

**WILDLIFE  
& WE**



*Let's have better tomorrow !*

**Wildlife & We Protection Foundation**

# STRATEGIC PLAN FOR CONSERVATION OF CORRIDORS(SPCC) IN CHHATTISGARH

The document recapitulates in brief the Scope A and Scope B of the Wildlife Corridor Project conceptualized by the CAMPA Chhattisgarh which consisted of two components namely 1. Scope-A: Identification of various potential wildlife/ biodiversity corridors in territorial forests apart from the ones identified by WII. 2. Scope-B: Preparation of 'Strategic Plan' for effective functioning of all such corridors including those identified by WII which finally resulted into the final deliverable - the ' Strategic [Plan for Conservation of Corridors ( SPCC) in Chhattisgarh

**January, 2021**

*Executive  
Summary*

## **Strategic Plan for Conservation of Corridors (SPCC) in Chhattisgarh State**

### **Executive Summary**

A 'wildlife corridor' is an area in the environment that functions as a passageway for the purpose of providing connectivity between wild species by means of dispersal and migration of individuals. With the increasing occurrence of habitat fragmentation caused by city developments, road construction, and clearing of land for agriculture, the chance for wildlife to be adversely affected continues to grow. As a way to combat the negative effects of habitat fragmentation, wildlife corridors have emerged as an effective tool to help sustain wildlife populations, habitats, and thus overall biodiversity. Wildlife Corridors allow for the increase in gene flow between small and fragmented wild populations and thus are important for maintaining biodiversity through the conservation of potentially at-risk local populations in the wild and has proven to greatly improve species richness. Small wild populations that are isolated from all other populations of the same species face a large risk of inbreeding depression and local extinction. This is due to a lack of variety in the gene pool of that population. The use of wildlife corridors allows for the opportunity of connectivity between small isolated populations in the wild. This can result in the increase of genetic variation within these small populations and lower inbreeding depression risks. Wildlife, Conservation or Biodiversity corridors have emerged as an important tool for landscape level management of wildlife populations to ensure long term conservation of wilderness landscapes.

It is in general agreed and confirmed that habitat fragmentation is the single largest cause of concern for forest and wildlife management at landscape level. Forest, Wildlife and Environmental Managers, Scientists and Conservationist all agree and recognize the need for various types of corridors which may keep the reserves, protected areas and large extents of habitat blocks of managed forests, connected for obvious reasons, as elaborated in extensive research and documentation available. The single largest constraint, in achieving success in 1. Protection, 2. Management, 3. Restoration. 4. Amelioration, 5. Development, 6. Conservation and 7. Monitoring of wildlife and various other types of corridors, is the financial resources required to do so, which may never be enough. If at all some funds are mobilized and streamlined from various sources then How? Where? and When? Would these funds be utilized, even if we are genuinely, earnestly and honestly interested and keen on conserving these corridors for long term existence of the protected areas and a large expanse of managed forests areas? The CAMPA Chhattisgarh realized this constrain and decided to find answers for the above three questions and thought of taking up this challenging task of conservation of corridor in Chhattisgarh for betterment and long-term conservation of the wilderness landscapes in Chhattisgarh and ensuring future of conservation in the regional context. Thus, the need for a 'Strategic Plan for Conservation of Corridors'( SPCC) in Chhattisgarh emerged to

develop a consolidated and concrete documentation not only to ensure long term conservation of forests, wildlife and environment in Chhattisgarh but at the same time ensure human well-being of local communities.

The CAMPA, thus envisioned and set a goal to develop a 'Strategic Plan for Conservation of Corridors'(SPCC) in Chhattisgarh to seek answers to the questions related to wildlife corridors like What is the extent? Have we assessed it factually and weighed it scientifically? How much funds would be required? What are the achievements to be targeted? Where is the plan? Where is the Strategy? The entire Strategic Plan as per the scope and design of the project consists of both the Scope-A and Scope-B. The Scope identified by the CAMPA is as follows

1. Scope-A: Identification of various potential wildlife/ biodiversity corridors in territorial forests apart from the ones identified by WII.
2. Scope-B: Preparation of 'Strategic Plan' for effective functioning of all such corridors including those identified by WII.

The entire Strategic Plan has been developed based on the Secondary Spatial and Non Spatial Data and documentation provided by the CAMPA. It is envisaged in the project that there will be least possible involvement of any Primary Data and that all the findings and generated deliverables will be based on secondary data provided by the CG Forest Department.

