

Madhya Pradesh sustainable agriculture program: Learning and planning workshop

SUMMARY OF SUSTAINABLE AGRICULTURE MODELS PRESENTED AT THE WORKSHOP FOR STRENGTHENING SUSTAINABLE AGRICULTURE IN MADHYA PRADESH

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BACKGROUND

The Green Revolution has significantly boosted agricultural productivity and food security. However, it has also brought about numerous ecological, social, and economic challenges. Transitioning to sustainable agriculture beyond the Green Revolution is essential for enhancing the agricultural economy, ensuring food security, and promoting the sustainable use of natural resources to ensure a sustained flow of ecosystem services. Both national and state governments, alongside civil society, recognize the need to design and implement sustainable agricultural practices. Successful implementation can improve rural livelihoods, build adaptive capacities, and enhance farming resilience.

Initiatives such as the Andhra Pradesh Community Managed Natural Farming (APCNF) highlight the growing interest in agroecology at various levels. Nevertheless, despite these efforts, a coherent government policy that acknowledges the associated uncertainties and risks is lacking, making farmers hesitant to switch from traditional Green-Revolution technologies and practices to nature-based farming systems. Some local and regional successes have been achieved; however, agriculture is a state subject, meaning that active state government involvement is needed for broader coordinated efforts at a larger scale.

The Sustainable Agriculture Initiative by the Food and Land Use Coalition India (FOLU India) aims to build evidence for the large-scale implementation of sustainable agriculture in India. As part of this initiative, FOLU India, along with WRI India, has joined hands with the Farmer Welfare and Agriculture Development Department, Government of Madhya Pradesh (FW&ADD, GoMP), to create an enabling ecosystem for integrating and implementing agricultural developmental schemes in selected districts of Madhya Pradesh.

CONTENTS

- 1 Background
- 2 Setting the context
- 6 Day 1 Technical session
- 7 Day 2 Technical session
- 7 Summary
- 8 Appendix A
- 9 Acknowledgements
- 9 For more information
- 10 About WRI India

These conference proceedings reflect the presentations and discussions of participants and do not necessarily represent the views of WRI India or other participating institutions.

The Madhya Pradesh Sustainable Agriculture Program: Synergizing Policies and Actions strives to demonstrate how states can lead large-scale transitions. The Learning and Planning Workshop, co-organized by the FW&ADD, GoMP, FOLU India, and WRI India, aimed to understand successful sustainable agriculture models across India and discuss their adaptation in Madhya Pradesh. This three-day workshop focused on thematic discussions on agri-value chain components, knowledge support, production landscape, technology innovation, financing models, governance, and water conservation. Sixteen organizations, including civil society organizations (CSOs) and private sector entities, presented their work during the session, which was attended by approximately 140 government officials and 15 team members from WRI India and FOLU India. The workshop participants are listed in Appendix A.

SETTING THE CONTEXT

At the inaugural session, the guest of honor, Shriman Shukla, IAS, Managing Director, Mandi Board, expressed his interest in learning more about the best practices across the agricultural value chain for potential adaptation in Madhya Pradesh. Dr. M. Selvendran, IAS, Commissioner, FW&ADD, GoMP, emphasized the GoMP's commitment to sustainable agricultural practices. In addition, Dr. Ruchika Singh, Executive Program Director, Food, Land, and Water, WRI India, highlighted the workshop's focus on learning from best practices across India and identifying models that can facilitate Madhya Pradesh's transition toward sustainable agriculture. This transition aims to improve livelihoods and increase incomes, emphasize social inclusion, and mitigate climate impacts, setting an example for the rest of the country.

Dr. Jayahari KM, FOLU India Country Coordinator, noted the global need to transform food systems into more sustainable ones. State governments are leading this transition in India, and Madhya Pradesh's inclusive and bottom-up approach seeks to benefit all stakeholders involved.

An expert panel comprising government officials, subject experts, and policy experts in the agricultural sector, constituted by WRI India in consultation with FW&ADD and GoMP, evaluated the presented models.

