenance in the target community. Building adaptive capacity of the community and natural resources management in agriculture would include soil water management, good quality inputs and practices, technical assistance and crop management.

Activity 3.1.1 Demonstration of adaptive agriculture crops and practices through farmer field school

The baseline and village planning exercise would help assess the situation which will describe the village / cluster level situation of water for irrigation, types of crops, and trends in production, constraints and challenges. Basic local need, activities such as - water security through recharge, micro watershed management in upland villages, water budgeting, introduction of low water intensity seeds will be promoted. Also, cropping practices which are climate resilient like multi cropping, mixed cropping, root intensification, crop diversification,

agro forestry, vegetable farming, use of organic manure and soil nutrient management will be encouraged. A total of 32 training days (8 per year) of classroom trainings and 64 demonstrations will be conducted for Paraworkers. These paraworkers will disseminate the training learning through 4 field level trainings per year to at least 5,000 farmers.

Plate 4 – SRI being practiced in a village in Mandla District

Under the project formulation exercise crop mixes to be promoted have been identified broadly and it is felt that it is best that the indigenous varieties are promoted. This protects food security. However for market needs, other varieties (that have market value) may also be promoted, taking into account the need for cash income.

KHARIF[3]: Crops generally grown during kharif are – Paddy (high yielding and indigenous both), kodo, kutki (minor millets that grow on rainfed areas) Pulses like pigeon pea and Moong, Maize, Sesame and Ragi. The ideal crop varieties and mix that will be promoted is as below:

A: Intercropping

1. Maize + pigeon pea in the ratio of rows of 4:2 or 3:1; or 6:2
2. Maize + Udid OR Moog in rows of 2: 6 or 3:9 or 3:1

B. Mixed Cropping

Kodo 20% + Kutki 20% + Udid 20% + Moog 20% + Sesame 20%; on the border of such a farm 3 rows of maize can be planted as a trap crop

[3] *The Indian cropping season is classified into two main seasons-(i)* ***Kharif*** *and (ii)****Rabi*** *based on the monsoon. The* ***kharif*** *cropping season is from July –October during the south-west monsoon and the* ***Rabi*** *cropping season is from October-March (winter). The crops grown between March and June are summer crops*

C. Paddy - following the SRI method – on the border of this field OR on the Bunds Ragi is planted

RABI: The crops generally grown are wheat (of native and some of high yielding varieties), while the rest of the crops are of indigenous varieties. The crops taken are gram (chick pea) Lathyrus sativus (lakhodi or kesari dal)[4], mustard (sarsoo), linseed (javas) and green pea (as a vegetable)

Mixed Cropping:

1. Wheat + mustard + Linseed (flax seed or Alsi)
2. Chick pea field would be helped by growing scattered on the field coriander and sorghum as trap crops
3. Green pea can be taken as a vegetable crop

Growing these crop varieties and following the System of crop intensification – a modification on the SRI method will ensure that the household has food security besides farm products for the market. A few crops like ginger, turmeric and taro root have also recorded success in the landscape since they can grow in water stressed conditions. These crops will be promoted too.

The above crop mixes and methods like SRI would be demonstrated at village / cluster level with farmers through creation of demonstration plots/sites. Each of these demonstration plots/sites will be closely monitored and progress will be documented for measuring the level of success. There would be several demonstrations that would be carried out to showcase a combination of best practices for each cropping season. Controlled demonstration would then be compared to regular cropping practice to showcase the difference in productivity.

Activity 3.1.2 Supply of agricultural inputs and implements and promotion of organic farming

Change in practices would require introduction, demonstration and availability of indigenous/ improved seed varieties, creation of seed banks, small agriculture implements (example for SRI) and inputs for undertaking vermi-composting with the community. Agricultural inputs will be supplied to the 5,000 farmer beneficiaries under the project to help them adopt the climate resilience agricultural practices. In order to promote collective action and utilize cost benefits realized from aggregation of inputs and outputs, famer groups will be created in each village and agricultural supplies would be provided at a group level. Selection of farmers will be done basis their land holdings – farmers with the small and medium land holdings (households will landholdings under 4 ha) will be given priority.

[4] The crop lathyrus sativus (lakhodi) while a drought resistant variety contains a neurotoxin too that causes muscular weakness and paralysis of the lower limbs. Hence farmers will be discouraged to grow this crop under the project.

Plate 5 – Vegetable farming undertaken in a project village in Balaghat district

Activity 3.1.3 Application of efficient irrigation systems / mechanisms and improvement of watershed

For a climate resilient agriculture, it is imperative to ensure optimum availability of water to the farmer. Hence, moving towards water conservation technologies to store water for leaner periods and avoid over-use of water is necessary. This would mean promoting measures for soil moisture conservation through development of watersheds and small catchments to increase the soil moisture content and fertility of the soil.

Improvement in accessibility and availability of water for irrigation, diversification of water sources through water harvesting and development of watersheds (Area and Drainage line treatment in the upland villages) covering an area of 1,800 ha is envisaged under the project in consultations with the CBOs. Construction of new /repairs of existing tanks and storage structures like check dams shall be taken up to improve availability of water for two irrigation during Rabi season and enhancing water recovery and ground water recharge. Area of watershed treatment will de identified in consultation with the village community and a combination of village field walks/visits by the project team. In addition to this, provision has been made to initiate water related entry point activities in the villages. These are provisioned to meet any immediate village level water related issues existing in the project village. These water related entry point activities proposed for the project include processes related to identification and prioritization of major concerns of the villagers related to irrigation through PRA, providing technical, institutional and partial financial support to solve one or two such

concerns to build rapport and trust and also to assess capacity, network and interest of the community in developmental activities.

Plate 6 – A farm pond (10 meter * 10 meter * 3 meter) created in an existing project village

Under this component alternative and advanced water use technologies will also be explored and promoted for efficient utilization of water and use of micro/drip irrigation will be extended to 560 households. The selection of the households will be done basis the availability of water with the households and households with homestead land of at least 20-25 decimal will be given priority. The main reason for installing this system at homestead land is because water availability during winters is not ensured on the fields and also there is a threat of theft of the micro irrigation equipments if they are installed on the fields.

Activity 3.1.4 Installation of agromet stations and dissemination of weather specific agricultural practices

For maximizing productivity even in the context of challenges posed by Climate Change, it is necessary to establish a mechanism of sharing updated local weather information and accordingly the agricultural practices to be adopted. Under this activity, 5 agromet stations will be installed in the project area which will serve the purpose of sharing local weather information to the farmers. The selection of project villages where these stations will be installed will be done at a cluster level, using the expertise of the project team. Once the village is finalized, site finalization will be done focusing on the safety criteria. (To ensure that no theft, damage or any act of vandalism happens)

Locations to install the Agromet[5] stations will be surveyed post which 5 Agromet stations will be installed spanning the 56 project villages. Cluster wise information/advisories would be disseminated to the community through development of local platforms (like display of information on village wall), through CBOs and through mobile SMS's. The community will also be capacitated to adhere to the advisories issued by the agricultural department through training programs. This will help the communities cope with changes in weather and is expected to make agriculture resilient through informed decision making during critical agricultural periods.

Output 3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households

Activity 3.2.1 Demonstration of alternate livelihood / enterprise options and supply of inputs and implements

A basket of livelihood options for the household to diversify income generation will be implemented. Promotion of these alternative livelihoods is expected to help make the community resilient against the seasonal risks in income and food security arising from agriculture failure especially for small and marginal farmers. Selection of households will be done basis the landholding – Landless will be given priority. These livelihood options would also become the main source of livelihood for landless and women headed households and other vulnerable groups. These groups will be identified from the baseline and village level meetings who other wise are dependent on wage income from local labour needs, migration or unsustainable forest harvests. Alternate livelihood options would include (not limited to) dairy, piggery, poultry, vegetable gardening, petty trades and eco tourism.

[5] An Agromet station consists of an automated weather station with a console that has a SIM card inserted within. It transfers weather details on real time basis directly from the place it is installed to the India Meteorological Department (IMD), Pune. IMD then processes this data and shares the analysis with the nearest agriculture department which releases advisories to be disseminated to the farmers.

Plate 7: Vaccination of poultry being done by a local Paravet

Alternative livelihoods would be demonstrated at village / cluster level with farmers through 4 trainings per year to households by paraworkers/ paravets. Entrepreneurship model of providing alternate livelihood related support and services will be explored under the project with a premise of sustainability and replication. Local village youths will be identified and trained to help people practice alternative livelihoods in a sustainable manner

Plate 8: Piggery being practiced as an alternative income generation activity

Activity 3.2.2 Facilitation of backward and forward linkages

Input and market linkage support to the identified beneficiaries would be extended to help them take up these enterprises as a sustainable source of income. Common interest groups for households who adopt similar alternate livelihood activities would be formed to facilitate efficient dissemination of information and facilitation of backward linkages for input supply and market linkages for sale.

For example, an Informal Village/cluster/project level group for poultry is expected to be created under the project. With this group in existence, the demand for inputs like poultry chicks, vaccination etc. and thus due to economies of scale, market linkages can be created at the local level. Similarly, linkages to supply surplus produce will be created. These market linkages will ensure benefits of economies of scale reach the beneficiary and thereby create a sustainable enterprise.

Furthermore, scope for creating a formal collective or a producer company at the project level will be assessed too. This collective will primarily be a catalyst institution responsible for proving backward, forward linkages and aggregating inputs and outputs to bring in the required cost efficiencies in farm/ non farm activities. This will help create robust and self sustaining market linkages and will ensure that market exists for the surplus produce created post project completion too.

Output 3.3 Enhanced vocational skills in 500 individuals.

Activity 3.3.1 Develop and implement a set of vocations for youth

Diversification of livelihood would also include imparting vocational skills for youth who are educated and lack employment opportunities. Reduced land holdings and lack of local livelihood options has resulted in large scale migration. Those who migrate are typically unskilled and find themselves being exploited and earning very low wages. On the other side, there is a requirement of skilled labour in and around the project area. Vocational skills can be a means of improving income and also create opportunities for the youths locally and nearby.

Furthermore, during the project formulation exercise, discussions were held with the community and it is found that there is a growing aspiration in the local youth to relocate to nearby cities in search of white collared jobs. These are educated youths who have completed school/ college and are no longer interested in taking up farming as a livelihood activity. However, due to increased competition and lack of skill in these youths, getting employment is a challenge and these youths are compelled to return to their home with no interest in working in their farms and resort to unproductive and sometimes unlawful activities. Under this intervention 500 such youth will be targeted and will be provided with technical/ semi technical trainings which will go a long way in increasing their employability. Post identification of the gaps in skills i.e. both in the demand and supply side promotion of

vocational skills will be done with 500 individuals. Based on the identification of skill gaps in the area and interest from the local youth, key skills would be identified. Based on these, linkages would be created with technical service providers for skill-based training. Facilities that can impart training would be established using existing infrastructure available in the region. Placement linkages for securing employment will be created to absorb these trained youths under the project.

Output 3.4 Adoption of energy efficient mechanisms by households to reduce fuel wood dependency and drudgery amongst women

Communities depend on wood harvested from the forest to meet their cooking fuel requirements. While the households use wood for fuel wood consumption, anecdotal evidence suggests that there is significant consumption of fuel wood through a commercial market by local establishments and at times by homes in the nearby towns. There are low cost successful models of fuel efficient cooking devices that can be introduced at the household and commercial levels. The shift from traditional practice to a new cooking devise would require a significant behavior change amongst the community. The use of these cooking devices reduces the negative impact from the smoke and there is evident reduction in women drudgery. While the selection of households under this component will be focused on the village level dynamics, for e.g. villages with low electricity will be given priority for distribution of solar lamps. Primarily, the selection will be done basis the households who are willing to contribute (both in cash and kind) to get access to these energy efficient mechanisms. The reason for giving emphasis to community contribution is to ensure that households have ownership of the device/ mechanism. If these are provided to the households free of cost, the ownership to use the device in a responsible manner goes away and the objective for provision of the device is lost.

Activity 3.4.1 Provision of alternative cooking fuel for 400 households

Use of bio gas will be promoted over fuel wood for cooking at a household level with the dual objective of reducing the extraction pressure on the surrounding forests and reduce women drudgery. Bio – gas plants will be constructed at 400 for selected households. The households will be selected after a village level consultative process and after accessing the appropriate assets available with the household i.e. number of livestock and homestead land available. Household selection will also depend on the weather conditions, as in our experience of implementing projects in the landscape biogas units are not successful in Mandla due to lower temperatures during winters while the bio – gas plants in Balaghat and Seoni are operational throughout the year. Also, households which are required to travel the most in search of wood would be given priority as against households with ready access to fuelwood through village woodlots.

Activity 3.4.2 Provision of efficient cooking mechanisms for 600 households

Efficient cooking chullahs (stoves) will be provided to households/ village institutions/ enterprises with a minimum outreach targeted of 600 households. Wide dissemination on positive impact of energy efficient cooking devices is expected to create a demand for such devices especially amongst the local businesses like eateries. It is envisaged that a value chain be developed under the project based on an entrepreneurship model. This model created will have an end to end service value chain including supply, technical assistance, and after sale service support. This model is planned to reach out at the household and commercial level in the project area.

Activity 3.4.3 Provision of solar lanterns to 600 households

Solar lanterns which also have a provision of mobile battery charging will be provided to 600 households. During field visits and community consultations it is noted that electricity supply is a big issue in the region, and while all villages have electricity connection; some villages don't get electricity for days at a stretch due to poor supply. The community particularly children (studies) and women (cooking) are most affected during these times. The community residing in such villages has to travel to nearby villages during such times and pay hourly for charging their mobile phones. This provision is proposed to be promoted in an entrepreneurial model with a minimum outreach of 600 households. Selection of households will be done by focusing on villages that have low availability of electricity; such villages will be identified during the PRA exercises.

Component 4 Knowledge management

Over the last few years, the KPC has emerged as one of the most important landscapes in the country and has seen a series of small interventions by government and other institutional interests. This project envisages building adaptive capacity of the community in the backdrop of climate change; it also will focus on creating an ecosystem of stakeholdership through knowledge management so as to promote resilience in and beyond the direct project beneficiaries. The component is planned with the objective of sustainability and scalability of the project and envisions that major adaptation pathways (some expected as part of the project) will be communicated with the larger audience including the community. Local stakeholders to be targeted are Farmers, Women and School children. Material will be developed primarily to be disseminated for the local community and will include knowledge material on topics like agriculture, alternative livelihoods, importance of institutions for climate adaptation, women empowerment, basic health, hygiene, financial education, environment - biodiversity related material.

External stakeholders to be targeted under the component will include members of NGOs, researchers, academicians, tourist facility operators, line department officials (forest, agriculture; renewable energy etc) and will be engaged through constant engagement by a series of knowledge material like newsletters, and knowledge sharing workshops with the

objective of initiating a dialogue for policy changes and replicability of the model in similar landscapes.

Output 4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC

Activity 4.1.1 Workshops for homogenous groups

As first steps, 4 consultative workshops are planned under this component for all important stakeholders in the landscape viz. community leaders, tourism operators, academicians, civil society organizations, forest department and other government administration units. These stakeholders will be consulted to understand their viewpoint and take their inputs so as to create a holistic knowledge management plan for the project/landscape. This knowledge management plan is envisaged to be a strategy document which will have clearly defined areas of intervention in terms of creating, developing, documenting, designing, and disseminating knowledge.

Output 4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools

Activity 4.2.1 Develop and design knowledge material and tools

Resource materials such as quarterly newsletters, training curriculums, brochures, messages in local language and those covering best practices under the project and in similar landscapes for stakeholders will be designed to be disseminated. In addition to the printable material, it is learnt through past experiences of implementing projects in the landscape that audio visual content like short movies appeal to the community and builds curiosity in them to learn and adopt beneficial interventions. In view of this, development of audio visual content will also be done and 5-6 short movies will be created under the project for dissemination to the community and other relevant stakeholders. These movies are envisaged to be produced on the areas of project interventions (agriculture, alternate livelihoods, institutions, energy access, gender related). It is envisaged that development of these materials will educate and equip the stakeholders in increasing their adaptive capacity in the backdrop of climate change and will have an outreach beyond the project area.

Activity 4.2.2 Documentation of learning and processes

The processes involved in increasing adaptive capacity basis the learnings from the project will be documented both for knowledge enhancement and to facilitate replication. Apart from the models, any others best practices/success stories that are followed by the local community in the project site to cope with climate change will be identified, documented in a

comprehensible manner, designed and distributed for knowledge enhancement of the stakeholders.

With a view of scalability and sustainability and to have a wider visibility of the project in the national and international climate change resilience context, it is envisaged that peer reviewed research papers will be commissioned to be published in national/international journals on major adaptation pathways envisaged under the project, some possible topics of research papers are listed as below:

1. Diversified portfolio of livelihoods leads to climate change adaptation for the poor.
2. Community based conservation of natural resources leads to climate change adaptation.
3. Quantification of role of institutions in climate change adaptation.
4. Landscape level dialogue leads to climate change adaptation.

Activity 4.2.3 Develop medium of knowledge sharing

It is planned that a website will be designed to host the entire information collected on the landscape, climate change and its impacts, solutions to problems and information for the stakeholders that would help them build their adaptive capacities to climate change. All material uploaded on the website will be publicly available to all stakeholders seeking relevant and up to date information about the project.

Also, all the ecological (GIS and weather) and socio-economic data collected under the project and research studies that will be undertaken through the project will be put up on the website with a vision to create a resource centre on KPC. It is expected that creating such a resource centre will be far reaching especially it is used by used by forest department and other administration units for drawing up plans for other such important landscapes. The website will be updated on a quarterly basis

Output 4.3 Local and National Level Campaigns/Workshops for dissemination

Activity 4.3.1 Dissemination of knowledge material and tools for homogeneous groups

Dissemination of knowledge generated under the project will be done at the local level through regular village level workshops. These workshops will be focused on increasing the adaptability of the community by building their awareness (through print and audio-visual) on improved agriculture practices like SRI/ organic farming and climate proof livelihoods. These workshops will also aim to spread awareness on why saving forests and wildlife is important for their survival and how robust community based institutions can increase their resilience in the context of climate change.

Furthermore, under this component, with a view to target the children in the project area an educational program which focuses on spreading awareness on forests, wildlife and climate change will be conducted in the schools in project villages. Also, it is envisaged that

workshops for school children on topics like maintaining personal and general hygiene, prospective professions, and financial literacy will be provided which can go a long way in securing their long term resilience. Atleast 12 such workshops (1 per quarter for 3 years) is planned to be conducted in the project villages.

Plate 9: Village level dissemination workshop on agriculture extension services being conducted in a project village in Mandla district

The dissemination strategy will also include a campaign on the issues of climate change adaptation. The campaign is expected to bring out people at a local level who are trained in science of eco-restoration and ecosystem services to bring this awareness to general public as to how broadly, the forests in the landscape contribute to ecological security and security of their lives and livelihoods. It is envisioned that the landscape be dotted with people who want to take action in this direction since it is believed that an intervention, if based on the will of the people, will be sustainable and will have far reaching impacts.

The component also recognizes the role local and national media will play to bring the landscape level issues to the fore, considering that media exposure trips will be conducted at the project site which will ensure a wide outreach and visibility of the project interventions and landscape level issures. 4 Local and National level media project field trips are planned to be conducted under the component.

Activity 4.3.2 Dissemination of learning and processes at local and national level through workshop and other mediums

Through workshops, symposiums and various other forums, documented processes and best practices will be distributed to all the stakeholders for discussion and replication. It is planned

to have 8 inter community (2 per year), 4 project level (1 per year) and 2 national level workshops (1 per 2 years) during the project period. While the 8 inter community workshops will be to promote cross learning amongst the community members in the project area. The Project level and National level workshops will be organized particularly for the scientific, management and policy making community to share the results of the project as well as processes and best practices relating to increase adaptive capacity to climate change induced issues.

B. *Describe how the programme provides economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme will avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

As per the KPC Management plan 442 villages are settled in and around the KPC. These villages support about 80,000 households with a population of more than 420,000 people, more than 60% of whom are indigenous and share an inextricable relationship with the forests of KPC. Gonds and Baigas are the two main tribes in the region and while Gonds have responded somewhat positively to the developmental programs and initiatives, the Baiga's have not, and have remained engaged to their traditional livelihoods. Baigas are classified as a Particularly Vulnerable tribal group (PVTG) by the Ministry of Tribal Affairs due to the low levels of development indices in this community.

Furthermore, as much as 40% households that inhabit KPC live below the poverty line, 86% households practice agriculture, more than 80% farmers have marginal land holdings, and 74% net sown area is rainfed. Also, about 12.5% households are landless, 4% households are women headed and face challenges to even meet their food security needs throughout the year.

The above details indicate the extent of vulnerabilities that prevail in these communities, and with surrounding forests as a readily available resource, these communities heavily depend upon it. With climate variations setting in these communities face increased crop failures making them increasingly dependent on the limited natural resources including forests thereby exacerbating its degradation. Distress migration, mostly unskilled is also common due to failed local livelihoods and causes widespread social, physical and financial impacts to the households in the area.

The project aims to reduce these vulnerabilities prevalent in the communities by implementing an array of interventions in aspects of capacity building of the community, soil and water development, improved agricultural practices, diversified and alternative livelihoods including vocational skills, poultry, piggery etc. It also aims to reduce dependence in terms of grazing

and fuel wood extraction and overall raise the community's sensitivity towards the surrounding forests and its biodiversity.

The proposed project is expected to benefit the local communities through provision of better ecosystem services for their well-being on a long term basis while developing resilience through climate change adaptation initiatives. It is meant to ensure biodiversity conservation, reduction in dependencies on forestry resources, more opportunities for sustainable livelihoods and in creating a conducive environment for climate change adaptation to contain its adverse impacts.

Furthermore, the project selection process prioritizes those villages that have a large tribal population over the non-tribal populated villages and are particularly vulnerable. The 56 villages identified have 72% of Scheduled tribes or Indigenous people (68%) and Scheduled caste (4%) population, a further village level exercise will be taken up as part of the baseline to prioritize selection of household through a community consultative process, thus the benefit flow to the most vulnerable communities is ensured through the project design itself. It explores institutional processes that facilitate ways of maintaining gender equity in thee villages based on the common objectives and governed by collectively developed rules and regulations. To that extent, the planning, implementing and monitoring of the project remains gender balanced and community driven. The project design ensures the representation of women and vulnerable communities which in turn provides them the opportunity to participate in the decision making process. Collective decision making builds on the ability of the women and vulnerable community to address their concerns in a judicious and equitable manner, thereby, improving their social standing.

To identify the gender issues in the project area, a gender analysis was undertaken as part of the project formulation exercise. Table 2.1 gives details about the changes men and women have seen with regards to various aspects like – equity and livelihoods over a period of 30 years.

