VANYA

India's Biodiversity Intelligence Platform

Conserve. Connect. Inspire.

Project Overview & Business Proposal

Prepared for Vande Bharatham · Team VANYA
Phase 1 Pilot Site: Kumarakom Bird Sanctuary, Kerala

1. Executive Summary

India is one of the world's most biodiverse nations, home to a vast network of wetlands, wildlife sanctuaries, national parks, biosphere reserves, and biodiversity heritage sites. Yet biodiversity information remains fragmented across researchers, conservation agencies, government departments, local communities, and visitors no existing platform unifies identification, citizen participation, environmental monitoring, and conservation governance into one system.

VANYA is proposed as an AI-powered Biodiversity Intelligence and Conservation Platform that closes this gap. It combines artificial intelligence, citizen science, geospatial technology, and conservation analytics into a single ecosystem, piloted at Kumarakom Bird Sanctuary, Kerala, with a clear, milestone-based pathway to scale across India's protected ecosystems. This document outlines the platform, its market opportunity, business model, phased scale-up roadmap, and the funding VANYA is seeking to move from working prototype to a validated pilot.

Team VANYA is requesting ₹10,00,000 to execute Phase 1 : the Kumarakom pilot. All subsequent phases represent an indicative scale-up roadmap, to be pursued only after Phase 1 milestones are met.

2. The Problem

Existing digital platforms address individual aspects of biodiversity conservation species identification, citizen science, or eco-tourism but none integrate biodiversity knowledge, conservation intelligence, environmental monitoring, and community participation into a single ecosystem. This fragmentation limits effective conservation planning, public engagement, and data-driven environmental decision-making across India's protected areas.

Platform	Species ID	Pollution Reporting	Eco-Tourism	Governance	Wetland-Specific
Feature	iNaturalist	eBird	India Biodiversity Portal	Eco-Tourism Apps	VANYA
AI Species Identification	✅	❌	❌	❌	✅
Citizen Science	✅	✅	✅	❌	✅
Biodiversity Database	✅	✅	✅	❌	✅

Platform	Species ID	Pollution Reporting	Eco-Tourism	Governance	Wetland-Specific
Conservation Dashboard	❌	❌	Basic	❌	✅
Water Quality Monitoring	❌	❌	❌	❌	✅
Eco-tourism Integration	❌	❌	❌	✅	✅
Government Decision Support	❌	❌	Basic	❌	✅
Integrated Biodiversity Platform	❌	❌	❌	❌	✅

3. Market Landscape ~ Where VANYA Fits

A review of platforms currently used in and around Kerala's protected wetlands shows consistent gaps: species identification tools do not handle pollution reporting; pollution-reporting tools are built for urban contexts; and none offer a closed-loop governance workflow purpose-built for a wetland ecosystem.

4. The VANYA Platform

VANYA connects citizens, researchers, conservation authorities, local communities, and nature enthusiasts through a collaborative digital ecosystem, transforming everyday biodiversity observations into meaningful conservation insights. The platform is built around four interconnected modules.

4.1 AI Biodiversity Intelligence

Enables users to identify birds, mammals, butterflies, plants, reptiles, amphibians, and aquatic species using AI-assisted image recognition. Alongside identification, users receive habitat information, conservation status, ecological importance, seasonal occurrence, and responsible observation guidelines.

4.2 Responsible Nature Exploration

Provides visitors with interactive biodiversity trails, QR-code-enabled learning experiences, biodiversity hotspots, seasonal recommendations, and accessibility features encouraging responsible interaction with nature rather than conventional tourism alone.

4.3 Citizen Science & Community Participation

Allows visitors, researchers, students, photographers, and local communities to contribute biodiversity observations, photographs, field journals, and environmental reports. Verified observations feed a centralized biodiversity database supporting research and long-term ecological monitoring.

4.4 Conservation & Ecosystem Intelligence

Provides analytical dashboards for biodiversity monitoring, habitat assessment, and environmental reporting. Users can report plastic pollution, habitat degradation, invasive species, or illegal activity; authorities receive organized environmental intelligence to respond more effectively.