FIGURE 1 | Workshop organizers and panelists at the Learning and Planning Workshop



Photo Credit: Bineesh Kandiyil/FOLU India

DAY 1 TECHNICAL SESSION

Village knowledge centers for farmer-centric advisories

Organization: MS Swaminathan Research Foundation (MSSRF)

Presenter: Dr. Rengalakshmi R., Director - Ecotechnology

Presentation overview

The MSSRF is enhancing agricultural advisory services through digital integration. During the session, the organization shared its experience in establishing community-owned village knowledge centers (VKC) in Tamil Nadu, which are equipped with information and communication tools (ICT). These VKCs have improved outreach; bridged knowledge, gender, and digital divides; and reached unserved areas. VKCs are strategically located in commonly accessible places to improve access for the entire community. The centers focus on social mobilization, local needs assessments, needs-based content development, capacity building, and strategic partnerships.

VKCs connect farmers with experts and complement the government agricultural extension services. They employ various digital tools such as audio advisories, helplines, audio conferences, phone-in programs, WhatsApp messages, video conferences/webinars, physical and digital plant clinics, and interactive voice response systems, such as mobile massive open online courses, working with institutions such as Kisan Vigyan Kendras, CSOs, and Farmer Producer Organizations (FPO). These tools have resolved more than 70% of queries, improved pest and disease management, and increased farmers' access to scientific information. Additionally, VKCs enhance farmers' market bargaining power and address digital asymmetries. They also provide civic services, such as issuing ration and Aadhaar cards.

After the presentation, a panel proposed that member that neutral, advertisement-free content be presented to farmers. Another panel member suggested emphasizing leveraging existing extension service systems by Agricultural Technology Management Agency centers and other community centers. It was also recommended that efforts be made to improve the capacities of these centers, instead of establishing new VKCs. The discussion was concluded by the panel chair, who highlighted the need to integrate the existing extension system into the VKC approach, rather than building a parallel infrastructure.

Climate finance for sustainable agriculture

Organization: Kosher Climate

Presenter: Neelesh Sachdeva, Business Head

Presentation overview

Kosher Climate focuses on reducing carbon footprints and directing climate finance to small-scale farmers through the Carbon Credit Program for sustainable agriculture. The organization presented agriculture as a potential source of carbon credits, achievable through practices such as tillage management, cover crops, residue management, nitrogen management, water management in rice production, and agroforestry. It collaborates with stakeholders such as FPOs, CSOs, input dealers, millers, farmers, knowledge partners from the Indian Council of Agricultural Research (ICAR) and various universities, union and state government departments, and working partners from the fertilizer, irrigation, seed, and machinery industries to conduct pilot projects across various states. Examples of these pilot projects include alternate water management in paddy cultivation through the alternate wet and drying method and direct seeded rice in Uttar Pradesh, West Bengal, Assam, and Telangana; sustainable agriculture practices in the Rice-Wheat-Maize system in Punjab, Haryana, parts of the National Capital Region, and northwestern India; and the cultivation of organic coffee, pepper, colocasia, yam, banana, turmeric, ginger, and tapioca in Wayanad,

Kerala. By transitioning to sustainable agricultural practices, a farmer can earn additional income through the sale of carbon credits generated, which may vary from two to six credits per hectare over 12–18 months. By acting as a carbon expert, Kosher Climate manages the sales of the credits generated by these projects.

During the question-and-answer session, it was noted that West Bengal was the first state to begin carbon credit payouts to farmers. Addressing the challenges faced by small and marginal farmers in accessing the carbon market, Sachdeva explained that volunteers provide handholding support to a group of farmers for an initial two-year period, after which the farmers take the lead. He also mentioned that third parties verified all the activities against international standards to claim carbon credits. Sachdeva shared that Kosher Climate conducted research before intervening to compensate small and marginal farmers for crop damage.

Novel and participatory governance approaches in implementing natural farming

Organization: Rythu Sadhikara Samstha (RySS)

Presenter: Prakash Rao, State Thematic Lead

Presentation overview

RySS promotes natural farming by supporting participatory governance approaches. The presentation outlined strategies for transitioning a village to a “bio-village” through natural farming under the APCNF program. The transition to natural farming takes five to seven years for a *gram panchayat*. Community resource persons, who are experienced local farmers, provide handholding support to farmers for up to five years, assisting with technology transfer and knowledge sharing. In addition, women’s self-help groups (SHGs) and their village federations help mobilize farmers.

Key strategies of the APCNF model include:

- Farmer-to-farmer extension systems
- Involvement of women’s SHGs
- Long-term support for each farmer
- Whole-village approach
- Support from the state government and agriculture department
- Building evidence through research
- ICT-backed community monitoring
- Partnerships for technical support and indigenous innovation

During the discussion, a panel member asked if the knowledge generated during these activities is documented. Rao explained that champion farmers who implemented sustainable practices in their fields often documented them and shared their knowledge with fellow farmers.

