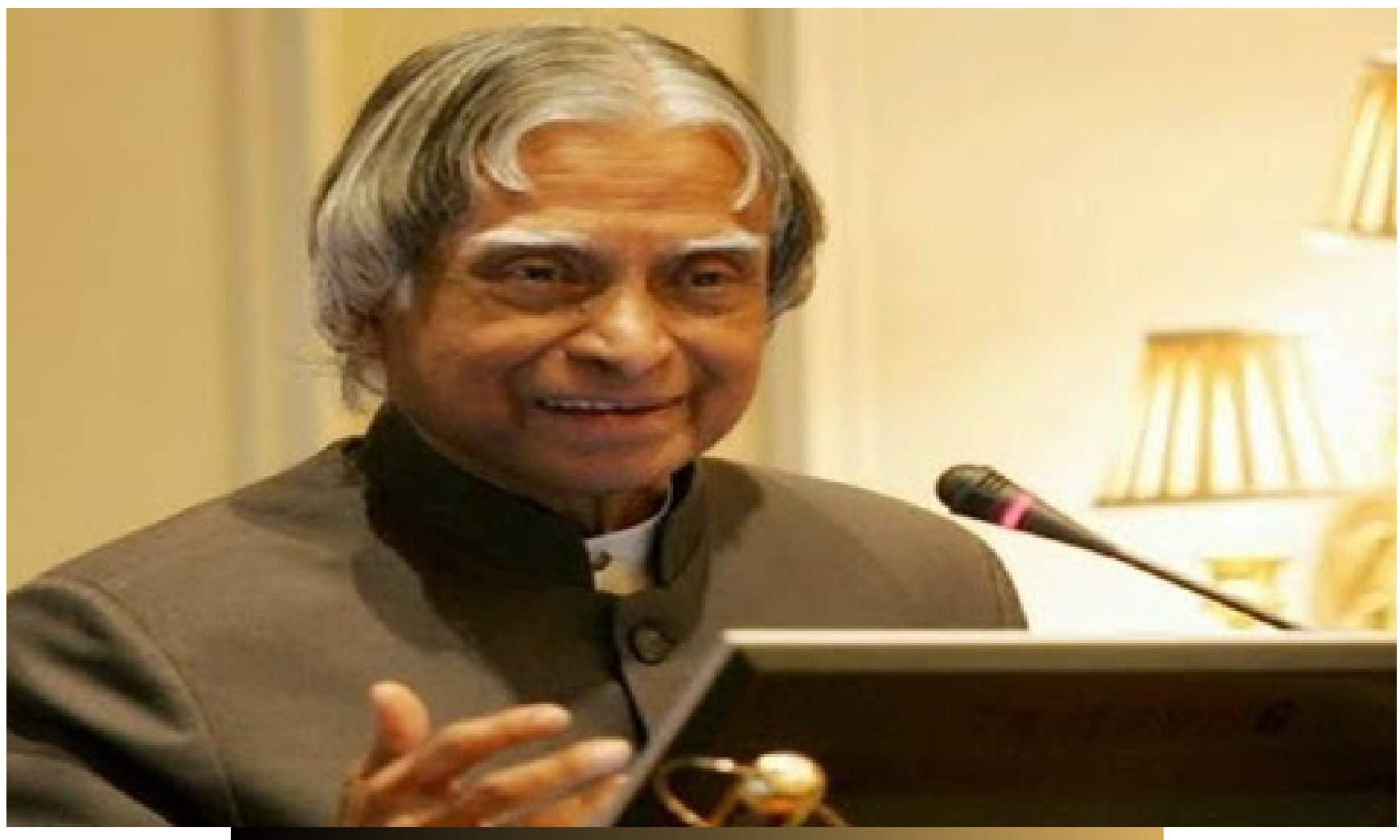
Bandhavgarh Mahua Village

A Rs 180 million model Agroforestry Village Initiative with the IIT Alumni Council Missions & Shambhala Organics as key sponsors



The Mahua Village is modelled on the PURA vision articulated by Late President APJ Abdul Kalam at the first PanIIT Conclave in 2004.

The PURA framework targets provision of urban amenities in rural areas. President Abdul Kalam had requested each IITian to adopt one village.

Gajraha in the buffer zone of the Bandhavgarh Tiger Reserve is the first village to be adopted under the PURA vision.

Project Consortium

IIT Alumni Foundation

Srinivas Rachakonda

Life Fellow - IIT Alumni Council
Chairman - Prakriti Prerna Foundation

Shambhala Organics

Christina Watson

Product Lead - Shambhala
Honorary Fellow - Wellness

Advisory Board

Prof Vinay Juvekar, L&T Chair Professor, IIT Bombay
Prof Srikanth Mutnuri, BITS Pilani Goa Campus.
Pradip Kishen, Forestry Expert

Bandhavgarh Mahua Village PROJECT

A 30 acre self contained smart campus adjacent to the 1500 sqkm Bandhavgarh Tiger Reserve forest area

It will export organic produce with a focus on Mahua & Sal butter for use as a base for skincare

The specific problem being addressed here...