Water Quality Monitoring (4.4.1): Rather than relying on expensive real-time IoT sensor networks during the pilot stage, VANYA adopts a practical, scalable approach authorized field personnel periodically record pH, dissolved oxygen, temperature, turbidity, and electrical conductivity using portable test kits, uploaded via an admin portal. VANYA then generates trend graphs, historical comparisons, dashboards, and downloadable reports. The architecture is designed to accommodate real-time sensor integration once such infrastructure becomes available.

5. Stakeholders

- Visitors - learn about biodiversity, explore responsibly, contribute observations
- Researchers - access biodiversity records, citizen science data, and ecological analytics
- Forest Departments - use dashboards, environmental monitoring, and biodiversity reports
- Local Communities - gain awareness, participation opportunities, and conservation activities

6. Technology Overview

Artificial Intelligence powers species identification, the recommendation engine, the biodiversity knowledge system, and conservation analytics. Supporting technologies include a mobile application, GIS mapping, a cloud database, dashboards, image recognition, and a digital knowledge base.

7. Pilot Implementation - Why Kumarakom

The pilot will be conducted at Kumarakom Bird Sanctuary, Kerala part of the Vembanad-Kol Ramsar Site, one of India's internationally recognised wetland ecosystems, and home to over 180 resident and migratory bird species. Kumarakom faces real, active threats (pollution, invasive water hyacinth, habitat degradation) and already has established eco-tourism infrastructure and engaged local communities, making it an ideal environment to validate VANYA's functionality and user engagement before wider rollout.

8. Market Opportunity & Scalability

The Kumarakom pilot is designed to validate VANYA's core technology and operating model at a single, well-understood site but the addressable opportunity extends across India's full network of protected ecosystems: approximately 49 Ramsar-designated wetlands, over 550 wildlife sanctuaries, 106+ national parks, and numerous biosphere reserves and biodiversity heritage sites.

Because VANYA's core AI models, mobile application, and governance workflows are built once and reused across sites, the platform is structured for scale rather than as a single-site project. The majority of the Kumarakom pilot investment corresponds to one-time platform research, development, and model training. Deploying VANYA to each subsequent site is expected to require substantially lower incremental investment per site than the initial build primarily cloud infrastructure, species-list customization, language localization, and integration with the local governing authority.

9. Indicative Scale-Up Investment Roadmap

Team VANYA is requesting ₹10,00,000 for Phase 1 only. The figures for Phases 2–4 below are indicative, forward-looking projections for future expansion not a present funding request. Each phase is pursued only after the preceding phase's milestones (technical validation, user adoption, government or partnership interest) have been demonstrated.

9.1 Phase 1 : Pilot Implementation (Kumarakom Bird Sanctuary)

Duration: 6–12 months | Estimated Funding: ₹10,00,000

Objective

Develop and validate VANYA in a real-world environment by deploying the first pilot at Kumarakom Bird Sanctuary.

Scope

- AI-powered biodiversity identification (birds, plants, butterflies, reptiles, mammals, aquatic species)
- Biodiversity information platform
- Citizen science reporting system
- Interactive biodiversity map
- Manual water quality monitoring dashboard
- Research and analytics dashboard
- Admin portal
- User testing with tourists, researchers, and forest officials
- Awareness and stakeholder training

Expected Outcomes

- Functional prototype validated
- Initial biodiversity database established
- 1 pilot site fully operational
- User feedback collected

- Impact assessment completed

9.2 Phase 2 : Kerala Biodiversity Expansion

Duration: 12–24 months | Estimated Funding: ₹40,00,000

Coverage

Major wetlands, wildlife sanctuaries, and biodiversity reserves across Kerala, including:

- Kumarakom
- Ashtamudi Wetland
- Kole Wetlands
- Thattekkad Bird Sanctuary
- Periyar Tiger Reserve
- Silent Valley National Park
- Wayanad Wildlife Sanctuary
- Chinnar Wildlife Sanctuary
- Neyyar Wildlife Sanctuary
- Aralam Wildlife Sanctuary
- Peechi–Vazhani Wildlife Sanctuary
- Mangalavanam Bird Sanctuary
- Other Biodiversity Heritage Sites