Table 2.1 – Change in the roles of men in women over the past 30 years

Sector	Description	Roles			
		Men		**Women**	
		30 Years	**Present**	**30 Years**	**Present**

Equity in terms of decision making and participation		Men had greater decision making power in almost all aspects of agriculture and livestock. They had greater participation and the ultimate say in matters regarding market transactions and agricultural inputs.	The men continue to hold greater decision making power, however are willing to let go of this owing to greater awareness and circumstances that provide a platform for women to act in the absence of men.	Women had some degree of decision making power only in terms of storage of harvest but nothing much in other aspects of agriculture. The responsibility of managing livestock was solely on their shoulders.	Improved participation of women is reflected from their involvement in expressing opinion on agricultural front.; more involvement in selection of agricultural inputs, greater familial responsibilities with men migrating out and improved access to market. However, they still hold low decision making power in terms of market transactions on agriculture and livestock, land ownership, credit facilities.
Agriculture	Land ownership	Men were the sole owners of their lands	Most of the lands are still under their name	No ownership at all	New lands are being bought under their name because of government subsidies.
	Agricultural inputs like Organic Fertilizers, Indigenous seeds etc.	Decision regarding cultivating commercial crops was in their hands. Opinion of women was considered	Decision regarding choice of commercial crops is taken by men. Opinion of women is considered	Decision regarding crops for home consumption was taken by them.	Women are involved in process of selecting agricultural inputs like fertilizers and seeds, but do not hold decision making power.
	Agricultural Operation	60% of agricultural work like tilling, ploughing and sowing of seeds, was done by men.	Owing to increase in migration in search of better livelihood opportunities, participation of men in agricultural work decreased to nearly 40% of what it used to be.	In the past, women were predominantly involved in harvesting and storage of agricultural produce, hence accounting to nearly 40% of agricultural operations.	With men having to migrate in search of better opportunities, women are now shouldered with increased responsibility and involvement in agricultural operations.
	Market Access	The accessibility to markets was restricted owing to greater distance and poor transportation.	Owing to better exposure and transportation facilities, men have started to access markets to a great	Due to poor exposure, women did not access markets.	Women are starting to access markets but hold a lower decision making power in terms of accessing and

			extent.		market transactions.
	Farmer Field Schools (FFs)/ Trainings	FFS were absent and no specific trainings.	Men attend FFS and training to a large extent	FFS were absent and no specific trainings	Women do not participate much in FFS or any other form of trainings.
	Irrigation sources	Absent, hence no involvement	Irrigation equipment was primarily handled by men.	Irrigation was absent in the past	Women were not much involved in irrigation activities.
	Agricultural. Labour	Their wages in the past summed up to 5INR/day	Currently the men are paid Rs. 100/day	In the past, women were paid Rs.3/day. They were paid lesser than men.	Even in the present scenario, women are paid lesser than men
	Credit & Savings Schemes	No schemes were availed; however credit was accessed from money lenders when required.	Acquiring Kisan Credit Card in their names.	No schemes	They were not involved in Kisan Credit Card however availed financial support from SHGs in the form of loans.
	Traditional Knowledge	Had equal knowledge as women.	Knowledge levels going down (No sharing from previous generation)	Had equal knowledge as men.	Knowledge levels show a declining trend as no sharing of knowledge regarding traditional practices from elders
Livestock	Ownership	Equal ownership, But they had greater decision making power.	Equal ownership, But they have greater decision making power.	Equal ownership, But they had greater responsibility in maintaining livestock.	Equal ownership. The responsibility still lies in the hands of women.
	Health Care management	They take livestock to clinics IF in-house treatment does not work.	Their involvement in health care of livestock is minimal as the responsibility shifted to women.	In-house care and responsibility more on women	In-house care and responsibility more on women.
	Fodder management	Men used to take livestock for open grazing, but were not much involved in in-house management.	Owing to a reduction in grazing area, crop residues are the primary sources of fodder. Men are involved in collecting the fodder and getting them home.	Take livestock to grazing lands. Involved in-house feeding of fodder. Greater responsibility.	Reduction in grazing area has accounted to low accessibility to these lands for grazing. Thus are greatly involved in-house feeding of fodder. They possess a greater responsibility of fodder management.

	Shed Management	Men were not greatly involved in shed management	Men continue to remain uninvolved in shed management.	Women had a greater responsibility in terms of cleaning and maintenance	Women continue to hold a greater responsibility of maintenance, however due to a decrease in livestock numbers, their efforts have reduced when compared to their past situation.
	Marketing-Animals	Decision making in their hands	Decision making is still in their hands	Women were not involved in marketing.	Women have slowly started to involve owing to better exposure and transportation
	Marketing-Milk/ Milk Products	Decision making in their hands	Decision making is still in their hands	Women were Involved in marketing at household level only	Involvement of women has increased owing to better exposure.
	Milking	Primarily done by women, hence the involvement of men was very minimal	Men are still not involved in milking activities.	Milking was predominantly done by women	Milking is still done by women to a greater extent.
Forest	NTFP Collection	Equally collected by men and women	The number of men going for NTFP collection has gone down as the job is now managed by the women of the community	Equally collected by men and women	The access and collection of NTFP had reduced due to an increase in animal attacks. Since women are involved in the process of collection, the vulnerability to animal attacks is greater for women when compared to men.
	Market Access	Men were involved in market activities.	Men are involved in market activities.	Not involved.	Women are starting to involve in market transactions owing to better transportation.
	Rights over forest produces	Equally by men and women	Equally by men and women	Equally by men and women	Equally by men and women
Fishery	Seeds	Primarily accessed by men	No access currently	Not accessed	Not accessed
	Market Access	Only accessed by men.	No access currently	Not accessed	Not accessed
	Fishing Nets	Used by men mostly	No access currently	Not accessed	Not accessed

	Private Ponds	Accessed by men mostly	No access currently	Not accessed	Not accessed
Allied Livelihoods	Various non-farm activities	Primarily non-farm activities Carried out by men	It is still carried out by men and they have greater decision making power.	Not involved.	Women support men in their activities, however hold no power of decision making.
	Credit from banks	Not accessed	Not accessed	Not accessed	Not accessed
	Credit from Money lenders	Availed mostly by men.	Men continue to avail credit from money lenders.	Not much availed by them	Women avail credit but to a lesser extent.
	Credit from SHGs	Not accessed	Not accessed	Not accessed	Mostly availed by women.
	Equipment	The men were involved in using almost all the equipment	They continue to use almost all the equipment.	Women were capable of using traditional agricultural equipment.	Owing to the complexity of modern agriculture, women do not possess knowledge regarding the current agricultural equipment.
	Skill sets	Men were involved in activities like masonry, carpentry and so on.	They continue to be involved in activities of carpentry, blacksmith, masonry, etc.	They did not display any skillsets over the past.	They are involved in tailoring and other small units.

The project design will incorporate training and development to be provided to the leaders and members of the community based organization of which the women and vulnerable communities are a part. This is to benefit the community in the project villages in the long run. Sensitization of leaders and members of the community based organisations on gender issues identified in the above exercise will be undertaken which will help in mainstreaming gender issues in the developmental process at the village level. Such institutional processes and approach will facilitate fair participation in village level planning, enable implementation using transparent methods, strengthen and regulate governance of equitable access to resources. The project would also create/revive women self help groups and integrate the women leaders in the capacity building and village planning exercise to ensure gender focused plans and their representation in the village level CBOs. The discussion with the community at different stages would attempt to bring to the fore the role of women, specific challenges faced by them, requirement to develop their adaptive capacities, focus on women headed household and their challenges. Specific drudgery related issues would be discussed in the meetings and addressing these would be factored in the village micro planning exercise.

The dependence of women over natural resources is much more, as natural resources are generally in the domain of common properties and commons serve as safety net for the poor. Forests, water resources not only provide firewood but also contribute significantly to food and nutrition security especially in distress times. Therefore institutional actions promoting judicious use of natural resources will be established to create provisioning for the vulnerable and poorer sections of the society including women. Also, better avenues for the well being of women will be undertaken such as provision of efficient cooking stove, biogas (wherever there is a potential) which reduces exposure to health hazards/ physical risks. The project design also envisages elevating the economic status through various alternative income generating activities to ensure the success of uptake through skill development. All institutional processes will nurture democratic ethos in village governance, thereby facilitating integration of women and vulnerable communities in project design.

***Social Benefits*:** Mobilisation and organization of the community into gender balanced village based institutions to plan, implement and monitor the project activities is one of the major benefits of the project. In the village community based institutions, representation will be given to marginalized groups, which in turn will provide them the opportunity to participate in the decision making process. The leaders and members of the community based organisations will be given training and workshops will be conducted to systemically address and adhere to resolve village issues including community conflicts in an equitable manner, which will benefit the community in the project villages in the long run. As necessary, the community will be motivated and empowered to participate in the community based organisations helping them develop a sense of ownership of their own livelihood enterprises and of village common resources. These platforms would also be used to increase the awareness of the community on their rights and establishment of strong market linkages for their basket of livelihoods. Many women led households find themselves in situations where the men of the family have migrated to nearby towns for work. As a result, they are left highly vulnerable and unequipped to manage the household while working for below subsistence wages to feed their family. Migration further expounds the problem as it leaves the women socially vulnerable to stigmas, discrimination and health hazards. Sensitization of leaders and members of the community based organizations on gender issues will help to mainstream gender in development process at the village level. The village members will also be capacitated for collective forest protection and undertake proposed livelihood interventions for establishing a cohesive relationship between the community and the landscape.

***Economic Benefits*:** Employment in the form of farm and non farm micro-enterprises in tune with the local supply chain will be developed and access to finance through formal village based institutions such as Self Help Groups will be created during the course of the project implementation. A basket of livelihood activities will be developed to mitigate risks arising from crop failure and reduce the community's dependency on natural resources including forests. Restoration of forest cover and biodiversity will help improve the quality of services

that the corridor's ecosystem would provide to all its inhabitants. Significant economic benefits are to arise from the protective function provided by the restored corridor including protection from natural hazards, carbon sinks and preventing soil erosion and degradation. The project will help farmers to improve their cropping intensity, promote optimal utilization of water and ensure an increase in agricultural productivity. The project will foster the entrepreneurial abilities of the local community by establishing strong market and finance linkages. The average daily returns from adapted livelihoods will be approximately 70-100% higher than traditional activities, based on previous RBS FI project experience.

***Environmental Benefits*:** Environmental benefits would include a fostered sense of sensitivity and ownership in the management of natural resources amongst the community members thereby curtailing the unsustainable dependency on forest resources for their livelihoods. Promotion of organic farming and improved agriculture services will reduce soil degradation and increase cropping intensity. Increased awareness on importance of biodiversity conservation will result in sustainable extraction of NTFPs, creation of governance for sustainable harvest of resources and improved biodiversity management. The floral and faunal diversity of the area will also improve. The Tiger - a flagship species will not be subjected to shock and torture while transiting from one protected area to the other. The visible improvement of forest ecosystem habitats will sequester more carbon and act as a carbon sink and thereby play a role in preventing CO2 increase in the atmosphere.

Table: 2.2: Key Benefits of the Project

Benefit Areas	Baseline Scenario	Key Benefits
Social	• Lack of village - based institutional mechanisms to reconcile biodiversity management and climate change impacts on living standards • Lack of leadership qualities and capacities to address village level and landscape level issues. • No participation of marginalized groups in decision making process • Migration to nearby towns for livelihoods causing social and physical impacts to the migrant household • Most vulnerable households do not have access to improved technology	• 56 robust community based village institutions driving village developmental activities and promoting collective action • At least 150 SHGs are revived/ created for enhance women participation and empowerment • 2 (Mid-term and end term) participatory impact monitoring exercises will be conducted by members of the village level CBOs for all the 56 villages promoting transparency and visibility of the interventions under the project to the entire community • Reduction in women drudgery by 20-25% in 1,000 households. • Community mobilized and organized for

		improved natural resource management through community based organizational capacity development • Capacity is built to work collectively for climate change risks and vulnerabilities • Specific training offered for natural resource management and livelihood • Marginalized groups i.e. women and tribal will have representation at CBOs • Participation of marginalized groups in decision making processes is ensured • Awareness and ownership of resource management • Project specifically targets the most vulnerable households
Economic	• Limited access to skills, inputs, markets and technical knowledge about alternative livelihoods options • Limited awareness and lack of specific interventions available for vulnerable groups or women • Limited opportunities now for training in vocational skills • Limited information and means to practice diversified livelihoods • Inadequate financial resource availability • High farm input costs for hybrid seeds, fertilizers	• At least 15-20% rise in gross income of the beneficiary households • Increase in cropping intensity by 50% • Improved livelihoods related decision making in at least 50% households due to improved access to information. • More resilient livelihoods and improved farm productivity per household • Reduction in input cost through improved agricultural practices like SRI and promotion of indigenous seeds and bio-fertilizers. • Rise in income level for most vulnerable households through adoption of sustainable farm and non-farm livelihoods • Basket of livelihoods developed; sustained income ensured through diverse earning sources • Entrepreneurial abilities developed and honed • Finance and market linkages established.
Environment	• Limited awareness and no participation in village development activities • Lack of awareness of climate change and its threat to the forest and their livelihoods	• At least 3,000 hectares of forest area is brought under sustainable management • Reduction in livestock fodder dependency on KPC by at least 3,000 tons.

	• Limited ownership in community led efforts • Unsustainable extraction of NTFPs and other forest resources • Unsustainable farming practices impacting soil and water quality in and around the project villages.	• Reduction in fuel wood dependency on KPC by at least 1,500 tons • Increased awareness on biodiversity conservation and its value • Improved functionality of the corridor ecosystem. • Reduction of unsustainable practices in farming (use of fertilizer) and NTFP collection • Reduced dependency on natural resources • Increased climate resilience • Creation of sustainable carbon sinks through community forest protection.

As may be seen from the above, implementation of the project is not expected to cause any major negative social environmental impact. The indicative impact that might arise due to implementation of proposed project interventions is addressed later under Section III C.

Local communities have been consulted in design of the project and components are in line with the prevalent regulations, policies and standards of National and Sub- National governments. Components proposed under the project have been designed with consideration towards the Social and Environmental Policy of the Adaptation Fund.

C. *Describe or provide an analysis of the cost-effectiveness of the proposed project / programme.*

The project will promote agricultural adaptation mechanisms, including improved and climate resilient agricultural techniques (System of Rice Intensification- SRI, Indigenous crop mix; organic farming); soil moisture enhancing measures through watershed treatment and micro irrigation mechanism like drip irrigation. These interventions will be implemented with the view of decreasing the prevalent agricultural sensitivities and improve crop productivity. In addition to this, alternative livelihoods including vocational skills will be promoted in order to create an alternate coping mechanism for the community. Integrated dairy development, alternative and efficient energy sources and sustainable management of forest resources will also be promoted to make the community resilient against climate change.

All the interventions mentioned above have proven to provide secured results and have demonstrated cost effectiveness in various developmental projects implemented in the region, both by RBS FI implementing partners and other agencies. For e.g. Drip irrigation is being implemented successfully as a technique to improve water efficiency (25%), reduce fertilizers application (25%) and labor involved in irrigation over a period of 8 – 10 years.

Furthermore, a number of studies suggest that SRI in paddy is more cost effective as compared to traditional cultivation method. M.S Swaminathan Research foundation of India has reported a 30% increase in on- farm yield with SRI methods, with a concomitant 18% reduction in the cost of production (MSSRF, 2006). A study conducted in 5 villages of Andhra Pradesh with 30 farmers showed that SRI system is more economical than traditional system by saving seeds (2kg v/s 30kg/ha); reducing the cost of nursery (INR 414 v/s INR 3086/ha); transplanting cost (INR 3,000 v/s INR 6,000); avoiding the use of pesticide, with the profit of INR 20,000-24,000/ha (Jaypalreddy and Sheony 2013). SRI is also one of the interventions strongly recommended in the MPSAPCC as a means to achieve agricultural resilience and is widely promoted by the Agriculture Departments, NGOs and other developmental agencies. Through the project SRI will be promoted with a minimum of 2,000 households which is not only a proven adaptation mechanism but also cost effective against traditional paddy cultivation.

Table 2.3 Cost effectiveness of SRI/ Improved agriculture as a project intervention

Baseline	**If business as usual**	**Results with interventions and cost effectiveness**
Households practice traditional method of Paddy cultivation which is highly water intensive, has high seed and fertilizer requirements; thus higher costs are involved. Farmers are shifting to hybrid seeds which are not resilient to climate change thus vulnerability of a farmer is increasing.	Farmers are tempted to adopt higher yielding hybrid seeds, this not only increases their input costs considerably, and it also reduces their resilience since not only these seeds are prone to fail in event of unforeseen weather changes; they also end up adversely affecting the farm soil. Since paddy is the most important crop for cash and subsistence of the local communities in KPC, these changes can cause adverse impacts as much as pushing these communities into further poverty.	Studies have proved that SRI method is less water intensive, requires less seed and fertilizers and gives out a higher output per unit of land. In projects of RBS FI in Mandla districts, beneficiaries have reported an increase in the yields by 20-100% while reduction in inputs by 30-50%. Furthermore, organic farming interventions like creation of bio-fertilizer and farm- manure will be promoted which will not only reduce cost of inputs; it will also improve long term soil quality. An investment of USD 40-45 per ha is expected for SRI/ other agricultural practices which is expected to bring savings of a minimum of USD 100 per ha in

		cultivation costs.
Alternative livelihoods	No alternative livelihood activities are available to the community. Only income is through agriculture, labour and NTFP income. High dependency on agriculture – which is vulnerable and marred with frequent crop failures (as climate dependent). Other coping mechanisms include income from NTFP or migration. Over extraction of NTFPs – leading to forest degradation Unskilled labour migration – causing adverse social and physical impacts to the migrant with very little income/ asset accumulation.	Under the project it is envisaged that alternate livelihoods will be developed for atleast 2,000 households @ USD 115 per household. Alternative livelihoods that are planned to be promoted include – backyard poultry, piggery, dairy, ecotourism. The budget figures provided are low compared to the prescribed rate of NABARD For e.g. for a poultry enterprise under the POTENTIAL LINKED CREDIT PLAN 2016-17 issued by NABARD for Mandla district for 200 broiler birds is @ USD 700. The poultry promoted under the project will be at backyard level (30-40 birds) and will be established promoting indigenous breed which forages naturally so no feed is required; can survive without a shed – since it has higher agility and immunity thus translating into lesser cost and higher returns since the market rate for an indigenous poultry is higher than a broiler. Similarly, to reduce unskilled migration of labour 500 youths will be provided skill development trainings – these trainings will be provided in National Skills Development Corporation accredited centres @ USD 385 approx. per person.

		This is considerable lower if compared to costs of setting up a training facility.

Improvement in the watershed and promoting micro irrigation mechanisms is seen as an important intervention to make the community and the landscape resilient. Under the vulnerability assessment exercise it was found that even though there has been an increase in the number of water storing/ extracting structures the water levels and availability has gone down in these structures considerably. The project envisages treating around 1,800 ha of area through the watershed activities. It is also planned that 560 farmers will be supported with micro – irrigation mechanisms which are expected to promote vegetable farming and raise farm incomes.

Table 2.4 Cost effectiveness of soil water related interventions

Baseline	**If business as usual**	**Results with interventions and cost effectiveness**
Untreated watersheds, especially in the upper catchment areas identified under Typology A, with higher rates of runoff and soil erosion. Absence of water recharging/ harvesting structures and micro irrigation mechanisms like drip irrigation.	If watershed not treated, runoff and soil erosion will increase especially in the scenario of high intensity rainfall which is becoming noticeable in the region as per the climate risks identified in the vulnerability assessment. Higher runoff and associated erosion can cause serious impoverishment of the land and rendered it unusable for crop production. Existing farm ponds, with high investment cost (US $ 2,000) are designed in a way that leads are designed in a way that leads to high rate of evaporation Presently, surface irrigation from dug wells and farm ponds are	Lower runoff rates leading to higher percolation and improvement in the water levels downstream. Low soil erosion rates leading to improved soil quality due to reduced topsoil and nutrients; loss of organic matter. Overall improvement in the soil's ability to retain water and nutrients leading to improved crop production. Watershed treatment is primarily a labour intensive activity – earthen works e.g. construction of staggered trench etc. are expected to cost around USD 225 per ha. The labour will be provided by the beneficiaries and as much as 90% of the amount invested in developing watershed would go back to the

	practiced, incurring huge loss of water and energy.	community as wages. Small and low cost structures that like well recharge pit that cost around USD 100 per structure against big structures like farm ponds which cost about USD 2,500 will be promoted. The farm ponds constructed under the project will be at the lower side of the fields and the runoff from the higher side of the fields is channelized into the pond. This will help in storing water for agriculture. The cost of construction of farm pond under the project is expected to be US $ 1,250-1300. (Half of government programmes) Micro irrigation will increase the irrigated surface. It will also help in the efficient utilization of the inputs and better nutrient uptake which helps in increasing the productivity by 20-25%. Gravitational drip systems will be used which are more suited to the project beneficiaries and are expected to cost USD 100-120 which is much less compared to other mechanised micro irrigation systems which cost from USD 500 – 2,000.

The project also targets to bring 3,000 hectares of forest land under community conservation through the CBOs which will be created/ revived under the project. The community through a consultative process will create bylaws for protection of village woodlots and create a social fencing on 3,000 ha or 30 sq. km of forest area.

Table 2.5 Cost effectiveness of community conservation as a project intervention

Baseline	If business as usual	Results with interventions and cost effectiveness
Forest protection is by and large responsibility of the forest department only. Protection is done through imposing restrictions/ barriers on entry and extraction. Expenses are incurred on employing forest department staff and building infrastructure to protect forests.	Forest department has to spend a large amount of tax payer's money conserving forests, causing a mix up of goods user and goods owner definition for public goods. It is estimated that in protecting 3,000 hectare of forest land over a period of 4 years the forest department will spend at least INR 12,250,000 or USD 185,000 (Details in **Annexure 5**) Alternatively - a physical fencing on 3,000 ha will cost - INR 50,000 (cost of fencing 1 ha with 5 feet tall chain link + poles on every 5 meters+ other materials + Labour) * 3,000 ha = INR 150,000,000 or USD 2.3 million (1 USD = 65 approx.)	Participation of local communities makes it possible to enforce exclusionary principles and include only those directly dependent on the resource, thereby improving monitoring in a cost effective manner. Measures adopted at a localized level also increase the changes of a sustainable forest protection. While, restrictive protection as imposed by the forest department removes community ownership, results in a disharmonious relationship between the community and forest department and leads to unlawful activities like timber felling and poaching in some instances. Higher participation reduces unsustainable resource extraction which is not possible with a business as usual approach. This community sensitivity approach will spread to forest areas beyond the protected 3,000 ha and will inculcate a practice of sustainable harvesting of resources. * Investment of USD 150,000 is

		expected under this intervention over a period of 4 years.

D. *Describe how the project / programme is consistent with national or sub-national sustainable development strategies including, where appropriate, national or subnational development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist.*

The project aims to build resilience of the KPC and the communities that live in and around it. This is envisaged to be done by implementing an array of interventions that promote development by creating sustainable farm and rural livelihoods on the one hand and improve functionality of the KPC landscape by arresting its degradation to maintain its continuity on the other. The project objectives conform to the current government programs and policies on environmental protection, development of its communities and adaptation towards climate change impacts. The consistency of the project with other relevant ongoing schemes can be understood further in table 2.5.