The Strategic Plan Scope A starts with an elaborate introduction to Wildlife and various other types of corridors and presents an elaborate review of literature. This is followed by providing and presenting the conservation scenario in the Chhattisgarh with respect to the Forest areas and Protected Area Network and various illustrations as to what types of wildlife/ conservation corridors may be expected to occur in Chhattisgarh state. In all 13 Categories of Corridors were planned to be demarcated and delineated using the forest cover of Chhattisgarh State on the basis of Administrative/ Management Category they connect/ link. Another important aspect of connectivity which was supposed to be explored was the possibility of identification of Ecological / Wildlife Corridors in the complex of disjunctive isolated island type forest patches, interspersed between non-forest areas, with majority of the area under, urban, semi urban, rural areas, settlements, agriculture and other associated land uses.

The methodology used for the **Scope -A** consists of the following steps at a glance.

**Step-I:** Wildlife Corridors and the target species.

The target species chosen were the two long ranging species, tigers and elephants which are known to exclusively use corridors for dispersal and corridor dwelling mammals namely prey

species of the tigers and leopards which includes chital, sambar, gaur, wild boar and barking deer which may disperse or undertake local migration based for habitat needs. The other associated wildlife which were given due consideration were leopards, sloth bear and wild buffalo.

#### **Step II: Identification and Mapping of probable Wildlife Corridors**

To identify a corridor: (1) Forest Cover datasets, and (2), datasets pertaining to tiger reserves and protected areas in Chhattisgarh and adjacent states were overlaid on the World Satellite Imagery of Digital Globe in Arc-map. Linear datasets from the center of the forest patches were created on separate spatial layer to generate the corridor layer. After creating and checking the linear datasets for accuracy and ensuring that all probable connectivity's have been considered, a 1500-meter buffer on either side of the lines was generated in the GIS domain to demarcate the 3 km wide corridor. As such there are no fixed and established criteria for the width of Tiger or Wildlife Corridor, thus a standard width of the corridor was decided to be 3 kms, as specified by the Wildlife Institute of India. These wildlife corridors identified are those other than those identified by the WII, however the WII corridors have also been included for analysis for the purpose of this Strategic Plan for Conservation of Corridors (SPCC).

**Step-III:** Land-use/Land-cover Classification of the identified corridors, inclusive of those identified by WII.

Apart from the forest cover within the 3 km wide wildlife corridors, which were delineated from the Forest Cover Map provided by CAMPA, the land use classes' visually classified from the Digital Globe World Satellite Data were 1. Agriculture 2. Barren Land 3. Canal 4. Human Settlement 5. Industry 6. Mines 7. National Highway 8. Open Land 9. Plantation 10. Reservoir 11. Rivers/Stream 12. Other Roads and 13. State Highways

#### **Step-IV: Identification of Wildlife/Ecological Corridors in Non-Forest and Urban areas**

The complex of disjunctive isolated island type forest patches, interspersed between non-forest areas with majority of the area under, urban, semi urban, rural areas, settlements, agriculture and other associated landuses, was considered important to maintain ecological connectivity's, not only for the dispersal of wildlife but to maintain green/ biodiversity/ ecological corridors, which will be extremely crucial for floral and faunal dispersal and maintaining connectivity between identified wildlife corridors and various types of other corridors which might be delineated and developed so that a network of the various types of

corridors may be spread over the entire extent of the Chhattisgarh State. This has been termed as Chhattisgarh Ecological Corridor Network for Nature Conservation and Human Well Being. (CNNCHW)

This category of corridors identified have been termed as Category 14 A (Riparian Corridors) and Corridor 14 B (Road network) of corridors and this basically addresses areas which are conglomerate/mosaic of isolated forest patches interspersed with various other non- forest landuse mentioned above.

#### **Step-V: Categorization of Identified Wildlife Corridors**

The 13 Categories of wildlife corridors identified were 1.Tiger Reserve to Tiger Reserve 2.Tiger Reserve to Elephant Reserve 3.Tiger Reserve to National Park / Sanctuary 4. Elephant Reserve to National Park / Sanctuary 5. Elephant Reserve to Elephant Reserve 6. National Park / Sanctuary to National Park / Sanctuary 7. Tiger Reserve to Habitat Block 8. Elephant Reserve to Habitat Block 9. National Park / Sanctuary to Habitat Block 10. Elephant Reserve to WII / Category 1 Corridors 11. National Park/ Sanctuary to WII / Category 1 Corridors 12. Habitat Block to WII / Category 1 Corridors 13. Habitat Block to Habitat Block.

In total 121 Wildlife Corridors have been identified for the purpose of the Strategic Plan(SPCC).