Role of innovative forward-linkage support in motivating farmers to shift agricultural practices

Organization: OTIPY

Presenter: Deepak Tiwari, Sourcing Head

Presentation overview

OTIPY is running tech-enabled supply chains for fresh produce that connect farmers with consumers through resellers, especially women. Through Artificial Intelligence (AI) driven demand prediction modeling, OTIPY facilitates planned harvesting that reduces postharvest losses, and identifies better

linkages and sourcing locations. A fast turnaround time ensures that food is fresh at the time of delivery. The organization's application guides farmers on purchase prices, market demand for upcoming seasonal crops, postharvest handling, and quality control during and after harvest. OTIPY sources produce from FPOs, connecting them with consumer markets. Commodities sourced from Madhya Pradesh include onion, capsicum, tomato, chili, banana, lemon, cucumber, custard apple, and garlic.

In response to a query from the panel, Tiwari clarified that OTIPY deals with both organic and non-organic produce. He also noted that pesticide residue testing is conducted for some commodities to meet household demands. Regarding profitability, Tiwari shared that women resellers earn a commission of up to 5% per delivery.

Enabling small-scale farmers through information exchange and improved advisories

Organization: Gram Vaani

Presenter: Sultan Ahmad, Director - Community Building and Empowerment

Presentation overview

Gram Vaani uses ICT to bridge the information gap for farmers, particularly small, marginal, female, and tenant farmers in Bihar. The organization uses interactive voice response technology to deliver personalized crop-specific messages in the local language. The Mobile Vaani app features an interactive query-response retrieval system to disseminate information to farmers and facilitates community conversations and knowledge sharing. Users can record their concerns, stories, and experiences on a live dashboard, which allows close monitoring of user engagement on the platform. Farmers can access text, audio, or video-based information through WhatsApp on smartphones or via a dedicated helpline for feature phones. The advisories cover five themes:

- Crop management
- Farming practices
- Pest management
- Government schemes
- Livestock management

Feedback loops improve message accuracy over time. The platform also supports agri-allied activities such as those involving livestock, fisheries, poultry, extension workers, intermediaries, and field personnel. Gram Vaani operates in 12 districts of Madhya Pradesh.

The panel appreciated Gram Vaani's efforts in raising awareness among marginal farmers and helping them make informed decisions. When asked about its sources, Ahmad shared that Gram Vaani has maintained a database of information collected from farmers since 2012.

Landscape approach to sustainable agriculture

Organization: Professional Assistance for Development Action (PRADAN)

Presenter: Sachin Pathania, Team Coordinator

Presentation overview

PRADAN focuses on enhancing farm livelihoods, with a particular emphasis on the roles of women and youth in agriculture. The organization aims to restore landscapes, promote regenerative agriculture, and build local circular economies through collaboration, cocreation, and evidence-based practices. It advocates for interventions at both the landscape and system levels to achieve landscape restoration. Landscape-level restoration plans are developed in consultation with communities using a ridge-to-valley approach and are

validated by the *Gram Sabha*. System-level interventions, supported by platforms such as Sanjha Manch in collaboration with the Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS), aim to amplify women's voices. The platform enables women to share opinions and build their capacities, helping them take on leadership roles such as *sarpanch*, *janpad adhyaksh*, and ward member, and as well as contribute to policymaking.

Sustainable agriculture is promoted through appropriate crop combinations and practices that allow a transition away from monoculture. Such practices include multilayer cropping, community nutrition gardens, individual composting, and homestead vegetable cultivation. Crop combinations of millets, oilseeds, and pulses are suggested to improve soil health through longer durations of crop cover and rotation. Off-farm interventions aim to create an ecosystem that supports sustainable agriculture, including bio-input resource centers (BRCs), farmer-producer companies, nurseries for quality seedlings, solar lift irrigation, processing units, branding, packaging, and value chains. PRADAN's success in Senguda and Muglei villages in Chhattisgarh highlights its achievements in ecological restoration, regenerative agriculture, and local economy creation.

During the panel discussion, a member inquired about PRADAN's engagement with the government. Pathania explained that PRADAN works as a facilitator with MGNREGS, with local bodies serving as decision-makers. Interest was expressed by the panel chair in the empirical evidence generated by PRADAN's work.