Mahua is the lifeline of the rural communities around the Bandhavgarh Tiger Reserve. The tiger reserve itself spreads over 1500 sqkms and is one of the oldest forest clusters in India with a history which goes back to the Ramayana.

Mahua seed derived oil can be used as a base for various cosmetic and edible preparations. It can thus serve as a carrier oil base used in cosmetic and personal care formulations such as hair oil, skin cream, pain balm etc.

Currently most products use kerosene (referred to as mineral oil) and petroleum jelly. The replacement of these harmful materials with natural skin-friendly materials will significantly improve the export potential of products ranging from anti-freeze coconut oil (most brands add kerosene) to winter skin cream (which commonly has petroleum jelly).

The problem being addressed is to create a year-round export quality supply chain for a kerosene and petroleum jelly substitute.

Business plan & commercialisation strategy

Our business plan is to market value added forestry produce such as mahua butters to business customers and organic produce to end consumers. The plan also includes marketing of artisan ware and other products prepared from forestry products.

The principal sponsors of this project are a non-profit and the primary objective of this project is to:

- provide livelihood to people living around the reserved forest
- create a labour pool for forest revitalisation work like Lantana removal and planting of trees
- catalyse afforestation and increase in carbon sequestration.
- provide urban facilities to technical experts and researchers wanting to spend significant time on projects in the vicinity. This includes 24/7 power and high speed internet besides piped cooking gas and a clean environment.
- attract wellness seekers.

The project places purpose over profit and is being sponsored by a non-profit with CSR from Shambhala Organics.

Stage of technology & competition

The technology components are all individually proven and commercially available. However, there is no existing end-to-end proven technology stack for the mahua products.

In addition, community services need to be developed to provide urban amenities including education, power, internet connectivity and road/rail/air connectivity to these areas.

Manorama Industries in Raipur which is around 300 kms away is the only mahua refinery in the mahua belt of Madhya Pradesh and Chattisgarh.

Manorama Industries is a listed company on BSE stock exchange.

Societal impact of this project

Because of a lack of opportunities and amenities, there is large scale migration to the cities. As a result, it is difficult to retain labour or to attract technical personnel to work in the area. Revitalisation of the forest and adjoining area needs both - labour and technical expertise. This project proposes to solve this challenge through creation of appropriate infrastructure in the form of the self contained Mahua Village.

Mahua village will provide all urban amenities including healthcare, value addition facilities for local produce, research facilities, helipad etc. It is being located in the vicinity of the biofuel plant which will provide backup power as well as cooking gas (to replace firewood). The primary power source is solar and grid.

By creating a market for value added forestry products in the global market - the project will provide year-round livelihood opportunities. This will serve as an incentive for the locals to assist in tree planting and removal of invasive species as these will get linked to both income enhancement as well as 24/7 electricity, cooking gas etc.

The proposed project involves three modules

mahua refinery -
with storage and support

organic farming -
resource and farm inputs

market access -
including a product development centre

The Mahua Village complex will be in the vicinity of the IIT Alumni Centre's biofuel power plant and the Prakriti Prerna Campus. It will house a mahua refinery, cold storage, arts & crafts centre, research building and procurement/ farm input centres. It will be a key part of the supply chain for the Shambhala healing spa product range.

1st module

A REFINERY MODULE OF 5000 TPA CAPACITY

The first module comprises a state-of-the-art mahua refinery capable of processing 5000 TPA of dried mahua and sal seed collected from the neighbourhood.

This facility will produce an indicative 3000 TPA of mahua and sal butter. The raw material will be warehoused at the cold storage complex, and farmers will be paid when the material is shipped, thus providing them with year-round income - and facilitating a low working capital for the sale operations.

The multi-purpose facility can also process mango butter, jojoba oil, high linoleic content sunflower oil, grape seed oil and other carrier oils.

2nd Module

ORGANIC FARMING RESOURCE CENTRE

The second module involves development of an organic farming resource centre which provides all the requisite farm and forestry inputs including bio-fertiliser, saplings and seeds. The biofertiliser is a byproduct of the biofuels plant in the neighbourhood.

The output from the organic farms is marketed directly to affluent customers in the NCR area. Forestry products like mahua seeds are processed into long shelf life products like mahua butter and stabilised cream.

Various kinds of forest produce are also included in the organic products to be distributed.

3rd module

MARKET ACCESS & PRODUCT SUPPORT & FRESHNESS

The third module involves creating a supply chain to reach the b2b as well as b2c consumer. The b2b customer is typically a cosmetics or personal care company. The b2c customer is for organic produce delivered direct to home via online channels.