#### **Step-VI: Prioritization of Wildlife Corridors**

Prioritization of the wildlife corridors was not within the current scope of the project. However, it was felt extremely necessary that the corridors be prioritized from the point of view being given priority for management interventions. The basic fundamental used here is that the wildlife corridors which are promising from the point of view of long term protection, management, conservation, development and monitoring have been given relatively a high priority, so that with appropriate management interventions and use of resources, the corridor will serve its designated purpose of forest and wildlife conservation. The corridors which do not have a chance of long term protection, management, conservation and development, have been allocated relatively low priority for management intervention because they will consume more resources of the 'state exchequer' and still the chances of it serving its designated utility may be negligible. The rationale here is wise, apt and optimum use of resources to get the maximum desired mileage for forest and wildlife conservation through protection, management, conservation, development and monitoring of wildlife corridors. In short the 'Return on Investment' principal has been used. The corridors where the chances of 'Return of

Investment' in terms of conservation mileage are more those corridors have been given a higher priority.

The Prioritization of the forested Wildlife Corridors was done using weighted ranking of the following Criteria-**Criteria-1:** Administrative/ Management Category (MC); **Criteria-2:** Contiguity of forests in wildlife corridors (Patchiness) -(P); **Criteria 3:** Indicative Habitat Suitability of Prey Species of Tiger in the Wildlife Corridor (HSC); **Criteria-4:** Area Statement of the Land-use in the Wildlife Corridor. (AS\_LU) ; **Criteria-5:** Fragmentation of the forests in the Wildlife Corridor (F); **Criteria-6:** Habitat Suitability for Tiger Prey Species in the protected areas and habitat blocks (HSI-PA-HB & WC); **Criteria-7:** Water bodies adding value to habitat for animals in passage (W); **Criteria-8:** Infrastructure especially Road Crossings along the wildlife corridors; **Criteria-9:** Number of point location of villages(V); **Criteria-10:** Connectivity between Corridors(CC) ; **Criteria-11:** Land-use or Management Category to which the Wildlife Corridors in Chhattisgarh connect to, in adjacent states with Regional Context (RC)

The Wildlife Corridors have been prioritized into Five Priority Classes namely- 1. Very High Priority 2. High Priority 3. Moderate Priority 4. Low Priority and 5. Very Low Priority.

Apart from prioritizing corridors using the aforesaid 11 criteria for Corridor Prioritization, for protection, conservation, development and monitoring, there are certain corridors which have been identified as Critical Corridors based on the following- **i.** In terms of number of first order connections to the corridor and interconnection with various corridors. **ii.** Status, quality and health of the adjacent protected areas or habitat blocks. **iii.** Strategic location and vulnerability of these particular corridors. These corridors may not yield a high return on investment or may need comparatively more resources in order to protect and conserve them but they still need to be protected since losing them would be paying a high price in terms of losses on the conservation front. These 'Critical Corridors' will need special interventions, may need more resources, watershed based interventions, specific policy and management initiatives, extensive awareness generation programs and a special Crisis Management Plan. This also means that, in no case can they be afforded to be lost. In all 14 such corridors have been identified as 'Critical Corridors'

## VII - Ground Validation

The ground validation up to 5% has been done by the Wildlife and We Protection Foundation assisted by the staff of the Forest Divisions. Further it will be done, as per the need, independently by the Territorial Forest Divisions under the directions of the CEO CAMPA. This will facilitate the Divisional Forest Officers of the Territorial Divisions to prepare their Detailed

Project Reports. Available, MStripes data of Chhattisgarh State, has also been used for ground validation.

The Spatial Database generated by the Project has been depicted and presented at three scales as **1. State Level** **2. Landscape ( Forest Circle Level)** and **3. Forest Division Level**. For the purpose of this project the six forest circles in Chhattisgarh have been considered as six landscapes for the purpose of planning and implementation of the Wildlife Corridor Project. A top to down approach has been adopted starting with the small scale maps of the entire state of Chhattisgarh. These maps of Chhattisgarh are followed by the comparatively larger scale maps of the six landscapes (forest circles) which are further subdivided into forest divisions in each forest circle. However, while displaying the maps while moving from small scale maps of the state to the large scale map of the divisions, only magnification of the map for display purpose has been taken recourse to. The principal of Map Generalization does not apply here, since the details in the maps just get enlarged when we move from small to large scale, but the map content remains the same. The **Strategic Plan Scope-A** concludes by proposing an 'On Line Orientation Program' for the Divisional Forest Officers, Frontline Executives and other senior level functionaries in the department.

The Scope-A ends with a note on transition of the Strategic Plan **Scope-A** into **Scope-B** with a short introduction as to what may be expected to be contained in the later. A Sample Forest Division Level database of Jashpur Forest Division has been depicted and presented to get a fairly good idea of the Spatial Database pertaining to individual wildlife corridors along with a variety of statistics pertaining to the corridors. A proposed layout of Strategic Plan Scope B is presented for a preliminary idea of the expected contents.

