

**IMPLEMENTING THE CENTRAL ASIAN HIGHWAY NATIONAL ACTION PLAN  
WITH SPECIAL FOCUS ON REPARATION OF SITE SPECIFIC ACTIVITY  
PLAN, CAPACITY BUILDING, DEVELOPING BIRD SENSITIVITY MAP FOR  
SETTING UP OF WIND ENERGY AND SPECIES ACTION PLANS**

Proposal submitted to



Ministry of Environment, Forest  
& Climate Change

Chief Executive Officer  
National Authority

Afforestation Fund Management and Planning Authority (CAMPA)  
Ministry of Environment, Forest and Climate Change



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By



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## **1 Introduction**

The Central Asian Flyway (CAF), one among the nine flyways in the world, encompasses overlapping migration routes over 30 countries for different waterbirds linking their northernmost breeding grounds in Russia (Siberia) to the southernmost non-breeding (wintering) grounds in West and South Asia, the Maldives and the British Indian Ocean Territory. The major traditional wintering grounds for the waterbirds of the CAF are located in India. India has a strategic role in the flyway, as it provides *critical stopover and wintering sites* to over 90% of the bird species known to use this migratory route. During peak annual migration periods, hundreds of thousands of birds migrating along the CAF descend upon the wetlands of India in search of refuge and food. Central Asian Flyway harbours at least 279 populations of 182 migratory waterbird species, which breed, migrate, and winter within the region. Wetlands are not isolated spaces but, on the contrary, dynamic, complex habitats with biotic and abiotic connections all around, which are shaped by natural processes and social practices affecting them.

India is also an important wintering site for several landbirds and raptor species, which migrates from Europe, Africa, and Central Asia. At least 440 species of migratory birds from three flyways (CAF, East Asian Australasian Flyway, and Asian East African Flyway) are reported to visit the Indian subcontinent, of which 310 predominantly use wetlands as habitats, the rest being landbirds and raptors, inhabiting dispersed terrestrial areas.

Migrating waterbirds depend on a network of healthy wetlands for completing their migratory cycle. Unfortunately, many ornithologically important areas all over the world are threatened, and birds are under pressure from increasing human population, socio-economic activities and man-induced adverse natural phenomena. Such being the case, it is important to see that the habitats of various birds are properly conserved through scientific management. Sound management of such habitats is only possible by using available information on existing habitat components. Therefore, there is an urgent need for science-based and internationally coordinated conservation measures, ensuring the survival of species and their habitats as well as sustainable benefits to people.

To address those needs and to identify coordinated actions to conserve those species, Ministry of Environment, Forest and Climate Change (MoEFCC) launched a five-year National Action Plan for the conservation of migratory species (2018 to 2023). The National Action Plan (hereinafter NAP) for conservation of migratory birds and their habitats states the national priority and specific actions required to ensure healthy populations of migratory species in India and within their range across the flyway.

urging the parties to implement various guidelines to avoid adverse impact due to the development of energy sector. Renewable energy and migratory species resolution was Adopted by the Conference of the Parties at its 12<sup>th</sup> Meeting in Manila during October 2017 which *Endorsed* the document '*Renewable Energy Technologies and Migratory Species: Guidelines for Sustainable Deployment*'. It is noteworthy to mention here that India has been one of the party members in CMS since 1983 and next CMS COP is being organized in India during February, 2020.

Hence, it is necessary to develop strategic bird sensitivity map which will play a crucial role in selecting safer locations for the installation of new wind turbines and managing the existing wind farms. This sensitivity map will provide a strategic view of the sensitivities of bird species of conservation, crucial migratory flyways and areas of conservational importance in India to setup wind farm development.

Considering the above crucial needs for the conservation of migratory birds in India this proposed study aims to prepare suitable site-specific actions to be taken by state governments to successfully implement the NAP which will help in conserving migratory bird and its habitats of the country. Moreover, site-based management actions will be helpful to abide the India's commitment to International agreements / conventions like Ramsar Convention, Convention on Biological Diversity (CBD), Convention on the Conservation of Migratory Species of Wild Animals (CMS) and sister agreements under the CMS, particularly CAF, Convention on International Trade of Endangered Species (CITES), United Nations Framework Convention on Climate Change (UNFCCC) and Sustainable Development Goals (SDGs). The biodiversity values of the wetlands provide additional strength for protecting the wetlands.

## 2 Objectives

- 1) Developing site-specific actions and objectives related to conservation of migratory bird species and their habitats in Protected Area Plans and (Both Management and Working Plans) and details of action to be taken for the non-protected areas.
- 2) Impart training to forest staffs and other stakeholders in various aspects of Migratory bird conservation
- 3) Preparation of Bird sensitivity mapping for setting up of windfarms and energy sector in India
- 4) Preparation of Single Species action plan for the 20 species prioritised in the National Action Plan.