The product development support provided for cosmetics and personal care companies includes formulation development, product stabilisation, toxicology studies etc

Bandhavgarh Mahua Village TEAM

The project team will initially focus on conceptualisation of the functionalities and sustainable architecture to be put together for the mahua village

Srinivas Rachakonda

A seasoned corporate leader from the oil and gas industry. Senior Advisor McKinsey & Co, former President Essar Oil and founding team member that built the Jamnagar oil refinery. A Chemical Engineer from IIT Bombay, Srinivas left his global corporate career and an eight-digit salary to move to a remote village in the Bandhavgarh Tiger Reserve's buffer zone in Madhya Pradesh, India.

He was awarded the Change Maker of the Year 2023 and is rated amongst the leading thought leaders globally in the area of elimination of invasive species.

He runs the Prakriti Prerna Foundation, addressing the challenges of mass dense afforestation in the area. Srinivas believes his work will create a new industry worth billions of dollars in climate change-related revenues while also undoing some of the harm caused by the chemical plants he helped build.

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For reviving forest health, enhancing biodiversity, increasing carbon sequestration and building a sustainable circular economy, we need to replace invasive toxic species of plants with native species.

SRINIVAS
RACHAKONDA

Forest Resident
Change Maker
of the Year 2023

Chairman
Prakriti Prerna
Foundation.

Bhandhavgarh

Sanjay Nagi

A seasoned decision support professional with a successful track record in angel investing, startup mentoring and management consultancy, Sanjay Nagi was awarded a Life Fellow of the IIT Alumni Council for Decision Support in Project Management.

Sanjay an IIT Roorkee alumnus and an angel investor who has left a stamp on a whole generation of startups in the NCR area.

His key strength lies in being able to separate the wheat from the chaff when it comes down to startup conceptualisation and strategy.

A person who walks his talk, startups mentored by him lead on metrics like good governance, sharp strategy and follow up funding.

Anil Sharma

A leading architect offering planning, architecture, interiors and building engineering services, Anil Sharma is ranked amongst the global league of architects in the luxury and wellness space. He set up his firm Anil Sharma Associates which has completed multiple luxury projects. Anil helped conceptualise and build the Khyber Resort in Gulmarg, Kashmir which is one of the highest room rent hotels in South Asia. Anil Sharma graduated from IIT Roorkee.

Anil's career included successful tenures with Bhardwaj Bhardwaj & Associates and US-based Kabil Associates, where he worked on prestigious projects, namely USIS Calcutta, US Chancery Burma, US consulate Lahore & Consulate Residence at Lahore

Aashish Deo

A highly experienced brand and business strategist based in London, Aashish Deo currently leads the work on creating demand for nutritious diets and foods in developing countries as a Special Advisor to the Global Alliance for Improved Nutrition. Ashish holds a degree in Mechanical Engineering from IIT Mumbai and an MBA from IIM Ahmedabad. His experience spans multiple regions and countries worldwide, enabling him to offer deep insights into similarities and differences across various cultures. He served as the global lead of the Fairtrade Commission.