As discussed and elaborated above, in the **Scope A** an overview of spatial database of the Chhattisgarh State has been generated to elaborate upon the forest and wildlife resources and the wildlife corridors identified and demarcated under the project. In the **Scope B**, each wildlife corridor gets an independent unique identity in terms of the State Level ID. The entire analysis and outcomes of the Scope-B are based on individual identity of the corridor for planning and implementation of the Strategic Plan for Wildlife Corridors. Each Wildlife Corridor has a State ID, with a nested Forest Division ID and a Corridor Segment ID, in the database. The framework of the Scope B is actually a set of Guidelines and Advisories based on individual analysis of Wildlife Corridors which are supposed to be used for development of Forest Division Level Detailed Project Reports. This may also be considered as the starting point of the implementation of the project. While developing Scope -B the target group is the planners and thus it starts with introduction to management of corridors followed by the problems

pertaining to protection, management and conservation of corridors. It is extremely essential for planners to know about the basic management practices pertaining to wildlife corridors and the problems which they may come across and may have to overcome. Along with the basic facets of management of corridors an effort has been made to elaborate and delve upon the advantages and disadvantages of the corridors to make the forest and wildlife managers/planners aware of both the sides of this coin from the conservation perspective. While developing the Scope –A, a mention was made to various types of corridors which may be encountered by forest and wildlife managers in the Chhattisgarh State and the same has been reiterated in Scope- B as a ready reference to deal with situations as they come and to serve handy for planning. But alongside the various categories, priority classes and criticality of corridors identified in Chhattisgarh State have also been elaborated.

To facilitate planning, management and implementation of Management Interventions for corridor conservation, the individual corridors are sub-divided into 3 Km<sup>2</sup> segments. These segments are generated using the ARC GIS Software. This is followed by prioritization of the segments within the corridors using a pre-decided set of criteria elaborated in **Chapter-7**. This has been done with the objective to understand as to within a particular corridor, which are the segments, which may need a treatment on priority so that we do not lose the connectivity. The Segment Prioritization has been based upon the disturbance indices of the respective segments in the corridors. The Segment Prioritization has been done as: **0- Very Low Priority Segments** **1- Low Priority Segments**, **2- Moderate Priority Segments**, **3- High Priority Segments** and **4- Very High Priority Segments** for a precise understanding and appreciation by the Field Planners

Each individual corridor has been longitudinally (along its length) subdivided into buffer widths of 1 km and 2 km width and the outer most width of 3 kms. The nomenclature used for these sub-divisions in the form of buffer widths, is the 'Priority Section' of the corridor. The innermost buffer is designated as the High Intensity Management Intervention Zone (1- High Priority Section), the intermediate one is the Moderate Intensity Management Intervention Zone( 2- Moderate Priority Section) and the outermost is the Low Intensity Management Intervention Zone(3- Low Priority Section). This has been done with the objective of concentrating the efforts and keeping the management interventions focused on the forest areas and other landuses in close vicinity of the corridors to get the maximum conservation mileage. This mechanism has been developed to address situations whereby within the 3 km width of the corridor, there may be a very narrow strip of forested area surrounded by large extents of non-forest and multiple landuse. In such cases the intensity of the management interventions may be concentrated in the High Intensity Management Intervention Zone of 1 km width. If there are cases where the forest area is wider, then some of the management interventions may be



taken up in the Moderate Intensity Management Intervention Zone. The intensity of the management interventions in the outermost 3 Km width will definitely be low since it would need tremendous amount of resources and may not provide enough return on investment. This decision may also depend upon the crucial and critical nature of a particular location, where the situation may be such, as to save the corridor, what may come and at any cost possible.

Another important factor which was felt to be crucial for the wildlife/ forest managers/ planners was understanding of the Principals of Management of Patches/ Reserves/ Protected Areas/ Habitat Blocks, Corridors and the Matrix consisting of multiple landuse/ landcover and ownerships within and adjacent to the identified corridors. Attempts have been made to impart enough exposure to the structure of the corridors and how is it important for conservation. It was felt important to elaborate on various steps involved in application of these 'Corridor Principals' in practice, to guide the planning process. The importance of scale has been adequately addressed with specific perspective of corridors identified in Chhattisgarh State. The hierarchy of the spatial data generated has been discussed to facilitate planning. A specific mention of the Digital Toolbox (**Chapter 6.6.**) developed for the Forest Divisional Planners seems to be extremely important in order to expect the best possible outcome in terms of the Detailed Project Reports, which are supposed to be developed for the Forest Divisions. The DPRs are expected to have a strong bearing on the implementation of various management interventions of the Corridor Project, as proposed in the Strategic Plan.