The agricultural production landscape model for entrepreneurship, skill development, and innovation to ensure community empowerment

Organization: Centre for Advanced Research and Development (CARD)

Presenter: Vivek Sharma, Chairman

Presentation overview

CARD aims to balance environmental protection with sustainable development, focusing on water, land, forests, livestock, and human communities. Its work encompasses watershed rehabilitation, sustainable agriculture, rural technology promotion, community institution development, women's empowerment, child development, skill development, water and sanitation, and health and family welfare.

The presentation highlighted CARD's efforts in Dewas, Madhya Pradesh, where its water management solutions have facilitated double-cropping and introduced high-yielding varieties of wheat and vegetables. CARD integrates the farming system approach with watershed programs and is recognized for its field-bundling programs with tribal farmers.

CARD's Sensible Farmer Responsible Farming program supports the adoption of best practices in sustainable agriculture. CARD also trains female farmers in advanced agricultural techniques under the Mahila Kisan Sashaktikaran Pariyojana, a subcomponent of the National Livelihood Rural Mission of the Government of India. The organization promotes responsible soy production in the Malwa region. In addition, as a nodal training institute for the National Institute of Agricultural Extension Management, it provides development training in skills and entrepreneurship to guide rural youth in setting up agri-clinics and agribusiness centers. CARD's year-long diploma program builds the technical competency of agri-input dealers, training them as para-extension professionals.

One panel member suggested that CARD could play a facilitative role in building farmers' capacity for sustainable agriculture.

Use of traditional seed systems and local soil microbe-based biofertilizers in the hot and arid Kutch district

Organization: Satvik

Presenter: Shailesh Vyas, Trustee

Presentation overview

Satvik collaborates with farming communities in Kutch, Gujarat, to revive traditional practices and promote sustainable agriculture. Its work focuses on three key aspects: promoting *Rammol*, a traditional mixed cropping system; conserving and producing traditional seed varieties; and using local soil microbes to prepare bio-fertilizers. *Rammol* involves mixing the seeds of multiple crops before sowing. This mixture can include food crops, food and feed crops, or oil crops. *Rammol* offers many advantages, including crop diversification, reduced impact of climate variability, efficient utilization of soil moisture and soil nutrients, less intraspecific competition between crops, a spread-out harvesting season that is manageable with family labor, simultaneous food and fodder security, and the health of the family, livestock, and soil.

Approximately 40% of the arable land in the district is covered by traditional cropping systems. Traditional seed varieties are preserved for their resilience to harsh climates, diverse soil conditions, and storage pest attacks, as well as long-term viability. A seed validation and approval committee selects traditional seeds based on field trials. Satvik procures, stores, and distributes these seeds based on demands raised during village meetings. Since 2018, more than 68 metric tons of traditional seeds have been distributed to over 5,000 farmers. To enhance economic viability, production quality must be improved, and initial cleaning should occur at the farm gate.

Satvik also promotes the use of local soil microbes as inputs for biofertilizers. Collaborating with Kutch University and the Somvanshi Research Foundation, it tested the effectiveness of local soil microflora-based biofertilizers for promoting crop growth and improving productivity in actual fields. For both tested parameters, seeds that were bio-primed with locally sourced plant growth-promoting rhizobacteria performed better than those that were untreated or treated with commercial biofertilizers.

At the end of the presentation, the importance of preserving the biodiversity of traditional seed varieties through seed repositories and policy support was emphasized by one panel member. The panel chair added that focusing on traditional seeds and soil microflora that are adapted to local conditions is crucial for resilience.

Social enterprise development in sustainable agriculture landscapes

Organization: Naandi Foundation

Presenter: Rohini Mukherji, Policy and Strategy Head

Presentation overview

The Naandi Foundation addresses the needs of small and marginal farmers in tribal regions along the borders of Andhra Pradesh and Odisha; the Wardha region in Vidarbha, Maharashtra; and riverine plains in select districts of Uttar Pradesh and Punjab. The Foundation has also developed a business-to-business model for urban farming that is focused on organic vegetable production.