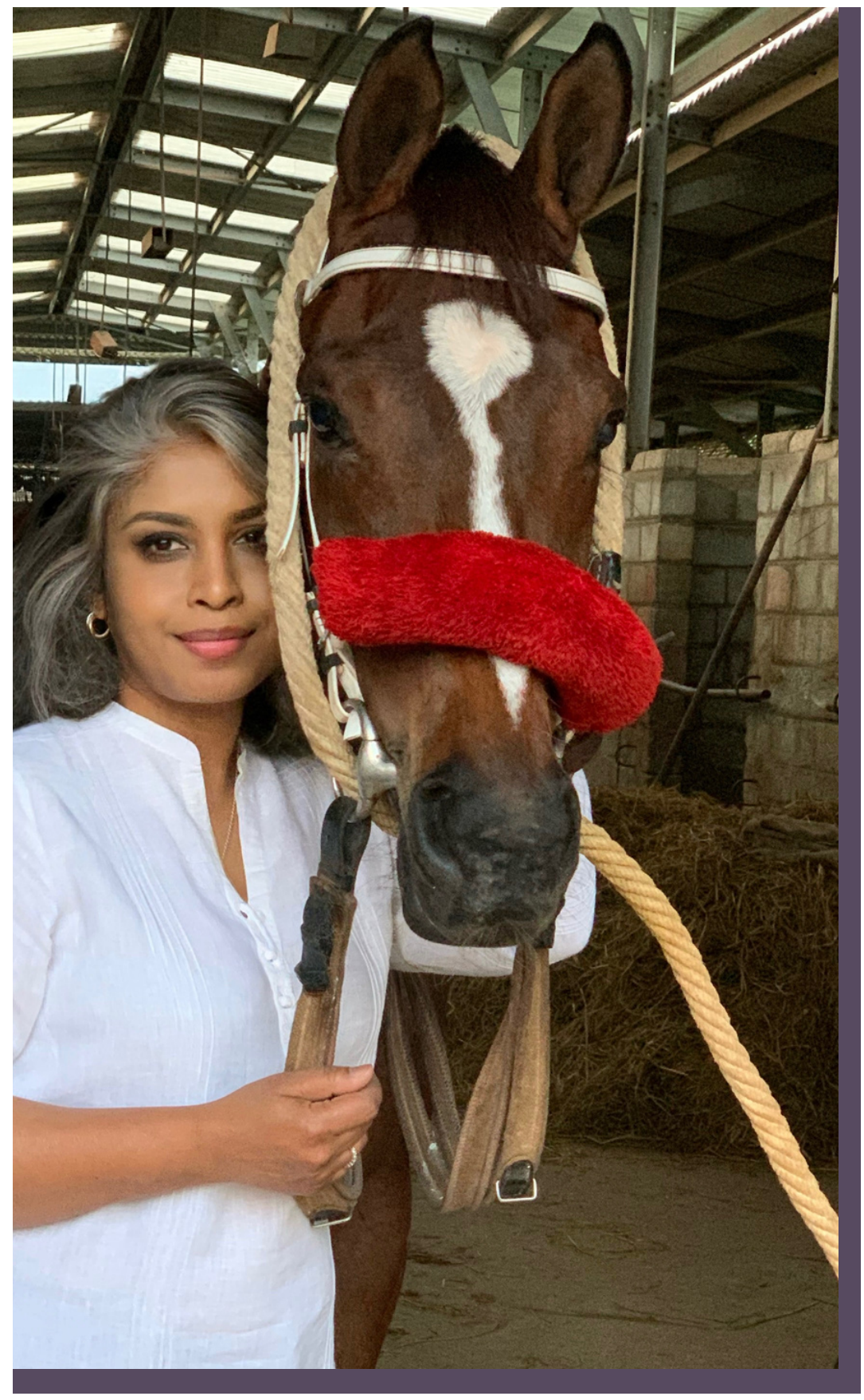
Ashish has applied marketing strategies in both the private sector (Procter & Gamble and Diageo) and the not-for-profit sector (Fairtrade and an NGO in nutrition). His experience spans multiple regions and countries worldwide, enabling him to offer deep insights into similarities and differences across various cultures.

Christina Watson

A pro in the wellness field, Christina conceptualises places of well-being and develops authentic offerings, versatile wellness-operating systems and professional teams, Christina's interests, talents, and experience overarch multiple facets of wellness facilitation.

She integrates multi-dimensional people wellness and that of the community and planet in her projects through resources that are socially and culturally inclusive, responsible, environmentally conscious and sustainable.

Christina has donned various roles in her career spanning over two decades that included Oberoi, Mandarin Oriental and Vana, amongst others, and has done freelance work as well. She has a penchant for synergising therapeutic care and delivery with elegant hospitality, meticulous yet heartfelt service and comfort.



Mrinalini Gupta

A seasoned professional with a successful track record for building Indian brands and growing profitable businesses in the real and virtual world, Mrinalini's strength lies in identifying and translating cultural and consumer insights into new businesses in emerging industries and new market segments.

She has considerable hands-on functional expertise in brand building, competitive strategy, consumer research, product conceptualisation, organisation building and profit centre management.

Balaji P

A senior corporate leader acclaimed as a thought leader in the CSR space, Balaji currently heads Vodafone Idea's Regulatory and Corporate Affairs function and its CSR initiatives. He has worked hands-on in agritech and correcting market failure in agricultural procurement.

Balaji holds an MBA in Marketing and Finance from the Indian Institute of Management, Ahmedabad and a BTech from t IIT Roorkee.

Balaji is currently a Board Member of Vodafone India. His earlier stints were with Nokia India as the Managing Director of Nokia India and the Head of Sony Mobile. Soon after his MBA, Balaji joined the Tata Administrative Service and held senior posts in the Tata group.

Consultants

Dr Hubby Mathew
Community Building
Value added natural products

Tribal Ag
Tree Planting
Local issues

Prof Srikanth Mutnuri
Biogas plant design and operations

Pradip Kishen
Social Forestry

Prof Vinay Juvekar
Quantitative Modelling

The wood wide web has completely transformed our understanding of how trees communicate with one another and regulate and influence the forest community.

Pradip Krishen

Tribal Ag

Tribal Ag works with global agencies to create a framework for mass tree planting. Studies show that the income of marginal farmers can be enhanced by planting fruit and other trees. It has several related benefits, from improving the organic content of the soil, preventing formation of rocky aggregates to retaining water.

Tribal Ag now links over a 100,000 tribal farmers in the eastern and north eastern states. Over two million trees are being planted in the current year. We seem to be on track to get to ten million trees pa within five years.

Satish Mehta

Governance Board
Totalstart, Tribal Ag
Micro entrepreneurship

PDS

Peermade Development Society

Peermade Development Society is a national-level organisation engaged in the sustainable development of tribal & indigenous communities, marginal and small farmers, women and children in India. Its mission is to empower rural communities, especially the tribals, women and marginal farmers, towards sustainable development by conserving and enhancing local resources.

