



**EMPOWERING TRIBAL YOUTH AS CONSERVATION STEWARDS
FOR THREATENED SPECIES AND ECOLOGICAL RESTORATION
THROUGH BIODIVERSITY PARK IN WESTERN GHATS**

Tribal communities have long demonstrated a profound connection with nature, using traditional ecological knowledge passed down through generations. This deep-rooted knowledge is especially valuable in the face of climate change, as it offers sustainable approaches to ecological restoration and biodiversity conservation.

1

**ESTABLISH A COMMUNITY-
RUN BIOPARK MODEL**

2

**ENHANCE TRIBAL
LIVELIHOODS THROUGH
ECO-ENTREPRENEURSHIP**

3

**PROMOTE BIODIVERSITY
AND CULTURAL HERITAGE
CONSERVATION**



***Project
Objectives***

INTRODUCTION

Wayanad, located in the Western Ghats, is home to several tribal groups with rich cultural and ecological heritage, including the Paniya, Adiya, Kattunaika, Kurichya, and Kuruma communities. Traditionally, these groups relied on forests and agriculture for their livelihoods. However, socio-economic shifts have increasingly pushed them into wage labor, reducing income stability and leaving them vulnerable.

Deforestation and restricted access to forest resources have significantly impacted tribal livelihoods and food security. Dependency on seasonal labor further exacerbates income instability, while economic pressures, low educational attainment, and limited healthcare deepen their socio-economic vulnerabilities. These challenges are compounded by factors like land alienation due to past settler influxes, the conversion of traditional paddy fields to cash crops, and a decline in traditional skills, all contributing to physical and mental health issues, reduced life expectancy, and weakened community bonds.

Despite these challenges, these communities possess traditional skills and nature-based knowledge essential



for environmental conservation and resilience. This knowledge, when combined with scientific approaches to ecosystem restoration, offers a unique pathway to sustainable development. Moreover, there is a growing demand for eco-friendly practices and products, and national initiatives, including carbon and green credit programs, have increased the need for skilled individuals in conservation and restoration.

Conventional skill enhancement programs for the tribal communities in Wayanad have often failed due to a lack of community interest or discomfort with non-traditional skills. This

underscores the potential of aligning modern training with their areas of interest, such as nature and biodiversity management. By connecting these communities with conservation work that resonates with their values and providing enhanced training, this initiative offers an innovative model for strengthening livelihoods.

This proposal envisions a community-managed Biopark in the Western Ghats, where tribal youth will be empowered as ecosystem stewards, serving as both biodiversity conservation practitioners and eco-entrepreneurs. It aims to blend modern conservation science with indigenous wisdom to create a sustainable, community-driven model for conserving biodiversity and ecosystems, with provisions to further enhance income.

Few existing models actively involve tribal communities in conservation efforts. However, integrating a business model that enhances income alongside conservation work remains largely untested. This initiative aims to bridge that gap, creating a sustainable livelihood model that merges ecological stewardship with income generation.

THE M S SWAMINATHAN BIODIVERSITY PARK

The M.S. Swaminathan Research Foundation is involved in conserving natural resources, particularly the native and traditional plant genetic resources by promoting their sustainable use, with a focus on enhancing the livelihoods of local and tribal communities in Wayanad

The M.S. Swaminathan Botanical Garden (MSSBG) acts as a hub centre for implementing the conservation projects. Established on 10 hectares of land, the garden serves as a



dynamic repository of plant species. It conserves a total of 1,061 plant species of significant importance in terms of food, nutrition, medicine, ecology, and economics. Given the rapid erosion of threatened species in the wild and NUS species on farms, the M.S. Swaminathan Research Foundation (MSSRF) has initiated several RET (Rare, Endangered, and Threatened) and NUS (Neglected and Underutilized Species) conservation programs since the mid-1990s. MSSRF has built scientific knowledge on RET species and engaged in human resource capacity building, facilitating 16 conservation fellows, 7 doctoral theses on floristic and conservation studies, and supporting over 40 custodian farmers and 5 community networks/grassroots organizations. MSSRF has popularized RET species conservation through taxonomy workshops, awareness campaigns, and maintaining a herbarium with 850 specimens of endemic species. The Centre has developed protocols for survey,

identification, distribution mapping, rescuing, collection, multiplication in nurseries, stakeholder sensitization, and community participation in restoration projects. Best practices include planting seedlings, maintenance, gap filling, and protection.