Major Activities

- Expand biodiversity database
- Deploy VANYA at multiple protected areas
- Mobile application launch
- Multilingual interface
- AI model improvement
- GIS integration
- Cloud infrastructure expansion
- Research collaborations
- Training programmes
- Tourism integration
- Community engagement

Deliverables

- Multiple protected areas onboarded
- State-level biodiversity database
- Kerala-wide citizen science network
- Research collaboration platform

9.3 Phase 3 : Multi-State Ramsar Sites & Protected Areas

Duration: 24–48 months | Estimated Funding: ₹5,00,00,000 (₹5 Crores)

Coverage

Expansion to India's Ramsar Sites, National Parks, Wildlife Sanctuaries, and Biodiversity Hotspots including Ramsar wetlands, national parks, tiger reserves, elephant reserves, marine protected areas, bird sanctuaries, mangrove ecosystems, and biosphere reserves. Potential deployment sites include:

- Chilika Lake
- Keoladeo National Park
- Bhitarkanika
- Sundarbans
- Loktak Lake
- Pulicat Lake
- Point Calimere
- Kaziranga
- Gir
- Corbett
- Kanha
- Bandipur
- Nagarhole
- Ranganathittu
- Bharatpur
- Vedanthangal

Major Activities

- National biodiversity database integration
- AI model training using regional biodiversity datasets
- Multi-language support (major Indian languages)
- National cloud infrastructure
- GIS and remote sensing integration
- Citizen science expansion
- Forest Department partnerships
- Tourism Department partnerships
- API development
- Large-scale data validation
- Research collaborations with universities
- Technical support centres
- Security and data governance

Deliverables

- Multi-state deployment

- National biodiversity observations database
- AI trained on diverse Indian ecosystems
- Interoperable research platform
- Cross-state biodiversity monitoring

9.4 Phase 4 : National Biodiversity Intelligence Platform

Estimated Funding: ₹15,00,00,000 (₹15 Crores) securable through phased investment, CSR partnerships, government programmes, grants, and strategic collaborations.

Vision

Transform VANYA into India's integrated AI-powered biodiversity intelligence platform, supporting conservation, ecological research, sustainable tourism, and environmental decision-making at national scale.

National-Scale Components

- Software Platform - national cloud platform, AI infrastructure, mobile ecosystem, web ecosystem, open APIs, research portal, administrative portal
- Artificial Intelligence - species identification, habitat intelligence, biodiversity analytics, predictive ecosystem monitoring, conservation recommendations, ecological trend analysis
- Conservation Intelligence - biodiversity dashboards, protected area monitoring, wetland health assessment, water quality analytics, species distribution mapping, threat monitoring, conservation alerts
- Citizen Science - nationwide biodiversity reporting, volunteer ecosystem, schools and colleges participation, NGOs, eco-tourism stakeholders, research organisations
- Government Integration - potential integration with State Forest Departments, State Biodiversity Boards, the National Biodiversity Authority, the Ministry of Environment, Forest and Climate Change, Tourism Departments, and Wetland Authorities
- Research Ecosystem - universities, research institutions, biodiversity researchers, conservation organisations, environmental NGOs

Long-Term Deliverables

- National biodiversity intelligence network
- AI-assisted conservation planning
- Large-scale citizen science platform
- Decision support system for biodiversity conservation
- Sustainable eco-tourism platform
- Standardised biodiversity data infrastructure
- National environmental analytics dashboard

9.5 Overall Indicative Funding Roadmap

Phase	Coverage	Duration	Estimated Funding
Phase 1	Kumarakom Bird Sanctuary (Pilot)	6–12 months	**₹10 Lakhs (as Phase 1 Implementation as first trial)**
Phase 2	Kerala Wetlands, Wildlife Sanctuaries & Biodiversity Reserves	12–24 months	₹40 Lakhs (indicative)
Phase 3	Multi-State Ramsar Sites & Protected Areas	24–48 months	₹5 Crores (indicative)
Phase 4	National Biodiversity Intelligence Platform	48–72 months	₹15 Crores (indicative)
Phase 5- Total Long-Term Vision	National Biodiversity Intelligence Platform	Subject to partnerships and phased investment	**≈ ₹20.5 Crores (indicative)**

