

Request for Proposal (RFP) for the Proof of Concept to Mitigate Human-Elephant Conflict through Technology with West Bengal Forest Department in West Bengal, India

June 2023

Office for STI & DX, Governance and Peacebuilding Department
Japan International Cooperation Agency (JICA)

Electronic submission must be received at JICADXLab@bcg.com by the latest 20:00 Japan Standard Time on July 2, 2023. The email subject needs to be changed to "RFP-HEC-PoC", followed by your organization name (for instance, RFP-HEC-PoC-Name). An information session for bidders will be hosted in the week of June 26, 2023 (IST) to clarify questions related to the PoC and the proposal submission. Fill in [this form](#) to register for the information session (pre-registration required).

1. Background

(1) Problem statement

- The state of West Bengal in India is home to a significant population of wild Asian elephants, one of the largest land mammals on the planet. However, human-elephant conflict (“**HEC**”) incidents in the state are on the rise, posing a significant threat to both human life and elephant conservation efforts. The conflict is driven by several factors, including habitat loss, human encroachment, and changing land use patterns.
- Elephants often stray from their natural habitats in search of food, water, and shelter, which brings them into contact with human settlements and agricultural lands. This frequently leads to conflict situations where elephants damage crops, property, and even attack humans, resulting in fatalities. In 2021-2022 alone, the state saw 77 lives lost, 190 individuals injured, and crop damage surpassing 40 million hectares (See Appendix 1 for incidence data on Human Elephant Conflict in West Bengal).
- The situation is further complicated by the fact that the state has a high population density, with over 91 million people living in an area of 88,752 square kilometers. The growing demand for land for agriculture, infrastructure development, and human settlements has led to increased pressure on natural resources and wildlife habitats, exacerbating HEC.

(2) Importance of Innovation

- The situation demands innovative solutions that can mitigate the conflict and ensure the safety of both humans and elephants. The use of digital and technological tools is essential to effectively manage conflict and facilitate coexistence between the two species.
- Several approaches have been used in the past to address the HEC problem in India, including traditional methods such as trenches and barriers. However, these methods have shown limited success (See Appendix 2 for previously employed methods in West Bengal and their results), and new approaches are needed that can better address the root causes of the conflict and reduce its impact on both humans and elephants.
- The application of digital and technological tools presents a promising approach to managing HEC in West Bengal. The use of remote sensing, GIS, and GPS technologies

can help in monitoring and tracking elephant movements, identifying conflict hotspots, and developing targeted strategies to address them. Similarly, the use of mobile apps, social media, and other digital communication tools can help in raising awareness among communities about the importance of conserving elephants and protecting their habitats.

(3) Announcing bodies

- The West Bengal Forest Department (“**WBFD**”) is responsible for the management and protection of the forests and wildlife in the state of West Bengal. The department is committed to ensuring the conservation and sustainable use of natural resources in the state, as well as protecting the biodiversity of the region. The WBFD works closely with local communities, NGOs, and other stakeholders to develop and implement conservation programs and initiatives, including those focused on reducing human-wildlife conflict. The WBFD has established a network of watchtowers to monitor the movements of the elephants and alert nearby villages in case of any potential conflicts. However, this approach has limitations, as it is not always possible to predict when and where the elephants will move next. Therefore, a more proactive approach is required to tackle the issue.
- Japan International Cooperation Agency (“**JICA**”), an implementing agency for Japan's Official Development Assistance (“**ODA**”), believes that cooperation with developing countries in the digital age needs to change fundamentally. As such, JICA has launched the JICA DXLab, an open-source mechanism to facilitate co-creation with Digital Partners to transform ODA projects with digital technology and innovation. To optimize forest conservation through digital transformation in West Bengal, 2 projects assisted by Japanese ODA Loan were launched. 1st project “West Bengal Forest and Biodiversity Conservation Project (WBFBCP)” started in 2012 and closed in 2022. In WBFBCP, WBFD enhanced GIS/MIS to develop an efficient information collection and sharing system with a broader aim to accelerate the digitization of WBFD. The second project, “The Project for Forest and Biodiversity Conservation for Climate Change Response in West Bengal (WB-FBCCCR)” started in March 2023 with eight years of the project implementation period. In WB-FBCCCR, to further accelerate data-driven monitoring and policymaking, WBFD plans to establish an integrated management information system with a web-based geographical information system, which is expected to be set out within 2023. Furthermore, “WBFD Digital Transformation Strategy” is planned to develop in WB-FBCCCR and in order to develop its strategy and promote digital transformation in the project, the project will incorporate a sub-component of “Proof of Concept” (PoC) activities for several digital technology/innovation.
- In terms of HEC, WBFD implemented some countermeasures in WBFBCP, such as electric fencing, studies of elephant ecology, and watch tower construction. Also, communication structure was established with local community as Human-Wildlife Conflict alert that communities alert WBFD Beat/Range Field officers via call/SMS when any conflict or elephant herds are found. During WB-FBCCCR, WBFD plans to procure and introduce tracking of elephant routes through radio collaring, installation of EWS (Early Warning System), and a pilot project for the use of UAVs as project activities.