The garden conserves 247 plant species categorized under various IUCN threat levels, including 9 Critically Endangered, 23 Endangered, 29 Vulnerable, 18 Near Threatened, 9 Data Deficient, and 159 Least Concern species. Notable species include the critically endangered *Vateria indica*, *Cynometra travancorica*, *C. beddomei*, *Vatica chinensis*, *Hopea erosa*, *Hopea parviflora*, *Hopea ponga*, *Dipterocarpus indicus*, *Myristica malabarica*, *Madhuca bourdillonii*, and *Sageraea grandiflora*. Over 25 years, these conservation efforts have resulted in the raising of over 305,000 seedlings representing 328 species of RET and other locally threatened and endemic plants from the Western Ghats. These plants have been conserved at the hub



and distributed to spoke gardens and individuals for long-term conservation. Sixteen satellite conservation gardens are established in Wayanad and adjacent districts, incorporating various land typologies such as natural forest land, sacred groves, coffee farms, custodian farmers' plots, and institutions interested in establishing gardens with threatened species. Most of these ex-situ conservation sites now resemble miniature forests. Despite establishment rates varying from 45% to 80%, the overall achievement has led to an increase in the stock and area of conservation for selected species.

The RET Plant Conservation Programme has significantly enhanced ecosystem services, as evidenced by increased species diversity and measurable biomass and carbon stock within the garden. The impact of conservation programs is also reflected in the enhancement of faunal species diversity.

The Centre has also documented and conserved food plants and varieties such as rice, root and tuber crops, leguminous crops, green leafy vegetables, spices, and medicinal plants in the Wayanad region. This initiative includes establishing germplasm collections as part of MSSBG and community conservation plots, and integrating on-farm conservation practices to enhance household food and nutritional security for tribal communities. Additionally, the Centre has recognized custodian farmers and promoted value addition of neglected crops and their market linkages to improve livelihoods. The M.S. Swaminathan Botanical Garden is advancing efforts to develop a Biodiversity Park that models the conservation of natural landscape elements of the Western Ghats, aiming to further contribute to biodiversity conservation.



PROJECT OBJECTIVES

This project aims to empower tribal youth with practical skills in environmental conservation, enabling them to become both managers of the biodiversity park and master trainers. The following objectives outline the primary goals of this Biopark initiative:

Establish a Community-Run Biopark Model

Enhance Tribal Livelihoods through Eco-entrepreneurship

Promote Biodiversity and Cultural Heritage Conservation

- **Establish a Community-Run Biopark Model:** Train tribal youth to manage various components of the Biopark, serving as park stewards, visitor guides, and master trainers for future conservation training programs.
- **Enhance Tribal Livelihoods through Eco-entrepreneurship:** Create sustainable income sources for Wayanad's tribal communities by equipping youth with skills in eco-friendly sectors, including nursery management, ecological restoration, sustainable agriculture, and eco-tourism.
- **Promote Biodiversity and Cultural Heritage Conservation:** Conserve RET species, neglected and underutilized species (NUS), and traditional knowledge, strengthening the local ecosystem by involving communities in species monitoring and habitat restoration.



PROPOSED PROGRAM STRUCTURE AND ACTIVITIES

The biopark will employ a people-centric approach to park management and ecological restoration in the Western Ghats. MSSBP plans to recruit 40 tribal youths from different communities in Wayanad to be trained as conservation stewards over a one-year immersive program. During this period, the youth will work closely with scientists, staff, and community leaders to acquire skills in managing park components, conservation techniques, and eco-entrepreneurship.

Youth will engage in day-to-day park activities, including plant propagation, nursery development, seed collection, invasive species management, land preparation, soil and water conservation, weed management, nurturing of species, conservation of germplasm, collection of seeds and seedlings from wild, documentation of TK associated with RET plants, sustainable use of NTFPs. Additionally, they will support Biopark operations such as visitor management, environmental education programs, management of infrastructure and the promotion of tribal arts and cultural activities.

To incentivize their efforts, trainees will receive a monthly stipend (of

Rs 10,000/-) and income-sharing opportunities based on the Biopark's revenue. Thus the overall monthly remuneration will be decided according to the base remuneration + incentive from the income generated from biodiversity park. This incentive structure fosters a results-driven, sustainable income model that encourages youth to contribute actively to the Biopark's development.

They will further be effectively linked for developing network gardens and participate and contribute in restoration programmes. The terms and conditions of their services will be updated according to their performances and skill sets. The park will be effectively function on all days, to cater the visitors and tourists.

Once the first batch of community trainees is well-trained and proficient in conservation practices, these experienced individuals will serve as master trainers for future programs, demonstrating park management skills. This approach will sustain the training program by enabling additional interested community members to receive training and be prepared for employment in similar fields. The **"Conservation Stewardship initiative"** is also planned to facilitate the recruitment of future trainees into suitable sectors.