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The NAP aims at enabling national and state level policy makers, responsible for conservation and management of habitat, stakeholders and society to take coordinated actions for securing and enhancing populations of migratory birds. To achieve this goal, the National Action Plan is structured under six interrelated components: 1. Species conservation, 2. Habitat conservation and sustainable management, 3. Capacity development, 4. Communication and outreach, 5. Research and knowledgebase development 6. International cooperation.

In addition, it calls for the establishment of a network of internationally important sites to promote conservation of migratory birds in the CAF. The action plan also urges to take up more effective planning for long-term conservation of migratory birds in the country and for the region. In the CAF NAP, 29 sites comprising of 20 major wetlands and nine wetland clusters have been identified as critical, crucial and bottleneck sites for migratory waterbirds. These critical sites for waterbirds have been selected based on the several criteria with the experiences gained from the two major flagship programmes of BNHS like Bird migration study programme (for 90 years) and Important bird area Programme. Similarly, 31, important sites for migratory land birds have also been identified for taking conservation actions.

Managing wetlands requires diverse capacities beyond protected area management to be able to communicate the wide-ranging ecosystem services and biodiversity values to diverse stakeholders, and integrate their views, rights and capacities in management processes. The NAP envisages conducting formal as well as ad-hoc capacity development programmes for site managers, to equip them with necessary skills for integrated wetland management. The implementation of NAP will allow the state governments to manage their wetlands and forest more scientifically for the conservation of migratory birds. This will help the state government to initiate the stakeholders' participation in wetland conservation. Frontline staff and other stakeholders will get acquainted with the CAF, NAP and action to be taken for managing the wetlands and land bird sites for CAF perspective.

Under the Component 5 of the NAP, it is recommended to understand and mitigate the impacts of renewable energy on birds. India is in fourth position in wind energy production with an installed capacity 32,279 MW as on January 2019 (IWMTA, 2019) from 1991. It is growing in fast tract and 74% of India's new power capacity addition in 2018 was renewables and planned to achieve installed capacity of 60,000 MW by 2028 (IWMTA, 2019). However, there is very few studies exist in India on the impacts of wind farms on wildlife. With this limited knowledge, installation of wind turbines and power transmission lines on sensitive areas may endanger the life of certain bird species. The development of renewable energy is crucially important – but it must be in the right way and the right place. Without proper planning, energy developments, including wind turbines and power lines, can be a major threat to migratory birds.

By considering this, various resolutions have been passed in the CMS. CMS Resolution 7.5 on '*Wind Turbines and Migratory Species*,' Bern Convention Recommendation No. 110 on minimizing adverse effects of aboveground electricity transmission facilities (power lines) on birds and the Budapest Declaration on bird protection and power lines adopted in 2011 are

### 3 Methods

It is proposed four components to achieve the specific task as per the objectives.

#### 3.1 Component 1. Site specific activity plans for integrating NAP components in Protected Area Plans (Both Management and Working Plans) and activity plan for the non-protected areas

The CAF Action plan has prioritised 48 wetlands and 31 forest area across different landscapes of India as important site for the survival of migratory waterbirds and landbirds repetitively. Details are given in the table 1 and annexure 1.

**Table 1. Summary of the prioritized sites**

<b>Total number of states covered</b>	<b>17</b>
<b>Total number waterbird sites</b>	<b>48</b>
<b>Total number of landbird sites</b>	<b>31</b>

Of the 79 sites, some are protected areas such as National Parks, Wildlife Sanctuaries, Tiger Reserves etc. However, specific actions are needed to be included for the improvement of habitats, actions for flyway perspective and for implementing the activities envisaged in the NAP. The Protected Area Management Plans will also be reviewed and site specific activities to be taken for implementation of NAP will be prepared.

Many of the prioritised areas are unprotected which lack any sort of management plans or action plans for the conservation of both birds as well as the habitats. Hence, detailed field assessments in the prioritised sites will be conducted and based on the scientific information obtained from the study, the site specific actions need to be taken will be documented and site specific plans will be developed. For the protected areas these specific actions could be incorporated into the PA management plans. Fresh site-specific activity plan will be developed for the unprotected areas. Similarly, activity plans will be prepared in collaboration with the State Forest Department for managing the other ornithologically important waterbirds sites identified during the period.