To promote sustainable agriculture, Naandi adopts zero-chemical farming principles. It has established 15 centralized compost and bio-inoculant preparation units across India to overcome the challenges faced by small and marginal farmers in accessing bio inputs. The use of green manure, such as sunnhemp (*Crotalaria juncea*) and *dhaincha* (*Sesbania grandiflora*), is recommended for improving the organic matter, structure, and fertility of the soil. Champion farmers are selected from within villages to train other community members. For farmers with small landholdings, a multilayer cropping system is recommended, such as multilayer pepper-and-coffee cropping system in the border regions of Andhra Pradesh and Odisha. To enhance forward linkages and help farmers achieve better returns, approximately 21,000 coffee farmers in Araku

FIGURE 2 | The opening session of the Learning and Planning Workshop



Photo Credit: Bineesh Kandiyil/FOLU India

Valley, Andhra Pradesh, have been organized into multiple cooperative societies. The Araku model, which showcases the strength of the cooperative movement, the importance of suitable farming practices, and the role of produce quality in market pricing, was discussed in detail.

At the conclusion of the presentation, one panelist suggested testing the Araku model in the coffee cultivation areas of Kukru in the Betul District of Madhya Pradesh.

DAY 2 TECHNICAL SESSION

System of rice intensification: a paddy-based, landscape-level approach to sustainable and regenerative agriculture

Organization: The Energy and Resources Institute (TERI)

Presenter: Dr. Manish Anand, Senior Fellow

Presentation overview

TERI is developing a landscape-level approach to promoting sustainable agriculture in Telangana. It experimented with the System of Rice Intensification (SRI), a water-efficient paddy cultivation method, in the dry and rainfed lands of Vikarabad, Telangana. An implementation plan that addressed challenges such as erratic rainfall, droughts, groundwater overextraction, monocropping, limited market access, and declining livestock was developed. This plan included soil and water management interventions, nutrient practices, and innovative land-use strategies. The plan also emphasized knowledge-sharing initiatives, leveraging champion farmers' expertise, and forming information exchanges on sustainable agricultural practices among small and marginal farmers. A cost analysis comparing conventional, hybrid, and indigenous paddy varieties using SRI techniques highlighted that indigenous paddy systems and natural farming incurred the lowest costs and withstood climate disasters better.

A panel member expressed interest in learning about the response of a single seed variety to different treatments and shared observations on why SRI is not gaining popularity among small farmers. Another panel member suggested focusing research efforts on identifying successful approaches and inhibiting factors, as well as reimagining the process for the wider adoption of SRI practices.

Knowledge and technology transfer to bring behavioral change in farmers

Organization: Self-Reliant Initiatives through Joint Action (SRIJAN)

Presenter: Ashish Ambasta, Program Manager

Presentation overview

SRIJAN is actively involved in rural development in the Bundelkhand region through the Bundelkhand Initiative for Water, Agriculture, and Livelihood (BIWAL) program. This program addresses challenges such as rising cultivation costs, migration, water scarcity, and biodiversity loss.

Over 300 traditional waterbodies have been restored through community participation. BRCs provide training and bio-inoculants, and seed banks supply local and improved seed varieties. Farmers learn through demonstration plots. SRIJAN has also identified small agri-tools, such as weeders and spray pumps, that can be easily adopted by farmers. Self-sustaining multilayer farming systems and orchards have been introduced to improve crop diversification and generate income. Local community cadres are developed through training and involvement in planning and monitoring, particularly in para-hydrological skills and supply chain management. Crop water budgeting exercises empower communities to manage water resources efficiently, resulting in increased agricultural yield without chemical fertilizers.

The continuation of plant varieties introduced in the orchards was inquired about by one panel member. Ambasta confirmed that all the orchards were operational, with plant varieties selected in consultation with the farmers' committees. The area under the orchards has expanded, and farmers' incomes have increased. Another panelist inquired about the conditions necessary for creating behavioral change: community involvement, women's participation, and customization to local needs were highlighted as crucial, along with building local cadres.

Ensuring water resource security to sustain agriculture in coastal and arid regions

Organization: ARID Communities and Technologies (ACT)

Presenter: Jayantilal Gorsiya, Program Head

Presentation overview

ACT works on water security issues in rural communities in western and central India. It presented the Kankavati Managed Aquifer Recharge through Communities project or Project K-Marc, named after the Kankavati aquifer of coastal Kachchh, Gujarat. This project adopts a participatory groundwater management (PGWM) strategy, combining community participation, geohydrology, and technology to address challenges such as water table depletion, saline groundwater owing to seawater ingress, and water scarcity. Despite an increase in annual average rainfall (1901–2012), high runoff has led to water scarcity. The regional water budget showed that agriculture has the highest demand for water. Current sources, such as groundwater and surface water, are unable to meet this requirement, negatively impacting the population.