KEY RESPONSIBILITIES OF THE TRAINEES INCLUDE

Habitat Restoration and Conservation

Community Education and Outreach

Ecological Monitoring

Management of Biopark Operations

- 1. Habitat Restoration and Conservation:** Assisting in the collection and propagation of plant genetic resources (PGRs), habitat restoration, and managing invasive species.
- 2. Ecological Monitoring:** Conducting fieldwork to monitor biodiversity, document flora and fauna, and record environmental data.
- 3. Community Education and Outreach:** Organizing environmental programs and cultural activities to educate park visitors and promote conservation awareness.
- 4. Management of Biopark Operations:** Overseeing nurseries, visitor services, and a sales outlet, providing a practical experience in park management and business operations.

INCOME-GENERATING ACTIVITIES IN THE BIOPARK

The Biopark will incorporate multiple revenue streams to support its operations sustainably, including:

- Sale of native and medicinal plants**
- Visitor fees**
- Sales of eco-friendly products and services, training courses, and programs**
- Food and beverage outlets for visitors**
- Fees for parking, educational camps, and skill development workshops**

A portion of the income will fund the trainees' monthly remuneration, while the remaining revenue will sustain the Biopark's infrastructure and future expansion. This community-run model is designed to motivate the youth to leverage their skills and foster a self-sustaining Biopark economy.

SELECTION CRITERIA AND TRAINING CURRICULUM

The Biopark will recruit youth aged 18–25 from the tribal communities of Wayanad, with a minimum educational qualification of grade 10. The selected candidates will undergo one year of immersive, hands-on training, with roles as park managers following successful probation. They will gain skills in various facets of biodiversity conservation, visitor engagement, and eco-entrepreneurship.

The curriculum will emphasize hands-on learning and will cover:

- **Propagule Sourcing, Propagation and Nursery Management:** Training in sustainable seed collection and sourcing, native plant propagation, nursery upkeep
- **Traditional Ecological Knowledge Integration:** Building on TEK of tribal communities to enhance modern restoration practices.
- **Conservation Techniques:** Instruction in techniques for RET species conservation, ecosystem monitoring, and sustainable management practices.
- **Eco-Entrepreneurship and Business Skills:** Training in visitor management, revenue generation (e.g., sales of native plants, eco-friendly products), and service-based income.
- **Environmental and Cultural Interpretation:** Skills to engage visitors through storytelling and demonstrations of tribal arts, photography, and botanical illustrations.



CAPACITY BUILDING MODULES

Creating a comprehensive year-long program for tribal community trainees at the M.S. Swaminathan Biodiversity Park would involve a curriculum that integrates both theoretical knowledge and hands-on experience in park management and

conservation. The program would be designed in modules to cover key areas like plant conservation, habitat restoration, environmental education, and sustainable tourism, tailored to empower trainees to become managers of these components.

S. No	Module	Topics & Skills Covered	Duration
1	Orientation, basic concepts and introduction to Biodiversity Park	Understanding Park objectives and the significance of conservation - Introduction to MSSBP's mission and biodiversity goals - Overview of biodiversity zones and familiarity with conservation terminology and practices	1 Month
2	Plant Genetic Resources (PGR) Collection and Habitat Restoration	PGR collection techniques, propagation, and habitat restoration - Methods of collecting and documenting genetic resources - Techniques in plant propagation and seedling care, especially for native and endangered species - Habitat restoration techniques and invasive species management	2 Months
3	Nursery and Plant Propagation Techniques	Plant nursery management and propagation skills - Propagation methods for endemic and rare species - Maintenance of nursery stock for retail and conservation - Inventory management for plants and materials	1 Month



4	Forest and Ecosystem Conservation	Ecology and management of park zones - Overview of forest types (e.g., Montane Wetlands, Myristica Swamp) and ecosystem functions - Conservation strategies for each zone (e.g., pollinator meadows, food forests) - Monitoring Forest health and supporting species reintroduction programs	1 Month
5	Field Data Collection and Ecological Monitoring	Collection and analysis of biodiversity data - Techniques for collecting and recording data on flora and fauna - Methods for tracking environmental conditions and ecosystem health - Introduction to data management and basic analysis	1 Month
6	Tribal Arts, Botanical Illustrations, bird watching, Photography etc	Developing creative and documentation skills - Traditional and contemporary methods in selected topics - Training in tribal arts related to flora and fauna themes - Documenting ecological patterns and species behaviours, identifying bird species etc.	1 Month
7	Environmental Education & Visitor Engagement	Educating visitors on conservation and park initiatives/components - Basics of communication and guiding tours - Creating engaging presentations on biodiversity and conservation - Facilitating hands-on activities for visitors such as workshops and nature trails	1 Month
8	Ecological and Sustainable Landscaping	Native landscaping and ecological management - Landscaping with native plants, including grasses, succulents, and pollinator-friendly plants - Sustainable gardening practices and slope retention techniques - Basics of creating healing and ethnobotanical gardens	1 Month