- In the meantime, JICA DXLab saw an opportunity to leverage Digital Partners’ expertise in mitigating conflict and promoting coexistence between humans and elephants, while allowing WBFD and JICA DXLab to familiarize themselves with the operating practices for upcoming collaborations with external players.
- As a collaborative effort between JICA DX Lab and WBFD, this request for proposal (“**RFP**”) looks for a player to serve as a technology solution provider (“**Digital Partner**”) in a Proof of Concept (“**PoC**”) to prevent and rapidly respond to HEC in West Bengal. The PoC is expected to be launched in mid-August and upon successful completion of the PoC, JICA and WBFD may continue to work with the Digital Partner to improve solutions and deploy them to broader geographical areas as a part of WB-FBCCCR. Accordingly, the PoC is expected not only to test technologies during PoC itself but also to find out effective solutions for deployment in project activities of WB-FBCCCR.

2. Objectives of the PoC

(1) Primary Objective

- To validate the effectiveness of a digital/technology solution in mitigating HEC incidents in West Bengal.
- To examine the feasibility of scaled deployment upon successful completion of the PoC

(2) Secondary Objectives

- To develop targeted strategies to address HEC.
- To promote coexistence between humans and elephants in West Bengal.
- To create awareness among communities about the importance of conserving elephants and protecting their habitats.
- To test the use of data currently held by WBFD and extract implications for its DX strategy (optional)

3. Duration and Timeline (Tentative)

(1) Contract duration

- Digital Partner may suggest a suitable duration with reasonable justification from mid-August to up to January 2024
 - While the completion time of the project is flexible, the start date should be set tentatively for mid-August 2023
- We acknowledge that the above maximum duration is relatively limited compared to other similar challenges and funding opportunities in the human-wildlife conflict mitigation space. However, both JICA and WBFD are committed to offering support to execute the PoC smoothly in a timely manner, from pre-PoC stakeholder management to assistance with obtaining permits to foster community engagement.
- In the meantime, it should also be noted that while we strive to optimize the duration and effectiveness of the PoC, this does not mean we undermine the time it takes to produce meaningful and lasting outcomes. We may also consider extending the duration of the PoC beyond the provided maximum duration, depending on the project status and progress.
- In addition, as briefly mentioned in 1. Background, WBFD is planning to implement technological solutions to counter HEC as part of the WB-FBCCCR project, a loan facility to be disbursed between 2023 and 2031. Upon successful completion of this PoC, there is

a possibility of deploying Digital Partner's solution as part of WB-FBCCCR from 2024 onwards.

(2) Selection Timeline (Tentative)

- Opening of the RFP: June 19, 2023
- Closing date of submission: July 2, 2023, at 20:00 Japan Standard Time
- Selection: July 3 – July 28, 2023
 - o Week 1: Screening and shortlisting of candidates
 - o Week 2: Interview and deep-dive discussion with the candidates
 - o Week 3: Candidates to revise proposals, if relevant
 - o Week 4: Evaluate the revised proposal
- Award notice: In the first week of August
- Signature of contract: By mid-August

4. Eligibility

(1) Organizational Capacity

- Digital Partner has experience in offering solutions to mitigate human-wildlife conflict in India or other similar regions
- Digital Partner acknowledges the sensitivity of data and wildlife locations and incorporates inherent mechanisms or strategies that guarantee the safeguarding of data and information
- Digital Partner can communicate with stakeholders in English
 - o Fluency in Bengali is not required but a plus
- Digital Partner's management does not include members who have a history of corruption, arrest records, or involvement with criminal organizations

(2) Proposed solutions

- Proposed solutions focus on conflict prevention and/or conflict response against HEC
 - o Solutions for conflict prevention include but are not limited to ML-embedded thermal/optical/acoustic sensors that enable object identification and classification connected to an early-notification system
 - o Solutions pertaining to conflict response should facilitate rapid response to HEC. This may include a community-based reporting app which triggers actions by the response team.
 - o Proposed solution may also facilitate monitoring/reporting of HEC in addition to conflict prevention and/or response
- Proposed solutions have been tested at other sites and can be readily deployed after adaptation/localization
 - o Solutions that have been test/implemented in India or other sites with similar environmental/climatological conditions are preferred
- Proposed solutions do not cause any harm on humans, wildlife, livestock, or the environment
- Proposed solutions facilitate a straightforward setup and/or maintenance process by local individuals and align with cultural norms and practices
- Proposed solutions do not, and will not, violate any contract or third-party rights, including proprietary rights of any individual or entity