Table 2.6: Consistency of the Project with relevant Ongoing Government Programs and Missions

S.N.	Central and State Government Policy	Responsible Agency	Project Component consistent with the Policy
1	XII Five Year Plan	Planning Commission Government of India	The following strategies indicated under XII Five Year Plan are aligned with the project objectives and interventions: 1. Increase the forest and tree cover to 33% of the geographical area of the country (Afforestation and Regeneration of degraded Forests) 2. Conservation of the existing forests, wildlife and water resources and survey of various areas for identification of new species (Protection of Forests, Conservation of rivers, Biodiversity Conservation, Conservation of Wetlands, Wildlife Conservation, Conservation of resources in the eco-sensitive zone. 3. Capacity building, training and research in classical and molecular taxonomy) 4. Wildlife conservation, preservation, protection planning, research, education, training and awareness; 5. Networking of Government agencies and institutions- a) Ministry of Environment and Forests and Ministries/Departments of the Government of India b) Ministry of Forests and Environment and All States/ UTs Governments.

			c) Citizens/ Organisations/ Institutions/ NGOs / Universities/ Research Institutions/Industries etc. 6. Strategy on Climate Change and promoting Sustainable Development
2.	National Action Plan on Climate Change (NAPCC) June 2008.	Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India	The Climate Change Division of MoEF&CC is India's nodal agency for climate change cooperation and global negotiations. It is also the nodal unit for coordinating NAPCC The National Action Plan on climate change identifies measures that promote our development objectives while also yielding co-benefits for addressing climate change effectively. It outlines a number of steps to simultaneously advance India's development and climate change-related objectives of adaptation and mitigation. In all 8 National Missions have been launched. The project is aligned mainly with National Mission for Sustainable Agriculture, National Mission for a Green India, National Water Mission as well as National Solar Mission.
3	State Action Plan for Climate Change	Madhya Pradesh State Forest and Environment Ministry	Key Strategies aligned with project objectives and interventions as indicated under Madhya Pradesh issued by SAPCC are given below: 1. Develop Forest Management (Working) Plans based on the different forest types in view of Climate Change 2. Enhance forest conservation, Afforestation (with special emphasis on Compensatory Afforestation) and Reforestation activities through viable models 3. Prioritize soil and water conservation measures as part of SFM practices 4. Reduce over-dependence on forests for energy by alternate energy sources 5. Strengthen forest fire management mechanism throughout the year 6. Create corridors for species migration 7. Support and develop market linkages for forest based livelihood opportunities 8. Impetus to Climate Change relevant research and development 9. Study on impacts of Climate Change on MP forests 10. Create awareness about CC impacts on MP's forest types Key Strategies for Agriculture Sector in Madhya Pradesh SAPCC include the following:

			1. Promote Soil and Water Conservation technologies 2. Promote dry land agriculture and horticulture 3. Plan for cropping systems suitable for each agro-climatic zone 4. Introduce policies for managing climate risks for a sustainable productivity 5. Enhancing dissemination of new and appropriate technologies and strengthening research 6. Creation of Agriculture Information management including information on climate forecast 7. Additional impetus to mechanization and accessibility to markets 8. Creation of rural business hubs for diversification of livelihoods 9. Capacity building of communities on sustainable harvesting, water management, use of fertilisers, sustainable agro-residue management etc. 10. Promotion to Climate Change relevant research and development 11. Capacity building to integrate Climate Change concerns
4	National Forest Policy (1894, 1952 and 1988)	Ministry of Environment and Forests, Govt. India	1. Maintenance of environmental stability through preservation and where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country. 2. Conserving the natural heritage of this country by preserving the remaining natural forests with the vast variety of flora and fauna, which represent the remarkable biological diversity and genetic resources in the country 3. Increasing sustainability of the forests/ tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands. 4. Meeting the requirements of fuel wood, fodder, minor forest produce and small timber for the rural and tribal populations. 5. Increasing the productivity of forests to meet essential national needs. 6. Encouraging efficient utilization of forest produce and maximizing substitution of wood. 7. Creating a massive people's movement with the involvement of women, for achieving these objectives and to minimize pressure on existing forests (National Forest Policy, 1988)
5	National Forestry	Ministry of	1. Sustainability and Sustainable Forest Management

	Action Programme, 1999	Environment and Forests, Govt. of India and State Forest Ministries.	2. Ownership and Functional Classification of Forest Resource Base 3. Measures to Enhance Forest Resource Conservation 4. Forest Resource Expansion through Plantations 5. Enhanced and Integrated Natural Forest Resource Manage 6. Skill Development and Capacity-building 7. Forest Policy and Legislation to Support. Sustainability and 8. Critical Role of Forestry Research and Technology Development
6.	National Wildlife Action Plan (1983 Revised 2002-2016)	Ministry of Environment and Forests, Govt. of India and State Forest Ministries.	1. Strengthening and Enhancing the Protected Area Network 2. Effective Management of Protected Areas 3. Conservation of Wild and Endangered Species and Their Habitats 4. Restoration of Degraded Habitats outside Protected Areas 5. Control of Poaching, Taxidermy and Illegal Trade in Wild Animal and Plant Species 6. Monitoring and Research 7. Human Resource Development and Personnel Planning 8. Ensuring Peoples' Participation in Wildlife Conservation 9. Conservation Awareness and Education 10. Wildlife Tourism 11. Human Wildlife Conflict
8	National Rural Livelihoods Mission	Ministry of Rural Development	The National Rural Livelihoods Mission (NRLM) is, perhaps, the largest poverty reduction initiative, the largest program for women in the world with its goal of reaching nearly 70 million rural households. NRLM will launch in the 12 states that account for 85% of the rural poor households in India. Go will invest US$5.1 billion in NRLM over next seven years including expected allocation for 12th Five - Year Plan. The World Bank is committing US$1 billion through its national rural livelihoods project (NRLP)—its largest single investment in a poverty reduction program. The key results expected of the NRLP and consistent with the project: 1. establishment of a sensitive and effective autonomous implementation structures in participating states to facilitate creation of the rural institutional platform; 2. increased membership of the rural poor in inclusive, community-managed institutions; 3. increase in access to savings, affordable credit and financial services to the rural poor; 4. increased amount of resources and services leveraged by the poor from financial institutions, private sector and public agencies; and

			5. Sustainable increase in productive assets and income from various livelihoods among the rural poor.
	National livestock mission (NLM)	Ministry of Agriculture Department of Animal Husbandry Dairying & Fisheries	The NLM objectives consistent with the project: 1. Sustainable growth and development of livestock sector, including poultry 2. Increasing availability of fodder and feed to substantially reduce the demand – supply gap through measures which include more area coverage under quality fodder seeds, technology promotion, extension, post-harvest management and processing in consonance with diverse agro-climatic condition. 3. Accelerating production of quality fodder and fodder seeds through effective seed production chain (Nucleus-Breeder-Foundation-Certified- Truthfully labelled, etc.) with active involvement of farmers and in collaboration with the dairy / farmers cooperatives, seed corporations, and private sector enterprises. 4. Establishing convergence and synergy among ongoing Plan programmes and stakeholders for sustainable livestock development. 5. Promoting applied research in prioritized areas of concern in animal nutrition and livestock production. 6. Promoting skill based training and dissemination of technologies for reducing cost of production, and improving production of livestock sector 7. Promoting initiatives for conservation and genetic upgradation of indigenous breeds of livestock in collaboration with farmers / farmers' groups / cooperatives, etc. 8. Encouraging formation of groups of farmers and cooperatives / producers' companies of small and marginal farmers / livestock owners. 9. Providing infrastructure and linkage for marketing, processing and value addition, as forward linkage for the farmer's enterprises. 10. Encouraging community participation on sustainable practices related to animal husbandry, involvement of community in breed conservation and creation of resource map for the states.

E. *Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund*

Table 2.7: National Technical Standards Applicable for Project Components, and Monitoring

Component	Technical Standard	Application to the project	Monitoring
Integrated socio - economic assessment and planning	Pradhan Mantri Adarsh Gram Yojna (PMAGY). Baseline Survey of a PMAGY Village – Guideline	Guidelines will help identify areas for data collection - for e.g. demographic, housing details, land holding pattern, social dynamics, banking facilities and other socio economic areas.	Baseline report - to be made available on public domain.
	IPCC technical guidelines for assessing climate change impacts and adaptation – 1994	Guidelines will help in identifying the best suitable methodology for conducting studies on climate change impacts and measures of adaptation	Baseline report - to be made available on public domain
Community mobilization for building adaptive capacities	NRLM Hand Book on Community Capacity Building	Guidelines will help sensitize and mobilize the community members for conservation of forest and adopting sustainable livelihoods PRA techniques as prescribed under the NRLM handbook will ensure safeguards to social impacts during the capacity building phase	Field visit for community interaction, progress reports
	Institutional Framework for Implementing REDD+ in India	Framework would provide guidance on how community institutions are to be created/revived/mobilized in a forested landscape to achieve the conservational and developmental objectives. Role the local institutions especially the panchayats and gram sabha play to promote the project objectives. For example. Local institutions (including Gram sabha) will provide approvals for earth works for soil moisture conservation in the project villages. This will also ensure that all such works are implemented in compliance of the ESMP	Field visit for community interaction, progress reports, forest land under protection
Integrated approach for ecosystem resilience and sustainable livelihoods as a means of	Watershed Guidelines Integrated watershed management program	Guidelines will help implement watershed development activities essential for agriculture and building resilience of the landscape against climate change. Adherence to the guidelines will ensure that structures developed under the	Area treated, increase in cropping intensity verified through field visits, progress reports

adaptation		project are done in a manner which ensures environmental and social safeguards	
	National mission for Sustainable agriculture - Operational Guidelines – 2014. The support of Jabalpur University, Krishi Vikas Kendra promoted by the India Council of Agriculture research would also be used for technical aspects related to crop and animal husbandry.	Sustainable agriculture practices guidelines will help promote agriculture practices best suited to the landscape including crop selection, irrigation practices other agro practices and promotion of organic farming Experts (both presently working and retired) from Jabalpur universities and KVKs will be involved in the trainings and demonstrations that will be promoted under the project. These trainings/demonstrations will be the primary drivers of the agriculture interventions being given under the project.	Adoption of promoted agricultural practices by the community on a sustainable basis, increase in output/decrease in inputs verified by field visit, beneficiary interactions, progress reports
	National Rural Livelihood Mission - Framework for Implementation National Biodiversity Act 2002	This framework would help assessing the implementation arrangements required in a phased manner for the farm and non farm based livelihoods and how they can be diversified for adaptation towards climate change. Adherence to Social/ Environment Assessment and Safeguards and Pro-active Action Plan as provided in the NRLM framework will ensure social and environmental safeguards	Adoption of alternative livelihood skills like poultry, piggery, NTFP processing - change in income - verified by case studies, field visits and progress reports
	Guidelines for convergence of National rural employment guarantee act with integrated watershed management, green India mission and other programs	The project aims to leverage on ongoing government schemes to ensure cost effectiveness and avoid duplication, the framework would help identify the avenues of convergence possible in the landscape	Amount of convergence facilitated under the project, verified by progress reports, field visits and convergence reports.
Knowledge Management	Guidelines on Knowledge Management - International Fund for Agricultural Development	Guidelines will help facilitating the processes by which knowledge on KPC is created, shared and used.	Participation in conferences and progress reports

F. *Describe if there is duplication of project / programme with other funding sources, if any.*

RBS FI has been working in the Satpuda – Maikal Landscape (SML) since 2009 which is the larger landscape with an area of 143,551 sq km within which the proposed project area resides. Majority of these communities are rural (87%) with high dependency on natural resource for their livelihoods. The area is ecologically significant and with 50% of the area under forest, it's a watershed for 2 important rivers of central India and source of other ecosystem services for the communities. The prevalent poverty and the ecological importance have resulted in putting it on higher priority for development spends by Government and non government agencies.

Based on need assessment and stakeholder consultation, RBS FI has implemented several projects. A total of 7 projects (Annexure 1) with budgets of $2.7 million (1 USD = INR 67) have been committed to the region. In the process of selection of villages all the villages where RBS FI has implemented/ is implementing projects is removed to ensure no duplication of project activities.

Also the World Bank and Global Environment Facility have previously funded projects in the region, (Table 2.8).

Table 2.8 Projects supported by World Bank and Global Environment Facility in the SML

Project Name, Duration, Funding and Scope	Key Components	Expected Outcomes	Lessons learned
• **World Bank. 1995. India - Madhya Pradesh Forestry Project.**[53] • 5 years (1995 to 1999) • US $ 58 million equivalent • The main beneficiaries of the project were tribal people and forest fringe villages belonging to the poorest sections of the society. The project incorporated specific measures to safeguard the interest of the landless and the women, through participation in village communities, employment preference and gender sensitive monitoring	Assist the Government of Madhya Pradesh in forestry sector development through: • Management development to improve forestry management by changing the approach of MPFD. • Forest development involving (a) Promotion of natural forest regeneration by enrichment planting and improved silvicultural practices (b) Village resource development programmes based on participatory training • Extension technology and research programmes with specific provisions for infrastructure and facilities • Biodiversity conservation through improved management of 12 high priority protected areas	The project was expected to: • Increase the production of NTFP and animal products directly or indirectly and supply of wood to forest based industries. • Natural regeneration on 1, 60,000 hectares of forest land, ensuring participation of 1140 village communities in forest management. • Establish village resource development programmes and Eco development programmes. • The economic rate of return for the project as a whole, in terms of direct forestry outputs and research component was estimated at 11.5%	The important lessons learned were • A long-term commitment is needed by the Government and the donor agency, to mobilise villagers support to resource conservation. • Flaws in the legal and incentive framework need to be addressed. • The banks involvement in the forest sector needs to be seen in the larger and longer term in context of poverty reduction and its monitoring.
• **GEF- India Eco development Project.** [54]	The project objectives were:	The output consisted of: • Broadening the focus of PA	The lessons learned from the project were

• 5 years (1997 to 2002) • US $ 28 million equivalent • The main beneficiaries were globally important protected area ecosystem and people in and around in these areas. Majority of the beneficiaries were tribal and the vulnerable forest depended communities. The project specifically addressed interest of the landless and the women). One of the project sites were 99 villages situated within a 3 km radius of the Pench Tiger Reserve.	• To improve capacity of PA management to conserve biodiversity and increase opportunities for local participation. • To reduce the negative impacts of the local people on Biodiversity and thereby increase supportive collaboration. • To develop more effective and extensive support for eco development. • To ensure effective management of the project • To prepare future biodiversity projects.	planning and management • Restore ecosystems, improve fire and poaching control and improve staff efficiency • Enabling communities to meet their requirements of PA resources sustainably, • To gain wider public support, to maintain the quality control, accountability and adaptive management mechanism.	• Baselines and benchmarks well established which helped identification of area adjacent to PA boundary for Eco development coverage. • Development of robust micro planning process and appropriate capacity building of PA staff, NGOs, and members of Eco Development Committee (EDCs) • Support of Credible NGO is required for effective implementation. • Establishment of revolving fund for EDCs through micro credits • Enhanced status and empowerment of 'special need groups' due to representation of poor tribes and women in EDC

Besides these, there are many other programmes of the Government of India, Government of Madhya Pradesh and civil society organizations that are operational in the area, but most of them are 'Business as usual' in fulfillment of the government mandate of a particular department or a particular issue. These include projects of the MPFD, NTCA (for Tiger areas), and MP Rural Livelihoods Programme, MNREGA amongst others.

These are ongoing projects and considering the importance of the landscape there would be more projects that would be implemented in the region in the future. On the basis of our experience of working in the region, we have learnt that conflicting projects and complementary projects can be effectively harnessed to achieve the desired impact and thereby avoiding duplicity is through governance, stakeholder involvement and knowledge management. While we will ensure that this proposal would be implemented in villages where RBS FI and the implementing partners are not functioning, it would not be possible to concurrently confirm no development activities have been done in the past. Therefore the following strategies have been incorporated in the proposal that are designed to help manage and reduce any potential duplication and overlaps:

a) Selection Criteria – At the grassroots level, the household level support will flow through the community institution, thus community will decide the priority and need of the support for a particular household and ensure selection of those who lack alterative available to help adapt. Household that has been benefited from other development projects would automatically get eliminated via this selection process. **Furthermore, villages where RBS FI and its implementing partners are already working through other projects have not been considered for this project.**

b) Multilevel governance – Local level governance through community based organization and project level governance through Project implementing and monitoring committee and Project steering committee. Community based organizations would have participation / representation from all homogeneous groups in the village. The project committees that will have representation from the Headquarters of the MPFD, District administration and Line departments, Other civil society organizations, academicians, researchers. Both these platforms will help to integrate / compliment the various ongoing and future projects at the demand and supply level. The community governance which is expected to sustain much beyond the project period will ensure project alignment in the future as well.

c) Knowledge management – Activities under knowledge management are targeted to create synergies amongst various stakeholders and enhance their effectives in the region. Past forums like the Kanha-Pench Landscape Symposium, Steering meetings and consultations (detailed in Section H) have demonstrated interest from various stakeholders on the need for a more comprehensive approach.

G. *If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.*

The primary focus of the project would be to build the adaptive capacity of the community and the landscape; it would also focus on creating stakeholder involvement through knowledge management. The role that each stakeholder plays can add or reduce the threats to the landscape, and other similar landscapes in the country. Thus, it is important to capture the challenges and opportunities to adopt strong adaptive mechanisms towards these threats which include climate change impacts. In view of this, at the inception stage 4 workshops will be organized and stakeholders, both local and others will be invited for brainstorming sessions in order to capture their inputs for creating a strategy for the knowledge management component. Basis this, a knowledge management plan will then be created and accordingly, implementation of the component will be initiated.

It is envisaged that the project will create, develop and design knowledge material, both printable and audio-visual and disseminate it through a series of workshops and local, project and national level for identified critical stakeholders' viz. the local community, forest department, civil society organizations, private establishments, academicians, researchers, journalists and other government line departments.

The local workshops and campaigns will be community centric and will focus on creating and disseminating knowledge material that helps the community increase their resilience by adopting practices in terms of livelihoods, institutions and other sectors like health, energy, education. Knowledge materials such as a module for school staff and students, short films, brochures and pamphlets containing best practices for villagers/farmers in local language will

be designed to be disseminated. These campaigns are also being proposed with the view of encouraging local leaders who want to contribute towards taking conservation action at local level.

On the other hand project level and national level workshops are envisaged to be organized to disseminate project learning, models and processes that build community resilience against climate change and can be replicated in other similar landscapes at a national and an international scenario. Learning from the project will be brought to the attention of state and national level environment and climate change departments through a dialogue planned to be initiated through these workshops. Specific targeting of project analysis and policy information will be derived from early assessments of existing gaps or weaknesses in policy matters. In addition, opportunities for dissemination through regional and international conferences, publications in journals and books, or web-based content will be explored

In view of creating a platform for communicating the vast information planned to be created under the project a website is proposed to be designed to reach out to the general public. The website will host all information collected and created under the project. This will include village socio- economic and environmental profiles, weather data collected at the local level during the project and other knowledge material, models, research studies. It is envisaged that through this website an information resource centre is created for the landscape, its threats (including climate change) and its impacts, solutions to problems and information for the stakeholders that would help them build their adaptive capacities and increase resilience.

H. *Describe the consultative process, including the list of stakeholders consulted, undertaken during project preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.*

RBS FI with its experience of implementing projects listed in **Annexure 1** has taken a lead to adopt a holistic approach of implementation which addresses the threats to the KPC landscape and contributes towards ensuring the long term functionality of the KPC. In this context, it has worked to systemically identify and subsequently consult stakeholders to develop a strong project design ensuring its effective implementation.

The holistic approach which sets the premise of the proposed project makes it essential to engage with stakeholders at different levels of project implementation as the landscape faces competing objectives of conservation, livelihoods of local people, and infrastructure to meet development goals and balancing these objectives so far has presented difficult trade offs. A consultative process is imperative to ensure desired outcomes and sustainability of the project. The stakeholders of the project include local community, community based organizations such as traditional Panchayats, local self-government, grass roots NGOs,

government agencies such as the departments dealing with Forest, Revenue and Agriculture and private establishments.

Over the numerous discussions held with the community for the project formulation and otherwise it is noted that the community has been able to identify the changing temperature, rainfall pattern and change in bio diversity, deforestation as factors that is affecting their livelihood, wellbeing and availability of water. Climate change is an ongoing process and community had traditional knowledge to devise coping mechanism, however with the drastic fluctuations of recent times are too complex for the community to adapt, increasing their vulnerability. Also, the community has been able to identify unprecedented and annually changing wet and dry spells , increase in pest attacks, change and fluctuations (like hail storms) in weather as factors that are affecting the agriculture productivity and forest produce. The stakeholders, both community and otherwise, consulted are of the consensus that climate change is a serious issue and it has to be addressed. The level of understanding of climate change varied basis profiles, experiences and background of the stakeholders. For academics, their studies have helped them decipher and understand climate change in the region, for development and conservation practitioners, they have had infield experience to develop their analysis and understanding of climate change, the policy makers have incorporated the learning's of the academics and the practitioners and educational institutions are incorporating the concept in their curriculum. The communities have always coped with changes and continue to cope but the sustainability of such existing coping strategies remain an issue for them since the projected changes in climate over the coming years are far more severe than any the communities have been accustomed to in the past.

Table: 2.9: Details of Consultative Meetings

Consultation	Date/Place	Participation	Objective	Outcome
Meetings with the community and interactions at the Gram Sabha (locally elected bodies) of the project villages	Date:06.06.15 Place: Village Jogisodha (This is one such meeting in a series of meetings that have been conducted. **(Minutes attached under Annexure 6)**	35 participants including leaders and members of local self-government, SHGs leaders and members, youth, women and indigenous tribes (Baigas, Gonds)	• To understand the intensity of suffering due to various climatic stresses by grassroot level stakeholders • Assess interest and willingness to adopt and co-operate with project activities.	• Documentation of various climatic stresses • Documentation of intensity of threat to livelihoods • Traditional techniques used to combat climate change are not sufficient • Documented interest and willingness to sustain the activities implemented to adapt to Climate Change impact. • Formation of a federation of women SHGs basis a discussion on natural resource management and livelihoods to develop resilience to climate change
	21.11.2015 Village: Atarwani Gram Jhalagundi Block: Kurai	17 community members, representatives from RBS FI &	• To conduct focused group discussions in the village and access the status in	• Climatic stresses being faced by the village and the intensity of threat to livelihoods and community

	District: Seoni **(Minutes attached under Annexure 6)**	WoTR (100% tribal population)	aspects of community composition, their livelihood pattern. • To discuss about issues facing the families and villages at large • Sensitize the community about the proposed project Such discussion were conducted as part of the Vulnerability assessment exercise in 6 villages (2 villages in Seoni, 2 in Balaghat and 2 in Mandla districts) , Minutes of each of the meetings have been attached as Annexure 2 for reference	• Lack of availability of water for agriculture and drinking purpose, invasion of fields with standing crops by wild boar and pigs, lack of rainfall, and hailstorms are a threat to agriculture as also reduction in production of NTFPs • Lack of collective action and decision making and institutions supporting the same • Adverse effect of migration on health of the elderly and education of children
	23.11.2015 Village: Sarekha Panchayat: Sarekha Block: Saraswada District: Balaghat **(Minutes attached under Annexure 2)**	23 community members, representatives from RBS FI & FES (100% tribal population)		• Documentation of various climatic stresses • Documentation of intensity of threat to livelihoods • Lack of availability of water for agriculture and drinking purpose, invasion of fields with standing crops by wild boar and pigs, lack of rainfall, and hailstorms are a threat to agriculture as also reduction in production of NTFPs • Sufficient water in two lakes but not available for use to farmlands. Discussion on creating a water reservoir for irrigation • Lack of collective action and decision making and institutions supporting the same • Sufficient production of milk but not enough demand, linkages • Availability of improved seeds but increased expenditure on fertilizers • 15-20% of the population migrates due to lack of stable source of income
Consultative Stakeholder Workshop on preparation of DPR	Date: 29th October 2015, Place: Pench Tiger reserve and 30.11.2015 Place : Khatia Eco-centre, Kanha Tiger Reserve **(Details attached under Annexure 7)**	25 participants including representatives from NGO's, MPFD and RBS FI	• participation for a project orientation and consultative workshop of all relevant stakeholders who work extensively and have interest in the Central Indian landscape on research, planning and implementation in aspects of community institutions, livelihoods, conservation and climate change. This workshop is	• Inputs provided by the NGO's and development professionals for each of the project component • Discussion on the key activities to be covered under livelihoods was discussed, the outcome of the discussion was that focus on skill development and establishing dairy as a source of income should be given under the project • Building capacity of the community to take collective action should be given focus. Exposure visits and demonstrations should be used to enable

			an important step towards preparing the DPR and streamlining the project interventions and deliverables proposed in the Concept note.	adoption early. • Focus should be given on improving the irrigation mechanisms, the budgeted amount in the concept note is seen to be less and should be increased. Treatment of watershed should be done wherever necessary • Knowledge management activities should be taken up in a localized yet innovative manner through using audio visual content, creating localized versions of existing material available with knowledge management institutions like CEE; conducting plays which encourage people's curiosity and participation.
Project Intent and Initiation Workshop	Date: 11. 01 .13 RBS Foundation Office, Mumbai	8 participants including NGOs, researchers, conservationists and RBS FI	• For RBS FI to present their interest in the KPC • To assimilate interest of other participants in the KPC	• Consensus by all participants on interest and urgency on building the adaptive capacities of all the stakeholders in the landscape from various non-climatic and climatic stresses. • To put together a plan of action on addressing the threats to the KPC and thereby to the livelihoods of the local community.
Experience Sharing Workshop on Sustainable Lifestyles & Livelihoods in the Kanha-Pench Landscape	Date: 30. 01.13 Place : Khatia Eco-centre, Kanha Tiger Reserve	48 participants including Forest Department, NGOs, civil society organizations, academics and education institutions	• To realize and share concerns arising from the many competing objectives of conservation, livelihoods of local people, and infrastructure to meet development goals • To formulate ways of balancing these objectives without presenting managers of the landscape with difficult tradeoffs.	• Knowledge Sharing
Kanha – Pench Landscape Symposium	Date: 16.02.13 to 18.02.13 Place: Tulli Resort, Mocha, Kanha Tiger Reserve	65 participants including Forest Department, NGOs, civil society organizations, academics and education institutions	• To bring together researchers, conservationists and managers working in the K-P Landscape to share their perspectives and findings, • Develop networks for collaborative future work in the region.	• Facilitation of mutual understanding and dialogue between researchers and managers to help deliver science based conservation and better outcomes for both wildlife and people in the landscape

Brief Description of the above meetings is given below:

Consultative Meeting 1: Project intention and initiation

On 11th January, 2013 RBS FI organized a meeting in Mumbai with NGOs, researchers, practitioners and conservationists with experience working in the proposed project area to present their interest in the KPC and in addressing the threats to it due to climate change and anthropogenic pressures; also an impact of climate change. The conveners spoke of the condition of the project area, the importance of restoring it to its full functionality and building the resilience of the local community to adapt to climate change by ensuring sustainable livelihoods for them. The meeting concluded with an understanding of the urgency to build the adaptive capacities of all the stakeholders in the region from various non-climatic and climatic stresses and ensure the sustainable development of the landscape.