In order to understand the correlation of the spatial data generated for the Scope -A and Scope-B, a detailed elaboration of Spatial Datasets for the data provided in the toolbox, has been given to facilitate the understanding of the Forest Divisional Planners, so that they can choose from the available database, the ones which they require for specific 'analysis oriented integrations' and to comprehend the combination of various layers to prompt them insights for planning and proposing management interventions in the DPRs. The entire spatial data in the form of maps with elaborative depictions has been provided in a separate **Chapter -8.**

A specific mention of the various scales at which the Spatial Database in Scope-B has been generated and presented needs a mention here. The various scales of spatial data representation are **1. State Level 2. Landscape (Forest Circle) Level 3. Forest Division Level 4. Corridor Level** and further at the **5. Segment Level.** This means that the data has been fine-tuned by two additional levels of details namely, the corridors and the Segment Level, for a

better understanding and appreciation of the Forest/ Wildlife Managers, Field level Planners and Implementers. The most significant difference in the Scope-A and the Scope B data is that in the former an 'Overview Data' of the identified corridors and forest and wildlife resources at various levels/ scales has been generated and presented and in the latter the spatial database generated and presented at various levels/ scales, concentrates entirely on the data, within the wildlife corridors and further within the 3 Km<sup>2</sup> segments, to support planning and execution of the project interventions. An additional qualitative level of data analysis and presentation is the prioritization of the segments which is expected to serve as an important milestone for the planners, as to at which location (segment), in a particular length of corridor, immediate interventions are needed. This information may serve as a very valuable input for the planner so that he can prioritize his actions where they are actually required and thus conservatively use his resources accordingly. Yet another additional qualitative analysis is overlay of the Longitudinal Sections of 1 km, 2 kms and 3 kms, along the length of the corridors, indicating the **1. High Intensity Management Interventions Zone( 1- High Priority Section) 2. Moderate Intensity Management Interventions Zone (2- Moderate Priority Section) and the 3. Low Intensity Management Intervention Zone (3- Low Priority Section),** respectively. These sections are expected to serve as a 'rider' to the field level planners as to where he is supposed to concentrate and focus his interventions for the best possible results. So the Field Planners for the purpose of providing management interventions at the level of individual corridors are guided by the Segment Prioritization and the Section Prioritization to get the maximum possible optimal solution, so as to ascertain the exact location / areas in the corridors, where management interventions are supposed to be focused upon and needed the most.

The elaborations provided in the Strategic Plan prior to this Chapter are expected to address various concerns related to applications of the various principles and practices by studying and appreciating these maps. There may be a need to get large size printouts of these maps (or use of digital enlargements on the PC) to understand and appreciate all possible details depicted. The maps have been generated at an appropriate scale of enlargements so that A1 size prints for field utility may be reproduced for clarity, understandability and for obtaining an appreciable resolution.

It is inferred that it will be extremely important and essential to demarcate all the Wildlife Corridors identified through this Strategic Plan on the ground for the field planners and the frontline staff of the forest department to understand them and identify them on ground for

management purposes, protection and conservation. This would be an exhaustive exercise but it will ensure protection, especially of the forested areas of the corridor from encroachments and misuse at the interface areas. It will also help generate various possibilities of protection of wildlife related interests in the adjacent multiple landuse matrix. The Corridor Assessment Workbook (**Chapter-10**) which has been provided is expected to be very handy for the Field Planners to conduct field surveys and assessments of the identified and mapped wildlife corridors, in order to propose future management interventions.

The main focus of the Scope-B as per the Project Format is providing Advisory by way of management prescriptions and proposing various management interventions for the long-term conservation of wildlife corridors. The **Advisory-A Thematic Corridor Segments Advisory** and **Advisory-B Corridor Planning, Management and Implementation Overview**, elaborate upon various management prescriptions and interventions which will guide the field level planners to choose the appropriate ones from amongst them, as per the site specificity. The Advisory –A is elaborated using a land-use wise and a theme-based method and Advisory -B has been elaborated using a theme-based method. The entire elaborations of the Strategic Plan Scope-B from **Chapter 1 to 7**, the Spatial Database provided and the two **Advisories A and Advisory B**, are expected to be sufficient enough tools at the hands of the Forest or Wildlife managers and the Field Level Planners to develop Detailed Project Reports (DPRs) for ensuring effective and efficient conservation of these corridors.