9	Business Management of Sales and Nurseries	Developing skills in retail and sustainable business operations - Nursery stock management for sales - Pricing and managing a sales outlet - Understanding sustainable business practices in a biodiversity context	1 Month
10	Cultural Activities and Event Planning	Promoting biodiversity through cultural expressions - Organizing cultural programs celebrating biodiversity (songs, dances, storytelling) - Planning biodiversity-themed events and festivals - Engaging local community through cultural exchange	1 Month
11	Community-based Sustainable Conservation Techniques	Incorporating traditional knowledge into conservation - Using indigenous knowledge for forest and plant care - Implementing community-driven practices for ecosystem restoration - Encouraging intergenerational transfer of knowledge	1 Month
12	Leadership Development	Preparing trainees for managerial roles - Training in leadership, teamwork, and conflict resolution - Basics of resource management - Preparing trainees for roles in managing the park zones and visitor interactions	1 Month

The modules will include various sessions such as field trips, presentations, discussion sessions, hands-on training, assigned projects, inventory sessions, workshops,

identification exercises, mock tours, gardening sessions, ecology walks, knowledge-sharing sessions with elders, and leadership and teamwork exercises.

KNOWLEDGE PARTNERS



Gurukula Botanical
Sanctuary



Malabar Botanic
Garden



Auroville Botanical
Garden

EXPECTED OUTCOMES

This initiative will empower tribal youth as conservation stewards, integrating traditional ecological knowledge with scientific restoration practices. Through this community-managed biopark, MSSRF aims to foster eco-entrepreneurship, safeguard threatened species, and create a replicable model for community-led conservation. As park managers and educators, these tribal youths will

champion conservation efforts and set a precedent for sustainable development across the Western Ghats. This program is designed to equip trainees with the skills needed for ecological restoration, conservation, and park management. It aims to empower them to contribute to the MSSBP's sustainability and make a positive impact on biodiversity conservation.

Increased Capacity
for Conservation and
Restoration

Sustainable
Livelihoods through
Eco-Entrepreneurship

Strengthened Community
and Environmental
Resilience

- 1. Increased Capacity for Conservation and Restoration:** Trainees will emerge as skilled conservation stewards, capable of contributing to ecological restoration and RET species conservation initiatives in the Western Ghats and beyond.
- 2. Sustainable Livelihoods through Eco-Entrepreneurship:** The program will reduce reliance on seasonal labour by providing a stable income and green business opportunities, fostering financial resilience for tribal youth and their communities.
- 3. Strengthened Community and Environmental Resilience:** The biopark will serve as a living model for sustainable resource management, community empowerment, and conservation education, ultimately enhancing the biodiversity and ecological health of Wayanad.

EVALUATION AND CERTIFICATION

- **Quarterly Assessments:** Trainees will undergo evaluations through practical exercises, written tests, and field assessments.
- **Certification:** At the end of the program, trainees who successfully complete all modules will receive a certification in Biodiversity Park Management, enabling them to take on leadership roles in the park.

BUDGET SUMMARY

S. No	Particulars	Amount(INR)
1.	Salary for Park trainees (40 persons X Rs 10,000 X 12 months)	48,00,000
2.	Food expense (Breakfast, tea, Lunch, evening tea and snacks (40 persons x 150 per day per person X 25 days per month X 12 months)	18,00,000
3.	Travel allowance (Rs 50 per day X 40 persons X 25 days per month X 12 months)	6,00,000
4.	Resource person fee including travel for experts as well as community elderly people (@ Rs.2500/day for 2 RPS for a total of 150 days)	7,50,000
5.	Exposure visits and training sessions for the trainees (at Gurukula Botanical Sanctuary (10 days -2L), Malabar Botanic Garden (15 days – 2L), Auroville Garden (10 days – 5L) etc.	9,00,000
6.	Outstation travel, food and accommodation for 40 persons during local forest site visits and other garden visits (10 trips @ Rs 25,000)	2,50,000
7.	Salary for one Project coordinator (Rs 35,000 X 12)	4,20,000
8.	Consumables (uniform, tools, equipment, protection/safety measures) LS	5,00,000

9.	Stationary and training materials LS	2,00,000
10.	Monitoring & Evaluation LS (including certification)	1,50,000
11.	Contingency and overhead	8,00,000
12.	TOTAL	1,11,70,000*

***130,000 USD**

Notes:

- Expenditure items 4 to 10 will apply only in the first year for trainees who will be absorbed into park management. Other expenditures will continue in subsequent years after their first year of training which will amounts to **Rs 80 lakhs (~USD 100,000)** per annum.
- This total cost does not include the scientific, managerial, and support staff costs provided by MSSRF (Program coordinator, Garden manager, Education officer, Development associates/assistants, Finance managers).
- To achieve our objectives , we seek **endowment grants of Rs 12 crores (USD 1.5M)** with the annual expenditure managed through the interest generated from this fund.



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