Consultative Meeting 2: Experience Sharing Workshop on Sustainable Lifestyles & Livelihoods in the Kanha-Pench Landscape

On 30th January, 2013 a workshop on experience sharing in sustainable lifestyles and livelihoods in the Kanha-Pench landscape was organized at Khatia Eco-centre, Kanha Tiger Reserve. The workshop, chaired by Dr. P.K. Shukla, Principal Chief Conservator of Forests (Wildlife), Bhopal, included technical sessions with relevant presentations, discussions and culminated in formulation of broad strategies and agreement on action points. The workshop was attended by officers/ scientists of MPFD and various non-governmental organizations. The participants discussed with concern the many competing objectives of conservation, livelihoods of local people, and infrastructure to meet development goals and balancing these objectives was presenting managers of the landscape with difficult tradeoffs. Discussions concluded with the reaffirmation that a participatory and holistic approach and facilitating mutual understanding and dialogue between researchers and managers could help deliver science based conservation and better outcomes for both wildlife and people in the landscape.

Consultative Meeting 3: Kanha – Pench Landscape Symposium

From February 16th – 18th 2013, a 3-day symposium brought together researchers, conservationists and managers working in the Kanha-Pench landscape to share their perspectives and findings, and develop networks for collaborative future work in the Kanha-Pench landscape. Participants in the symposium which included RBS FI, MPFD, local NGOS, community representatives and researchers brought to the fore some of the challenges and opportunities in reference to the landscape. The practitioners, beneficiaries and researchers alike focused to exchange ideas and actions directly related to the sustainable management of the Kanha-Pench landscape and its biodiversity. One of the key outcomes of the gathering was to develop a holistic approach to address the challenges to the landscape and strengthen collaboration at various levels to ensure effective implementation. The participants discussed with concern the many competing objectives of conservation, livelihoods of local people, and

infrastructure to meet development goals and that balancing these objectives was presenting managers of the landscape with difficult tradeoffs. Discussions concluded with the reaffirmation that a participatory and holistic approach and facilitating mutual understanding and dialogue between researchers and managers could help deliver science based conservation and better outcomes for both wildlife and people in the landscape.

Consultative Meeting 4– Meeting the Gram Sabha (locally elected bodies) of the project villages

Consultative meetings with locally self elected bodies of the villages were organized. Group discussions were the techniques used in the meetings. In one such meeting held on 21.01.2014 this meeting leaders and members of the traditional Panchayat including leaders and members of local self-government, SHGs leaders and members, youth, women and indigenous tribes participated. Grassroots level stakeholders revealed that they were suffering from various climatic stresses which were a threat to their livelihoods and the major cause of their unsustainable dependencies on forest resources for survival. They shared information on some of the traditional techniques that they have been using to combat climate change; however they were not sufficient. During the meeting, villagers showed keen interest to participate in activities that would ensure protection of biodiversity resources and their livelihoods. The respective elected local self-government presidents informed that they would explore and provide support to sustain the activities even after the eventual completion of the project. The community members, local self-government and the landless community expressed their willingness to participate in the project.

Consultative meeting 5 – Consultative Stakeholder Workshop on preparation of DPR for "Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha Pench Corridor" (Annexure 7)

RBS FI and the MPFD, the co-proponents in its effort to have a holistic approach for preparing the detailed project report hosted a project orientation and consultative workshop of all relevant stakeholders who have worked extensively and have interest in the Central Indian landscape on research, planning and implementation in aspects of community institutions, livelihoods, conservation and climate change. This workshop was considered as an important step towards preparing the DPR and streamlining the project interventions and deliverables proposed in the Concept note. The workshop started with a welcome and an introductory note by the Field Director of Kanha Tiger Reserve Dr J.S. Chouhan. Subsequently the project approach, its design along with the project components and the deliverables under each component were shared with the participants present at the workshop.

The participants were then divided into 3 groups; Group I was assigned Component 2 (Capacity Building), Group II was assigned Component 3 (Livelihoods) and Group III was assigned Component 4 (Knowledge management). The groups were provided with a detailed

description of the activities under their respective component and were requested to brainstorm within their group and provide inputs so as to enable streamlining the activities. This was an all day workshop wherein participants from representatives from civil society organizations like WWF, PRADAN, FES, WOTR, Corbett Foundation, Vrutti Livelihoods, Satpura Foundation participated along with officials from Forest department and representatives from RBS FI. A list of the participants is attached in Annexure 7.

Consultative meeting 6: Meeting with tourist facility operators (Annexure 8)

Stakeholders from the tourism sector have been involved in the consultation process too, their inputs and concerns have been taken into account and will be addressed through the project activities (Annexure 8), the tourism operators will also be invited to the knowledge and awareness workshops that will be conducted as a part of raising awareness for the landscape and its conservational importance. It is important to note that tourism in the project area is under the purview of the MPFD – the co applicant of the project.

A multi stakeholder meeting was organized on 14.12.2015 in Mocha village, Mandla. The meeting participants were primarily locals who are directly/indirectly involved in the tourism sector, resort operators/managers, safari vehicle association representatives. The meeting was convened by the implementing partner Foundation for Ecological Security (FES) with guidance from RBS FI. The meeting began with a presentation of the existing work being done by FES & RBS FI on developing ecotourism sites as a source of livelihood for the local communities. During the meeting, locals were asked to share issues between them and the tourism industry. The existing state of eco-tourism in the area and scope of scaling it up was discussed. There were also discussions on putting together the requirements for local resorts that have to be adhered to in consultation with the local community. Developing sustainable waste delivery mechanism was crucial and the requirements would have to be met with the help of the local community. During the meeting, the villagers brought to the fore issues such as resorts throwing away food in plastic bags which could harm animals, lack of garbage disposal facilities etc. The participants stressed on the creation of new ecotourism sites that would help divert to tourists pressure from the national park and also be a livelihood for the local communities. The participants however voiced their confusion towards access rites to different eco tourism sites and proposed having a middle man, ideally from the JFM committee to facilitate their visit to the sites. Some of the above outcomes as solutions to the issues were discussed at length and the approach to implement them in a collective and concentrated manner was unanimously agreed upon. The same has been considered in streamlining the livelihood activities which will include developing a waste disposal mechanism and developing ecotourism as a livelihood activity for the local community and to divert tourism pressure. Knowledge management tools will be used to sensitize the tourism facility operators and other related participants to support the interventions planned under the project.

I. *Provide justification for funding requested, focusing on the full cost of adaptation reasoning.*

Building adaptive capacities that are effective for communities requires an approach that is able to bring various complementary and conflicting stakeholders onto a common platform. The communities that live in and around KPC are the major stakeholders and while enhancing their adaptive capacity is the core of the project, the project strives to create an enabling ecosystem that promotes responsible participation from other important stakeholders as well. Component wise justification of the project is as below:

Component 1 - Integrated socio - economic and ecological assessment and planning

In the baseline scenario, demographic data is available as per Census, 2011; this includes population details of the indigenous people, land classification and assets available in the village. However, no socio-economic and environmental data is available at the village level. Also, there is no information about the community based institutions and no information on the general/specific issues being faced the villages is available. Village development activities are undertaken in a sporadic manner without any planning and there is an absence of village developmental plans in the project villages.

Furthermore, in the baseline scenario, projects are conceptualized, designed and implemented adopting a top down approach. Adopting such an approach leads to lack of ownership of the community in the proposed interventions and affects the sustainability of interventions.

Adaptation alternative*:* Socio-economic and environmental information at the village level is required to be captured. Discussion with the community members are required to be initiated through tools like Participatory Rural Appraisals so that the issues of the village in terms of livelihoods, gender, education, energy and health are identified. The identification of such issues will help in accessing the specific needs of a village and also help in setting priority of interventions under the project. Furthermore, since the project is being implemented in an area of huge ecological importance and with an inextricable link between the community and the forests, to improve adaptability it is imperative to promote community based conservation of surrounding resources, especially the forests. Thus, spatial data using satellite imagery for 56 villages will be collected at a baseline stage and changes to the same will be analyzed and documented.

Another important output of the component is the creation of village development plans using bottoms up approach that will be used by all 56 villages to plan and implement project activities. This document is envisaged to be the basis for all community led action in the project villages with support from the project team. It is expected to be created after identifying the village level issues through PRA exercises and community consultations and

village community will be encouraged to identify solutions to the these issues, these inputs will be incorporated with the project design and village development plans for implementation.

Component 2 - Community Mobilization for building adaptive capacities

In the baseline situation, the community does not possess the capacity to adapt to climate change impacts. There is lack of robust institutions with good governance that can identify and find solutions to village level issues. Absence of such institutions leads to lack of collective action and awareness which in turn adversely affects the village development activities and the community is deprived of the various provisions available to them through government schemes.

Also, with absence of good governance and collective action it is found that there is an absence of community ownership and responsibility over any progressive intervention being introduced in the village, and that climate change adaptation is not possible in institutional vacuum.

Furthermore, lack of women involvement in the village level institutions often leads to undermining the role they play in village development activities. Women are the most affected by climate change impacts as they are the primary workers in the farms as well as household. Village development activities thus require equitable institutions and active women participation so that gender issues can be identified and addressed. In order to do so, it is important to provide an ecosystem where women can grow in confidence and are subsequently empowered to participate in such institutions.

***Adaptation alternative**:* The project is designed on the premise that adaptation to climate change is not possible in institutional vacuum and community mobilization/capacity building act as the corner stones of the proposed project. The approach of project conceptualization, planning and implementation is envisaged to be community centric and community driven. The project will provide the resources in terms of mobilization, technical assistance and inputs required to create robust institutions with the help of the community. The community would be capacitated systematically through a series of training sessions, exposure visits and meetings at village and cluster levels. The capacity building would be done through the span of the project – starting with the planning exercise, implementation, monitoring, and impact assessment. Community's involvement at all stages of the project is expected to create ownership and therefore responsibility. The cascading impact of this approach in capacity building will be evidenced by enhanced community involvement in other areas of development. The community will be capacitated to identify village level issues and propose solutions to the problems. It is expected that the community will achieve strengthened capacity to identify and prioritize issues, build knowledge and required skills in the long run.

Empowering women is expected to go a long way in creating climate resilience. Gender focused trainings and mobilization workshops are required to provide the women folk with opportunities to build their confidence and subsequently participate actively in the existing institutions as well as the new institutions that will be created under the project if required. Women based institutions that encourage savings and enable a credit linkage will be promoted and are expected to help build resilience of the community through provision of readily available and community controlled funds which can be used in instances of exigencies.

Component 3 - Integrated approaches for Ecosystem resilience and sustainable livelihoods as a means for adaptation

In the baseline scenario, forest resources for the community are a coping mechanism. The need to cope arises during economic stress occurring at times of livelihood failures like agriculture and livestock. Such failures are expected to rise with climatic change setting in and if such livelihood practices continue it is expected to cause more widespread economic stress periods for the community. Increase in economic stress will further make the community resort to increased extraction of forest resources to cope which can lead to irreversible degradation and fragmentation of the KPC. Distress migration of unskilled labor is also used a coping mechanism which leads to many social and physical impacts to the households in the area as the migration results in minimal wealth accumulation but extremely high vulnerabilities for the migrant.

Also due to low education levels, awareness and appropriate information these communities do not possess the capacity and skills to adopt climate resilient agriculture techniques, decision making is usually influenced by individuals/ enterprises with vested interest. Farmers end up getting lured towards high yielding hybrid crop varieties which require heavy inputs in terms of fertilizers and pesticides; thus are not as profitable as they seem and are not climate resilient at the same time for e.g. the private agriculture input suppliers in the region misguide the farmer to deploy high quantities of fertilizers for higher profitability.

Information, resources and skills about other market driven alternate livelihoods/ vocations is also lacking, which leads to the community missing out on diversified employment opportunities, educated youth are particularly affected as most end up pursuing traditional professions which entail high competition and due to their low exposure levels find it difficult to get employment. Furthermore, women face extreme drudgery as they are the primary contributor to the farm as well as the household level activities which include collecting fuel wood and fodder, fetching drinking water. These conditions make the women extremely vulnerable to climate change impacts and there is an immediate need to address the drudgery issues, particularly by addressing the prevalent energy access issues.

Adaptation Alternative: To deal with the prevalent livelihood related vulnerabilities it is imperative to focus on improvement and diversification of livelihoods and related infrastructure in KPC. It is required to i) to promote ecologically neutral and climate resilient crops and practices and build relevant capacities both in terms of assets and human resources ii) to diversify livelihoods through promotion of alternative livelihoods like poultry, piggery, dairy, ecotourism and market driven vocational skills as additional income sources so as to divert pressure from forests related incomes; iii) promote alternative (renewable) fuel for cooking and lighting; and efficient cooking mechanisms to reduce drudgery conditions in the women as well as the pressure on the surrounding forests.

Under the proposed project livelihood planning would be carried out at the village / cluster level and will be based on the learning from integrated assessment and capacity building phase. A livelihood strategy that will focus on ensuring food security, enhancing income earning opportunities and promoting sustainable harvest of forest and other natural resources would be implemented. Improved and resilient agricultural practices like SRI and organic farming which require optimum input supply yet are sustainable in nature will be promoted. Technology like the agromet stations which provide informed agricultural advisories at a local level would be introduced.

While interventions like these are expected to address the main livelihood activities in the region, diversification of livelihoods through promotion of alternatives like poultry, dairy, ecotourism etc are expected to create new opportunities for the community to generate cash income. Vocational skill training would also be provided to the community so they can earn higher incomes during migratory periods. Specific focus would be given to livestock management as a means for livelihood for the community i.e. convert from a non productive asset to productive assets. Furthermore, in order to address the energy access and drudgery issues biogas plants, efficient cooking stoves and solar lanterns will be promoted using an entrepreneurship model. The broader plan is to make available a basket of options for the community to have sustained income over a period of time and thereby achieve resilience in the long run.

Component 4 - Knowledge management for improved understanding on Climate change impacts on the landscape and enhanced involvement of stakeholders

At the base line scenario, extremely low education levels combined with shallow information outreach have created a lack of awareness on climate resilient agricultural practices for the farmer. Decision making of a farmer is influenced by unsustainable profit driven interests which prevent adoption of climate resilient and ecologically neutral agricultural practices. Furthermore, while the agricultural department is creating, developing and disseminating such information on improved farming techniques, in absence of proper platforms (robust

community institutions), sporadic outreach programs and complementary resource availability, the farmers are not able to adopt any of these proposed practices.

It is noted that community learns the best from fellow community members however; there are no cross learning platforms/ activities that are available to the community in the landscape to learn and adopt improved agriculture and alternative livelihood practices.

In the context of building long term climate change resilience, it is felt that youth/children are the most important stakeholders. While these children/ youth are going to school and getting educated on government approved modules, there is very little exposure available to them in terms of life skills, prospective professions they can pursue, and importance of conserving biodiversity in the local context. There is no platform/ medium which can provide such exposures to the children/ youth in the project villages.

Furthermore, there are several functional stakeholders in the area besides the community viz. Forest Department, Revenue Department, Civil Society organizations, Academic institutions, Researchers, and Business establishments. These stakeholders have varying degree of stake, dependence and contribution to the region which affects it in both negative and positive aspects. As the stakeholders have different objectives they work mostly in isolation with each other, and in doing so end up adding on to the stress to the community and to the landscape. For long term resilience of the landscape it is imperative that these stakeholders are sensitized about the importance of the landscape and required resilience building against climate change but there is no platform available that can bring these stakeholders on a common platform and share models, learning and best practices.

***Adaptation Alternative*:** There is a need to build knowledge of the community in terms of best agriculture and livelihood practices that can enhance their income earning sources and yet are sustainable in nature given the prevalent landscape and climate change related dynamics. It is also important to create and spread awareness on the role a community based institution plays in building resilience in the backdrop of climate change. In order to do this there is a need to create, develop and disseminate information that is relevant in the local context, is community centric and simple. It is felt that information created in an audio-visual form is required considering low education levels and affinity of the community towards adopt practices that have been tried and successfully implemented by their fellow community members with continued benefits. Through the knowledge management component information will be created, collected, developed and disseminated considering the above points so as to promote maximum adoption of improved livelihoods by enhancing awareness levels at the local level. The knowledge created will be a combination of printable and audio-visual material and regular village level workshops will be conducted to disseminate this material. Also, there will be inter-community exposure visits that would be organized that

would help the community with fellow community members and discuss practices, models and success stories amongst each other.

Similar interventions on knowledge management will be introduced for the youth/ children of the village on getting exposure to life skills, climate change related topics in association with local schools. Furthermore, for other stakeholders, the project proposes to bring all the stakeholders onto a common platform to engage, involve and evolve their involvement in the landscape. It is felt that raising awareness levels of these stakeholders, especially those involved in developmental activities will increase their sensitivity towards the landscape, the larger implications of isolated activities and actions and ultimately promote landscape friendly practices and activities. Such practices are also in line with modern-day best principles of forest management, tourist management in ecologically sensitive zones, and sustainability. This would be carried out through project level and national level consultation and dissemination workshops. Research studies, best practices, knowledge products that are stakeholder specific –would be produced and disseminated. The scientific research would be shared at policy level through National level workshops. Concurrent documentation of project activities and impacts would be shared locally and using a website with stakeholders as ways to improve overall knowledge about the landscape, build popular support and promote better common understanding of KPC management.

J. *Describe how the sustainability of the project/programme outcomes has been taken into account when designing the project / programme.*

The design of the proposed project has been finalized after a series of consultations with the community and other stakeholders including civil society organizations, government department officials and private businesses. These consultations, particularly the ones with the community provided the broad issues required to be addressed in the long run if resilience against climate change is to be enhanced in the project villages. Sustainability of the proposed project interventions thus was given major focus during this process.

The project strategy is to adopt a community centric approach to development and resilience building; this is planned by giving focus on creating robust community based institutions. The consultative process initiated with the community during project formulation will continue post project initiation and a village level development plan will be created. These plans will be the foundation for implementing project interventions at the village level. The project design focuses heavily on a bottom up approach in which community is expected to drive and own the village development plans, and project interventions, during and post project implementation. In order to build community's capacity to do so, provisions have been made in the project component 2, and through trainings and exposure visits it is envisaged that leaders will come out at a village level from this exercise and act as stimulus to the village development and resilience building activities in the future. Also, these CBOs through robust

governance are expected to motivate and enable the fellow community to participate in activities like protection of surrounding natural resources, maintaining watershed structures (private and shared), and continuing with the livelihood activities initiated under the project.

Also, in order to effectively operationalize sustainability, the project aims to adopt a holistic approach which moves beyond giving focus to just one aspect like institutions and strives to take a number of other dimensions of sustainability into account. Consideration of each is critical, due to the fact that they will not only reflect different outcomes, but they will also be given focus at different stages of the project cycle. The project in order to ensure project sustainability considers the below essential elements.

Table 2.10 Sustainability under various project activities

Project Activity	Sustainability Element
Community based institutions	• By ensuring that the village level institutions are capacitated in a phased manner and by keeping them motivated by provision of inputs at a participant level initially to incentivize participation. • By identifying and capacitating leadership during the course of project implementation • Creation of byelaws at institution level • By creating a group of trained local youth (paraworkers) on institutionalization (including PRA, conflict resolution, collective action, village level planning) • By creating a revolving fund mechanism (monetary/ resource) • By merging the institutions with the gram sabha if possible
Community conservation of natural resource	• By creation of byelaws and monitoring mechanism. • By incentivizing such activities by linking it to livelihoods (for e.g. ecotourism) • By forming a conducive relationship with a forest department and institutions
Watershed development (community level)	• By ensuring the watershed development activities on common property in the village is owned by the village level

	institutions right from inception. • Ensure that byelaws created in the institution incorporate regular maintenance of these structures. • By empowering the community to reach out to government agencies for undertaking new watershed activities/ maintaining the ones created under the project. • By creating a group of trained local youth (paraworkers) on watershed activities who can guide the institutions. (fee based model)
Livelihoods	• By creation of robust backward and forward market linkages at the local level. • By implementing market driven livelihood activities (alternative/vocational) which are in compliance to the local cultural sentiments. • By routing all livelihood activities through the village institutions. • By promoting entrepreneurship model for livelihood activities at the local level which creates an organic model of growth at the village/cluster level.
Knowledge management	• By creating a group of trained local youth (paraworkers) on spreading awareness on livelihood practices, government schemes and financial linkages that can be utilized. (fee based model)

The major sustainability in securing their livelihoods through facilitating access to inputs, technical assistance and markets (from linkages created under the project and also the ones available through government schemes). This will ensure that outcomes created under the project continue in a sustainable manner. Participation in these CBOs is also expected to lead to an increased sensitivity amongst the community members with regards to their rights and schemes that are available to them.

The project will aim at creating a conducive ecosystem that enables sustainability of the proposed project intervention. However, it will also require an ongoing commitment from

various government schemes and programmes, especially the schemes owned by the (Agriculture Department) to enable upkeep of impacted areas and services. Dialogue has been held with the Government, and will continue throughout the project life to ensure these ongoing support /services reach out to the project villages. Furthermore, a key element in sustainable project outcomes is a design based on a holistic consideration of livelihood systems, needs and opportunities. Narrow, sector-focused interventions can be a risk to sustainability in various ways. For example, in the project area, gains made in income from agriculture by a household can easily be lost due to a livestock depredation. Similarly, improved economic status can be comprised by shocks – natural or manmade – that deplete or destroy household and community assets. In short, if households and communities face further exposure in the face of natural, social or economic shocks, project impacts can be lost quickly.

To support the community post exit and ensure that continuous support from agricultural extension and other line departments continues, a cadre of village resource persons (paraworkers) will be trained who will work for the community on fee basis post project exit and will facilitate line departments' scheme for the community and manage the existing services/interventions implemented during project period. The village resource persons will play an integral role in the project, especially post exit as departments like agriculture extension tend to work in silos and need a driving force from the community representative so as to ensure continuous support.

For wider acceptance, knowledge created and developed will be will be put up and shared through the website which will be updated and maintained on a regular basis. These will ensure that the project outcomes continue to be realized, not meet a dead end and are replicable in other landscapes with similar dynamics once the project proponents withdraw from the area after completion of the project.

Table 2.11 Sustainability under various elements through the project

Sustainability Element	Project activity
Institutional sustainability	Creation of functional community based organizations will be done through fostering participatory approaches, remaining flexible in the face of inevitable setbacks, and strengthening the capacity of the community to plan and manage future actions.
Household and community resilience	The project through its capacity building, livelihoods and knowledge management components strives to make its beneficiaries resilient at a household and a community level. Resilient communities are readily able to anticipate and adapt to change through clear decision-making processes, collaboration, and management of resources internal and external to the

	community.
Environmental sustainability	Through promoting conservation of surrounding natural resources, reduced dependency on fuelwood and fodder the project will strive to create an environmentally sustainable system by maintain a stable resource base, avoid overexploitation of renewable resources and preserve biodiversity.
Structural change	Structural dimensions of poverty will be addressed through the empowerment of poor and marginalized rural households through the project activities like creating value chains, functional marketing linkages, improved watersheds which are long term assets for the marginalized households will be taken up as part of the project activities and promote sustainability.