The most important factor for the Strategic Plan is the process of preparation of the Detailed Project Reports at the Forest Division Level. The spatial database provided may be sufficient in all respects but it is expected that the Forest Division Level Planners may also conduct some 'Analysis Oriented Integrated' by selectively choosing the data from the toolbox for developing scenarios for comprehension and understanding of the datasets, to develop 'Overview Maps for Management interventions'. These may be comparatively large scale maps for an entire corridor, parts of the corridor or may be for a group of segments falling in a part of a particular corridor. However, the 'Overview Maps of Management Interventions' generated may not be of a scale large enough to plan specific treatment through various management interventions. Therefore, it is envisaged and suggested that the Theme wise 'Treatment Maps' for a particular group of a segments or individual segments may be prepared at still larger scale which may be comparable to the cadastral scale applicable in the particular area. For example the Forest Divisional Planners / Forest and Wildlife Managers may develop Treatment Maps for Plantations, Soil and Moisture Conservation Works, Development of Riparian Buffers,

Development of shelter breaks and wind breaks along the roads and agricultural bunds/ boundaries, habitat management, development and conservation activities, so on and so forth.

The **Chapter- 12** elaborates upon the methodology for preparation of the Detailed Project Report along with a DPR formulation template. Some demonstrative maps of the Achanakmar-Kanha Corridor pertaining to 'Overview Maps for Management Interventions' and 'Treatment Maps' have been depicted and presentation for the understanding of the Planning Teams. These treatment maps are expected to impart precision in development of realistic estimation of various resources which may be required for a particular planning area. The **Chapter 13** concludes with concise elaborations of the Scope-B findings and deliverables.

The **Chapter 14** focuses on the issues as to how the Strategic Plan is expected to technically support the Forest Department of Chhattisgarh and the State Government of Chhattisgarh to foresee into the future of conservation for forest and wildlife and ensure human well-being as well. Based on the findings and elaborations and deliverables of this Strategic Plan for Conservation of Corridors (SPCC), the **Way Forward** has been proposed for the CAMPA/ Chhattisgarh Forest Department, elaborating upon issues related to 'Dissemination of the **Learning of SPCC**' and envisioning future perspectives namely **1.** Spatial Digital Planning and Management Support System of CG Forest Department **2.** Geo-informaton Policy for the Forest Department **3.** Chhattisgarh Conservation Strategy and Action Plan **4.** Chhattisgarh Regional Ecosystem Assessment. The **SPCC** may serve as one of the important enabler to successfully deal with the aforesaid initiatives to ensure 'Future of Conservation' in Chhattisgarh State.

An overview and the scenario which emerges as a result of the SPCC may be summarized as follows-

In total 121 Wildlife Corridors have been identified/ considered for the purpose of the SPCC. The number of wildlife corridors of the 13 Categories are 1.Tiger Reserve to Tiger Reserve(**24**) 2.Tiger Reserve to Elephant Reserve(**9**) 3.Tiger Reserve to National Park / Sanctuary(**6**) 4. Elephant Reserve to National Park / Sanctuary (**2**) 5. Elephant Reserve to Elephant Reserve (**1**) 6. National Park / Sanctuary to National Park / Sanctuary (**2**) 7. Tiger Reserve to Habitat Block (**7**) 8. Elephant Reserve to Habitat Block (**9**) 9. National Park / Sanctuary to Habitat Block (**4**) 10. Elephant Reserve to WII / Category 1 Corridors (**1**) 11. National Park/ Sanctuary to WII / Category 1 Corridors (**1**) 12. Habitat Block to WII / Category 1 Corridors (**8**) 13. Habitat Block to Habitat Block (**47**).

Amongst the total 121 Wildlife Corridors identified/ considered for the purpose of the SPCC, the number of wildlife corridors in different Priority Classes is 1. Very High Priority (**16**) 2. High

Priority **(29)** 3. Moderate(Medium) Priority **(31)** 4. Low Priority **(30)** and 5. Very Low Priority **(15)**. There are in all 14 wildlife corridors which have been analyzed as Critical Corridors.

Corridor **Category 14 A** and **14 B** which are basically the Riparian/ Riverine connectivity's and the Road network respectively have been identified to address the issue pertaining to disjunction of the Corridor Network of Chhattisgarh in the Central Chhattisgarh Region which is devoid of forest cover due to heavy influx of cities, townships, developmental activities and habitations. These corridors have been identified by the Project Team but the discretion about, which of these, may be taken up for interventions or the prioritization thereof, has been left to the discretion of the CAMPA/ Forest Department. However, attempts have been made to identify the '**Preferred Riparian/ Riverine and Major Road Corridors**' which are connecting or passing through a close vicinity of the isolated and disjunctive forest pockets, sprinkled all over the entire central Chhattisgarh Region amongst the influx of cities, townships, developmental activities and habitations. This preference has been worked out using the preliminary analysis based on **1. Drainage Order 4 and above** **2. Major Rivers / Streams** connecting from north south and east to west which establish ecological connectivity to a considerable extent **3. Drainage and Riverine courses** which connect or pass at a close vicinity of the isolated forested / island pockets in the multiple landuse matrixes with varying disturbance gradient **4. Major Roads** where there is a potential to develop roadside and avenue plantations which serve the purpose of ecological connectivity **5. The major roads** which as far as possible connect or pass close by to isolated forest pockets in the multiple landuse matrix. **6. Important roads** which may help develop across north-south and east west connectivity's between the forested wildlife corridors, protected areas and managed forest areas. This will enable the Project Proponent (CAMPA) to address the central Chhattisgarh Region which evidently looks devoid of forest cover. The **Advisories A** and **B** have adequately addressed various prescriptions pertaining to the Riparian Corridors and enable roads to serve as ecological corridors which connect the areas which are main conservation strongholds and the forested corridors in Chhattisgarh.