A sophisticated Tissue Culture lab is set up in the Amaljyothi Engineering College, Koovapally for mass propagation of plants using bio-technical tools. Quality plantlets are multiplied by tissue culture. The matured plantlets are shifted to hardening units and supplied to the farmers.

"PDS was established in the year 1980 by Bishop Emeritus of Kanjirapally diocese Mar Mathew Arackal. I have had the honour of being part of PDS for over twenty years."

Rev Dr. H Mathew

Srikanth Mutnuri

Biological Sciences

A professor at the Department of Biological Sciences, BITS Pilani, Goa campus, Dr Srikanth Mutnuri's lab has received grants from DST, DBT, BIRAC, Bill & Melinda Gates Foundation, CEFIPRA, German Technical Cooperation, etc. He has demonstrated waste-to-energy plants based on Biogas wherein he installed one ton-per-day organic waste-based biogas plant and provided technical support to the German Technical Cooperation for implementing 30 tons per day Biogas plant at Nashik where the substrates were an organic fraction of Municipal solid waste and septage. He also demonstrated a 5-ton-per-day biogas plant using OFMSW and septage in Goa.

He is also part of the Prof Shannon Yee, Georgia Tech USA global research team of over 70 engineers, scientists, and industrial designers in developing, and now testing, a portfolio of reinvented toilets that bring together the best concepts from the last decade of the Bill & Melinda Gates Foundation-led Reinvent The Toilet Challenge