K. *Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.*

Table 2.12: Checklist of Environmental and Social Impacts and Risks

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts risks – further assessment and management required for compliance
Compliance with the law	• The project complies with Forest Conservation Act, 1980, Environment (Protection) Act, 1986, Wildlife (Protection) Act, 1972, Madhya Pradesh Land Revenue Code 1959 (for ownership of land), Madhya Pradesh Panchayat Raj and Gram Swaraj Act 1993 (local governance) and other administrative orders of sub-national government.	None
Access and Equity	• The project will provide fair and equitable access to the project beneficiaries and will facilitate access to robust institutions, sustainable livelihoods, efficient energy and knowledge. • The access and equity issues are envisaged to be mitigated through promoting gender neutral institutions. These institutions will promote participation of indigenous people, women and other marginalized groups that are in the village (more than 68% population is indigenous by project design). • While every household/ individual under the project area will have equal opportunity/ access to project interventions, priority setting will be done by the village institutions and interventions will be promoted using the village developmental plans and wealth ranking of households.	Low
Marginalized and Vulnerable Groups	• Very low risks are predicted in this category since most of the project villages are homogenous in nature and as much as 68% belong to indigenous tribes. Thus these risks are mitigated through project design	Low to medium

	itself. • The project will provide resilience building opportunities for indigenous people including women residing in the proposed project area. They will be encouraged to participate in the decision making process for development schemes as well as to enhance their livelihood and incomes and as such will not have any adverse impact on other marginalized and vulnerable groups. • While efforts will be made to bring the entire marginalized and vulnerable households in the mainstream economy some marginalized and vulnerable individuals / households may not have any means/ assets/ skills to enable them adopt the project activities. Also, in case of heterogeneous villages (very few) the stronger communities will try to get access to more benefits and suppress support flow to the marginalized and vulnerable households and thus low – medium risks are predicted.	
Human Rights	• The project empowers the communities to exercise their human rights and systemically educates and empowers them to use it to their benefit and development. The project does not foresee any violation of human rights.	None
Gender Equity and Women Empowerment	• The project activities will be planned, implemented and monitored by community based institutions and a fair and equitable gender representation will be ensured in these CBOs. Efforts will be made to ensure equal participation of women in interventions and decision making too. • During the consultative process and project formulation exercise a gender analysis has been conducted which have provided specific areas to address. These have been incorporated in the design interventions and are expected to empower the women beneficiaries. Activities like creation/revival of SHGs, exposure visits are designed to empower women and activities like provision of bio-gas, efficient stoves and solar lanterns are specifically designed to reduce drudgery pressures on the women. Women drudgery will also reduce with enhanced availability of fodder and enable them to provide time to undertake women focused livelihood activities which will be promoted under the project. • Capacity building and skill development training for sustainable livelihood generation will be provided to the women of the village communities as well. This will ensure participation by women fully and equitably, and that they do not suffer adverse effects.	None to low
Core Labour Rights	• Payments to labour under the project area will be made as per Government approved norms duly following minimum wage rate and hence ensuring core labour rights. While full control on non violation of Labour rights will be exercised when labour is being paid using project funds the same cannot be ensured when government schemes are being leveraged and the payment is to be made under a government scheme.	None
Indigenous Peoples	• Tribal and indigenous peoples have been identified in the project area as vulnerable groups in the project area. About 68% of the population is	Low

	indigenous and thus are the key beneficiaries to activities of reducing unsustainable dependencies on forests and to provide sustainable livelihoods and building resilience against climate change. • In some villages with heterogeneous community, indigenous people participation can be suppressed by a higher caste stronger community and thus the low risk rating to this category	
Involuntary Resettlement	• Resettlement of communities does not fall within the purview of the project. Forest department carries out resettlements under the provisions of the Wildlife (Protection) Act 1972 and it is completely voluntary.	None
Protection of Natural Habitats	• Integrated within the project design is the protection of natural habitats; in this case project area itself i.e. the KPC by enhancing the adaptive capacities of all its stakeholders and ensuring the effective functionality of the services it provides. • The project will address the threats of fragmentation through community based protection measures. Community related threats will be addressed by creating governance around extraction of forest resources and through promotion of alternative livelihoods. Conservation of these forest areas will ultimately lead into creation of resilient ecosystems since they would have lesser extraction pressures as these pressure is being diverted by creating other income sources and coping mechanisms. • Natural habitats may be affected by other developmental activities approved by the government. Like in this case sanction of a new road cutting through KPC can lead to clearing of forests and destroy natural habitats but no risks to natural habitat is envisaged through the project.	None
Conservation of Biological Diversity	• Integrated within the project design are activities that ensure that the flora and fauna within the project area is conserved by reducing the unsustainable dependency of the communities on the forest resources and thereby further reducing man-animal conflict and ensuring biodiversity conservation. • Crop mixes that are not prone to raiding by wild herbivores will be promoted that will be a step towards building a harmonious relationship between the project community and the wildlife in the region	None
Climate Change	• The project supports enhancing the adaptive capacity of the local community and the KPC against adverse impacts of climate change. • Increase in carbon sinks which is a co benefit is also expected to be achieved through project interventions and thus is not expected to contribute to GHG emissions. • No project interventions are expected to contribute to release of gases responsible for CC	None
Pollution Prevention and Resource Efficiency	• Project is not expected to generate any environmental pollution and aims for higher resource efficiency for better management of available natural resources. • Low risks are identified in terms of causing pollution to a pristine forest/ecotourism site while promoting ecotourism initiatives and will be	Low

	addressed through incorporating in the environmental and social risk mitigation.	
Public Health	• No adverse impact on public health related issues is envisaged.	None
Physical and Cultural Heritage	• No adverse impact on cultural heritage related issues has been identified. Under the livelihood component ecotourism sites will be identified in the KPC to divert tourists to other places to improve the income earning potential of the village community. Mitigation of tourism impacts on these sites will be given due consideration.	None
Lands and Soil Conservation, Water Supply	• Restoration activities are envisaged to help in land and soil conservation and will not create any damage to land and soil resources. • Provision of water supply through rehabilitation of natural micro watersheds, etc., will similarly not create any damage to the environment. • Implementation of development of watershed/application of efficient irrigation mechanisms will be done through a participatory process which will include recommendations from technical experts as well as of the community members involved.	Low

Although most of the environmental and social risks principles have **none to low** ratings arising from the project interventions, as the activities are being implemented with a approach of promoting environmental, social and economic resilience for the project beneficiaries, low risks are identified in the below principles, and the project is classified as **category B** project.

- Access and Equity
- Marginalized and Vulnerable Groups
- Gender Equity and Women Empowerment
- Indigenous Peoples
- Pollution Prevention and Resource Efficiency
- Lands and Soil Conservation, Water Supply

As indicated earlier, the project districts are predominantly inhabited by Scheduled Tribes. The implementation of the project is expected to provide benefits to these communities. As such no adverse impact is envisaged to the people belonging to Scheduled Tribes or any other marginalized groups in the project area. However, the project will identify and ensure that various risks likely to arise during project implementation are identified and necessary mitigation mechanisms are built in.

In view of the project being categorized as a category B project, an Environmental & Social Management Plan (ESMP) is proposed and given in the **Annexure 9**.

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for programme implementation

The project will be guided by a 2 tier governing and implementing framework. The tier I of the framework will comprise of the "Project Steering Committee (PSC)" which will be chaired by the Principal Chief Conservator of Forests (Wildlife) MPFD, and co- chaired by the Head, RBS FI. Other members of the PSC will include:

1. Field Director of the Kanha Tiger Reserve
2. Field Director of the Pench Tiger Reserve
3. Representative of the Chief General Manger, NABARD, Madhya Pradesh
4. Chief Conservator of Forests of the Mandla, Balaghat and Seoni Districts
5. Regional General Manager of the Forest Development Corporation
6. Chief Functionary/ representatives of Implementing NGO partners
7. Representation from Farmer welfare and Agriculture Department, Govt. of M.P
8. Representation from New and Renewable Energy department, Govt. of M.P

The PSC will meet every 6 months and its functions will be as below:

1. Approve annual plans as per the Detailed Project Report approved by the Adaptation Fund Board.
2. Provide supervision and direction for the implementation of the project
3. Review the progress of the project and monitor performance including effectiveness of ESI screening and ESMP implementation.
4. Provide requisite convergence, coordination/ facilitation to the implementing partners and provide support to the implementation team with solutions for challenges faced on field.
5. Approve the framework to be used in capacity building and knowledge management programs.
6. Provide any need based guidance required on need basis.

The tier II of the framework will comprise the "Project Implementation and Monitoring committee (PIMC)"; the committee will be co-chaired by Field Directors of Kanha and Pench tiger reserves (or their representatives, Deputy Directors). The secretariat of the PIMC will be RBS FI. The PIMC will guide and ensure implementation of the project as per the agreed deliverables and will meet every quarter to review and monitor the project activities. The PIMC will also provide technical support to the implementing partners on need basis.

Other members of the PIMC will include:

1. Project Coordinator - RBS FI
2. Deputy Director of Kanha Tiger Reserve
3. Deputy Director of the Pench Tiger Reserve
4. Divisional Managers of the Lamta, Barghat and Mohgaon Project
5. DFOs of South Seoni, North Balaghat, South Balaghat and West Mandla Divisions
6. District Development Manager - NABARD of Balaghat, Mandla and Seoni
7. Project Manager – Implementing NGO's

8. Representatives – Line Department
9. Village Leaders

Project Implementation at the Organizational level

- The project implementation will be executed by RBS FI and MPFD in partnership with two implementing partners' viz. Foundation for Ecological Security (FES); and Water Organization Trust (WOTR) – More information about the partners provided as **Annexure 10**.
- The project components i.e. Baseline, Capacity Building, Livelihoods and Knowledge management will be implemented by the two project implementing partners i.e. FES & WOTR.
- FES will implement the project in 32 villages situated in the Mandla and Balaghat Districts and WOTR will implement the project in 16 villages situated in the Seoni district. (Both FES and WOTR have implemented/ are implementing projects in partnership with RBS FI)
- RBS FI will assign a Project Coordinator who will also be the member secretary in the PIMC, and will work closely with the implementing partners, FES and WOTR to ensure that the project implementation and monitoring milestones are met.
- The implementing partners will assign Project Managers.
- FES and WOTR will employ a team of cluster coordinators and field executives who will be primarily responsible for implementing the project components. The field assistants will act as an important interface between the local youths (paraworkers) and the cluster coordinators and project managers.
- The field executives will ensure that these paraworkers are trained and capacitated to implement the project components in partnership with the local community.

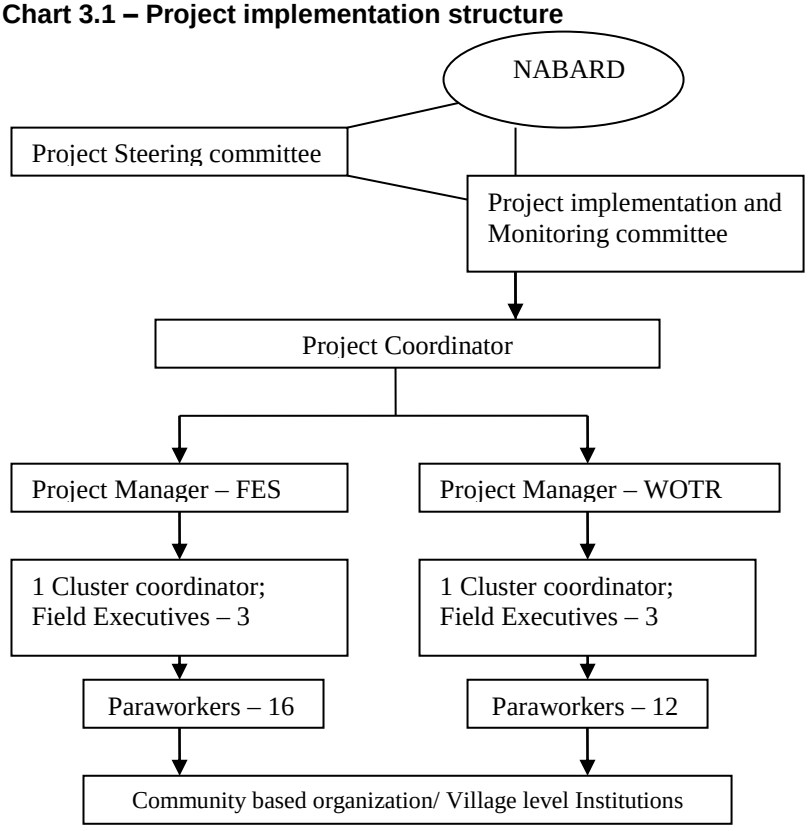
Table 3.1 Job Descriptions for Implementing Partners

Project Managers	Field Executives/ Cluster coordinators	Para workers
• Provide Guidance, training and capacity building to Field Executives/ cluster coordinators • Play a lead role in working with CBOs in preparation of village development plans, and monitoring. • Provide guidance to Field Executives/Cluster coordinators on community mobilization	• Community mobilization: Orientation of the project activities • Conducting participatory rural appraisals in the project villages • Establish Village level community based organizations and organize regular meetings with the community • Assist Project manager in Village level activities	• Assist the Field Executives in mobilizing the community, • Organize village level meetings, • Provide capacity building and technical trainings at the household level. • Coordinate on field activities such as providing input support to the beneficiaries, and provide household level technical support on

and village development plan implementation. • Analyze and report on field data collated by Field executives/ Cluster coordinators on a quarterly and need basis. • Monitoring of project activities basis the village level plans prepared and periodic milestones. • Liaison with the relevant stakeholders • Prepare quarterly progress reports for submission to Project Coordinator	like preparation of micro plans and its implementation. • Provide capacity building and technical trainings to para workers for Household level extension • Collect and collate on field data and report to project manager. • Cluster coordinators will support the field executives in project implementation and will ve based in the project offices, they will also be responsible for monitoring the field executives	farm/non farm livelihoods. • Collect household level data and report to the field executive on a weekly basis.

The below structure is proposed for the implementation at an organizational level

Chart 3.1 – Project implementation structure



Agreements between RBS FI and the implementing partners

Agreements will be signed between RBS FI and the implementing partners (FES and WOTR) to implement the project **"Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha-Pench Corridor of Madhya Pradesh"**. The agreement will be for the entire project duration i.e. 4 years and will state the scope, budgets, obligations of the implementing partners, also said description will contain, amongst other things, the start and completion date of the project, a description of the various phases thereof, the objectives/milestones that are to be reached and reported during each phase and the timelines related thereto, and will be set out in a yearly project schedule substantially in the form of the specimen. This yearly annexure will be prepared each year basis the approved plan and achievements of the implementing partners against the set milestones.

Role of RBS FI

RBS FI along with the MPFD as the executing entity will be responsible for execution of the project as per the approved proposal at the field level ensuring social inclusion including participation of vulnerable groups and women, gender mainstreaming, partnership with local agencies including district level government departments, local self-government, NGOs and CBOs and execute proposed building of adaptive capacities in the communities, their livelihoods and the ecological security of the Kanha Pench landscape.

RBS FI will also be the secretariat for the PIMC and will undertake key administrative and operational functions, including:

1. Development of annual work plans in consultation with the MPFD and implementing partners;
2. Financial management (sending out fund requests and receipt of funds from NIE and disbursement to implementing partners)
3. Management, supervision, monitoring and evaluation of project activities in close coordination of the implementing partners;
4. Reporting to the NIE (e.g., preparation of periodic technical and audited financial reports and annual implementation reports; half yearly ESI and ESMP compliance and impact monitoring report)
5. Assigning external consultants wherever necessary to undertake planned project activities/ assessments.
6. Ensuring compliance with NIE procedures for governance and program implementation.

Role of MPFD (Wildlife wing)

The MPFD as co-proponent and EE are responsible for providing the overall guidance and supervision for the implementation of the project and provide requisite convergence, coordination/ facilitation to the implementing partners and as a wing of the sovereign state ensure compliance with national and local regulations. They are also responsible to provide implementation support to RBS FI and the other implementing partners in terms of providing

access to locations, infrastructure and resources on need basis. The forest department (office of the Principal Chief Conservator of Forests – Wildlife) will be the secretariat of the PSC and will be responsible for managing and ensuring that PSC meetings are held as per the agreed timelines so as to ensure timely execution of the PSC roles and responsibilities.

Funds Flow arrangement

- At the project level, RBS FI will prepare Annual Work plan in consultation with the implementing partners and present it to the PSC for their ratification and PIMC for reference.
- Once PSC provides consent for the annual work plan fund release requests will be placed with NABARD for release of funds.
- Post receipt of funds by RBS FI, the funds will be disbursed to the implementing partner quarterly who will further implement project activities as per the approved plan.
- Utilization reports will be prepared and submitted to NABARD. The utilization certificate will include the amount extended to the implementing partners and its utilization viz. a viz. the budget heads on a quarterly basis.
- The implementing partners will maintain all the records like bills, vouchers and cash book relating to the expenditure incurred.
- All the expenditure incurred under the project will be audited by internal auditors and the Project Proponents and NIE will be responsible for ensuring proper utilization of funds in the project.

Project Implementation structure at Village level

At the village level, project planning, implementation and monitoring will be done with the participation of a gender balanced community based organization (CBO). The CBO in each village will be constituted in a democratic process ensuring the representation of the community members is done in an equitable manner. Village level plans will then be prepared with a consultative and participatory approach which will be the guiding document for project activities. The major purpose to establish these institutions is

1. to provide a platform to participate in planning project interventions, implementing and monitoring
2. to provide space for women and marginalized communities to participate in decision making
3. to create ownership of all project activities implemented in the village and ensure sustainability post project completion.

Each CBO is expected to have a President, a secretary and a treasurer who will have the joint responsibility to initiate preparation of village level development plans and overlook its implementation and monitoring at the village level. This structure can vary depending on the existing institutions working in the village and comfort of the community. Cluster level village leaders will be selected to be community representatives at the PIMC.

B. Describe the measures for financial and project / programme risk management

Table 3.2 Planned mitigation measures to be adopted for the risks identified

Identified risks	Perceived level of risks	Planned mitigation measure
Failure in Community Mobilization to undertake the activities of building adaptive capacities of the community residing in the landscape.	Low	• The community will be mobilized in a phased manner; confidence of the community will be gained through entry point activities; and their trust through a transparent and participatory village level planning exercise. • Furthermore, exposure visits to similar ongoing and successful interventions in the landscape will be conducted which will help the community get insight on improved and adaptive livelihoods and its benefits to create a demonstration effect amongst them. • Local youth will be trained and employed as community mobilizers (paraworkers), and since the community will be familiar with these local youths it will help negate the risks associated with mobilization.
Not all necessary stakeholders may take part in the process with the capacity and commitment required. Afterwards, there can be resistance from some stakeholders in adopting the proper measures	Moderate	• The project has been designed by adopting a participatory approach with all the major stakeholders including Line Departments, CSOs, Tourism operators and most importantly the community contributing to it. • To build upon the project design and continue having stakeholders on board regular orientation; awareness sessions and meetings will be organized to mitigate risks arising from lack of stakeholder commitment.

		• All important stakeholders will be invited to be members of the two tier structure proposed under the implementation design i.e. the Project Steering Committee and the Project Implementation and Monitoring committee. This will ensure transparency and build inter stakeholders relationship to work towards the project objective collectively.
Slow progress of the intervention implementation due to climatic unfavourable factors and accessibility	Low	• Work-plan based on the suitability of season for certain activities for earthworks, agriculture would be prepared and monitored accordingly. • Accessibility will be an issue in certain villages especially during the monsoons, work prioritization will be done basis the village accessibility to negate these risks.
Extreme weather events during the project lifetime undermine confidence of local communities in adaptation measures promoted by the project	Low	• The project implementation team at grass roots level and the Community Based Organisations (CBOs) will be sensitized on how weather events can impact the project interventions especially farm related, also one of the project activities is installation of agromet stations which provide regular weather forecasting will act as early warning system for the community in the project area. This will enable basic preparedness planning and will help negate the risks arising from extreme weather everts.
Limited capacity/expertise of partner organisations to deliver project outputs	Low	• Project implementing partners have been selected basis their past work in the landscape and their expertise on implementing adaptive livelihoods while promoting natural resource

		management. To negate the risks of limited capacity and expertise for other project outputs, cross learning between the implementing partners will be done and external agencies will be used to achieve the same wherever required. • The project has a strong capacity building and training component. The project will carry out capacity assessments of community institutions during the inception phase and incorporate capacity building where necessary.
Failure to create ownership of the project at the local level	Moderate	• The project formulation has been done by bringing all the key stakeholders on the same platform by conducting a consultative workshop. In the consultative workshop all relevant stakeholders gave their inputs on all the four project components and agreed to the project objectives/targets. • The project will also ensure that all the stakeholders play a constructive role in the project at the local level and are involved in implementation through participation in the project implementing and monitoring committee. • Creation of community ownership will be done in a phased manner through a participatory and transparent approach to create governance and ownership at the community level and build in sustainability to project interventions.
Financial mismanagement	Low	• Regular tracking and monitoring of the expenses will be undertaken at the field level. Financial reports will

		be generated quarterly; will undergo internal audit checks and will be put up for review in the PSC and PIMC. Also, annual audits will be conducted through an external agency on a financial year basis. • The financial plans will be presented for ratification to the Project steering committee, and for reference to the PIMC. Regular reporting of the fund status will be done during quarterly and half yearly meetings. • Separate ledger books will be maintained for the same and will be in accordance with the approved budget heads. The account books will be designed and maintained in a manner which will ensure that the all expenses booked under the project are made in accordance to the approved plan, have an audit trail and are maintained in a transparent manner. • An internal system of financial monitoring will be established to examine proper use of the fund and an external auditor will be appointed every year for auditing the accounts and the audited report will be sent to NIE.

NIE's role in financial and project risk management is given below:

NABARD as part of structured / periodic monitoring would take-up the scrutiny of books of accounts as well as scrutiny of audit and accounting systems of the project fund at executing entity level. Release of fund would be based on the scrutiny of accounts and utilization of funds, progress of implementation and action plan submitted by the EE.

Risk parameters identified would be specifically monitored during the field visits as well through reporting mechanism by EE to NABARD. Monitoring objectives will also include identification of project bottlenecks and risks as early as possible to address them.

NABARD has a Regional Office at the state capital, Bhopal and also has posted an officer, called the District Development Manager (DDM the project district. NABARD has trained manpower at Regional Office level for implementation of CC adaptation projects. The DDMs are also members of the PIMC proposed under the implementation structure.

NABARD officials/teams at district and state level would be involved in project guidance, steering, monitoring, auditing, co-ordination with State, District officials for resolving any bottlenecks in project implementation

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund

The Environmental and Social Policy of the Adaptation Fund is consistent with Indian environmental and social policies and laws, in aspects which ensure that project interventions/activities do not cause environmental or social harm. The objective of the project is to implement activities that increase the resilience of the most marginalized and vulnerable communities, and the landscape they reside in i) by enhancing/diversifying their livelihoods source while reducing their dependence on forest resources, ii) by building functional and robust community institutions for collective decision making and iii) by promoting community protection of surrounding forests to improve their functionality maintaining a healthy ecosystem base to act as a natural buffer to the impacts of climate variability and climate change.

The focus of the project lies in creating a conducive environment that on one had improves the resilience of the local community through developing their ability to take informed and collective actions, and enhancing their income through development/diversification of livelihoods on the other. It adopts an integrated approach to landscape level conservation that promotes sustainable forest management and gives forests the opportunity to adapt to climate variation thereby improving their long term functionality and ensuring improved and sustainable benefits to the biodiversity and local community. By adopting this approach, the project aims to work in 56 villages having 7,609 households and settled in and around degraded/ weak link areas of the KPC.

It is worth mentioning that RBS FI (executing entity) has implemented/ is implementing ongoing projects (**Annexure 1**) in the landscape with FES and WoTR (Implementing partners) adopting a similar integrated approach since year 2008 and in experience has not faced or anticipates that the proposed project activities would result in causing any adverse environmental or social impacts. However, should any adverse social or environmental impact occurs, it is likely to be restricted at a village level, be small in scale, and reversible. As indicated earlier under section 2.K there are certain risks identified under the below

environmental and social principles of the adaptation fund and the project is thus classified as a **category B** project.