The field assessments and preparation of site-specific activity plans will be based on the following different aspects given in the CAF National Action Plan

<b>CAF NAP Component no.</b>	<b>Activities</b>
1.1	<ul style="list-style-type: none"> <li>Status assessment of prioritised species in the particular site and their habitat needs</li> </ul>
1.3	<ul style="list-style-type: none"> <li>Documenting and creating sit-wise database on Hunting/ Trapping/ Poisoning</li> </ul>
1.7	<ul style="list-style-type: none"> <li>Involving communities in non-protected area management</li> </ul>
2.1	<ul style="list-style-type: none"> <li>Ornithological importance of wetlands from existing documents (Protected Area and Non-protected areas).</li> <li>Exploring additional undocumented ornithologically important wetlands near to the prioritized wetlands</li> </ul>

	<ul style="list-style-type: none"> <li>• Recognition of wetlands with historical bird data to understand the impact of climate change on migratory birds</li> </ul>
2.2	<ul style="list-style-type: none"> <li>• Boundary demarcation, notification and inclusion within land use records for protected areas</li> </ul>
5.2	<ul style="list-style-type: none"> <li>• Regulated and co-ordinated bird census and strengthening the Asian Waterfowl Census (AWC)</li> </ul>
1.6 & 3.5	<ul style="list-style-type: none"> <li>• Disease surveillance of migratory birds and Poultry</li> <li>• Studying the Impact of pesticides on birds</li> </ul>

### 3.2 Component 2. Capacity building with respect to CAF

Various levels of officials in forest department and other stakeholders will be trained in specific management activities for the successful implementation of CAF Action Plan. In addition to this, field staffs of the selected CAF sites will be trained in bird migration studies, bird handling techniques, habitat management with respect to migratory birds, disease surveillance in wild birds etc. Study materials and kits will be designed in the regional languages. In addition to this, training programmes for researchers and amateur bird watchers, other stakeholders and local public will be organised. The following activities will be carried out as part of the capacity development programme. Minimum 20 participants each of the 17 states will be trained.

CAF-NAP Component no.	Activities
3.3& 3.4	<ul style="list-style-type: none"> <li>• Capacity building on monitoring of migratory birds for forest department staff</li> <li>• Bird Ringing/ Banding training for forest department staff</li> <li>• Information on CMS and Agreements for forest department</li> </ul>
3.1&3.3	<ul style="list-style-type: none"> <li>• Concept for building a cadre of trained bird ringers (within State Forest Departments)</li> <li>• Build a cadre of trained bird population census team (within State Forest Departments, civil society and interested government agencies)</li> </ul>
3.4	<ul style="list-style-type: none"> <li>• Build capacity and protocols for disease surveillance in poultry and wild birds</li> <li>• Develop educational, awareness and training material in multi-local languages</li> </ul>

### 3.3 Component 3. Preparation of Bird sensitivity mapping for setting up of windfarms in India

To prepare a bird sensitivity map of India, a three-tier approach would be followed. 1) Information pertaining to migratory flyways based on the ringing recoveries and information got from satellite tracked birds, Important Bird Areas, Potential and existing Ramsar Sites, Critical and threatened bird habitat and important soaring raptor/bird locations will be analysed and taken for mapping. 2) Based on the collected information, various level of scoring will be done on the map. 3) According the final scores obtained, geographical area can be classified into three zones, Highly sensitive Zone (Red), Medium Sensitive Zones (Amber) and Low



○ Sensitive Zone (Green). For assigning scores in different map layers following steps will be adopted.

### 3.3.1 Species Listing

Sensitivity map will be prepared based on distribution of selected Indian bird species (except vagrants and pelagic birds). The bird species to be included for map preparation will be ranked based on three major criteria such conservation status, vulnerability to turbine collision and its habitat preference. High scores will be given to the species that are conservational important such as Globally-threatened birds and bird species which are more prone to wind turbine collision such as Raptors, large bodied birds like Pelicans, Storks, Cranes etc. and birds with high habitat preference like restricted range species and species like Bustards and Floricans etc. Hence, the sensitivity score of an area will be depended on qualitative and quantitative data of such species.

### 3.3.2 Protected Areas

The layers of protected areas and other conservational importance areas will also be included in the Sensitivity Map. India has network of protected areas spread across the country. The major protected areas include National Parks and Wildlife Sanctuaries. BNHS has identified over 554 Important Bird Areas (IBA), 27 Ramsar sites and other important intertidal zones, coastal estuaries and other major bird breeding, roosting and congregation sites in India. The sensitivity score of an area will also be decided by whether the area is falling under any one or combination of these areas.

### 3.3.3 Migratory Pathways

There is enormous amount of data on bird migration is available with BNHS. All this will be compiled and major migratory routes will be mapped. The layers of active migratory pathways, stopover points, wintering grounds, and migratory bottle neck will be included in the sensitivity map and the area falling under any of the above layers will be given high sensitivity scores.

### 3.3.4 Data Sources

Data on Bird Distribution: This data can be obtained from Birdlife International as they it has distribution map (shape files) of all bird species. In addition to that distribution map from e-bird data (online database for bird observations) also can be used to certain extant. The information pertaining to various conservation statuses, vulnerability to turbine collision and habitat preference of birds will be compiled from existing information from various sources.

Data on flyways: BNHS has ringed over 7, 00,000 birds in the course of 90 years and got over 3500 recoveries. Based on ringing recoveries data, the information regarding pathways of bird has been worked out based on the coordinates of the locations. Apart from this various global patterns of BNHS including Birdlife International have repositories of bird migration data. All this information will be compiled and crucial areas of Central Asian Flyway and East Asian–Australasian Flyway will be mapped.