To develop participatory water management strategies, *Bhujal Jankars* (community representatives) were appointed to provide knowledge inputs. The steps taken included capacity building for *Bhujal Jankars*, formation and capacity building for PGWM committees, geohydrology-based water security planning, demonstration of supply- and demand-side management interventions, impact monitoring, mass awareness campaigns for adaptation and scale-up, convergence with public funds, and institution building and

strengthening. Supply-side interventions included recharging tube wells, creating recharge wells in riverbeds, harvesting rooftop rainwater, recharging defunct tube wells, creating gabion structures, and surface rainwater storage. Demand-side measures included adding compost and bio-inputs as soil amendments, creating farm bunds, planting Napier grass with strong root systems, and using soil moisture meters to assess crop irrigation needs. This PGWM strategy created 19 water surplus villages in the region within four years (2018–21) and decreased groundwater salinity.

One panel member suggested that a similar initiative be implemented in urban areas of Bhopal and parts of Bundelkhand. The panel chair concluded that management of groundwater and active community participation is the key takeaway from this project, and it is extremely important to simultaneously manage both these demand and supply sides.

Landscape-level planning for sustainable agriculture in Gadchiroli, Maharashtra

Organization: WRI India

Presenter: Dr. Seema Yadav, Program Manager

Presentation overview

WRI India is conducting research to support the transition toward sustainable agriculture and landscape restoration. It presented a landscape-level implementation plan for Gadchiroli, Maharashtra, utilizing the Restoration Opportunities Assessment Methodology (ROAM). This participatory approach identified critical land-use challenges and potential interventions to address these challenges. A detailed analysis of state and national policies, along with mapping of key actors and institutions as well as the flow of ecosystem services, was undertaken to understand the enabling environment, social landscape, and existing and prioritized ecosystem services. The geographical potential of the identified interventions was estimated using geospatial mapping tools.

Approximately 70% of Gadchiroli's geographical area stands to benefit from restoration interventions targeting agriculture, forestry, and water conservation. Water resource conservation was recommended as an initial activity, and crop diversification during the *Rabi* season was proposed to mitigate the challenges of paddy monoculture. Other suggested interventions for transitioning to sustainable agriculture include integrated nutrient and pest management and water-efficient paddy cultivation. Planting native species mixes and bamboo using artificial natural regeneration principles was recommended to restore degraded forestlands in community forest resource (CFR) areas, as recognized under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. These CFR areas were deemed suitable for developing silvi-pastures to address open grazing and crop damage by livestock. Scaling up homestead nutrition gardens and agri-horti-forestry in degraded areas outside forests was recommended to combat the district's high malnutrition rates, particularly among women and children. It is estimated that adopting these interventions would enhance the provision and regulation of ecosystem services in the district.

Increasing village-level BRCs was suggested by a panel member to improve bio-input accessibility, support the wide-scale adoption of integrated nutrient and pest management, and optimize livestock wealth. Dr. Yadav stated that the creation of village-level BRCs is an integral part of the intervention. Seeking the Forest Department's support to implement the identified interventions was suggested by another panel member. When asked about the key non-timber forest products (NFTPs), the panel member recommended introducing value-addition activities for the surplus. Dr. Yadav agreed with this recommendation.

Restoring commons for sustainable agriculture and livelihoods

Organization: Foundation for Ecological Security (FES)

Presenter: Satyasovan Das, Team Lead

Presentation overview

FES promotes gender-inclusive and community-led governance to improve ecological and economic outcomes. It presented a case study from the buffer zones of Kanha National Park, Madhya Pradesh, on restoring village commons that are infested with the invasive species *Lantana camara*. This encroachment has significantly impacted small and marginal livestock farmers by reducing fodder availability and making it difficult to collect NTFPs, such as *mahua* (*Madhuca longifolia*) and *tendu patta* (*Diospyros melanoxylon*). *Lantana* is also a major cause of human-wildlife conflict and biodiversity loss in the region.

The restoration approach involved active landscape-level management with community involvement. Hamlets were identified as basic units, with the river basin as the highest unit. A community institution architecture was developed, where members created management rules, provided labor as in-kind support, and monitored sites. Women played a leading role in these activities. Technical inputs for *Lantana* eradication and other forestry operations were provided through interactions with multiple stakeholders. *Lantana* eradication also extended to private uplands adjoining forests. The eradication efforts have improved fodder availability, reduced forest dependence for grazing, decreased human-wildlife conflict, simplified the collection of NTFPs, and enhanced biodiversity. Some native plants that are emerging on restored commons are used in bio-input preparation to support natural farming. The community farming of millets has also been initiated in some locations. In total, 2,085 ha of land was freed from *Lantana* encroachment and restored.