5. Target Location and Animal Habitat

(1) Target Location

- Jhargram district, West Bengal, India
 - The predominant vegetation type in the South-West is tropical dry deciduous, with sal (*Shorea robusta*) being the dominant species. Forests in the region belong to category 5B of group 5, consisting of various types such as C1/1C, C2, DS1, E5, E7, and 2S1. The composition of forests varies, with sal ranging from 82% in the western hilly tract to 95% in the eastern undulating plains.
 - South-West Bengal is traversed by four major river systems: Subarnarekha, Kangsabati, Silabati, and Darakeswar. Additionally, there are several minor rivers and perennial streams, including Kumari, Totko, Tarafeni, Tamal, and Kubai. Numerous man-made water bodies and ponds can also be found in the villages. The canal networks of the Kangsabati dam at Mukutmanipur in Bankura district serve as a significant source of irrigation in the region, also affecting the movement pattern of elephant herds.
 - The region experiences three distinct seasons: summer, monsoon, and winter. Summers are characterized by extreme heat from mid-March to mid-June, with April, May, and June being the hottest months. Maximum temperatures range between 42 and 46°C, while minimum temperatures vary between 8 and 13°C. Monsoon season spans from mid-June to the end of September, accompanied by moderate rainfall. The average annual rainfall varies across the region, with approximately 1,428mm (about 4.69 ft) in Midnapore, 1,271mm (about 4.17 ft) in Bankura, and 1,180mm (about 3.87 ft) in Purulia. Rainfall decreases from October onwards, and the dry winter season prevails from November to February.

(2) Animal Habitat

- Jhargram is a district in the Indian state of West Bengal, located in the South-Western part of the state. The forest land accounts for about 30% of the total land mass of the district, much higher than the state average at 13.38%, extending to 59,497 ha. (See Appendix 3 for the geographical boundaries of Jhargram). A major portion of the non-forest land areas is covered by Mango orchards. Cashew plantations and a few bamboo forests are generally preferred by elephants and normally stay there for a considerable time of the year.
- Jhargram constitutes an important habitat of wild elephants' herds, connecting Jharkhand, Odisha with Khargpur Division and Medinipur Division of West Bengal. Both forest and non-forest areas of Jhargram Division come under the migratory route of approximately 180-200 elephants. The elephants in Jhargram move in herds and are known to travel long distances, covering a range of approximately 150-200 kilometers. Their movements are not seasonal, and they can move throughout the year. Apart from the above, being an arid region, most of the medium and small water holes in forest and non-forest areas remain dry during the summertime. Elephants present in those regions generally scale long distances in search of water, often bringing them dangerously close to human habitations posing a threat to human life and property. Appendix 4 provides a detailed map of elephants' routes in West Bengal.

- The habitat of the elephants in Jhargram is fragmented by human settlements, leading to increased HEC. As the human population grows, the area available for the elephants to roam freely has decreased, leading to more encounters with humans. In the past three fiscal years, HEC resulted in the loss of 54 people and 35 injuries in the Jhargram district. In the district, Jhargram, Lodhasuli, Manikpara Range under Jhargram Block, Jamboni and Gidhni Range under Jamboni Block, and Belpahari Range under Binpur-II Block showed the highest number of incidents.
- The elephants often raid crops and damage property, leading to economic losses for farmers and property owners. Between 2022-2023 alone, the area of crop raids in the district surpassed 300 ha and nearly Rs. 300,000 lakhs were paid to the affected population as compensation. In the same year, total ex-gratia payments reached Rs. 19,025,537 lakhs, including compensation for casualty, damage to agriculture crops, and livestock, imposing increased financial burdens. According to the study on the seasonal crop depredation by elephants in Medinipur, Rupnarayan, and Kharagpur Forest Divisions, paddy was the most depredated crop, followed by vegetables, potatoes, and sugarcane in descending order for the number of cases. In Jhargram, conflicts increase in October-November during paddy ripening and harvest season and extend up to February when vegetable crops come to mature, especially potatoes. The sal-dominated forest with low availability of food species and abundance prompts elephants to move out of the forest in search of food, making them susceptible to conflict with humans.
- The elephants in Jhargram are tracked, so their movements can be monitored to some extent. However, tracking them is not always easy, as they can move through dense forests and hilly terrain. There have been efforts to collar the elephants to monitor their movements more accurately, but this approach has its limitations, including the device size/weight, limited battery life, the lack of visibility over the status of elephants' aggressiveness level (females are reported to be more violent after giving birth, and males could be aggressive during musth). Tracking loners and occasional loners is also met with challenges, particularly during heavy rains at nighttime.

(3) People of West Bengal and Jhargram

- The population in South-West Bengal comprises various communities, including Santal, Lodha, Sabar, Kheria tribes, as well as local Bengali people and migrants from Odisha, Jharkhand, and Bihar. Jhargram town is the only municipal area of the entire Jhargram district, implying the rural nature of the landscape.
 - In terms of civil administration, the hierarchical structure in India follows the following tiers: Union Government (New Delhi), State Government (West Bengal), District Headquarter (Jhargram district), Civil Sub-Divisions (e.g., Jhargram Sadar Sub-Division), and Blocks (e.g., Jhargram blocks and Jamboni blocks).
 - In the context of forest administration, the hierarchical structure is as follows: Union Government, State Government, Forest Division, Range, and Beat (See Appendix 3 for the range and beat boundaries).
- As per the 2011 census, almost 50% of the total population of Jhargram District belongs to the scheduled caste and scheduled Tribe community and is economically backward in comparison to other parts of the state of West Bengal. Due to the prevailing socioeconomic structure and abundance of open and forest-like features, most people are compelled to

directly depend on forest resources for their daily livelihood while keeping them in proximity to wild elephants.