Protected Areas and Other Strategic Locations: BNHS has the data on IBAs and Ramsar sites. For other Areas, data will be collected and compiled from various relevant organisations such as Wildlife Institute of India.

### 3.3.5 Sensitivity Ranking

Various levels of ratings/ Scores will be given for each layers of bird distribution, Migratory Pathways and Protected Areas and Other Strategic Locations. First stage of sensitivity scoring will be done based on the bird species present in an area. For this the distribution layers of bird species will be assigned sensitivity scores based on its i) Conservation values such as IUCN, IOWA, CMS, CITES status, ii) Vulnerability to turbine collision which will be assessed by its Flight Manoeuvrability, Soaring; Ranging Behaviour, Nocturnal flight activity, and Aerial display etc. iii) Habitat preference which will be assessed by its distribution range in India, endemic status, site fidelity, availability of preferred habitat, habitat preference sensitivity to displacement etc. will be incorporated in the map.

On the second stage of scores will be assigned to the land based two aspects on migratory flyways and areas with special status. Migratory Pathway Layers will be ranked based on its importance in sustain birds such as pathways regularly used by the birds, pathways used by threatened bird species, major stopover points and major wintering sites etc. Along with these layers, the layers of areas with special status such as National Parks and Wildlife Sanctuaries, IBA, Ramsar sites and other important intertidal zones, coastal estuaries and other major bird breeding, roosting and congregation sites will be assigned with high scores.

### 3.3.6 Sensitivity Map Generation

The species priority score for each species as well as the sensitivity value for the land (Important Bird Areas & Strategic Locations + Migratory pathway status) that occur in that geographical area will be counted together to obtain a score for target area. Based on the final scores, geographical area can be classified into three zones, indicating the sensitivity by three levels; for example, low, medium and high sensitivity. Each category can then be assigned a different colour to make it easy to identify the relevant category. A GIS tool (multilayer platform) for wind farm developers and other stakeholders can be developed using Arc GIS Software.

This mapping tool will function at a broader level, giving an indication of likely importance of a site for vulnerable birds. As a screening tool, it is aimed at assisting developers of wind energy installations in the advanced planning of required statutory surveys. Importantly, the current tool is specific to wind energy developments and the potential risks posed to birds, through visually representing the locations of selected bird species and their respective sensitivity to wind energy developments.

## 3.4 Component 4. Preparation of Single Species action plan for the 20 CAF Action plan priority species

National Single Species Action Plan (SSAP) is an instrument for implementing coordinated measures to conserve some important migratory species to a favourable conservation status. The proposed national single species action plans will provide baseline information about the species, threats faced by the species and management plan for conservation of these species. This national level action plans will be implemented with the cooperation of state forest departments. Based on the several years of bird monitoring and ringing, BNHS has shortlisted the 20 species (Annexure -2) which has been adopted in CAF National Action Plan for which single species action plans will be developed.

## 4 Expected Outcomes and applicability

### 4.1 Deliverables

- Activity plans to be included in the protected area management plans or working plans for the prioritised CAF wetlands and land bird sites
- Activity plans for prioritised CAF non-protected wetlands and landbird sites
- Minimum 340 trained members (20 members in each of 17 states) from 17 states for successful implementation of the NAP
- A Comprehensive Bird sensitivity map and GIS Tool to guide for setting up of wind farms and transmission lines
- National Single Species action plan for 20 species prioritized in the NAP which will have the specific action for conservation of the species
- Training materials for capacity development of forest officials (in local language) which can be used for train more staff and stakeholders
- Capacity development for disease monitoring by following the disease monitoring protocol
- Standardized site-specific plan for Annual Waterbird Census for each prioritized wetlands

### 4.2 The outcome of the study will be useful for the following

#### 4.2.1 State Governments:

- Implementation of CAF Action plan and scientific management of the wetlands and landbird sites.
- Initiate the stakeholders' participation in wetland conservation. Addressing the site-specific protection and management issues, mainstreaming the biodiversity conservation initiatives related to waterbirds and framing the site-specific conservation strategies,
- Frontline staff and local stakeholders will get acquainted with the CAF, NAP and action to be taken for managing the wetlands for CAF Action Plan perspective.
- The information gathered through this study will be helpful for revisiting the Management Plans/Working Plans of these wetlands.
- The activities envisaged in the CAF Action Plan will be incorporated with timelines in the management/working plans of the selected wetlands and landbird sites.

#### 4.2.2 Government of India

- Helpful to fulfil the India's commitment on various international Conventions and agreements:
  - Convention on Biological Diversity (CBD): Where signatories have committed to protect 17% of terrestrial land and inland waters by 2020 (Aichi Target 11). It will also be helpful to address the actions envisaged in the Aichi Targets 12 & 14.