Replicating this work and exploring the cost-effectiveness of removal versus value addition were suggested by panel members. The feasibility of using *Lantana* for value-added products such as furniture was queried by one panel member, who cited the Ashoka Trust for Research in Ecology and the Environment initiative (ATREE). Das mentioned using *Lantana* wood for biochar production, though concerns about emissions during biochar preparation were raised.

Sustainable livelihoods through community-based institutions such as FPOs

Organization: Action for Social Advancement (ASA)

Presenter: Samin Mondal, Program Director - Training

Presentation overview

ASA focuses on creating livelihood opportunities through the development of land and water resources, promoting sustainable agriculture technologies, and ensuring financial inclusion and market access by leveraging community institutions. The organization presented its work done in the middle sub-basin of the Narmada River, where it aimed to develop a regenerative production landscape focusing on people, nature, and the economy. With a focus on a landscape approach, their interventions included water harvesting, developing agribusiness opportunities, and transferring modern technology. Through water harvesting interventions, ASA has brought over 22,000 ha under cultivation, which was previously fallow during the Rabi season, spanning more than 75 villages in Betul. Over 94 FPOs were promoted to support smallholder farmers who struggle with market access and fair pricing owing to small quantities. These FPOs focus on agri-inputs, seed production, commodity trading, and niche products, such as organic produce.

ASA also supports tribal smallholder farmers by transferring modern technologies and improving cropping intensity through focused water and land resource interventions, with over 350,000 farmers adopting responsible crop initiatives. ASA connects FPOs and smallholder farmers through a dedicated incubation and support unit—the Centre for Incubation and Support of Smallholders Producers' Organization—which

consolidates technology mobilization, legal and financial compliance, training, and account coordination. Additionally, ASA established Ploughman Agro Private Limited to link millions of smallholders with markets through FPOs.

The presentation prompted a discussion on how FPOs function and the impact of the political environment on them, women's participation, the support needed, and their financial health. When asked about the carbon market, Mondal clarified that it was not the project's focus. The potential to leverage existing FPO mechanisms in Madhya Pradesh was highlighted by another panel member.

Digital solutions to support sustainable agriculture: creating a world where farmers use technology and data to build prosperous communities

Organization: Digital Greens

Presenter: Ravishankar Sharma, Director - Programs

Presentation overview

Digital Greens develops digital tools and supports government agricultural extension services to enhance information and knowledge dissemination among farmers. It presented a customizable mobile application called Farmer Org, designed to allow leaders of farmer organizations, frontline extension workers, and farmers to coordinate advisory, input, offtake, and financing activities.

The presentation showcased the evolution of agricultural extension from the conventional “train and visit” model to Generative Artificial Intelligence (GAI)-assisted system. This evolution has reduced the cost of outreach through technology. The GAI-based extension system integrates farmer-mediated videos, feedback, and adoption information in local languages. The AI chatbot, trained on dynamic data, offers a conversational interface for extension agents. A customizable app also systematizes incentives for frontline workers by tracking their performance and publishing agricultural data for policymakers, researchers, and service providers. Digital Greens is collaborating with the Ministry of Agriculture and Farmers Welfare, Government of India, to build a national-level digital extension platform that provides real-time access to best practices in agriculture and related resources, and enhances the capacity of extension workers. Other digital tools developed by Digital Greens include Farmstack and E-Mircha. In Madhya Pradesh, the organization assists the Farmers' Welfare and Agriculture Development Department with the VISTAAR platform, which is dedicated to providing agricultural information and advisory services.

Panel members inquired about the revenue model of the digital tools, gender specificity, economics, and the impact of AI on job creation. Sharma responded that field-level extension functionaries are enthusiastic about digital technology and emphasized the importance of financial resilience to keep pace with rapidly changing technology.