- Among the activities of the deceased due to elephants, open defecation was reported to be most common (17.91%) in South-West Bengal, followed by agriculture, collection of the NTFP (non-timber forest products), and regular life activities (sleeping or doing household work around the houses). While not as prevalent, travelling through forest patches on the road accounted for 7.46%. Appendix 6 shows the hotspot analysis of human deaths due to elephants in South-West Bengal.
- Joint Forest Management (“**JFM**”) is a collaborative approach in India that involves local communities and forest department officials working together to manage and conserve forest resources. The Joint Forest Management Committee (“**JFMC**”) is a key institution within the JFM framework. In JFM, local communities are empowered to participate in decision-making processes, protection activities, and sustainable use of forest resources. The JFMC serves as a platform where representatives from the forest department and the local community come together to jointly plan and implement various forest management activities and they are responsible for activities such as protecting forests from encroachment, managing grazing, and implementing village-level forest management plans. In Jhargram, all areas except two forests fall under the jurisdiction of JFMCs and beat officers are appointed as a secretary of JFMCs. For smooth execution of the PoC, WBFD will conduct briefings with the Divisional Forest Officers (“**DFO**”), an officer belonging to the Indian Forest Service to request collaboration for this PoC, who will then speak to the residents through JFMCs. sustenance of the solution during and after the PoC. DFOs and JFMCs will play a crucial role to sustain the solution throughout and after the PoC, along with WBFD.
- The local forest office is promptly informed by the villagers during incidents of elephants straying into villages. The forest department then mobilizes departmental driving teams, with the assistance of skilled villagers, to drive the elephants back to the forest. All driving operations are coordinated and reimbursed by the forest department, and the villagers involved in the operation are compensated for their wages from the government funds. The day after the incident, villagers submit compensation applications to the forest department for property loss or injuries. The forest department, in collaboration with the Panchayat (local self-government institutions at the village or small-town level) and the Land department, conducts a joint site inquiry to assess the damage. A report and recommendations from the local MLA (Member of Legislative Assembly) is prepared and submitted to the DFO. Claims are subsequently processed, and payments are disbursed to the beneficiaries' accounts through the DFO's office. The local community generally maintains a respectful and receptive attitude towards animals as part of their culture, except when they suffer significant losses. This is why there have been no notable cases of retaliatory killings so far. Implementing a proactive compensation system has proven to be an effective mitigation measure. As long as people receive adequate support in driving away elephants and receive timely compensation, they willingly report elephant straying incidents in the villages.

(4) Existing data and its collection method

- Data on elephant movement routes in West Bengal is systematically collected annually, particularly when migratory elephants begin to cause damage to local communities. Skilled field staff are responsible for mapping these routes and recording relevant information such as the number of elephants, group composition, and the occurrence of new births. Additionally, the extent of damage caused by wild elephants is estimated based on the compensation amounts disbursed and any pending applications awaiting funds at the Division office.
- Moreover, local DFOs typically possess GPS routes from previous years, which depict the movements of wild elephants in the region. These data are collected manually using handheld devices, and the historical routes serve as valuable references for understanding elephant behavior and patterns of movement.
- As mentioned earlier, there have been efforts to track elephant movements using radio collars. These collars are comprised of an electronic module or tracker and a counterweight, with a belt made primarily of natural rubber to prevent any skin abrasion. The tracker acquires the GPS satellite position and quickly transmits it to the server using local GSM networks (2G, 3G, 4G, or 5G). It also allows two-way communication, enabling remote configuration changes from one position per minute to one position per 24 hours. In case of a failed connection, the tracker stores the positions (up to 20,000) and sends them during the next connection. The collars are adjustable, with a counterweight made of chromium-coated steel that can lock the collar without any holes, fitting any size within minutes. The length of the collar is 4.5 meters, with variations of 2 meters for adult females and 3 meters for adult males. Any excess length is cut off after fitting. Each collar weighs around 12 kg, representing approximately 0.2% to 0.4% of the average body weight of an adult elephant. The tracker is powered by an imported 10-year-life lithium battery pack, with a gradual annual battery level decrease of about 3%.

For further details, bidders may refer to “[*Ecology of elephant \(*Elphas maximus*\) in South-West Bengal including population dynamics, migratory pattern, feeding habits and human-elephant conflict*](#)”, which was produced in commission by Wbfd as a final project report for Wbfdcp in June 2019.

Bidders also may make inquiries and information requests through email to JICADXLab@bcg.com. For any inquiry, the email subject must be changed to “Inquiry-HEC-PoC”, followed by your organization name (e.g., “Inquiry-HEC-PoC-Name”). The deadline for receipt of inquiry is June 26, Japan Standard Time. Also, an information session for bidders will be hosted in the week of June 26, 2023 (IST) to clarify questions related to the PoC and the proposal submission. Fill in [this form](#) to register for the information session (pre-registration required). Additionally, we allocate time for deep-dive discussion and an opportunity to revise the submitted proposal during the selection process (see Section 3.2).