- Ramsar Convention Guidelines: This study will be helpful in managing the wetlands (particularly Ramsar Sites prioritized in NAP) based on the “New Guidelines for management planning for Ramsar sites and other wetlands-2002”. As per the new guidelines, the contracting parties have to have a vision “to develop and maintain an international network of wetlands which are important for the conservation of global biological diversity and for sustaining human life through the maintenance of their ecosystem components, processes and benefits/services”.
- As per the India’s commitments under CMS, implementation of the Central Asian Flyway Action Plan for the conservation of migratory waterbirds and their habitats (CAF Global Action Plan) is the priority. Section 3.2.1 of this action plan says, “maintain and sustainably manage wetlands and other habitats important to migratory waterbirds and a participatory approach in the planning, management (and conservation) of waterbird habitats”. The proposed conservation plan would be helpful for addressing the above national commitments to various convention and agreements. Fulfil the actions envisaged in the Raptor MoU which is one of the sister agreements under the CMS.
- The site-specific activity plan for the Important sites for the migratory land birds will be prepared which will be helpful to implement the African-Eurasian Migratory Land bird Action Plan (AEMLAP) in which India is a range country
- The best management practices will be highlighted among the global forum/parties of the CMS during the Conference of Parties (CMS COP) – 13 which is to be organized in India in 2020 by Government of India.
- Wetlands contribute directly and indirectly to 75 sustainable development goal indicators. As these are freshwater wetlands/reservoirs, it sustains SDG goal 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 15, 17. (Global wetland output, 2018).

### 5 TIMELINE

Activities	1 <sup>st</sup> Year				2 <sup>nd</sup> Year				3 <sup>rd</sup> Year			
	Quarters				Quarters				Quarters			
	1	2	3	4	1	2	3	4	1	2	3	4
Staff recruitment and absorption of existing staffs	X											
<b>Component 1- Site Specific Management Plans</b>												
Grouping and categorizing the prioritized wetlands and land bird sites	X	X	X	X								
Field Assessments in the prioritized sites		X	X	X	X	X	X	X				
Preparing site specific activity plans							X	X	X	X		
Implementation initiatives											X	X
<b>Component 2- Capacity Building</b>												
Preparation of study materials	X	X	X									
Series of Training/workshops			X	X	X	X	X	X	X	X	X	X
<b>Component 3- Bird Sensitivity mapping</b>												
Data Collection	X	X	X	X	X	X						
GIS Layers- mapping				X	X	X	X					
Scoring							X					
Sensitivity mapping								X				
GIS Tool Development								X				
<b>Component 4 – Single Species Action Plans</b>												
Data Collection	X	X	X									
Preparation of SSAP	X	X	X	X								
Expert opinions				X								
Final Printing of SSAP				X								
<b>Final Reports</b>												
Final Report												X
Progress reports				X				X				

## 6 BUDGET

### Total Budget Summary

Sr. No.	Details of Expenditure	Year 1	Year 2	Year 3	Total
1	Component 1- Site specific Management Plans	62,03,100	53,97,410	55,85,251	1,71,85,761
2	Component 2- Capacity Building	35,24,750	42,54,425	37,81,143	1,15,60,318
3	Component 3- Bird Sensitivity Mapping	28,70,400	23,35,190	-	52,05,590
4	Component 4- Single Species Action Plan	35,88,000	0	0	35,88,000
	<b>Total</b>	<b>1,61,86,250</b>	<b>1,19,87,025</b>	<b>93,66,394</b>	<b>3,75,40,000 *</b>

Note : \* Round off to the nearest thousands

### Component -1 Preparation of Site Specific Activity Plans

Sr. No.	Details of Expenditure	Year 1	Year 2	Year 3	Total
	<b>Manpower</b>				
1	Scientist (1 nos) @ Rs. 60000/month/person (10 % annual increment)	720000	792000	871200	2383200
2	Research Fellows (4 nos) @ Rs. 28,000/month/person (10 % annual increment) (1 Research Fellow will cover 20 sites)	1344000	1478400	1626240	4448640
	<b>Travel expenses</b>				
3	Travel food & Peridorm, Accommodation for the project staff (Needs intensive travel to 79 sites of 17 states)	600000	660000	726000	1986000
4	Vehicle hiring, fuel for surveys and local conveyance (Needs intensive travel locally for assessment, information and meet the stakeholders in 79 sites of 17 states)	500000	550000	605000	1655000
5	Boat hiring	200000	220000	242000	662000
	<b>Technical Requirements</b>				