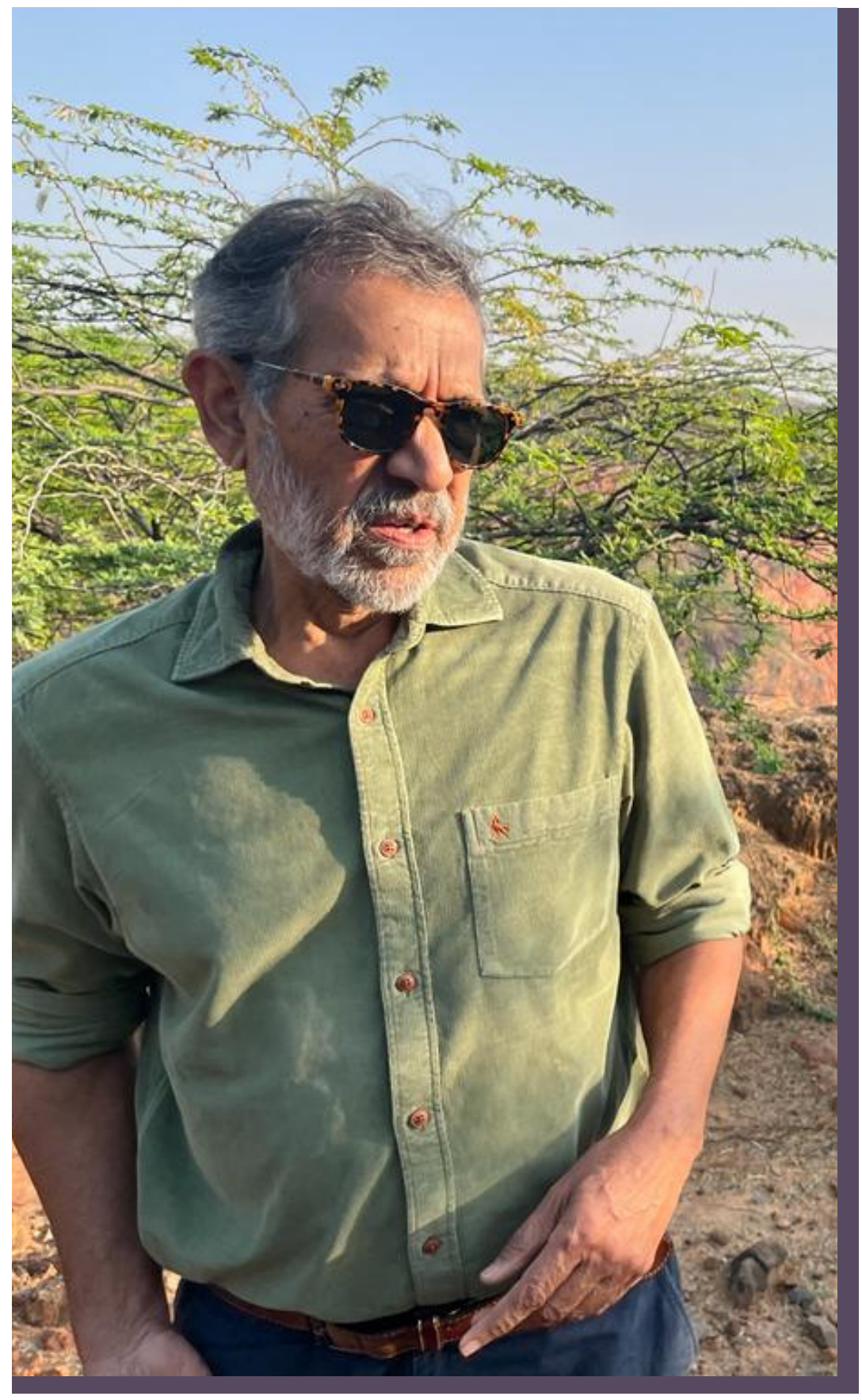
Pradip Kishen

Forestry

An award-winning documentary and feature film-maker, Pradip Kishen is a graduate of St Stephens, Delhi University and Balliol College, Oxford University.

For the last twenty years, he has been doing pioneering restoration work in North India and has been involved with creating some iconic bio-diverse vegetation hubs in desert areas. These include desert parks in Jodhpur and Jaipur of around 70 hectares each.

Pradip started writing about trees and forests in 1987. He has authored several books on Indian trees and forests and is widely regarded as the most authoritative source on the subject globally. His books on trees of Delhi and North India are by far the most respected and referred-to publications in the forest revitalisation domain.



Vinay Juvekar

Reactor design

A highly acclaimed and well-regarded academician, Prof Vinay Juvekar is an alumnus of UDCT, Mumbai University. He spent a significant part of his career as a faculty of the Dept of Chemical Engineering at IIT Bombay. He served as the L&T Chair Professor of Chemical Engineering at IIT Bombay.

He is considered one of Asia's best chemical engineering academicians, with several publications, patents and research findings.

Prof Juvekar joined IIT Bombay in 1984, and over the last 40 years, he has played a vital role in developing indigenous technologies in petrochemicals and various other aspects of chemical engineering, such as colloids and nanotechnology. In recent years, he has applied his knowledge of quantitative modelling to areas such as microbial reactors and micro/nanosystems.

The Climate Change Initiative

The Climate Change Initiative of the MegaFund mission of the IIT Alumni Council is the largest private non-profit climate change project of it’s kind in the world

It is configured to catalyse a global paradigm shift through electrification, energy transition, migration reversal, healthspan enhancement and forest revitalisation

The big picture

To meet the core objective of revitalising the forest area in and around the Bandhavgarh Tiger Reserve, the IIT Alumni Council missions have sponsored five synergistic projects:

Real-time monitoring of carbon absorption capacity

carboncredit.iitcouncil.org

Replacement of Lantana with native trees like Mahua & Sal

lantana.iitcouncil.org

Livelihoods based on value added forestry produce

mahua.iitcouncil.org

Market access for forestry products and other organic produce

shambhala.net.in

Smart integrated health villages in each state of India

ayushca.org

The Social Impact

Along with the COAL2GAS project*
and the Ionique Perpetual Power project**
these seven projects constitute the largest climate change initiative in the private non-profit sector worldwide. The eventual target is to:

Revitalise 100,000 sq. km of native forests in four hubs of India under the Shambhala Forestry mission so as to double their carbon sequestration capacity within ten years.

Create a USD 10 Billion infrastructure for health and wellness which fuses ancient wisdom with cutting-edge theranostics from the MegaLab mission.

Convert all underground coal into cleaner CNG, which can be used to replace:

- firewood as a cooking fuel
- gasoline as a transportation fuel
- thermal power with hydrogen-derived green electricity

Develop perpetual power zero carbon solutions for EV charging in strategic applications, including interstellar, underwater and remote area habitats.