6. Related Parties

- **Primary Users:** Wbfd officials and JICA

- **Secondary Users:** DFO officers, Rangers/community leaders (JFMCs), and the residents of West Bengal
 - **Operator:** Company engaged by JICA to operate JICA DXLab. The Operator will be the contracting counterparty to Digital Partner.
7. **Scope of Work.** Scope of Work may be negotiated after award notice to accommodate the selected solution/proposal.
- (1) **PoC Design.** The design phase will focus on furthering the understanding of the local requirements and developing a comprehensive plan for the PoC by adjusting the proposed plan. This phase will include the following tasks:
- Conducting a needs assessment: Conduct a needs assessment to better understand the nature and scope of the HEC issues in West Bengal by leveraging WBFD’s data on conflict incidents and elephants’ behavior as well as in-person/remote field observation.
 - Developing WBFD’s data utilization plan: Develop a plan on how the data collected and owned by WBFD will be linked to the PoC solution and utilized for effective conflict mitigation. Similarly, develop a plan on how the data collected during the PoC may be linked to WBFD’s data/platform.
 - Preliminary testing of the solution: Test the solution to ensure its initial effectiveness in monitoring and tracking elephant movements, identifying conflict hotspots, and developing targeted strategies to address them. The testing will involve field trials in conflict-prone areas of Jhargram.
 - Finalizing roll-out strategy: Based on the needs assessment and solution testing, adjust a roll-out plan prepared as part of RFP response according to the local requirements.
 - Planning of monitoring and evaluation: Prepare and utilize a monitoring and evaluation plan to assess the effectiveness of the PoC and reiterate it based on the needs assessment and solution testing together with the related stakeholders. The plan should include the selection of appropriate key performance indicators (KPIs) that can measure the impact of the PoC on avoiding/reducing conflict incidents and protecting elephant habitats.
- (2) **PoC Implementation.** The implementation phase will focus on implementing the roll-out strategy. This phase will include the following tasks:
- Roll-out of the solution: Roll out the solution to communities in conflict-prone areas of West Bengal. The roll-out will include training sessions to ensure that the Secondary Users are familiar with the solution and can use it effectively.
 - Adaptation and localization: Adapt and localize solutions based on the local requirements and the performance of the initial roll-out.
- (3) **Monitoring and Evaluation**
- Monitoring and evaluation: Monitor and evaluate the effectiveness of the solution in preventing/responding to conflict incidents. The evaluation will be based on the KPIs developed during the design phase and will be used to assess the impact of the PoC.
 - Ongoing support and maintenance: Provide ongoing support and maintenance for the solutions during the implementation phase.
 - Reporting: Report on the project progress and insights on the effectiveness of the solution to related parties, including WBFD, JICA, and the Operator.
 - Develop a post-PoC deployment plan

- Organize/participate in the following reporting sessions:
 - Regular check-ups with Wbfd and the Operator
 - Weekly meetings with the Wbfd, JICA, and the Operator
 - A mid-term review
 - Final reporting session at the completion of the PoC
 - JICA DXLab seminars to be held both internally with JICA relevant teams, and externally with relevant stakeholders and potential customers interested in the Digital Partner's solution
- Draft the Deliverables, obtain feedback from the Operator and the Primary and Secondary Users, and finalize them

8. Deliverables

(1) Deliverables (in English)

- Monthly reports on the project progress with higher-level analysis and findings from the data/impact captured by the solution.
- One final report, including but not limited to: (a) an outline of the result of the PoC; (b) details of the PoC activities; (c) quantitative and qualitative evaluation of the PoC based on a set of predetermined KPIs; (d) technical, operational and strategic recommendations to Wbfd/JICA and the Operator; and (e) a preliminary scaled deployment strategy recommendations on data utilization/practices.

(2) Time of delivery (Tentative)

- January 31st, 2023

(3) Method of submission

- Electronic data

9. **Budget ceiling.** The maximum budget for the services is USD 70,000 including all taxes and expenses, however negotiable.

10. IP and Other Considerations

- The intellectual property rights of the Deliverables set out in “8. Deliverables” created by the Digital Partner for this PoC shall be assigned to JICA (or party designated by JICA) upon completion of the inspection.
 - The consideration for the assignment of rights set forth in the preceding paragraph shall be included in the commission fee
- The Digital Partner's solution that existed before the start of this work will be considered the Digital Partner's pre-existing intellectual property rights.
- Similarly, the intellectual property rights of the Work Product will be owned by the Digital Partner and the Digital Partner will grant to Operator a license to use the Work Products and any IPR in the Work Products, to use solely for the PoC. Operator may sublicense the same to JICA and if applicable, other parties involved in the PoC under the same term.
- The handling of personal information and other data obtained with necessary consent and approval for use during the PoC shall be conducted in accordance with all applicable local and international laws, rules and guidelines.

- In case the Digital Partner’s solution requires data provided by WBFD for implementation (e.g., elephant images to improve machine learning algorithm), WBFD will retain the ownership of data and grant the use of the data for pre-agreed purposes. The Digital Partner shall be responsible for obtaining the necessary permits or authorizations and they are strictly limited to using the data for the pre-agreed purpose. Details of the terms will be negotiated between WBFD and the Digital Partner after partner selection.
- Digital Partners will not be held liable for the damage directly caused by HEC during the PoC. When applicable, compensation for the villagers may be provided in accordance with the local laws and regulations by the relevant institutions.