- Access and Equity
- Marginalized and Vulnerable Groups
- Gender Equity and Women Empowerment
- Indigenous Peoples
- Pollution Prevention and Resource Efficiency
- Lands and Soil Conservation, Water Supply

However, the implementation mechanism is designed to take care of social and environmental risks as per the AFB's Policy. The principles of the environmental and social policy of the adaptation fund have been included in each of the project activities. All project activities will be screened for risks by the implementing partners at the village level, and will focus on addressing the risks detection of environmental and / or social risks. If such risks are detected, plans will be made to address or mitigate for the specific risk.

Table 3.3 Measures adopted for Environmental and Social Risks

Environmental and social principles	Risks/Impacts identified	Possible measures to avoid, minimize, or mitigate environmental and social risks
Compliance with the law	• Non compliance with the laws and other administrative orders of national and state government.	• The project is in compliance with major domestic environmental law / policies / rules like (1) National Forest Policy-1988, (2) The Environment (Protection) Act, 1986 and Rules, 1986, (3) The Forest (Conservation) Act, 1980 and Rules, 1981. Further the project activities are in compliance with state specific Panchayat Raj and Gram Swaraj Act (local governance); land tenancy laws and other administrative orders of State Government. • All the village level plans will be prepared and submitted to Gram Sabha approval to ensure compliance. Village level plan scrutinizing by the Gram sabha and PIMC will ensure compliance. • Relevant permission and sanctions will be taken in accordance to the act/laws from the relevant line departments if necessary so as to ensure compliance.

Access and Equity	• Biasness in allocating project benefits • Lack of interest to participate in project activities	• By design, the project has selected a region where 72% of population belongs to Scheduled Tribes/ Scheduled Caste. This in itself is a mitigation measure. • Furthermore, a village level profile will be generated under Component 1 of the project. Through PRAs and village profiling, a wealth ranking will be done which will assist in identifying the households towards which project activities support should be prioritized. • Village institutions and individuals will be sensitized towards the approach of prioritizing project support to most vulnerable households while ensuring benefits trickle down to all the village households through one of the project activities. This will mitigate any conflicts that might arise within the village due to focusing on the most vulnerable households. • Allocation of project benefits will flow from the village development plan and decisions taken in the CBOs. Both the micro plans and CBO functioning will be monitored closely by the PIMC.
Marginalized and Vulnerable Groups	• Exclusion of marginalized groups from project benefits	• Exclusion of marginalized groups is seen as a low risk item since 72% of the population in the selected project villages is scheduled caste/ scheduled tribes. Thus, the project's design in itself is a mitigation measure. • The village profiling done under Component 1 will help identify marginal and vulnerable groups like Tribal/indigenous Groups, Women headed households etc. • The profiling will also help in assessing the skill sets, capacities of the marginalized groups and help the project team plan and implement household specific interventions. • To avoid social exclusion of marginalized communities, orientation /sensitization will be initiated at a village level to ensure equal participation and ensure no social impacts fall

		on the marginalized and vulnerable group.

Human Rights		• The project will respect and promote all fundamental human rights as per the constitution of India, including but not limited to:
		  • Right to equality
		  • Right to freedom
		  • Right against exploitation
		  • Cultural and educational rights
		• All the developmental activities being undertaken in a project village will flow through the village development plan. The plans and CBO meetings will be closely monitored by the PIMC and will ensure no human rights violation happens.
		• The project anticipates no violation of human rights through the project activities, and on the other hand will strive to empower the local community to be aware of and exercise their human rights so as to use it systemically for their benefit and wellbeing.

Gender Equity and Women Empowerment	• Inequitable representation of women in the village planning activities • Lack of confidence in women folk to participate in project activities	• Capacity building for women will be given focus to ensure that women are confident to participate in the project activities. Women SHGs will be created/ revived and will be mobilized to participate and contribute in the village planning. • To ensure equitable participation of women in the CBOs a minimum requirement of 30% women members will be applicable. No village micro plan will be prepared/ submitted for approval unless this criterion is satisfied in the village institution. • Gender focus activities will also include creating awareness in the community at large to acknowledge women for their contribution as an income generating individual in the household to create their value in the community and promote equitable

		participation of women in the project activities. • Fair and equitable selection of beneficiaries will be done for capacity building and training sessions. A list of all the participants will be maintained and gender ratio will be monitored by the PIMC on a quarterly basis.
Core Labour Rights	• Delay in wage payments • Non adherence to minimum wage • Child labour • Labour hours	• Compliance to labour rights will be ensured in all the project activities. The main component under which labour will be involved will be watershed improvement, wherein community members will provide the labour. All of the labour involved will be on daily wages. The wages will be determined on task allotted and the wage rate will be calculated on the basis of prevailing minimum wage rate for the task. The record of work done for each labour engaged will have to be maintained and the wages paid accordingly. The hours of work and the timing of the working hours will be determined in consultation with the labour and the prevailing practices in the area • Compliance will be ensured by making advance payments for the physical work as per the village micro plan submitted by the CBO to the implementing partner. This will ensure that timely payments are issued for the labour charges by the CBO for the work done. • Positive discrimination in favour of women may be used to provide fair and equal opportunity to women who seek employment as labour and gain from the wages earned by her. All forms of negative discrimination in respect of employment and occupation would be eliminated. Project should not engage child labour in any of its activities and all forms of forced or compulsory labour may be eliminated. • CBO will maintain registers for labour payments and same would be verified with respect to payments as per the schedule of

		rates, work quantity by the EE. It would also be monitoring parameter during monitoring by PIMC and NABARD. • Name, designation and number of the concerned official of EE to whom the labour and employment related grievances can be addressed shall be displayed in the project area.
Indigenous Peoples	• Activities that are inconsistent with the tribal groups culture and practices	• The project will not contravene the rights of indigenous people. • The indigenous communities will form the majority of the beneficiaries through the project activities. As much as 70% of the beneficiaries are expected to be indigenous. • The project activities planned to be implemented will be finalized through a participatory process and will ensure that indigenous communities are consulted before finalizing and implementing any project activity. • Consultations have already been undertaken in villages with 100% indigenous population, wherein their buy-in was taken to undertake the project activities in the village. Similar consultative process will be initiated in other project villages.
Pollution Prevention and Resource Efficiency	• Polluting of the ecotourism sites developed under the project by the tourists visiting • Treatment of non biodegradable	• Capacity building of the tourist operators will be done to instruct tourists not to litter when they visit the eco tourism sites developed. Sign boards will be put up at the ecotourism place requesting tourist to keep the site clean and pristine. • CBOs will be capacitated/ byelaws will be made to impose fines on tourists operators who fail to prevent tourist littering and causing harm to the pristine environment. • Community will be mobilized with the effect of littering/burning of non biodegradable materials like polythene bags and other plastic material.

	material like polythene bags of saplings, micro irrigation material etc.	• Field staff will ensure that while supplying inputs to project beneficiaries non biodegradable material is collected and stored at a place till collected by the waste collector for recycling. • Community will be sensitized for disposal of plastic pipes used in the case of micro irrigation and will be guided to a local recycling plant.

Over and above the mitigation measures, the PSC, PIMC and the project implementation teams will be sensitized on these aspects and PSC would specifically review issues related to social and environmental risk during its periodic meetings. The PIMC shall be responsible for identifying specific risks that may arise during implementation based on the monitoring of project and built in mitigation and reporting mechanism for the same. Also, social audit would be put in place that would also help in mitigation of some of risk enlisted under Environmental and Social Policy of the Fund.

Due to the project objective and design it is important to note that with mitigation measures extending into project intervention implementation, the executing entity will ensure that environmental and social risks, if any will be adequately and timely addressed through a management plan or changes in project design. The existing system of annual project performance reports and the mid-term and terminal evaluation reports will be designed to track any required environmental and social risk management plan or changes in project design.

In order to ensure that the implementing partners are fully aware of their responsibilities with regards to provision of the Environmental & Social Policy of Adaptation Fund, RBS FI will orient the partners on the guidelines, systems and procedures related to the environmental and social policy including the **grievance redressal mechanism**.

The project aims to adopt a bottom up approach, thus the project interventions will be implemented post undertaking a consultative process with the community. This is expected to ensure prevention of grievances that might arise from the project activities. However, If at all, there are any grievances, the below redressal mechanism is proposed:

- Grievance redressal mechanism would be shared with the community during the project inception workshop and subsequent meetings with the community.
- As part of the grievance redressal mechanism, the contact details of the project partners - Cluster Coordinator/ Project Manager would be made available to stakeholders including project beneficiaries and the community. Contact numbers

would be displayed at common or predominant places along–with the project details. This is expected to promote social auditing of project implementation.

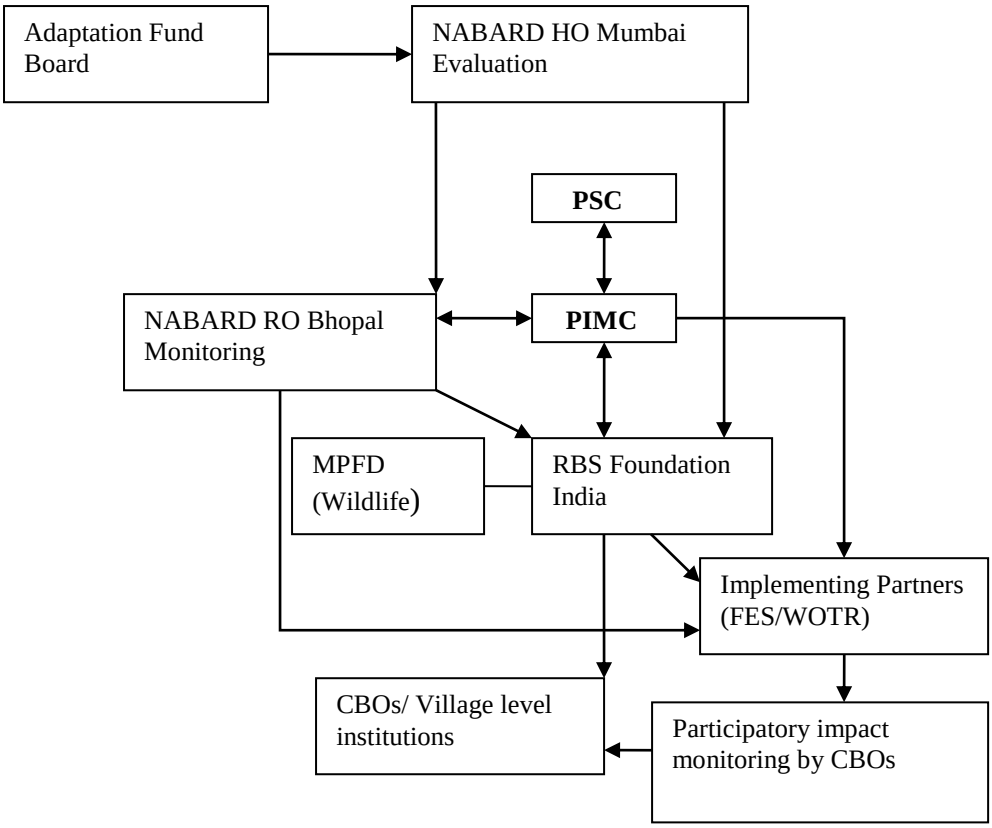
- The grievance mechanism will be available to the entire village community. However, the functionality of the mechanism rests with the community considering that the project including the grievance mechanism is envisaged to be a bottom up approach.
- Grievances are aimed to be addressed at the field level by the project team which will be the first level of redressal mechanism. If the grievance is not resolved at the field level, it will be escalated to the PIMC and then to the PMC who will be responsible for addressing grievances related to violation of any of the provisions of Environmental and Social Policy of the Adaptation Fund.
- All grievances received and action taken on them will be put up before the PIMC and PMC meetings and will also be included in the progress reports to the NIE for reporting and monitoring purposes.

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

The benchmark for the monitoring will be based upon the baseline that will be completed as part of Component – I. A monitoring and evaluation system will be established basis the project results framework, and will clearly state the data collection, collation and analysis plans for monitoring qualitative and quantitative indicators. The system will also include the intervals at which the data will be collected and analyzed to track progress made through the project interventions at various levels i.e. household, village and landscape.

The project will follow a multi-level monitoring structure that will be followed to review the implementation of the planned interventions, their efficiency and effectiveness. Monitoring of the project is proposed to be established at each level of implementation starting from the CBO wherein the members of the community and field associates will carry out a participatory impact monitoring exercise. Village/ cluster level monitoring of activities will be jointly carried out by the Project Managers and Project Coordinator. The implementing partners will in turn be jointly monitored by the PIMC. Project Coordinator will be responsible for presenting the project progress reports to the PIMC at every meeting, also, participation of community representatives will be ensured in these meetings to encourage and ensure a transparent monitoring cycle. The PSC will be the highest level of monitoring entity and will guide the PIMC to help achieve the project objectives post review of the interventions at the landscape level. NIE will monitor the project independently with assistance from Project Coordinator of RBS FI and Project Managers of the Implementing partners.

Chart 3.2 – Monitoring and Reporting Structure



Inception and annual workshop

A project inception workshop will be held within the first two months of project implementation to

- introduce the project team
- orientate key stakeholders on the objectives and results framework
- provide an update on the project start up activities
- agree roles and responsibilities of each institution
- provide an overview of reporting, monitoring and evaluation requirements
- present the financial reporting procedures and arrangements for audits
- plan and schedule PIMC and PSC meetings

The inception report will cover the proceedings of the Inception workshops and have details about overall work plan and budget for the four year period. The Inception report will also have details about arrangements that have been finalized during the workshop, namely, monitoring frameworks, indicators and their means of verification, responsibility for tracking specific risks and implementing risk management strategies. The Inception Report will be submitted within one month of holding the workshop.

a) Progress Monitoring will follow a quarterly cycle. Quarterly progress will be prepared and shared in the PIMC. The progress reports will contain information on achievements

against plan and the financial status under various budget heads. These reports will provide an update on progress on the delivery of outputs, a quarterly expenditure report and a work plan for the next quarter.

b) In case of variation, decisions to improve the performance will be made in the quarterly PIMC meetings by analyzing the results. Monitoring reports will be prepared based on the analyses and will incorporate the challenges and internal and external difficulties encountered during implementation of activities and in monitoring process.
c) Every quarter the risks will be monitored and reported and the action taken for managing each risk will be reviewed at the PIMC level. The exercise will also include identification of new risks and allocation of responsibility for managing it.
d) In addition to this half yearly progress and financial reports will be prepared and describe progress on implementation as well as lesson learning, a risk update and management and an ongoing assessment of sustainability and acceptance of project interventions by the stakeholders particularly the beneficiaries. The bi-annual progress reports will be submitted to the PSC for regular review and action.
e) Audited financial reports will be prepared and submitted

A Midterm review with both internal and external evaluators will be conducted and an impact evaluation will be done after the project period as the nature of interventions demands a long period to realize its fullest impact. A comprehensive external Mid-Term Evaluation will be conducted mid-way through project implementation. The evaluation will review progress against milestones and assess progress made towards the delivery of outputs and achievement of objectives as well as identify corrective actions if needed. It will focus on the effectiveness of delivery, timelines and efficiency of implementation, and risk management. It will present the initial lessons of project design, implementation and management. The findings will be used to enhance implementation during the final half of the project's term.

A Final Evaluation will be conducted 3 months before project closure and will focus on the impact and sustainability of project results. The report will summarize the results achieved (objectives, outcomes, outputs), lessons learned, and make recommendations on any actions needed to ensure sustainability, replicability and scaling up. Results and lessons learned from the project will be periodically disseminated within and beyond the project intervention zone using a variety of media (briefing notes, website as well as through existing information sharing networks and forums).

Reporting Mechanism

- The implementing partners (FES and WOTR) will collect the data, analyze and provide information to the Project Coordinator, who basis the information from the implementing partners will prepare a quarterly progress and financial report, which

will be presented and reviewed in the PIMC meeting. The PIMC approved report will be submitted to NABARD.

- Half yearly monitoring report will be prepared and submitted to the PSC by the PIMC along with a status report on the project performance and finances.
- Annual progress and performance report
- Annual Audited financial statement
- NABARD would update the progress of implementation to AFB as per the instruction of Fund Board and sanction terms and conditions.

The budget for Monitoring and Evaluation is given below:

Activity	Responsible Parties	Budget USD	Frequency
Inception Workshops	Project Coordinator Project Team	USD 1,950	Within two months of the project start
Performance Monitoring	Project Managers Project Coordinator PIMC	Inbuilt in project execution budget	Quarterly and Half yearly
Efficiency Reporting	Project coordinator PIMC	Inbuilt in project execution budget	Half yearly
Project Completion Report	Project Managers Project Coordinator PIMC	Inbuilt in project execution budget	End of Project
Audits	External Auditor	Inbuilt in project execution budget	Yearly
Mid term assessment	External consultant	USD 8,923	After completion of 2 years
End term assessment	External consultant	USD 8,923	3 months before project completion

E. *Include a results framework for the project proposal, including milestones, targets and indicators.*

Table 3.4: Project Report Framework

Outcome / Output	Indicator	Baseline Situation	Target	Source of Verification	Risks and Assumptions
Component 1 : Integrated socio - economic - ecological planning and assessment					
Outcome 1: Improved understanding of prevalent dynamics and changes in area of interventions	• Number of village level meetings conducted • % of village households represented in meetings • Number of men and women participants • Number of village development plans prepared	• Only demographic data is available for these 56 villages (Census, 2011) • No socio-economic and environmental data is available at the village level. • No information about village institutions is available • No village development plans are available and development activities are undertaken in a sporadic manner	• One report with 56 project village level profiles will be created; these will include the socio economic and environmental profile of the village. • 56 Village development plans will be created through adopting a participatory rural appraisal approach. • Village level wealth ranking will be done to prioritize beneficiaries	• Baseline report with 56 village level socio-economic and environmental profiles • Village development plans	Risks: • All participants are not covered since the tools used are focused group discussions and participatory rural appraisals. Assumption: • FGDs and PRAs will provide all the issues to be addressed at the village level.
Output 1.1: Socio economic baseline report with village level detailed analysis in the project villages	• Number of village level meetings conducted • % of village households represented in meetings • Number of men and women participants	• No information about the prevalent issues in the villages. • No broad wealth ranking available at village level.	• 1 comprehensive baseline document including socio economic and environmental profile of the 56 villages. • Relevant Information available to the project team to prioritize, plan and implement project activities at the village level • Development activities are implemented in the village using a plan created through a consultative approach	• 56 Village development plans • Socio Economic information about the 56 project villages	Risks: • If Households participating in the FGDs and PRA exercises is not an ideal number (only members of few household are present), it can give a misleading data Assumptions: • Series of meetings and discussions

			in order to achieve long term resilience.		with village community will bring out the correct information to create the baseline and village plans.
Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS.	• Area/villages covered with Satellite imagery • Number of villages with mapping of natural resources	• No satellite level data available for project villages • No mapping of natural resources for the 56 villages is available at the baseline level	• Comprehensive set of maps that outline the natural resources in the 56 project villages at baseline. • Annual change assessments to measure changes to the village woodlots/ surrounding forests.	• Environmental profiling of the 56 project villages	Risks • Stakeholders are capacitated to understand the exercise importance and undertake non biased monitoring.
Component 2 : Community mobilization for building adaptive capacities					
Outcome 2: Enhanced capability of the community to take collective action, practice adaptive livelihoods and conservation	• Regular meetings, trainings and exposure visits attended by institution members • % of women participants in village meetings/ trainings • % of participants involved in the decision making process • Amount of convergence achieved with existing government schemes • Forest Area brought under community management/ protection. • Number of village conflicts addressed by the institution	• Lack of robust village level institutions with good governance • Lack of collective action and awareness towards village development and conservation • Limited or no participation of women in the decision making process	• Robust and gender neutral village level community based institutions in 56 project villages. • Enhanced awareness levels and collective action ability towards village development and conservation activities.	• Minutes of the meetings • Details of trainings / exposure visits conducted for the community members • Community register at the village level created and maintained by the members of the institution • Progress reports • Field visits and • Interaction with the community	Risks : • All households may not be covered in participating in the capacity building program • Women participation may not be active due to the social fabric preventing them to contribute Assumption: • Communities see value in having robust institutions and collective decision

					making mechanisms proposed for improving their capacity
Output 2.1: Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	• Number of meetings / trainings conducted for formation and strengthening of CBOs • Number of men and women participants in the workshops/ training sessions • % of participants with respect to total village population • Number of self-help groups active with average savings and active inter- loaning • Number of women covered through gender based trainings/exposure visits.	• Lack of robust institutions, collective action due to conflicts, defunct institutions • Over extraction of forest resources leading to degradation • Lack of cohesiveness in the community, low participation of women in the decision making process • Lack of confidence in women • No internal saving mechanism which can meet emergency requirements is available with the village community	• Monthly meetings of village CBOs conducted for 56 villages for 4 years • 112 trainings and 56 exposure visits on capacity building are provided to selected members of 56 village level CBOs. • At least 3,000 hectares of forest area is brought under sustainable management • At least 150 SHGs are revived/ created and 4 trainings per year are provided to women SHG members • 56 exposure visits are provided to selected women SHGs members • At least 50% of the village households actively participate in planning and implementing village development plans. • At least 30% women participants in village CBOs • At least 1,500 women are mobilized into active SHGs	• Village development plans • Minutes of the meetings • CBO registers • SHG books • Progress reports • Field visits and • Interaction with the community	<u>Risks</u>: • Community willingness and ability to participate. • Ongoing community conflicts. • Lack of Community participation in the institutions created/ revived • Lack of women, indigenous people representation in CBOs • Political influence

Output 2.2: Participatory Impact monitoring	• Number of village level CBOs undertaking participatory impact monitoring • Number of participants • % of participants with respect to total village population • Enhanced skill in monitoring and evaluating of existing and other village projects	• Sporadic implementation of development activities in the project village with no monitoring or performance measurement • No long term village development plans and no involvement of the village community in monitoring performance	• 112 (Midterm and end term) participatory impact monitoring exercises conducted by members of the village level CBOs for all the 56 villages	• Village development plans • Village level participatory impact monitoring report for mid-term and end term • Progress reports • Field visits and • Interaction with the community	Risks • Diversion from the village development plan, non achievement of targets/ milestones
Component 3 : Integrated approaches for ecosystem resilience and sustainable livelihoods as a means for adaptation					
Outcome 3: Improved adaptive capacity of the community and landscape	• % of households having capacity, access to inputs and mechanisms to implement sustainable and adaptive livelihood techniques. • % increase in gross income of households • % increase in cropping intensity • % decrease in women drudgery • % reduction in forest resource dependence of beneficiary households	• Practice of traditional livelihoods with high vulnerability to climatic variations and with high forest dependence. • Forest resources are the coping mechanism for community during period of economic stress caused due to livelihood failures • Low education levels and information outreach • Lack of informed decision making; Decision making influenced by individuals/ enterprises with vested interest. • Information, resources and skills about other market driven alternate livelihoods/ vocations is lacking, leading the community missing out on diversified employment opportunities • Women face extreme	• At least 75% households in 56 villages have access to and practice at least one of improve agricultural/ livestock/ energy efficient/ alternative livelihoods/ vocational skills practices / practices that enhance community and landscape resilience. • At least 15-20% rise in gross income of the beneficiary households • Increase in cropping intensity by 50% • Improved livelihoods related decision making in at least 50% households due to improved access to information. • Reduction in livestock fodder dependency on KPC by at least 3,000 tons. • Reduction in fuel wood dependency on KPC by	• CBO registers • Village development plans • Minutes of the PIMC • Progress reports • Field visits and • Interaction with the community	Risks: • Community is unwilling to adopt the livelihoods being promoted. • There is lack of resources. There is extreme climatic condition like flood / droughts • Cultural constraints, for e.g. piggery is looked down upon as a livelihood activity by some communities. Assumption: • Community participates and adopts the interventions;

		drudgery as they are the primary contributor to the farm as well as the household level activities which include collecting fuel wood and fodder, fetching drinking water.	at least 1,500 tons. • Reduction in women drudgery by 20-25% in 1,000 households.		• Adequate resources are available
Output 3.1: Climate resilient agricultural practices are adopted by the identified beneficiaries	• Number of agricultural demonstrations conducted for par workers and farmers. • Number of households practicing SRI, other improved package of practices. • Area treated through watershed activities • Number of households with access to micro irrigation mechanism • Number of households with access to weather information	• Present agricultural practices are found to be non climate resilient against climatic risks like extended dry spells, high intensity rainfall, hailstones and Frost • Agriculture practiced is mostly rainfed, with high crop raiding by wild herbivores making the agriculture in the region extremely sensitive and prone to regular crop failures. • Farmers are lured towards high yielding hybrid crop varieties requiring heavy inputs (water, fertilizers and pesticides)	• At least 5,000 households receive inputs, technical assistance and linkage support for improved and climate resilient agricultural livelihoods. • 8 trainings are conducted for 28 paraworkers (16 training days for 4 years) • 64 demonstrations are conducted for the farmers (16 per year) • Each farmer receives 4 mobilization training days each year • Atleast 1,800 ha is covered by watershed development activity • At least 560 households support on installing Micro irrigation mechanism. • At least 5 agromet stations are installed covering the 56 villages	• Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Minutes of the meeting of the PIMC	Risks • Community is willing and is able to adopt package of agriculture practices. • Delay in availability / non availability of inputs (indigenous seeds for example) • Extreme weather events • Attrition in paraworkers Assumptions • Inputs are locally and timely available • Local paraworkers are sufficiently trained
Output 3.2: Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households	• Number of households adopting alternative livelihoods • Number of linkages created to complement alternative livelihoods	• Limited information and means to practice diversified livelihoods. • No alternative livelihoods for landless other than agriculture	• At least 2,000 households have access and means to practice alternative livelihoods and diversify their income sources.	• Progress reports • Field visits for physical verification • Interaction with beneficiaries. • CBO registers	Risk: • Community is willing and is able to adopt alternative livelihoods.