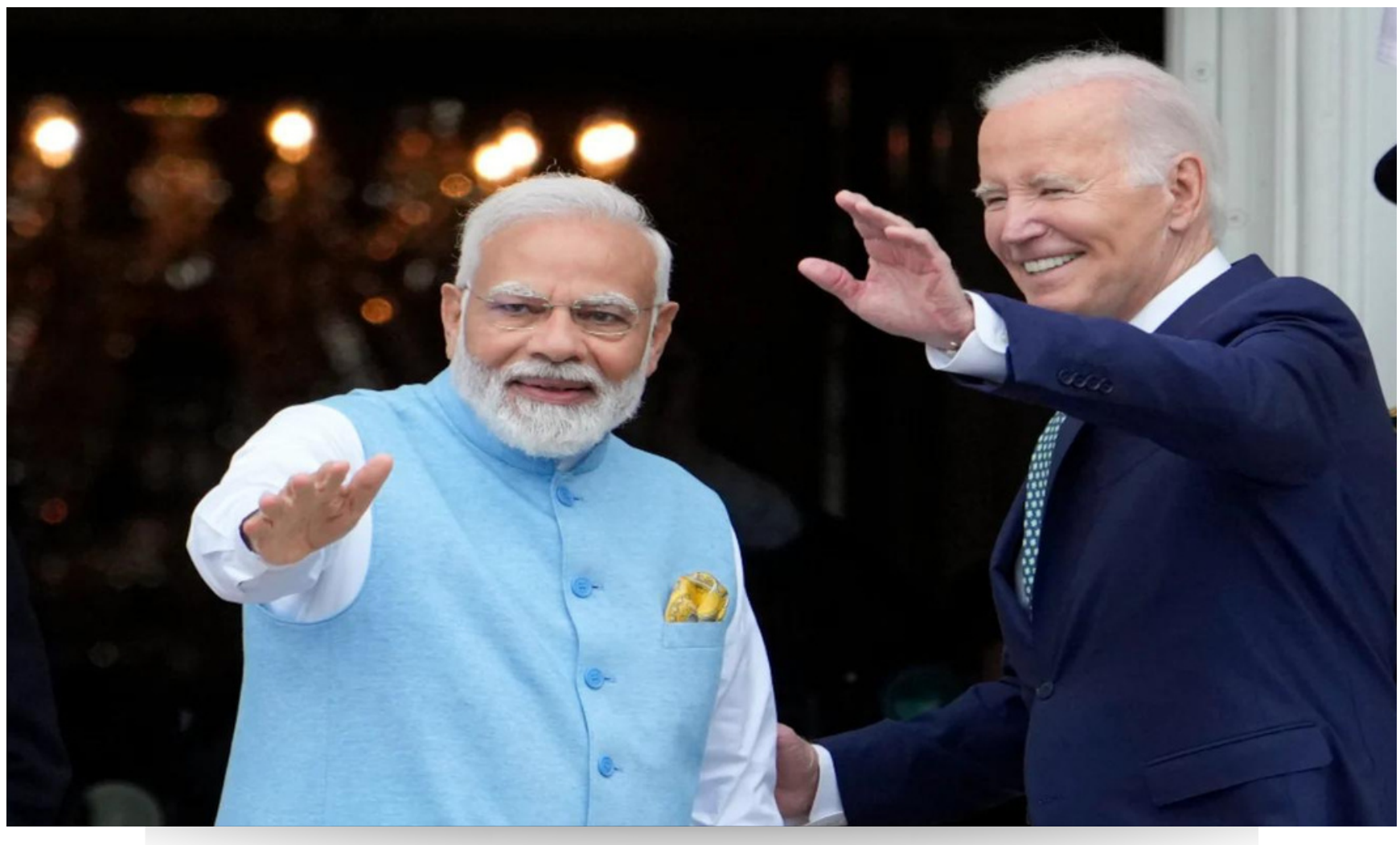
Use paradigms from the startup and venture capital ecosystem to foster deep tech ventures that solve climate change challenges.

*coal.iitac.online

**ionique.iitcouncil.org

Carbon Credit Research Project

Artificial Intelligence to accurately and instantly determine spot rate of carbon absorption in a defined forest



Joint research initiative with PanIIT Institute, USA Chapter in response to the United States–India Science and Technology partnership on core climate change technologies

The project uses
Quantum Technologies & Artificial Intelligence
for Transforming Forests & Lives

carboncredit.iitcouncil.org

Nextgen BioFuel

PILOT PROJECT

Standardised biofuel derived from any combination of input energy sources such as coal , lantana and sewage waste using AI-controlled precision bio-fermentation.

lantana.iitcouncil.org

IONIQUE

PERPETUAL POWER GENERATION

ionique.iitcouncil.org

INSTITUTE

an IIT Alumni Council initiative

India’s first thorium powered perpetual heat source capable of 30,000 hours continuous operations.

Compatible with closed loop turbines, TEG and thermolysers for electricity generation

COAL2CNG

MICROBIAL METHANATION OF COAL TECHNOLOGY

coal.iitac.online

COAL2CNG

COAL2CNG initiative envisages converting underground coal into CNG at a global scale with an ambition to make India the largest producer of CNG within ten years.

The energy basket envisaged includes coal, thorium and solar with all the coal being converted to CNG and thorium being used as a fuel for nuclear energy.

MEGALAB

HEALTHSPAN ENHANCEMENT INITIATIVE

megalab.in

The C19 Task Force was set up by the IIT Alumni Council as a Rs 700 crore initiative to catalyse the national fight against Covid. The C19 Task Force morphed into the MegaLab mission in August 2021.

Several technologies developed by the MegaLab mission have found substantial applications outside of healthcare in areas ranging from green chemistry to new food technologies.

AYUSHCA

HEALTH VILLAGE WITH SUSTAINABLE HABITATS

ayushca.org

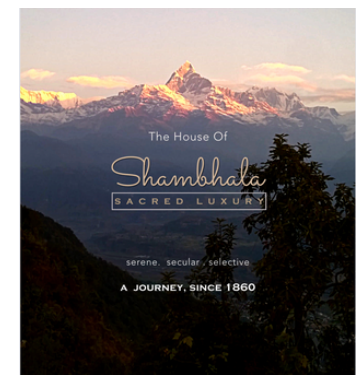
Ayushca is conceptualised as a next-generation, self-contained private biosphere to accommodate up to 50,000 residents. The smart health villages have been configured to fit in three land parcel sizes - 30 acres, 125 acres and 300 acres. IIT Alumni Council proposes to build twenty-five Ayushca Health Villages over the next fifteen years. .