6	GIS maps and software and consultancy	500000	300000	0	800000
	<b>Equipment</b>				
7	DSLR Cameras (4 nos) and Maintenance from second Year	300000	20000	22000	342000
8	Binocular (4 nos), GPS (4 nos), Spotting scope (2 nos) ect. and maintenance from second year	300000	20000	22000	342000
9	Computer, Accessories and maintenance	300000	20000	22000	342000
10	Other Field equipment like head lamp, electronics items, torch,	100000	50000	0	150000
	<b>Communication</b>				
11	Postal, Telephone, Internet, etc	50000	55000	60500	165500
	<b>Other expenses</b>				
12	Stationeries	100000	110000	121000	331000
13	Report printing cost	100000	110000	200000	410000
14	Contingency	100000	110000	121000	331000
15	Staff Insurance	180000	198000	217800	595800
	<b>Total of each year</b>	5394000	4693400	4856740	14944140
	<b>Institutional Charges</b>				
	15 % Over Head Charges	809100	704010	728511	2241621
	<b>Gross Total Of each year</b>	62,03,100	53,97,410	55,85,251	1,71,86,000*

Note : \* Round off to the nearest thousands

## Component -2 Capacity Building

Sr. No.	Details of Expenditure	Year 1	Year 2	Year 3	Total
	<b>Manpower</b>				
1	Scientist (1 nos) @ Rs. 60000/month/person (10 % annual increment)	720000	792000	871200	2383200
2	Research Fellows (1 nos) @ Rs. 28,000/month/person (10 % annual increment)	336000	369600	406560	1112160
3	Bird Trappers cum field assistant (2 Nos) @ Rs. 22000/month/person (10 % annual increment) hired for 6 months a year	264000	290400	319440	873840
	<b>Travel expenses</b>				
4	Travel food & Peridorm, Accommodation for the project staff	300000	330000	363000	993000
5	Vehicle hiring, fuel for surveys and local conveyance	200000	220000	242000	662000
	<b>Training programme</b>				
6	Logistics, materials, trainers and food for training (First year- 5 trainings, Second year - 10 trainings, Third year -2 trainings). Local travel within the state for the participants will be borne by the department	500000	1000000	200000	1700000
7	Training materials preparation and printing	100000	110000	200000	410000
	<b>Equipment</b>				
8	Computer, Accessories and maintenance	120000	20000	22000	162000
	<b>Bird banding materials</b>				
9	Metal Rings, Colour Flags, Ringing Players	100000	100000	110000	310000
10	Birds capturing equipment (Traps, Nets, Bags, baskets etc.)	100000	110000	121000	331000
	<b>Capacity building/training Communication</b>				



11	Postal, Telephone, Internet, etc	25000	27500	30250	82750
	<b>Other expenses</b>				
12	Stationeries	100000	110000	121000	331000
13	Report printing cost	50000	55000	100000	205000
14	Contingency	50000	55000	60500	165500
15	Staff Insurance and benefits	100000	110000	121000	331000
	<b>Total of each year</b>	<b>3065000</b>	<b>3699500</b>	<b>3287950</b>	<b>10052450</b>
	<b>Institutional Charges</b>				
	15 % Over Head Charges	459750	554925	493192.5	1507867.5
	<b>Gross Total Of each year</b>	<b>35,24,750</b>	<b>42,54,425</b>	<b>37,81,143</b>	<b>1,15,60,000*</b>

Note : \* Round off to the nearest thousands

### Component 3 - Bird Sensitivity Mapping

Sr. No.	Details of Expenditure	Year 1	Year 2	Year 3	Total
	<b>Manpower</b>				
1	Scientist (1 nos) @ Rs. 60,000/month/person (10 % annual increment)	720000	792000		1512000
2	Research Fellow (1 nos) @ Rs. 28,000/month/person (10 % annual increment)	336000	369600		705600
	<b>Travel expenses</b>				
3	Travel food & Peridern, Accommodation for the project staff	200000	220000		420000
4	Vehicle hiring, fuel for surveys and local conveyance	150000	165000		315000
	<b>Equipment</b>				
5	GIS Software/ maps/ Tool development/Consultancy	700000	200000		900000
6	Computer, Accessories and maintenance	150000	20000		170000
	<b>Communication</b>				
7	Postal, Telephone, Internet, etc	50000	55000		105000

	<b>Other expenses</b>				
8	Stationeries	100000	110000		210000
9	Report printing cost	20000	22000		42000
10	Contingency	50000	55000		105000
11	Staff Insurance and benefits	20000	22000		42000
	<b>Total of each year</b>	<b>2496000</b>	<b>2030600</b>		<b>4526600</b>
	<b>Institutional Charges</b>				
	15 % Over Head Charges	374400	304590	0	678990
	<b>Gross Total Of each year.</b>	<b>2870400</b>	<b>2335190</b>	<b>0</b>	<b>52,05,000*</b>

Note : This component is expected to be completed in two years. Therefore, not budgeted for 3<sup>rd</sup> year.