		labor/ migration	• Each beneficiary receives 4 mobilization training days each year on alternative livelihood adopted • At least 2 robust market linkages are created for alternative livelihoods	• Minutes of the meetings of the PIMC	• Delay in availability / non availability of inputs (indigenous seeds for example) • Extreme weather events • Attrition in paraworkers <u>Assumptions</u> • Markets are available nearby
Output 3.3: Enhanced vocational skills in 500 individuals.	• Number of youth that have undergone skill training. • Linkages created to complement supply of skilled youth	• Distress migration of unskilled labor leading to many social and physical impacts to the household • Lack of awareness in the youth about the market driven vocational employment opportunities available • Limited local opportunities for training in vocational skills and increasing demand of skilled manpower	• At least 500 youth are skill trained for employability. • At least 50% youth are facilitated with placement linkages	• Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Minutes of the meeting of PIMC	<u>Risk</u>: • Community (youth) is willing to be skill trained and relocate/ migrate to work as skilled labour. • Adequate training facilities are available nearby <u>Assumptions</u> • Youth will be willing to relocate
Output 3.4 Energy efficient mechanisms to reduce fuel wood dependency are adopted	• Number of households having access to bio-gas plants • Number of households and establishments having access to efficient cooking stoves • Number of households	• Lack of alternative energy sources/ arrangements. • Drudgery in women and adverse impacts on health • High extraction of fuel wood from the forest for	• At least 400 household have access to bio-gas • At least 600 households have access to energy efficient cooking stoves • At least 100 efficient cooking stoves are provided to small	• Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Minutes of the meeting of PIMC	<u>Risks</u> • Households are willing to accept and adopt alternative energy sources

	have access to solar lanterns	meeting energy requirements	establishments • At least 600 households are provided with solar lanterns		• Households are willing to shift usage from fuel wood to the alternative source. <u>Assumptions</u> • Inputs are timely available
Component 4 : Knowledge management					
Outcome 4: Improved understanding on threats and climate change impacts on the landscape and enhanced involvement of stakeholders	• % of households having improved understanding on the importance of having robust and gender neutral CBOs as means to climate resilience. • % of household having improved understanding on the importance of conserving and utilizing the forest resources in a sustainable manner in the context of climate change. • % of households having improved knowledge/decision making ability on climate resilient agricultural and other livelihood practices • Adaptive strategies through project learning articulated, developed and communicated for replication and policy changes • Number of case studies/ research studies published in peer reviewed journals	• Lack of community sensitivity/awareness towards the importance of institutions/ forest conservation / gender issues/climate change impacts • Lack of community awareness on adaptive agricultural, alternative and vocational livelihoods • No adaptive strategies have been articulated, developed and communicated	• Enhanced sensitivity and awareness levels in the community towards KPC, its functions and its conservational importance. • Enhanced awareness on the importance of being a part of active and gender neutral CBOs, collective decision making, and adopting resilient livelihoods • Enhanced awareness about KPC in the local, state and national scenario and importance of its conservation • Availability of models and processes to adopt in similar landscapes for enhancing community resilience. • Case studies/ research studies published in at least 4 platforms (magazines/ peer reviewed journals) • Project covered at least	• Knowledge management plan • Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Minutes of the meeting of PIMC	<u>Risks</u> • Lack of participation by Stakeholders <u>Assumption</u> • Stakeholders are keen to enhance / improvise their role in the landscape

	• Number of print/ audio/video media coverage generated		8 times by the Local and National Media		
Output 4.1: Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	• Number of workshops conducted • Number of participants from each homogeneous group contributing to the knowledge management plan	• No strategy of knowledge management available	• A knowledge management plan created which is used as a strategy document for creating, developing, designing and communicating knowledge covering various stakeholders of KPC.	• Knowledge management plan • Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Minutes of the meeting of PIMC	Risk: • Participation of all stakeholders in the preparation of the knowledge management plan
Output 4.2: Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools.	• Number of audio visual content designed and developed for dissemination • Number of Newsletters ; Pamphlets, stickers, modules and posters designed and developed for dissemination • Number of research studies commissioned • Number of success stories developed for dissemination • IT platform created for dissemination	• Lack of appropriate knowledge material/ platform available for dissemination to the community and other stakeholders	• At least 5 number of audio visual content developed (short movies/documentaries) • At least 16 newsletters developed • At least 3 modules for school children prepared • At least 12 posters and pamphlets developed • At least 4 research studies are commissioned to be published in peer reviewed journals • At least 20 success stories/case studies are developed and designed for dissemination • 1 website developed	• Progress reports • Field visits for physical verification • Interaction with beneficiaries. • Material developed in digital and printable format • Website	
Output 4.3: Local and National Level Campaigns/Workshops for dissemination	• Number of village/school level dissemination workshops held for the community • Number of inter –	• Lack of multi – stakeholder platforms and appropriate channels to share KPC information	• At least 12 village level awareness workshops per village are conducted in 56 project villages	• List of participants • Progress reports • Proceedings of the workshops • News articles cutting	Assumption: • Participants adopt and use the knowledge gained during

	community awareness/cross learning workshops • Number of project level awareness workshops • Number of national level awareness workshops • Number of participants from homogenous groups / % of households participating • Number / % of attendees in awareness workshops • Number of website hits • Number of media trips organized		• At least 8 inter – community awareness and cross learning campaigns/ fairs/ workshops are conducted • At least 4 project level awareness level workshops are conducted • At least 2 national level awareness workshops are conducted • Atleast 6 media field exposure visits are conducted.	published in local national media	awareness programs: • Annual planning and stakeholder engagements fosters a culture of shared learning and shared responsibility

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Table 3.5 Project alignment with the Adaptation fund results framework

Project Objective(s)	Project Objective Indicator (s)	Fund Outcome	Fund Outcome Indicator	Grant Amount $
Build adaptive capacities of communities, livelihoods and ecosystem resilience in the KPC	Number of households covered under village level plans for conservational and developmental activities. (atleast 5,000 households) Number of households have access to diversified and improved livelihoods that increases resilience to climate change and reduce forest dependency (atleast 5,000 households)	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction process at local level.	3.2 Percentage of targeted population applying appropriate adaptation measures	
		Outcome 5: Increased ecosystem resilience in response to climate change and variability induced stress	5.Ecosystem services and natural assets maintained or improved under climate change and variability-induced stress	

	Number of hectares of forest under community conservation (atleast 3,000 ha) Number of hectares of area treated with watershed activities (atleast 1,800 ha)	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas	6.2 Percentage of targeted population with sustained climate resilient livelihood	
Project Outcome(s)	Project Outcome Indicator(s)	Fund Output	Fund Output Indicator	
Improved understanding of prevalent dynamics and changes in area of interventions	• Number of village level meetings conducted (monthly for village level institutions) • % of village households represented in meetings • Number of men and women participants • Number of village development plans prepared (56 villages) • Number of SHGs active with credit linkage (atleast 150 SHGs)	Outcome 1: Reduced exposure to climate related hazards and threats		
		Output 1.1 Risk and vulnerability assessments conducted and updated	1 Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	
		Output 1.2 Targeted population groups covered by adequate risk reduction system	1.2.1 Percentage of local population covered by adequate risk reduction systems	
Enhanced capability of the community to take collective action, practice adaptive livelihoods and conservation	• Number of robust community institutions in the project villages (56 institutions) • Regular meetings, trainings and exposure visits attended by institution members • % of women participants in village	Outcome 3: Strengthened awareness and ownership of adaptation and climate risk reduction processes at local level. Output 3: Targeted population groups	3.1 Percentage of targeted population aware of the predicted adverse impacts of climate change and of appropriate responses. 3.2 Percentage of targeted population applying	

	meetings/ trainings • % of participants involved in the decision making process • Amount of convergence achieved with existing government schemes • Forest Area brought under community management/ protection. • Number of village conflicts addressed by the institution	participating in adaptation and risk reduction awareness activities.	appropriate responses.	
Improved adaptive capacity of the community and landscape	• % of households having capacity, access to inputs and mechanisms to implement sustainable and adaptive livelihood techniques. (at least 5,000 households) • % increase in gross income of households (15-20%) • % increase in cropping intensity (150%) • % decrease in women drudgery (25% in atleast 1,000 households) • % reduction in forest resource dependence of beneficiary households (by 1,500 tons – fuel wood + 3,000 tons fodder)	Outcome 6: Diversified and strengthened livelihoods and sources of income for vulnerable people in targeted areas Output 6: Targeted individual and community livelihood strategies strengthened in relation to climate change impacts including variability	6.1 Percentage of households and communities having more secure access to livelihoods assets. 6.2 Percentage of households with sustained climate resilient alternative livelihoods 6.1.1. Number and type of adaptation assets (tangible and intangible 6.2.1. Type of income sources for households generated under climate change scenario.	
Improved understanding	• % of households having improved	Outcome 3: Strengthened	3.1 Percentage of targeted	

on threats and climate change impacts on the landscape and enhanced involvement of stakeholders	understanding on the importance of having robust and gender neutral CBOs as means to climate resilience. • % of household having improved understanding on the importance of conserving and utilizing the forest resources in a sustainable manner in the context of climate change. • % of households having improved knowledge/decision making ability on climate resilient agricultural and other livelihood practices • Adaptive strategies through project learning articulated, developed and communicated for replication and policy changes • Number of case studies/ research studies published in peer reviewed journals (atleast 4) • Number of print/ audio/video media coverage generated (atleast 5)	awareness and ownership of adaptation and climate risk reduction processes at local level. Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities. Outcome 7: Improved policies and regulations that promote and enforce resilience measures Output 7: Improved integration of climate - resilience strategies into country development plans	population aware of the predicted adverse impacts of climate change and of appropriate responses. 3.1 No of news outlets in the local press and media that have covered the topic 7. Climate change priorities are integrated into national development strategy 7.1 No. of policies introduced or adjusted to address climate change risks (by sector) 7.2 No. of targeted development strategies with incorporated climate change priorities enforced	

TABLE 3. 6 – 3.9: LIST OF TABLES FOR REPORTING ADAPTATION FUND CORE IMPACT INDICATORS

Table 3.6 Adaptation Fund Core Impact Indicator "Number of Beneficiaries"	
Date of Report	28th July, 2016
Project Title	Building Adaptive Capacities of Communities, Livelihoods and Ecological

	Security in the Kanha-Pench Corridor of Madhya Pradesh			
Country	India			
Implementing Agency	National Bank for Agriculture and Rural Development (NABARD)			
Project Duration	4 years			
	Baseline *(absolute number)*	Target at project approval *(absolute number)*	Adjusted target first year of implementation *(absolute number)*	Actual at completion[6] *(absolute number)*
Direct beneficiaries supported by the project	0	21,220		
Female direct beneficiaries	0	10,610		
Youth direct beneficiaries	0	5,000		
Indirect beneficiaries supported by the project	0	32,292		
Female indirect beneficiaries	0	16,027		
Youth indirect beneficiaries	0	8,000		

Table 3.7 Adaptation Fund Core Impact Indicator "Assets Produced, Developed, Improved, or Strengthened"	
Date of Report	28th July, 2016
Project Title	Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha-Pench Corridor of Madhya Pradesh

[6] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure)

Country	India			
Implementing Agency	National Bank for Agriculture and Rural Development (NABARD)			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion
Sector (identify)				
Targeted Asset 1) Development sector services • Village development plan for driving village developmental activities	0	56		
• SHGs	0	150		
• Knowledge management material for dissemination – extension services				
○ Newsletters	0	16		
○ Documentaries	0	5		
○ Research studies	0	4		
2) Physical asset *(produced/improved/strengthened)*				
• Agromet stations	0	5		
• Biogas plants	0	200		
• Energy efficient stoves	0	700 (600 household + 100 commercial)		

• Solar lanterns	0	600		
• Micro drip systems	0	560		
• Watershed (Area, drainage line treatment, farm ponds other irrigation mechanisms	0	1,800 ha		
Changes in Asset *(Quantitative or qualitative depending on the asset)* 1. Village development plan for driving village developmental activities	0	Drive village level developmental activities – motivate the community to create a milestone based approach for village development		
2. SHGs	0	At least 150 SHG's would act as a mechanism for petty savings which can be used for taking soft loans during emergencies and also act as a medium of credit linkage		
3. Knowledge management material for dissemination – extension services	0	Increased sensitivity around the landscape/climate change issues in the at least 5,000 families and other local and external stakeholders		
4. Agromet stations	0	Minimum 5,000 families are capable of responding to climate variability and its impacts		

5. Biogas plants/ Energy efficient stoves	0	1000 families have reduced dependency on fuel wood for cooking – combined savings of 1,500 tons fuel wood		
6. Solar lanterns	0	Reduced drudgery, especially amongst children and women of 600 families.		
7. Micro drip systems	0	Improved productivity of 20-25% in vegetables Improved soil moisture and irrigation availability to 5,000 families		
8. Watershed (Area, drainage line treatment, farm ponds other irrigation mechanisms)	0	Improved soil moisture and irrigation availability to at least 5,000 families		

Table 3.8 Adaptation Fund Impact Indicator "Increased income, or avoided decrease in income"				
Date of Report	28th July, 2016			
Project Title	Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha-Pench Corridor of Madhya Pradesh			
Country	India			
Implementing Agency	National Bank for Agriculture and Rural Development (NABARD)			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion
Income Source[7] *(name)*				

[7] When the numbers of livelihoods go through significant changes, such as when sources of income are diversified, it may be useful to illustrate the changes by primary livelihoods.

Income Source	Agriculture NTFP Labor	Agriculture NTFP Skilled Labor Alternatives (poultry, piggery, ecotourism)		
Income level *(USD) at household level per annum*	500-550 USD	At least 570-650 USD		
Number of households *(total number in the project area) (report for each project component)*	0	At least 5,000 households		

Table 3.9 Adaptation Fund Core Impact Indicator "Natural Assets Protected or Rehabilitated"				
Date of Report	28th July, 2016			
Project Title	Building Adaptive Capacities of Communities, Livelihoods and Ecological Security in the Kanha-Pench Corridor of Madhya Pradesh			
Country	India			
Implementing Agency	National Bank for Agriculture and Rural Development (NABARD)			
Project Duration	4 years			
	Baseline	Target at project approval	Adjusted target first year of implementation	Actual at completion[8]
Natural Asset or Ecosystem Community conservation of Village woodlots/ commons	0	At least 3,000 ha		

[8] At project completion, the proponent could report on % targeted population reached or successfully supported (the absolute numbers could then be deduced from that figure)

Rehabilitation of degraded land through watershed improvement	0	1,800 ha		
Change in state *Ha or km* *Protected/rehabilitated, or*		Sustainable extraction of forest produce, improved governance on natural resources including village woodlots, commons in 56 villages. Improved soil moisture through better water recharge over 1,800 ha positively impacting 5,000 families.		
Effectiveness of protection/rehabilitation - Scale (1-5) Community conservation of Village woodlots/ commons Rehabilitation of degraded land through watershed improvement		3 3		
Total number of natural assets or ecosystems protected/rehabilitated	0	4,800 ha Area (including village woodlots/commons, slopes, farms) in 56 villages		

G. Include a detailed budget with budget notes, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs

Table 3.10 Activity wise budget for the project

Outcome / Output	Activity	USD
Component I: Integrated socio - economic and ecological assessment and planning		**44,538**
Output 1.1 Socio economic baseline report with village level detailed analysis in the project villages	Activity 1.1.1 Collection of primary data	10,154
	Activity 1.1.2 Baseline report and village development plans	16,538
Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS	Activity 1.2.1: GIS Mapping & Analysis	17,846
Component II: Community mobilization for building adaptive capacities		**303,089**
Output 2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	Activity 2.1.1 Community awareness, sensitization and mobilization	24,812
	Activity 2.1.2 Formation and strengthening of CBOs through exposure visits and training	111,138
	Activity 2.1.3 Gender focused activity	128,370
Output 2.2 Participatory impact monitoring	Activity 2.2.1 Participatory impact monitoring	38,769
Component III: Integrated approach for ecosystem resilience and sustainable livelihoods as a means for adaptation		**1,530,646**
Output 3.1: Adoption of climate resilient agricultural practices by 5,000 households	Activity 3.1.1 Demonstration of adaptive agriculture crops and practices through farmer field schoo	57,108

	Activity 3.1.2 Supply of agricultural inputs and implements and promotion of organic farming	230,769
	Activity 3.1.3 Application of efficient irrigation systems / mechanisms and improvement of watershed	544,615
	Activity 3.1.4 Installation of agromet stations and dissemination of weather specific agricultural practices	53,846
Output 3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households	Activity 3.2.1 Demonstration of alternate livelihood / enterprise options and supply of inputs and implements	252,923
	Activity 3.2.2 Facilitation of backward and forward linkages	22,154
Output 3.3 Enhanced vocational skills in 500 individuals.	Activity 3.3.1 Develop and implement a set of vocations for youth	192,308
Output 3.4 Adoption of energy efficient mechanisms by households to reduce fuel wood dependency and drudgery amongst women	Activity 3.4.1 Provision of alternative cooking fuel for 400 households	123,077
	Activity 3.4.2 Provision of efficient cooking mechanisms for atleast 600 households	30,769
	Activity 3.4.3 Provision of solar lanterns for atleast 600 households	23,077
Component IV : Knowledge management		**273,409**
Output 4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	Activity 4.1.1 Workshops for homogenous groups	6,154
Output 4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools	Activity 4.2.1 Develop and design knowledge material and tools	60,000
	Activity 4.2.2 Documentation of learning and processes	66,178

	Activity 4.2.3 Develop medium of knowledge sharing	10,000
Output 4.3 Local and National Level Campaigns/Workshops for dissemination	Activity 4.3.1 Dissemination of knowledge material and tools for identified homogeneous groups	57,231
	Activity 4.3.2 Dissemination of learning and processes at local and national level through workshop and other mediums	73,846
Total: Project Components		**2,151,683**
Total: Project Execution @ 9.5%		**204,410**
HR Costs		
2 Cluster Coordinators		51,692
6 Field Executives		88,615
1 Accountant		14,769
Travel @ INR 20,000 per month		14,769
Inception Workshops, monitoring and evaluation costs		19,796
Office running costs (2 office)		14,769
Total Project Cost		**2,356,093**
NIE Management Fees		**200,000**
Total Financing requested		**2,556,093**

Table 3.11 Budget details with budget notes (*reference rate:* ***1 USD = INR 65***)

Outcome / Output	Activity	Budget	Number	Unit	Unit Cost(INR)	Total (INR)	Unit Cost(USD)	Total (USD)	Budget notes
Component 1: Integrated socio - economic and ecological assessment and planning		**Total Component 1**				**28,95,000**		**44,538**	
Output 1.1 Socio economic baseline report with village level detailed analysis in the project villages	Activity 1.1.1 Collection of primary data	2 Trainings (2 days each) to PW for collection of baseline data and conducting PRA @ 25,000 per day	4	Training days	25,000	1,00,000	385	1,538	Expert trainer cost = INR 4,000 + Travel = INR 3,000 + Lodging Boarding = INR 3,000; Total INR 10,000 per day: Trainee paraworker cost = INR 500 (INR 200 food, INR 200 lodging + INR 100 travel and stationery) * 28 = INR 14,000 Misc. costs = INR 1,000 ; Total =INR 25,000 per day.
		Baseline data collection through Focused group discussions - Man Days - PRA conduct resource (15 man days per village * 56 villages @ INR 600 per day)	56	Villages	9,000	5,04,000	138	7,754	Para worker cost = INR 300 + Facilitation costs = INR 300 * 15 days per village * 56 villages
		Stationery expenses @ 1000 per village for 56 villages - Village development Plan	56	Villages	1,000	56,000	15	862	@ INR 1000 per village for 56 villages
	Activity 1.1.2 Baseline report and village development plans	Baseline report preparation	1	Report	9,75,000	9,75,000	15,000	15,000	To be commissioned to an external consultant
		Report printing expenses	1	Number	1,00,000	1,00,000	1,538	1,538	20 reports@5000 INR per report.

Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS	Activity 1.2.1: GIS Mapping & Analysis	Expert cost @ 4000 per day for 60 days per year	4	Years	2,40,000	9,60,000	3,692	14,769	To be spread across 4 years of project period @ INR 4,000 per day for 60 days * 4 years
		Purchase of data (imagery, maps)	1	Number	1,00,000	1,00,000	1,538	1,538	
		GIS Software training and purchase	1	Number	1,00,000	1,00,000	1,538	1,538	
Component 2: Community mobilization for building adaptive capacities		**Total Component 2**				**1,97,00,800**		**3,03,089**	
Output 2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	Activity 2.1.1 Community awareness, sensitization and mobilization	Mobilization and strengthening trainings @ INR 28,800 per village for 4 years	56	Villages	28,800	16,12,800	443	24,812.31	Cost of 2 paraworkers - @ INR 600 per day * 48 months * 56 villages
	Activity 2.1.2 Formation and strengthening of CBOs through exposure visits and training	112 trainings (One, 3 day training per year * 28 villages * 4 years) - 2 villages will be merged	112	Number of Training	42,000	47,04,000	646	72,369.23	Food = 12,000 + Lodging = 12,000 + Travel, Stationery = 6000 + training fee = 12000 ; Total = INR 42,000 per training
		56 Exposure visits - 10-15 individuals per village (One, 2 day exposure visit * 56 village * 2 years)2	56	Number of Exposure Visits	45,000	25,20,000	692	38,769.23	Food = 8000; Lodging = 8000; Travel = 6500; total = INR 22,500 per day or INR 45,000 per visit

		villages will be merged							
	Activity 2.1.3 Gender focused activity	896 Trainings - 25-30 women per village (Four, 1day training per year * 56 villages * 4 years)	896	Number of Training	5,000	44,80,000	77	68,923.08	Food = 4000; Gender Expert trainer = 1000 per day; Total INR 5000 per training
		56 Exposure visits - 10-15 individuals per village (One, 2 day exposure visit * 56 village * 2 years)- 2 villages will be merged	56	Number of Exposure Visits	45,000	25,20,000	692	38,769.23	Food = 8000; Lodging = 8000; Travel = 6500; total = INR 22,500 per day or INR 45,000 per visit
		Creation of new SHGs/ Revival of defunct SHGs - 3 per village * 56 villages @ INR 8,000 per SHG	168	Number of SHG's	8,000	13,44,000	123	20,676.92	Accepted rates in India for SHG creation with credit linkage
Output 2.2 Participatory impact monitoring	Activity 2.2.1 Participatory impact monitoring	56 PIMs - 10-15 individuals per village (2 days * 56 villages * 2) 2 villages will be merged	56	Number of PIM"s	45,000	25,20,000	692	38,769.23	Food = 8000; Lodging = 8000; Travel = 6500; total = INR 22,500 per day or INR 45,000 per PIM
Component 3: Integrated approach for ecosystem resilience and sustainable livelihoods as a means for adaptation		**Total Component 3**				**9,94,92,000**		**15,30,646**	
Output 3.1: Adoption of climate resilient agricultural practices by 5,000 households	Activity 3.1.1 Demonstration of adaptive agriculture crops and practices through farmer field school	32 training days (2 trainings * 2 crop season *2 days * 4 years) @ 25,000 per training day	32	Number of training days	25,000	8,00,000	385	12,308	Expert trainer = INR 4,000 + Travel = INR 3,000 + Lodging Boarding = INR 3,000; Total INR 10,000 per day: Trainee paraworker cost = INR 500 (INR 200 food, INR 200 lodging + INR 100 travel and stationery) * 28 = INR 14,000:Misc costs = INR 1,000 ; Total = INR

									25,000
		64 demonstrations (16 demo days per year * 4 years) @ INR 8,000 per day	64	Number of Demonstrations	8,000	5,12,000	123	7,877	Expert trainer cost = INR 4,000 + Travel = INR 3,000 + Food Misc. costs = INR 1,000 ; Total = INR 8,000
		Agri mobilization trainings - (INR 480 per training* 5000 farmers)	5,000	Number of farmers	480	24,00,000	7	36,923	Pawaworkers costs for conducting mobilization trainings @ INR 30 * 16 training days
	Activity 3.1.2 Supply of agricultural inputs and implements and promotion of organic farming	5000 farmers	5,000	Number of farmers	3,000	1,50,00,000	46	2,30,769	INR 3000 per farmer (support for agricultural inputs like seeds, implements, vermi composting)
	Activity 3.1.3 Application of efficient irrigation systems / mechanisms and improvement of watershed	Watershed development covering 1,800 ha	1,800	ha	15,000	2,70,00,000	231	4,15,385	INR 15000 per ha - national approved rates by NABARD
		Water related entry point activities in the village	56	Villages	75,000	42,00,000	1,154	64,615	Water related entry point activities in 56 villages @ INR 75,000 per village
		Micro irrigation mechanism for 560 farmers (10 farmers * 56 villages)	560	Number of farmers	7,500	42,00,000	115	64,615	INR 7500 (Cost of 500 ltr Tank = INR 3500 + Cost of 15 mm drip pipe set up for 25 decimal layout = INR 3,000 + INR 1000 = construction of elevated structure/ labour

	Activity 3.1.4 Installation of agromet stations and dissemination of weather specific agricultural practices	5 agromet stations (all inclusive)	5	Number	7,00,000	35,00,000	10,769	53,846	Infrastructure (Telemetry equipment + Weather station + Battery + Sensors + Fencing) = INR 200,000 ; Operation and Maintenance expenses (Sim cards + mobile/internet charges + personnel cost + software + agri crop calendar) = INR 436,500 ; Indirect costs (Overheads + transport) = 10% of 636,500 = INR 63,500 = INR 698,500
Output 3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households	Activity 3.2.1 Demonstration of alternate livelihood / enterprise options and supply of inputs and implements	2,000 households	2,000	Number of households	7,500	1,50,00,000	115	2,30,769	INR 7500 per households (support for inputs for taking up alternative livelihoods - including Poultry, Piggery, dairy)
		Mobilization trainings - 4 day trainings each year (4 training days per year * 2000 households* 4 years) @ INR 45 per beneficiary per day	2,000	Number of households	720	14,40,000	11	22,154	Pawaworkers costs for conducting mobilization trainings @ INR 45 per training * 16 training days
	Activity 3.2.2 Facilitation of backward and forward linkages	Expert resource cost @ INR 4,000 * 60 days * 2 clusters * 3 years	360	Number of days	4,000	14,40,000	62	22,154	@ INR 4,000 * 60 days * 2 clusters * 3 years
Output 3.3 Enhanced vocational skills in 500 individuals.	Activity 3.3.1 Develop and implement a set of vocations for youth	500 youth	500	youth	25,000	1,25,00,000	385	1,92,308	Approved rates for residential programs - costs as per National Skills development corporation technical course

Output 3.4 Adoption of energy efficient mechanisms by 1,000 households to reduce fuel wood dependency and drudgery amongst women	Activity 3.4.1 Provision of alternative cooking fuel for 400 households	400 households to get access to biogas	400	Number of households	20,000	80,00,000	308	1,23,077	Excavation (including site clearance; tank; inlet; and outlet = INR 6,000 ; Inlet + Outlet base, wall = INR 3,100; Plaster costs = INR 5,200; Transport = INR 2,700; Pipes cables stove valve etc. = INR 3,000 ; Total costs = INR 20,000
	Activity 3.4.2 Provision of efficient cooking mechanisms for atleast 600 households	Efficient chullas - 600 units - Household	600	Number of households	2,500	15,00,000	38	23,077	Per unit costs for MNRE approved Efficient cooking stove - household level
		Efficient chullas - 100 units - Commercial	100	Number of households	5,000	5,00,000	77	7,692	Per unit costs for MNRE approved Efficient stove - commercial level
	Activity 3.4.3 Provision of solar lanterns to atleast 600 households	Provision of solar charging stations and solar lanterns	600	Number of households	2,500	15,00,000	38	23,077	Per unit costs for MNRE approved solar lanterns with mobile phone charging points
Component 4 : Knowledge management		**Total Component 4**				**1,77,71,600**		**2,73,409**	
Output 4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	Activity 4.1.1 Workshops for homogenous groups	4 workshops @ INR 100,000 per workshop	4	Number of workshops	1,00,000	4,00,000	1,538	6,154	Conference room = INR 10,000 + 50 people breakfast @ 300 + 50 people lunch @ INR 500 per plate + Travel costs = INR 50,000; = Total = INR 100,000

Output 4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools	Activity 4.2.1 Develop and design knowledge material and tools	Audio visual content development	5	Number of movies	6,00,000	30,00,000	9,231	46,154	5 movies @ 600,000 per movie
		Designing Newsletters ; Pamphlets, stickers, modules and posters	3	Number of years	3,00,000	9,00,000	4,615	13,846	Design costs = INR 300,000 per year;
	Activity 4.2.2 Documentation of learning and processes	2 Trainings (2 days each) to PW for collection of stories @ 25000 per day	4	Training days	25,000	1,00,000	385	1,538	Expert trainer cost = INR 4,000 + Travel = INR 3,000 + Lodging Boarding = INR 3,000; Total INR 10,000 per day:Expert trainer cost = INR 4,000 + Travel = INR 3,000 + Lodging Boarding = INR 3,000; Total INR 10,000 per day:Misc costs = INR 1,000 ; Total = INR 25,000 per day
		Collection of data / success stories	56	Number of villages	3,600	2,01,600	55	3,102	Pawaworkers costs for data collection - 4 days per year per village * 3 years * 56 villages
		Commissioning Research studies	4	Number of studies	10,00,000	40,00,000	15,385	61,538	
	Activity 4.2.3 Develop medium of knowledge sharing	IT enabled tools	1	website	6,50,000	6,50,000	10,000	10,000	Website development and maintenance
Output 4.3 Local and National Level Campaigns/Workshops for dissemination	Activity 4.3.1 Dissemination of knowledge material and tools for	56 villages @ INR 15,000 per village per year * 3 years	56	Number of villages	45,000	25,20,000	692	38,769	Printing and Dissemination costs

	identified homogeneous groups								
		Media - FAM Trips	4	Media trips	3,00,000	12,00,000	4,615	18,462	4 Local and National level media project field trips
	Activity 4.3.2 Dissemination of learning and processes at local and national level through workshop and other mediums	8 inter community workshops @ INR 100,000 (2 per year)	8	Number of workshops	1,00,000	8,00,000	1,538	12,308	
		4 workshops at project area level @ INR 500,000 per workshop (1 per year)	4	Number of workshops	5,00,000	20,00,000	7,692	30,769	
		2 workshops at National Level @ INR 1,000,000 per workshop (1 per 2 years)	2	Number of workshops	10,00,000	20,00,000	15,385	30,769	
		Total: Project Components (1+2+3+4)				**13,98,59,400**		**21,51,683**	
		HR Costs							
		2 Cluster Coordinators	96	months	35,000	33,60,000	538	51,692	2 * 48 months * INR 35,000 per month
		6 Field Executives	288	months	20,000	57,60,000	308	88,615	6 * 48 months * INR 20,000 per month
		1 Accountant	48	months	20,000	9,60,000	308	14,769	1 * 48 months * INR 20,000 per month
		Travel	48	months	20,000	9,60,000	308	14,769	48 months * INR 20,000 per month

		Inception Workshops, monitoring and evaluation costs				12,86,643		19,796	INR 126,643 for inception workshops + INR 580,000 each for 2 assessments - mid term - end term
		Office running costs (2 office)	96	months	10,000	9,60,000	154	14,769	2 * 48 months * INR 10,000 per month
		Project Execution Cost @9.5%				**1,32,86,643**		**2,04,410**	
		Total Project Cost				**15,31,46,043**		**23,56,093**	
		NIE Cost				**1,30,00,000**		**2,00,000**	
		Total Financing requested				**16,61,46,043**		**25,56,093**	

Table 3.12 Budget Details – year wise

Outcome / Output	Activity	Budget	Total (USD)	Y I	Y II	Y III	Y IV
Component 1: Integrated socio - economic and ecological assessment and planning		**Total Component 1**	**44,538**	**44,538**	**-**	**-**	**-**
Output 1.1 Socio economic baseline report with village level detailed analysis in the project villages	Activity 1.1.1 Collection of primary data	2 Trainings (2 days each) to PW for collection of baseline data and conducting PRA @ 25,000 per day	1,538.00	1,538.00			
		Baseline data collection through Focused group discussions - Man Days - PRA conduct resource (15 man days per village * 56 villages @ INR 600 per day)	7,754.00	7,754.00			
		Stationery expenses @ 1000 per village for 56 villages - Village development Plan	862.00	862.00			
	Activity 1.1.2 Baseline report and village development plans	Baseline report preparation	15,000.00	15,000.00			
		Report printing expenses	1,538.00	1,538.00			

Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS	Activity 1.2.1: GIS Mapping & Analysis	Expert cost @ 4000 per day for 60 days per year	14,769.00	14,769.00			
		Purchase of data (imagery, maps)	1,538.00	1,538.00			
		GIS Software training and purchase	1,538.00	1,538.00			
Component 2: Community mobilization for building adaptive capacities		**Total Component 2**	**303,089**	**66,082**	**85,463**	**66,080**	**85,464**
Output 2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	Activity 2.1.1 Community awareness, sensitization and mobilization	Mobilization and strengthening trainings @ INR 28,800 per village for 4 years	24,812	6,203	6,203	6,203	6,203
	Activity 2.1.2 Formation and strengthening of CBOs through exposure visits and training	112 trainings (One, 3 day training per year * 28 villages * 4 years) - 2 villages will be merged	72,369	18,093	18,092	18,092	18,092
		56 Exposure visits - 10-15 individuals per village (One, 2 day exposure visit * 56 village * 2 years)2 villages will be merged	38,769	9,693	9,692	9,692	9,692
	Activity 2.1.3 Gender focused activity	Trainings - 25-30 women per village (Four, 1day training per year * 56 villages * 4 years)	68,923	17,231	17,231	17,231	17,230
		56 Exposure visits - 10-15 individuals per village (One, 2 day exposure visit * 56 village * 2 years)- 2 villages will be merged	38,769	9,693	9,692	9,692	9,692
		Creation of new SHGs/ Revival of defunct SHGs - 3 per village * 56 villages @ INR 8,000 per SHG	20,678	5,169	5,169	5,170	5,170
Output 2.2 Participatory impact monitoring	Activity 2.2.1 Participatory impact monitoring	56 PIMs - 10-15 individuals per village (2 days * 56 villages * 2) 2 villages will be merged	38,769		19,384		19,385
Component 3: Integrated approach for ecosystem resilience and sustainable livelihoods as a means for adaptation		**Total Component 3**	**1,530,646**	**448,432**	**617,199**	**372,431**	**92,584**
Output 3.1: Adoption of climate	Activity 3.1.1 Demonstration of	32 training days (2 trainings * 2 crop	12,308	3,077	3,077	3,077	3,077

resilient agricultural practices by 5,000 households	adaptive agriculture crops and practices through farmer field school	season *2 days * 4 years) @ 25,000 per training day					
		64 demonstrations (16 demo days per year * 4 years) @ INR 8,000 per day	7,877	1,970	1,969	1,969	1,969
		Agri mobilization trainings - (INR 480 per training* 5000 farmers)	36,923	9,230	9,231	9,231	9,231
	Activity 3.1.2 Supply of agricultural inputs and implements and promotion of organic farming	5000 farmers	230,769	46,153	92,308	69,231	23,077
	Activity 3.1.3 Application of efficient irrigation systems / mechanisms and improvement of watershed	Watershed development covering 1,800 ha	415,385	124,616	207,692	83,077	0
		Water related entry point activities in the village	64,615	64,615			
		Micro irrigation mechanism for 560 farmers (10 farmers * 56 villages)	64,615	19,384	32,308	12,923	
	Activity 3.1.4 Installation of agromet stations and dissemination of weather specific agricultural practices	5 agromet stations (all inclusive)	53,846	53,846			
Output 3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households	Activity 3.2.1 Demonstration of alternate livelihood / enterprise options and supply of inputs and implements	2,000 households	230,769	46,153	92,308	69,231	23,077
		Mobilization trainings - 4 day trainings each year (4 training days per year * 2000 beneficiaries* 4 years) @ INR 45 per beneficiary per day	22,154	5,540	5,538	5,538	5,538
	Activity 3.2.2 Facilitation of backward and forward linkages	Expert resource cost @ INR 4,000 * 60 days * 2 clusters * 3 years	22,154		7,385	7,385	7,384
Output 3.3 Enhanced vocational skills in 500 individuals.	Activity 3.3.1 Develop and implement a set of vocations for youth	500 youth	192,308	38,462	76,923	57,692	19,231
Output 3.4 Adoption of energy efficient mechanisms by 1,000 households to reduce fuel wood dependency and	Activity 3.4.1 Provision of alternative cooking fuel for 400 households	400 households to get access to biogas	123,077	24,616	61,538	36,923	

drudgery amongst women							
	Activity 3.4.2 Provision of efficient cooking mechanisms for atleast 600 households	Efficient chullas - 600 units - Household	23,077	4,616	11,538	6,923	
		Efficient chullas - 100 units - Commercial	7,692	1,538	3,846	2,308	
	Activity 3.4.3 Provision of solar lanterns to atleast 600 households	Provision of solar charging stations and solar lanterns	23,077	4,616	11,538	6,923	
Component 4 : Knowledge management		**Total Component 4**	**273,409**	**43,855**	**106,005**	**68,312**	**55,237**
Output 4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	Activity 4.1.1 Workshops for homogenous groups	4 workshops @ INR 100,000 per workshop	6,154	6,154			
Output 4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools	Activity 4.2.1 Develop and design knowledge material and tools	Audio visual content development	46,154	9,231	23,077	13,846	
		Designing Newsletters ; Pamphlets, stickers, modules and posters	13,846	4,616	4,615	4,615	
	Activity 4.2.2 Documentation of learning and processes	2 Trainings to PW for collection of stories @ 25000 per training	1,538	769		769	
		Collection of data / success stories	3,102	777	775	775	775
		Commissioning Research studies	61,538	12,308	24,615	24,615	
	Activity 4.2.3 Develop medium of knowledge sharing	IT enabled tools	10,000	10,000			
Output 4.3 Local and National Level Campaigns/Workshops for dissemination	Activity 4.3.1 Dissemination of knowledge material and tools for identified homogeneous groups	56 villages @ INR 15,000 per village per year * 3 years	38,769		12,923	12,923	12,923
		Media - FAM Trips	18,462		6,154	6,154	6,154
	Activity 4.3.2 Dissemination of learning and processes at local and national level through workshop and other mediums	8 inter community workshops @ INR 100,000 (2 per year)	12,308		3,078	4,615	4,615
		4 workshops at project area level @	30,769		15,384		15,385

		INR 500,000 per workshop (1 per year)					
		2 workshops at National Level @ INR 1,000,000 per workshop (1 per 2 years)	30,769		15,384		15,385
		Total: Project Components	**2,151,683**	**602,908**	**808,667**	**506,823**	**233,285**
		Total: Project Execution @ 9.5%	**204,410**	**48,106**	**55,076**	**46,153**	**55,075**
		HR Costs					
		2 Cluster Coordinators	51,692	12,923	12,923	12,923	12,923
		6 Field Executives	88,615	22,154	22,154	22,154	22,153
		1 Accountant	14,769	3,693	3,692	3,692	3,692
		Travel	14,769	3,693	3,692	3,692	3,692
		Inception Workshops, monitoring and evaluation costs	19,796	1,950	8,923		8,923
		Office running costs (2 office)	14,769	3,693	3,692	3,692	3,692
		Total Project Cost	**2,356,093**	**651,014**	**863,743**	**552,976**	**288,360**

NIE Project Cycle Management:

The project management fee will be utilized by NABARD, the National Implementing Entity, to cover the costs associated with the provision of general management support. Table below provides a breakdown of the estimated costs of providing these services. Breakdown of costs for the project management fee is given below:

Breakdown of costs for the project management fee Cost	**Amount US$**
Financial Management	30,000
Performance Management - Progress Monitoring- Field Monitoring	60,000
Information and Reporting (MIS)	40,000
Programme Support - Technical and Other to EE	70,000
Total	**200,000**

Notes:

1. Financial Management: This covers general oversight of financial management and budgeting and quality control. NABARD will:

- Ensure compliance with standards and internal control processes, transparency.
- manage, monitor and track AF financial resources including allocating and monitoring expenditure based on agreed work
- plans, financial reporting to the AFB and the return of unspent funds to AF;
- ensuring that financial management practices comply with AF requirements and support audits as required;
- ensuring financial reporting complies with AF standards; and

2. Performance Management. This includes:

- Providing oversight of the monitoring and evaluation function of the Executing Agency
- Undertake field monitoring of the project through District Development Managers, Regional Office and Head Office officials.
- Providing technical support in the areas of risk management, screening of financial and risk criteria;
- Providing guidance in establishing performance measurement processes; and
- Technical support on methodologies, TOR validation, identification of experts, results validation, and quality assurance.

3. Information and Reporting Management: This includes maintaining information management systems and specific project management databases to track and monitor project implementation. Progress reporting to AFB and create platform for information dissemination.

4. Program Support: This includes-

- Technical support, troubleshooting, and support missions as necessary;
- Policy, programming, and implementation support services;
- Supporting evaluation missions and participating in briefing / debriefing;
- Providing guidance on AF reporting requirements

H. Include a disbursement schedule with time-bound milestones.

Table 3.13: Project Cost Disbursement Schedule

	Upon Agreement signature	One Year after Project Start	Year 3	Year 4	Total
Scheduled Date	1st January, 2017	1st January, 2018	1st January, 2019	1st January, 2020	**(in USD)**
Project Funds	**651,014**	**863,743**	**552,976**	**288,360**	**2,356,093**
Implementing Entity Fee	**55,262**	**73,320**	**46,940**	**24,478**	**200,000**
Total	**706,276**	**937,063**	**599,916**	**312,838**	**2,556,093**

Table 3.14: Project timelines

Activity	Broad timelines
Baseline data collection through FGDs/ PRAs/ GIS and baseline report preparation. Creation of 56 village development plans	0-6 months
Formation and strengthening of village level community institutions & capacity building	3-36 months
Participatory impact monitoring	18-24 months, 37-48 months
Implementing livelihood activities	7-42 months
Entry point activities (water related)	0-6 months
Installation of agromet stations	0- 12 months
Watershed improvement, efficient irrigation mechanisms	4-42 months
Development of design of knowledge material	7-24 months
Workshops, Awareness sessions	10-48 months
Monitoring	3-50 months
Evaluation	23 month (midterm) 45 month(final)

Table 3.15: Gant chart for implementation – Activity wise

Outcome / Output	Activity	Year I				Year II				Year III				Year IV			
Component I: Integrated socio - economic and ecological assessment and planning		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 1.1 Socio economic baseline report with village level detailed analysis in the project villages	Activity 1.1.1 Collection of primary data																
	Activity 1.1.2 Baseline report and village development plans																
Output 1.2 Baseline mapping and change assessments of natural resource base in project villages using GIS	Activity 1.2.1: GIS Mapping & Analysis																
Component II: Community mobilization for building adaptive capacities																	
Output 2.1 Robust community institutions in 56 villages with collective decision making of stakeholders at village / cluster / district / landscape level on issues of conservation, climate change, gender and development.	Activity 2.1.1 Community awareness, sensitization and mobilization																
	Activity 2.1.2 Formation and strengthening of CBOs through exposure visits and training																
	Activity 2.1.3 Gender focused activity																
Output 2.2 Participatory impact monitoring	Activity 2.2.1 Participatory impact monitoring																
Component III: Integrated approach for ecosystem resilience and sustainable livelihoods as a means for adaptation																	

Output 3.1: Adoption of climate resilient agricultural practices by 5,000 households	Activity 3.1.1 Demonstration of adaptive agriculture crops and practices through farmer field schools																
	Activity 3.1.2 Supply of agricultural inputs and implements and promotion of organic farming																
	Activity 3.1.3 Application of efficient irrigation systems / mechanisms and improvement of watershed																
	Activity 3.1.4 Installation of agromet stations and dissemination of weather specific agricultural practices																
Output 3.2 Adoption of diversified livelihoods for poverty reduction and enhanced climate change resilience by 2,000 households	Activity 3.2.1 Demonstration of alternate livelihood / enterprise options and supply of inputs and implements																
	Activity 3.2.2 Facilitation of backward and forward linkages																
Output 3.3 Enhanced vocational skills in 500 individuals.	Activity 3.3.1 Develop and implement a set of vocations for youth																
Output 3.4 Adoption of energy efficient mechanisms by 1,000 households to reduce fuel wood dependency and drudgery amongst women	Activity 3.4.1 Provision of alternative cooking fuel for 400 households																
	Activity 3.4.2 Provision of efficient cooking mechanisms for atleast 600 households																
	Activity 3.4.3 Provision of solar lanterns for atleast 600 households																
Component IV : Knowledge management																	

Output 4.1 Knowledge management plan covering all main KPC-dependent user groups to improve awareness levels and facilitate informed decision making to address threats to KPC	Activity 4.1.1 Workshops for homogenous groups																	
Output 4.2 Developed pool of products comprising research studies, learning/ case studies from the project, training modules and capacities for its dissemination through relevant tools	Activity 4.2.1 Develop and design knowledge material and tools																	
	Activity 4.2.2 Documentation of learning and processes																	
	Activity 4.2.3 Develop medium of knowledge sharing																	
Output 4.3 Local and National Level Campaigns/Workshops for dissemination	Activity 4.3.1 Dissemination of knowledge material and tools for identified homogeneous groups																	
	Activity 4.3.2 Dissemination of learning and processes at local and national level through workshop and other mediums																	

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PART IV: ENDORSEMENT BY GOVERNMENT AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. **Record of endorsement on behalf of the government** *Provide the name and position of the government official and indicate date of endorsement. If this is a regional project/programme, list the endorsing officials all the participating countries. The endorsement letter(s) should be attached as an annex to the project/programme proposal. Please attach the endorsement letter(s) with this template; add as many participating governments if a regional project/programme:*

Ravi Shankar Prasad, IAS, Joint Secretary, Ministry of Environment, Forest & Climate Change (MoEF&CC), Government of India	Date:

B. **Implementing Entity certification** *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (National Action Plan on Climate Change) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
(Dr. B. G. Mukhopadhyay) *Chief General Manager* *NABARD, Head Office, Mumbai* *(Implementing Entity Co-ordinator)*	
Date: *August,01, 2016*	Tel. and email: Phone (Direct): +91 (022) 26530007 Fax (022) 2653 0009, Mobile: +91 9769690750 fsdd@nabard.org climate.change@nabard.org bg.mukhopadhyay@nabard.org,
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