Note on framing: Team VANYA is requesting ₹10 lakhs for the Kumarakom pilot only. The Phase 2–4 figures above represent an indicative scale-up investment roadmap projected future investment based on successful milestones, partnerships, and adoption, and are not a present funding request.

10. Phase 1 Detailed Budget Breakdown

The ₹10,00,000 requested for Phase 1 is allocated as follows:

Category	Amount (₹)	Share
AI Model Development & Data Acquisition	1,50,000	15%
Application Engineering & System Integration	2,50,000	25%
Cloud Infrastructure & Operations (Year 1)	1,00,000	10%
Pilot Implementation, Training & Field Support	1,50,000	15%
Government & Tourism Partnership Development	1,50,000	15%
Marketing & Citizen-Science Awareness Campaign	1,00,000	10%
Contingency & Administrative Costs	1,00,000	10%
Total - Phase 1 Implementation Cost Expected	**10,00,000**	**100%**

11. Business Model & Revenue Streams

Beyond the pilot, VANYA is designed to sustain itself through multiple complementary revenue channels:

- Government Licensing - annual platform licensing fees from state biodiversity boards, forest departments, and protected-area authorities that adopt VANYA for their jurisdiction
- Tourism Partnerships - revenue-sharing arrangements with state tourism boards and eco-tourism operators for the Responsible Nature Exploration module
- Data-as-a-Service - licensing anonymized, aggregated biodiversity and environmental datasets to research institutions and universities
- Grants & CSR Partnerships - corporate CSR budgets earmarked for biodiversity conservation, and conservation grants from government or international bodies
- Premium Citizen Science Features - an optional paid tier offering advanced identification history, printable certificates, expedition access, and recognition badges

12. Innovation & Competitive Advantage

Unlike existing platforms that solve individual problems such as species identification or biodiversity recording in isolation, VANYA integrates Artificial Intelligence, biodiversity knowledge, citizen science, environmental reporting, conservation analytics, and responsible nature exploration within a single, closed-loop platform from observation, through AI verification, to authority action and measurable conservation outcome.

13. Future Enhancements

- IoT sensor integration for real-time water quality monitoring
- Satellite imagery and drone-based habitat monitoring
- Predictive biodiversity analytics and climate risk assessment
- Multilingual support across Indian languages
- Deeper government data integration

14. Expected Impact

- Improve biodiversity awareness among visitors and local communities
- Increase citizen participation in conservation
- Support researchers with structured, verified biodiversity data
- Provide conservation authorities with actionable ecological insights
- Promote responsible nature exploration over conventional tourism
- Build scalable digital infrastructure for biodiversity conservation across India

15. What We're Seeking from Vande Bharatam

Team VANYA is applying for a combination of support to take VANYA from working prototype to validated pilot, and beyond:

- Funding - ₹10,00,000 to execute the Phase 1 Kumarakom pilot in full, as detailed above
- Incubation & Mentorship guidance on business model validation, go-to-market strategy, and structuring long-term government partnerships
- Distribution & Government Access introductions to state biodiversity boards, forest departments, and tourism boards that could become VANYA's first institutional customers beyond Kumarakom

Phase 1 is intentionally scoped as a milestone: a successful, validated pilot at Kumarakom is the basis on which Team VANYA will pursue further funding and partnerships to execute Phases 2 through 4.

16. Vision

VANYA turns every wetland visitor into a conservation contributor. Starting at Kumarakom, built for every protected ecosystem in India VANYA envisions becoming India's Biodiversity Intelligence Platform: a unified digital infrastructure supporting biodiversity documentation, ecological research, conservation management, environmental monitoring, public participation, and sustainable nature exploration.