11. Proposal Format and Evaluation Criteria

(1) Proposal format

- Electronic submission must be received at JICADXLab@bcg.com by the latest 20:00 Japan Standard Time on July 2, 2023. The email subject needs to be changed to "RFP-HEC-PoC", followed by your organization name (for instance, RFP-HEC-PoC-Name).
- The submission shall consist of the two separate files, Overview of General Information and Proposal Pitch Deck, both in the form of PDF. Note that all submission materials need to be prepared in English.
- Also note that we allocate time for deep-dive discussion and an opportunity to revise the submitted proposal during the selection process (see Section 3.2).
 - a. **Overview of General Information (PDF format).** Provide all the following information by filling out the form provided in Attachment 1.
 - b. **Proposal Pitch Deck (PDF format).** Your organization’s description and business/technical qualifications should be presented concisely in this order in a pitch deck format to include the following information:
 - i. **Organizational capacity**
 - An overview of relevant experience: Highlight experience in developing and implementing technology-based solutions for human-wildlife conflict with a particular focus on HEC mitigation.
 - An overview of credentials, including ongoing affiliation with other wildlife conservation organizations and research institutions
 - ii. **Technical Proposal**
 - 1. Solution/technology overview
 - A detailed description of the solution's technology, software, and hardware components and how the technologies will be integrated to achieve the project objectives.
 - A detailed description of how WBFD’s data will be utilized / integrated into the PoC solution and vice versa (optional)
 - The initial proposal may not include a comprehensive description of this matter. Shortlisted Digital partners will have a chance to revise their proposals based on further details of the available data we plan to provide

during the week of the deep-dive session (See 3.2 Selection Timeline).

- A brief description of how the solution could be replicated for broader geographical coverage and/or different species
 - If available, provide previously achieved outcomes of the solutions
 - If available, also provide possible referees who have previously adopted the solutions
2. Implementing team structure and operating model
 - A detailed breakdown of roles and responsibilities of the project team, including a project manager, engineers, software developers, data scientists, and any other relevant personnel.
 - The proposal should also describe the qualifications and experience of each team member, highlighting their relevant experience and expertise in developing and implementing technology-based solutions for wildlife conservation projects, with a particular focus on HEC mitigation.
 3. A detailed implementation plan, including the timeline and the resources required for the project.
 - Duration in which the team plans to spend on the field should be clearly defined in the timeline
- iii. **Financial Proposal.** Provide a total expected cost (after tax) and a detailed breakdown of the costs associated with the project, including personnel, hardware, and implementation resources.
- Bidders may make inquiries/information requests by email to JICADXLab@bcg.com. For any inquiry, the email subject must be changed to “Inquiry-HEC-PoC”, followed by your organization name (e.g., “Inquiry-HEC-PoC-Name”). The deadline for receipt of inquiry is June 26 Japan Standard Time.

(2) Evaluation criteria

a. Organizational Capacity

- Track record of successfully conducting relevant projects in the past in India or other similar regions
- Track record of providing solutions to mitigate conflicts with elephants, especially Asiatic elephants
- Thoroughness of data handling acknowledgement and strategies

b. Proposed Solution/Technology

- Relevance and innovativeness of the solution, given historical and ongoing initiatives in West Bengal to mitigate HEC.
- Usability (ease of implementation)
- Compatibility with the existing infrastructure and cultural framework
- Scalability and adaptability of the solution from practical and financial standpoints in the context of West Bengal
- Relevance and quality of suggested implication on the WBFD data/DX strategy

c. Implementation Structure

- Technical competence of the core team
- Feasibility of the operating/delivery model (resource allocation/timeline) to complete the work defined in the Scope of Work
- Willingness and team flexibility
- Commitment to engage in the in-filed activities
 - While constant on-the-ground presence is not necessary, we prefer teams that are willing and able to engage with the local officers and communities at the start and the end of the project. In-kind support for the in-person visits/interactions will be offered by WBFD.

Attachment 1

Form for the Overview of General Information

Electronic submission must be received at JICADXLab@bcg.com by the latest 20:00 Japan Standard Time on July 2, 2023. The email subject needs to be changed to "RFP-HEC-PoC", followed by your organization name (for instance, RFP-HEC-PoC-Name). The submission shall consist of two separate files, Overview of General Information and Proposal Pitch Deck, both in the form of PDF. In order to be considered for funding, submission documents must be prepared in English and fulfil each of the following items.

Fill out this form and include it as a cover page of the Overview of General Information

1. Contact Information	
Organization name	
Contact person name and title	
Address	
Phone number	
Email address	
Organization description (Max 150 words)	
Ownership structure and ultimate beneficiary owners, if relevant	

2. Documentations (a copy to be included in the PDF file)	Check/attached
Company/Organization registration certificate or equivalent	
At least 2 years of audited financial statements	
Tax certificate *If your organizations are exempted from filing tax, please submit a tax exemption certificate	

In the event of a joint proposal prepared by multiple organizations, please provide the above documents for all participating entities.

3. Proposal overview	
Proposed duration (Detailed timeline to be elaborated in the proposal)	weeks
Total costs	USD
Short description of the solution (150 words)	
Advantages and disadvantages of the solutions	
Advantages	Disadvantages
Required conditions for effective implementation, if any	
This may include the level of maintenance, community involvement, and training, as well as types of power supply.	