The outcome of the 'Strategic Plan for Conservation of Corridor' indicates the following in a nutshell.

- The recorded forest area in the State is **59,772km<sup>2</sup>** (44.21% of the geographical area which is **135,192 km<sup>2</sup>** ).
- Reserved, Protected, Un-classed Forests are 43.13%, 40.21% and 16.65% of the total forest area respectively.

- The Total Number of Wildlife/ Conservation/ Biodiversity Corridors identified is **121**. (This does not include the Riparian/ Riverine and the Road Corridor Network)
- Total length of the corridors identified in the Chhattisgarh State = 5363.15 kms.
- Total area under the identified wildlife corridors = 16312.74 Km<sup>2</sup>, which is 27.29 % of the forest area and 12.06 % of the geographical area of the state.
- Total Area under the Protected Area Network is **11112.76 Km<sup>2</sup>** which is **18.59 %** of the total forest area of the Chhattisgarh state and **8.22 %** of the total geographical area of the Chhattisgarh state. (Elephant Reserve Area is included in the total area under Protected Area).

With reference to the above mentioned statistics it may be inferred that a total area of **11112.71 Km<sup>2</sup>** under the Protected Area Network and an area of 16312.74 Km<sup>2</sup> under the Corridor Network, constitutes a total area of **27425.5 Km<sup>2</sup>**, which is expected to be brought under effective management conducive to wildlife conservation and conservation in general. This comes to **45.88 %** of the total forest area of the state and **20.28 %** of the geographic area of the Chhattisgarh State. With such an extent of area being intended to be brought under the Conservation Network, there emerges a need for development of 'Chhattisgarh Conservation Strategy for Environmental and Human Well Being'.

Any Strategic Plan once prepared needs to have an element of 'hand holding' for the Policy Makers and Planners of the Resource Department, in this case the CAMPA/ Forest Department. Under the prevailing scope of the Project 'handholding' to some extent pertaining to development of advisory for preparation of the Detailed Project Reports, have been incorporated by way of supporting and providing technical support in generation of database for facilitating implementation of the Project. However, to provide the Forest and Wildlife Managers and Field Level Planners a helping hand in preparation of database for fine-tuned planning and facilitation in implementation capability and competency, a sample database of Range-Wise Beat Level Maps with Corridor Segments, Corridors Sections, Compartments and Geocoordinates overlaid on the land-use spatial layer for demarcation of the corridors at field level and preparation of 'Overview Maps of Management Interventions' and 'Treatment Maps' for facilitating planning, management and implementation of the project have been provided in a separate **Sample Map Catalogue** as an **Appendix** to the Strategic Plan.

Generation and development of Beat Level Maps for the entire Chhattisgarh State is a humongous task. Thus, for development of such Range-wise Beat Level Maps for the entire state of Chhattisgarh the Forest Management and Information System (FMIS) and the Regional GIS Centers of the Forest Department, at the Landscape( Forest Circle) levels will have to trained and adequately equipped to generate Beat Level Maps for their respective Forest

Divisions in that particular Forest Circle. In the absence of such an arrangement a thought may have to be given to develop a component for outsourcing of generation of Beat Level Maps. However, it is proposed that the first option seems to be more useful for the department since this intends to develop the capacity and competency of the human resource for future. In case there is an emergency of these maps to be generated for timely implementation of the project then outsourcing is a viable option.

The Strategic Plan may be considered as the first basic document developed by any state in the country for conservation of corridor in its entirety. It actually aims at developing the framework of baseline information on wildlife and various other types of corridors in Chhattisgarh State. The current Strategic Plan is not the ultimate answer or the end result but it is the consolidated foundation to evolve upon and to develop various other frameworks, for policy and planning in order to ensure forest and wildlife conservation in totality through protection and conservation of corridors. The Chhattisgarh State Forest Department now has a factual strategic plan built on scientific and technically sound principals and a strong footing to look forward into the future with facts and figures at the finger tips and for facilitating an informed decision making process.