SHAMBHALA

SUSTAINABLE FORESTRY & VALUE ADDED PRODUCTS

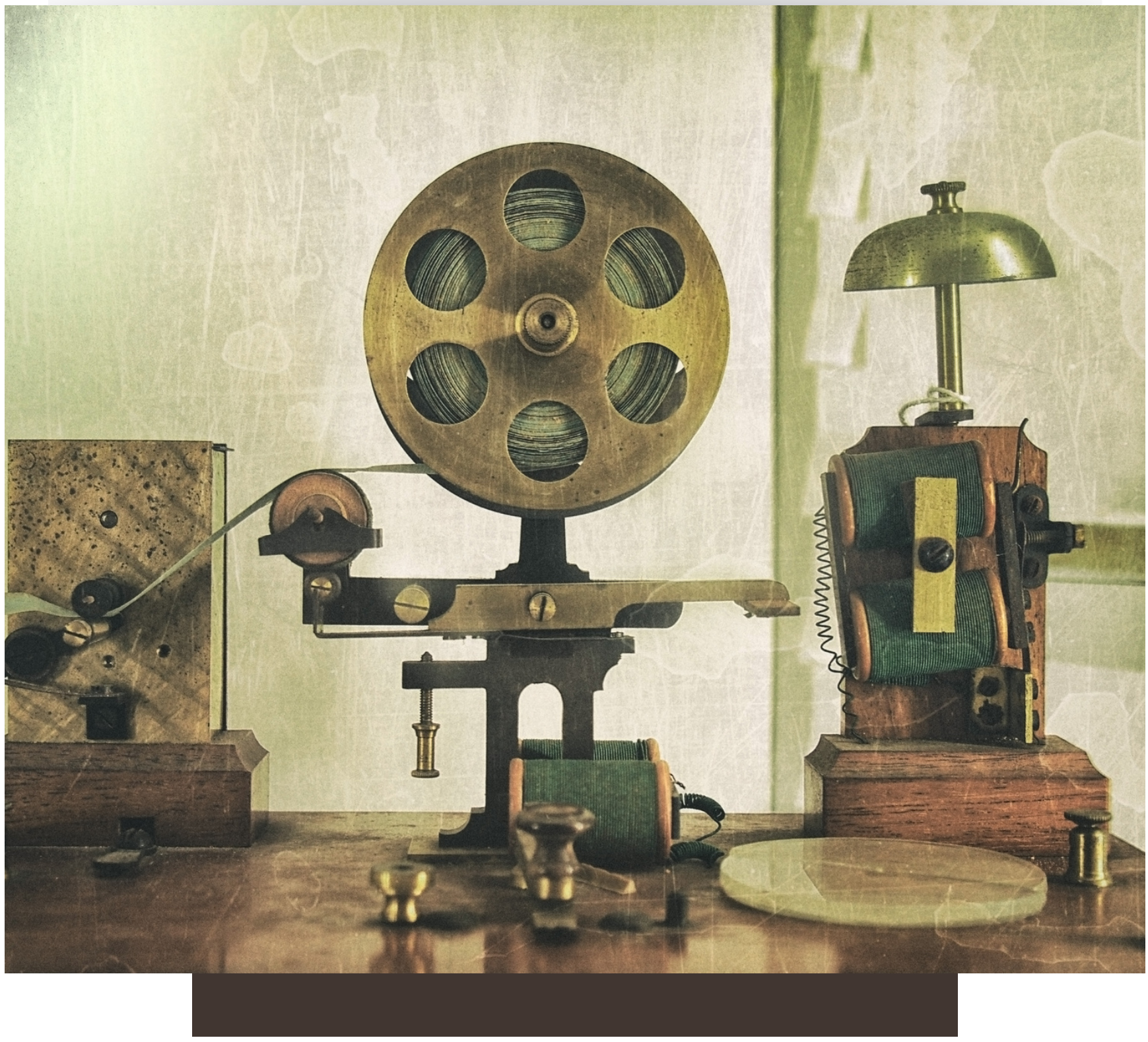
shambhala.net.in

Shambhala
SACRED LUXURY



Shambhala has been conceptualised in the context of the current climate changes challenges. Shambhala proposes to positively impact 100,000 sq kms of forest area in India and around twenty five million people. Shambhala proposes to create a livelihood ecosystem from the monetisation of forest produce, eco-tourism and carbon credits.

Communications



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Tending a reciprocal relationship with the land teaches us the importance of community and how we can better show up for the earth, ourselves and those who came before us.

Julie Douglas

Shambhala