4. Data handling statement (Max 400 words)
<ul style="list-style-type: none"> - Demonstrate understanding of the sensitivity of data and wildlife locations - Explain strategies to guarantee the safeguarding of data and information

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5. Information request to WBFD, if any

Appendix 1: Incidence data on Human Elephant Conflict in West Bengal

Data on Human Elephant Conflict (HEC)
Elephant

Year	Person Killed	person Injured	Comp paid for human life injury (Rs)	Crop damage (hectare)	Comp paid for crop damage (Rs)	hut damage (nos)	Comp paid for hut damage (Rs)	Total (Rs)
2016-17	84	57	1,52,34,288.00	47884660	6,93,99,933.00	3314	1,12,11,955.00	9,58,46,176.00
2017-18	66	98	1,44,44,229.00	46130670	8,52,80,912.00	3516	1,17,12,019.00	11,14,37,160.00
2018-19	80	81	1,94,13,952.00	37711420	5,09,58,700.00	3531	1,49,23,395.00	8,52,96,047.00
2019-20	116	80	3,07,32,437.00	39049910	5,45,09,945.00	2928	1,06,07,230.00	9,58,49,612.00
2020-21	117	229	3,17,01,031.00	51231840	5,30,66,318.00	2812	1,15,73,080.00	9,63,40,429.00
2021-22	77	190	2,95,76,094.00	40579510	3,90,48,319.00	2879	84,51,458.00	7,70,75,871.00

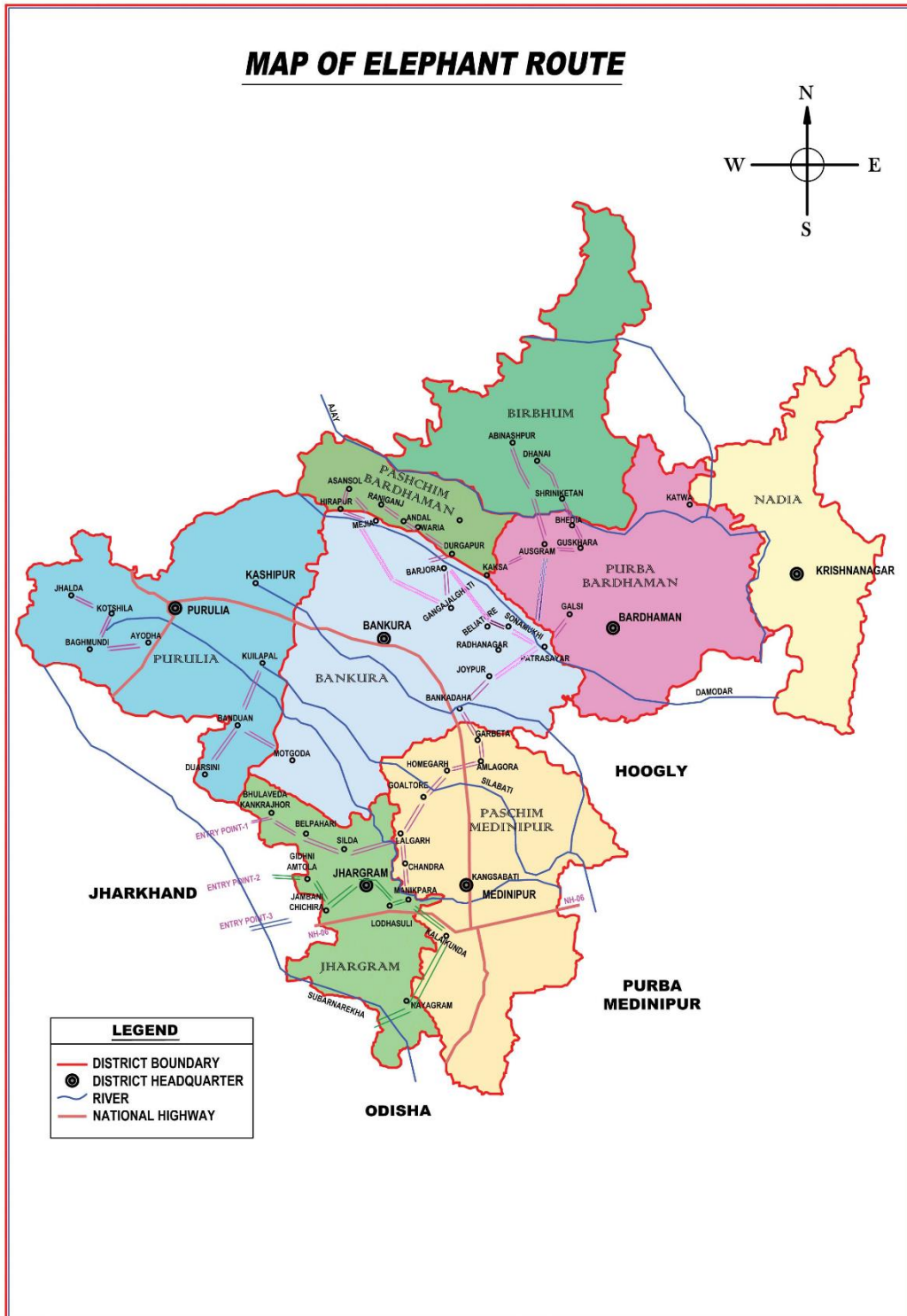
Note: The crop area damaged exceeds the total geographical area of West Bengal. This is primarily due to agricultural practice in the region growing multiple crops in a year. Additionally, farmers respond to the damage to the crop field by wild elephants by replanting the crops, resulting in a continuous process of sowing and reaping.