The Strategic Plan has given the Chhattisgarh Forest Department a way to plan meticulously for implementation of measures for corridor conservation. This Strategic Plan is expected to give the forest department the ability to test and try various management interventions on a small scale, in selective, scientifically and technically prioritized areas, consolidate them to ensure success and then upscale the interventions through judicious and optimal use of resources. Maximum return on investment and optimal use of resources of the State Exchequer are the watchwords of this Strategic Plan. It demonstrates a combination of Science, Technology, Management and Conservation-Field craft to suit the working mechanism of the forest department for conservation of forests and wildlife. The Strategic Plan has been kept open ended for periodic updating through use of upcoming data requirements, rapidly evolving technologies, review and revisions to accommodate and incorporate futuristic planning and emerging needs and trends.

As a follow-up action to facilitate Field Level Planning, Management and Implementation of the **SPCC**, two State Level Orientation and Training Programs for Chief Conservator of Forests and Forest Division Level Planners, with the following objectives has been recommended **1.** To comprehend and understand the 'Strategic Plan Scope A and B of the corridor Project' **2.** To enable the mechanism for transfer of data to the Forest Division Level through the FMIS. **3.** To make the Division Level Functionaries understand the mechanism for utilizing the data. **4.** To get Field Managers oriented and acquainted to the entire digital spatial and non- spatial database generated by the Corridor Project for their utility, which in turn will enable preparation of DPRs for implementation. **5.** To provide guidance to the Field Planners related to

information and data they may be required to generate at field level for preparation of the Detailed Project Reports. **6.** To brief them on the Final Deliverable of the Strategic Plan Scope-A and B. **7.** To educate and train the Field Planners and Forest and Wildlife Managers in 'Analysis Oriented Integration and Comprehension' of the Corridor Project Deliverables to ensure long term Protection, Management, Development, Restoration. Amelioration, Conservation and Monitoring, of the Wildlife/ Conservation/ Biodiversity Corridors in Chhattisgarh. **8.** Elaboration on various avenues of Establishment, Management and Conservation of 'Chhattisgarh Ecological Corridor Network for Nature Conservation and Human Well Being' (CNNCHW).

Finally, it is suggested that for a project of this magnitude to be implemented there needs to be three data nodes 1. State Level (FMIS) 2. Landscape Level (Forest Circle) and Forest Division Level. All these three data nodes are proposed to have an interface with the Data Node of WNW, the PMC in this case. The three data nodes on the Chhattisgarh, side needs to be updated with hardware and software both and manned with specialized technical task force with appropriate capacity and competency building back up. This will not only help the planning and implementation of this 'Strategic Plan for Corridors' but may take care of future needs as well. This project needs to be seen as an opportunity to do so.

It is also proposed that various mechanisms may be thought about to get the best, out of the outcome of this 'Strategic Plan for Corridor Conservation' in Chhattisgarh. However, it is worth mentioning here that to ensure smooth implementation of the **SPCC** it is proposed that the Chhattisgarh Forest Department may have to embark upon a robust 'Integration and Analytical Platform' for maintaining the voluminous database which would be generated and will have to be maintained, to serve the designated purpose. The FMIS may have to adopt one such Platform which may be the ESRI Platform of the Environmental Science Research Institute, USA. It is high time that instead of adopting a piecemeal approach to development of Spatial Data Infrastructure an Integrated and a Comprehensive Platform may be adopted. It is proposed that the CAMPA may give a serious thought to choose from the range of analytical tools available with the ESRI, USA.

The layout of the Strategic Plan for Conservation of Corridors (**SPCC**) Scope-A and the Scope-B as presented and documented is as follows;-



## **Scope-A-**

Chapter-1 Wildlife Corridors –An Overview

Chapter-2 Chhattisgarh at a Glance

Chapter-3 Methodology

Chapter-4 Spatial Database Generation

Chapter-5 Overview of Findings

Chapter-6 Conclusions

Chapter-7 Transition to Strategic Plan and Advisories-(Part-B)

## **Scope-B**

Executive Summary

Chapter- 1 Summary of Part A

Chapter- 2 Introduction

Chapter- 3 Advantages and Disadvantages of Corridors

Chapter- 4 Planning Landscape Level Solutions

Chapter- 5 Types of Corridors

Chapter- 6 Principles Corridor Management

Chapter- 7 Understanding the Spatial Data

Chapter- 8 Forest Division Level Data

Chapter- 9 Field Level Follow-Up Mechanisms

Chapter-10 Field-based Corridor Assessments

Chapter-11 Thematic Corridors Advisories

Chapter-12 Methodology for Preparation of DPRs

Chapter- 13 Conclusion

Chapter- 14 Way Forward

Annexure- Sample Map Catalogue – Range Wise Beat Level Field Maps