\* Round off to the nearest thousand

#### Component -4 Single Species Action Plans

Sl. No.	Details of Expenditure	Year 1	Year 2	Year 3	Total
1	Stationeries	100000			100000
2	Printing cost (editing and other expenses will be borne by BNHS)	3000000			3000000
3	Contingency	20000			20000
	<b>Total</b>	<b>3120000</b>			<b>3120000</b>
	<b>Institutional Charges</b>				
	15 % Over Head Charges	468000	0	0	468000
	<b>Gross Total</b>	<b>3588000</b>	<b>0</b>	<b>0</b>	<b>35,88,000</b>

Note : 1. Man-power cost and other expenses will be met from the amount budgeted under other three components

2. This component is expected to be completed in the year 1. Therefore, not budgeted for 2<sup>nd</sup> and 3<sup>rd</sup> years

ANNEXURE 1. IMPORTANT WETLANDS AND LAND BIRD SITES PRIORITISED IN CAF NATIONAL ACTION PLAN

S. No	State	Major Wetland	Wetland Cluster	Land bird migratory site
1	Tamil Nadu	<ol style="list-style-type: none"> <li>Point Calimere &amp; Great Vedaranyam Swamp</li> <li>Gulf of Mannar Marine National Park - Adam's Bridge</li> <li>Karaiyetti Bird Sanctuary</li> <li>Pallikaranai</li> </ol>	<ol style="list-style-type: none"> <li>Suchindram.</li> <li>Theroor</li> <li>Vembanoor</li> <li>Manakudi Estuary</li> <li>Saltpans of Puthalam</li> <li>Kovalam</li> </ol>	<ol style="list-style-type: none"> <li>Upper Palni Hills</li> <li>Point Calimere</li> <li>Kalakadu and Mundanthurai</li> <li>Mukurthi National Park</li> </ol>
2	Puducherry		<ol style="list-style-type: none"> <li>Ousteri Lake</li> <li>Bahour Lake</li> <li>Kaliveli Tank</li> </ol>	
3	Andhra Pradesh	<ol style="list-style-type: none"> <li>Kolleru</li> <li>Pulicat</li> <li>Coringa</li> </ol>		<ol style="list-style-type: none"> <li>Sriharikota Island</li> </ol>
4	Odisha	<ol style="list-style-type: none"> <li>Chilka</li> <li>Bhitarkanika</li> </ol>		<ol style="list-style-type: none"> <li>Satkosia Gorge Wildlife Sanctuary</li> </ol>
5	Maharashtra	<ol style="list-style-type: none"> <li>Jaikwadi</li> <li>Gangapur Dam and Grassland</li> <li>Nandur Madhmeshwar</li> </ol>	<ol style="list-style-type: none"> <li>Mahul Sewri Mudflats</li> <li>Alibaugh</li> <li>Thane Creek</li> <li>Uran</li> </ol>	
6	Gujarat	<ol style="list-style-type: none"> <li>Nal sarovar</li> </ol>	<ol style="list-style-type: none"> <li>Khijadia</li> <li>National Park and Wildlife sanctuary</li> </ol>	<ol style="list-style-type: none"> <li>Hingoldh</li> <li>Rajpipla Hills</li> <li>Great Rann of Kutch</li> </ol>
7	Madhya Pradesh	<ol style="list-style-type: none"> <li>Karera (Dihaila Jheel and Other Wetlands)</li> </ol>	<ol style="list-style-type: none"> <li>Halali Reservoir</li> <li>Bhoj (Upper/Lake)</li> </ol>	<ol style="list-style-type: none"> <li>Madhav National park-Shivpuri</li> </ol>

8	West Bengal	1. Sundarbans 2. Farakka Barrage and Adjoining Areas			1. Jaldapara National Park 2. Buxa Tiger Reserve 3. Neora Valley National Park
9	Rajasthan	1. Keoladeo 2. Sambhar		a) Aniya Dam b) Bardha Dam c) RamSagar (Hindoli)	1. Jaisalmer
10	Punjab	1. Harike			
11	Himachal Pradesh	1. Pong Dam			1. Shivaliks Hill 2. Great Himalayan National Park
12	Assam			a. Majuli Island b. Pani-Dihing c. Sibsagar Tanks	
13	Uttar Pradesh			a) Kurra Jheel b) Saman	
14	Jammu & Kashmir			a) Haigam Rakh b) Hokarsar c) Mirgund Jheel	1. Limbar Valley Wildlife Sanctuary 2. Kistwar National Park 3. Overa-Aru Wildlife Sanctuary 4. Dachigam
15	Arunachal Pradesh				1. Dihang-Dihang Biosphere Reserve 2. Namdapha Tiger Reserve 3. Pakke Tiger Reserve 4. Eaglenest Wildlife Sanctuary 5. D'Ering Wildlife Sanctuary

16	Kerala			<ol style="list-style-type: none"> <li>1. Parambikulam wildlife sanctuary</li> <li>2. Idukki wild life sanctuary</li> <li>3. Thattakad Birds Sanctuary</li> <li>4. Waynad Wildlife sanctuary</li> </ol>
17	Sikkim			<ol style="list-style-type: none"> <li>1. Fambong lho Himalayan Zoological Park</li> <li>2. Kyongnosla alpine sanctuary</li> </ol>