Appendix 2: HEC Mitigation Techniques Used in West Bengal and Their Assessment

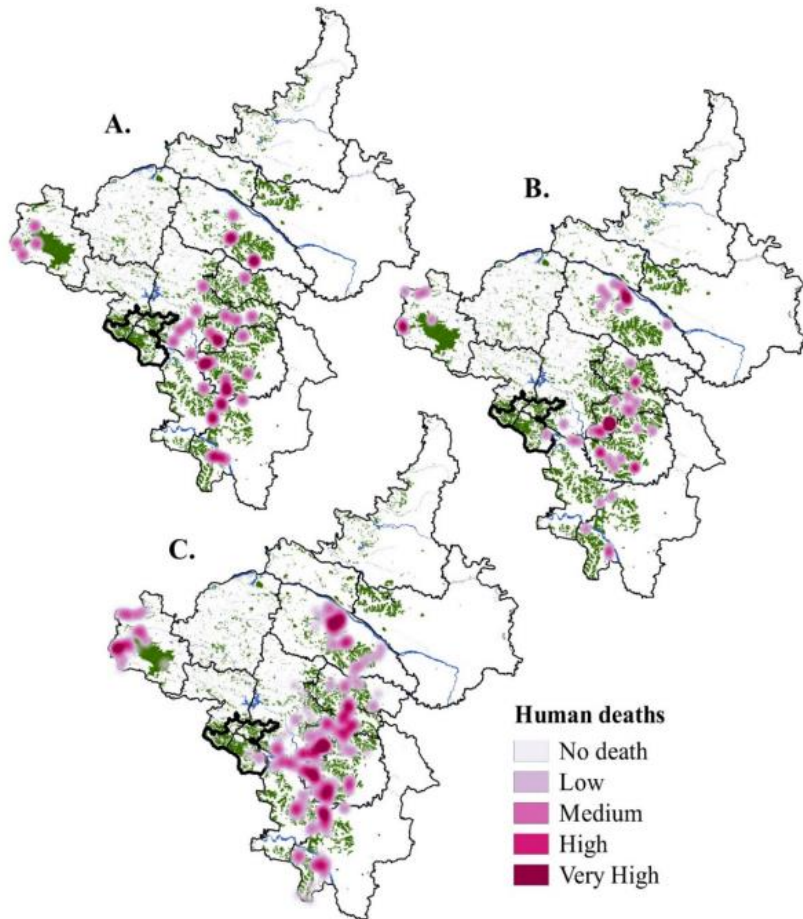
HEC mitigation techniques used in West Bengal

Sl. No	Technique	Features	Challenge(s)
1	Energised Fence	Used extensively in North Bengal and parts of South Bengal, effective to great extent, very effective if maintained rigorously and used in combination with EPT.	Great wisdom and care needed in its use as otherwise may lead to aggravation of the problem, may lead to further fragmentation of already fragmented habitats. Particularly suited for large forested tracts like North Bengal.
2	Elephant Proof Trench	Very Effective if used in combination with Energised Fence	Not suited to high rainfall areas of North Bengal
3	Alert system based on Infrared	Infra-red sensors installed on forest boundaries capture elephant movement and send signals converted into sound alerts in nearby villages. Serious incidences can be avoided by getting prior information of animal arrival.	Limited efficacy, as it is based on assumption that elephants will take fixed route for movement
4	Chilli Fence	Effective in small areas	Difficult for large stretches and out smarted by the wise animal
5	Plantation of crops like Lemon and Citronella	Used in small areas with varying degrees of success	Crop economics does not favour in view of land scarcity
6	Tiger Urine	Limited use	Not feasible on the scale
7	Honey Bee	Used with unknown degree of success	Difficult for large stretches and out smarted by the wise animal
8	Driving by Elephant Driving Teams	Oldest but the most effective	Delay in mobilization, Counter driving in certain areas and cases
9	SMS alerts	Movement or presence in the area and possibility of straying of animals intimated through SMS alert	Predictive rather than realistic
10	Radio Collar	Movement tracked and used for SMS alerts	Predictive rather than realistic, only limited number of animals can be radio collared.
11	Ex gratia payments	Government attempt to compensate for losses	Necessary but often not readily available

Appendix 4: Detailed Map of Elephants' Route in West Bengal



Appendix 5: Hotspot Analysis of Human Deaths Due to Elephants in South-West Bengal: A. While travelling to or from the village; B. While had gone out for open defecation, and C. overall deaths



The hotspot map is adapted from “[Ecology of elephant \(*Elphas maximus*\) in South-West Bengal including population dynamics, migratory pattern, feeding habits and human-elephant conflict](#)”, produced in commission by Wbfd as a final project report for Wbfdcp in June 2019.