## Annexure – 2: Prioritised species for preparing Single species action plan

S.No	Species	Justification for SSAP
1	Eurasian Curlew <i>Numenius arquata</i>	A Near Threatened long distant migratory species, its global population is on the decline due to habitat disturbances. Long-term marking and monitoring data has established wintering population decline of this species in India.
2	Crab Plover <i>Dromas ardeola</i>	This species is restricted to intertidal mudflats and has a limited distribution range. Information on this species in India is limited.
3	Black-tailed Godwit <i>Limosa limosa</i>	A Near Threatened long distant migratory species, its global population is on the decline. This species is listed as priority species in African Eurasian Flyway.
4	Bar-tailed Godwit <i>Limosa lapponica</i>	It is a Near Threatened long distant migratory species. Overall population is on the decline. This species is listed as priority species in East Asian-Australasian Flyway action plan 2015–2019. It is also a priority species in African Eurasian Flyway.
5	Red Knot <i>Calidris canutus</i>	It is a Near Threatened long distant migratory species. The species has been rendered vulnerable owing to extensive land reclamation projects that have encroached upon important habitats across its range. It has been susceptible to avian influenza in the past, so could be threatened by future outbreaks of the virus. This species is listed as priority species in East Asian-Australasian Flyway action plan 2015–2019.
6	Long-toed Stint <i>Calidris subminuta</i>	Long distant migratory species. The population trend of this species is not known, but the population is not believed to be decreasing. Knowledge on this species is limited as recent records for this species are not available.
7	Indian Skimmer <i>Rynchops albicollis</i>	A globally threatened (Vulnerable) species and its population is undergoing a rapid decline as a result of widespread degradation and disturbance of lowland rivers and lakes. Its Indian population is estimated to be less than 2500 individuals.
8	Greater Flamingo <i>Phoenicopterus roseus</i>	A short distant migratory bird, it is a priority species of BNHS. The species suffers from low reproductive success if exposed to disturbance at breeding colonies. The species also suffers mortality from collisions with fences and power lines.
9	Lesser Flamingo <i>Phoenicoparrus minor</i>	A Near Threatened species with very limited breeding range. The overall population trend is decreasing owing to habitat degradation and disturbance. It is a BNHS priority species.
10	Curlew Sandpiper <i>Calidris ferruginea</i>	Near Threatened long distant migratory species. Population trends are very difficult to determine for this species; however, overall it is suspected to be declining. India supports its largest wintering population.
	Little Stint <i>Calidris minuta</i>	A long distant migratory species, India supports its largest wintering population. Long-term marking and monitoring in India has revealed population decline due to illegal hunting (bird

1		trapping), reservoir and marshland habitat alteration by salt industries, and habitat degradation owing to diminishing rainfall (changing the salt regime).
12	Lesser Sand plover <i>Charadrius mongolus</i>	India supports its major wintering population. The global population trend is difficult to determine because of uncertainty over the impacts of habitat modification on population sizes; however BNHS Bird Banding data shows population decline in India.
13	Black-bellied Tern <i>Sterna acuticauda</i>	Globally threatened (Endangered) species. This species is almost extinct in a large part of its range and is thought to be on a very rapid decline overall owing to a multitude of threatening processes that affect riverine species in southern Asia.
14	Great Knot <i>Calidris tenuirostris</i>	Globally threatened (Endangered) species. Undergoing a very rapid population decline caused by reclamation of non-breeding stopover grounds. Increased report from east coasts of India in the recent years. This species is listed as priority species in East Asian-Australasian Flyway action plan 2015-2019.
15	Common Pochard <i>Aythya ferina</i>	Globally threatened (Vulnerable) long distance migratory species. Its population has declined rapidly across the majority of the range.
16	Yellow-breasted Bunting <i>Emberiza aureola</i>	Globally threatened (Endangered) migratory land bird species. It is undergoing a very rapid population decline owing mainly to trapping in its non-breeding range. It is listed as priority species of African Eurasian Migratory Land birds Action Plan
17	White-headed Duck <i>Oxyura leucocephala</i>	Globally threatened (Vulnerable) long distance migratory species. The population of this species has undergone a very rapid decline.
18	Ferruginous Duck <i>Aythya nyroca</i>	Near Threatened long distant migratory species. The overall population is estimated to be declining at a moderate rate. The species is threatened by the degradation and destruction of well-vegetated shallow pools and other wetland habitats
19	European roller <i>Coracias garrulus</i>	Migratory land bird species which is a passage migrant to India. It is listed as a priority species of African Eurasian Migratory Land birds Action Plan.
20	Sociable Lapwing <i>Vanellus gregarius</i>	A Critically Endangered short distant migratory species with considerable records from north-west India. Its population has undergone a very rapid reduction for reasons that are poorly understood but are likely due to hunting along the migration flyway.

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