SUMMARY

After all the presentations were completed, the floor was opened for discussion. Most participants appreciated the efforts made by FOLU India and WRI India, noting this workshop as their first exposure to multiple organizations working on different components of sustainable agri-value chains together. Concerns were raised about the siloed and often competing approach of CSOs in the field, which can mean the larger goals of agriculture and farmers' welfare are neglected. Dr. Jayahari acknowledged these concerns, stating that the initiative aims to break such silos and encourage synergy among partners working in the landscape. He emphasized the need for a common online platform to serve as a “knowledge hub” that bridges the information gap, where field officers can raise issues faced by farmers and CSOs can provide technical help and guidance. In her concluding remarks, Dr. Singh thanked all the CSOs, panel experts, and government officials for their participation. The third day of the workshop involved internal discussions between WRI India, FOLU India, and the panel members on future steps.

FIGURE 3 | Participants, panelists, and presenters at the Learning and Planning Workshop held in Bhopal



Photo Credit: Bineesh Kandiyil/FOLU India

APPENDIX A

Participants

Dr. M. Selvendran, Commissioner FW&AD
Department, GoMP

Shirman Shukla, Managing Director, Mandi Board, GoMP

K. P. Ahirwal, Director, SiEAT, GoMP

Rashmi Varghese, Deputy Director, FW&AD
Department, GoMP

Ankita Tiwari, Office Assistant, Soil Testing Officer, Sidhi

Huda Khalil, Under Deputy Director Agriculture, Sehore

Kulraj Raghuvanshi, Office of the Principal Agricultural
Extension and Training Center Varasivani, Balaghat

Shivraj Singh Rathore, Senior Agricultural Development
Officer, Development Block - Neemuch, Neemuch

Vivek Barche, Office of the Field Superintendent,
Government Agricultural Field, Dhar

Vijay Yadav, Office of Deputy Director
Agriculture, Mandsaur

Ashok Dhakad, Senior Agricultural Development Officer,
Development Block – Lahar, Bhind

Jayshree Deshmukh, Senior Agricultural Development
Officer, Development Block – Narmadapuram

Nirali Arya, Senior Agricultural Development Officer,
Development Block – Pipariya, Narmadapuram

Priyanka Rathore, Office of Deputy Director
Agriculture, Narmadapuram

Priyanka Thakur, Office of Deputy Director
Agriculture, Dindori

Riya Kushwaha, Office of Deputy Director
Agriculture, Singrauli

Rajbhan Vaishya, Office of Deputy Director
Agriculture, Singrauli

Gopal Patidar, Office of Deputy Director
Agriculture, Mandsaur

Ritesh Kumar Parmar, Office of Deputy Director
Agriculture, Vidisha

Umashanker Prajapati, Senior Agricultural Development
Officer, Development Block – Patharia, Damoh

Ramakant Lodhi, Office of Deputy Director
Agriculture, Tikamgarh

Satyam Jat, Office Fertilizer Quality Control
Laboratory, Indore

Shriram Patil, Office of the Sub-Divisional Agriculture
Officer, Burhanpur

Salil Sahu, Office of Deputy Director
Agriculture, Narmadapuram

Alka Rajoria, Office of the Sub-Divisional Agriculture
Officer, Ujjain

Heena Shivvanshi, Office of Assistant Soil Testing
Officer, Balaghat

Laxmi Jatav, Office Fertilizer Quality Control Laboratory,
Pawarkheda, Narmadapuram

Sandeep Karode, Senior Agricultural Development Officer,
Development Block – Khachraud, Ujjain

Basant Kumar Mandre, Under Deputy Director
Agriculture, Khargone

Pradeep Garg, Senior Agricultural Development Officer,
Development Block – Moongavali, Ashoknagar

Rohit Chouhan, Field Superintendent Jobat, Alirajpur

Virendra Malviya, Office of Deputy Director
Agriculture, Vidisha

Ankita Barde, Senior Agricultural Development Officer,
Development Block – Niwali, Barwani

Swati Panwar, Under Deputy Director Agriculture, Bhopal

Chetna Wadiwa, Office Fertilizer Quality Control
Laboratory, Pawarkheda, Narmadapuram

Ajay Chouhan, Senior Agricultural Development Officer,
Development Block – Kukshi, Dhar

Vishnu, Office of Deputy Director Agriculture, Shajapur

Girdhari Nargave, Office of Deputy Director
Agriculture, Alirajpur

Jitendra Solanki, Office of Assistant Soil
Testing Officer, Dhar

Pratap Singh Jamre, Office of Deputy Director
Agriculture, Burhanpur

Reham Dawar, Senior Agricultural Development Officer,
Development Block – Rajpur, Barwani

Vijay More, Senior Agricultural Development Officer,
Development Block – Jhabua

Pratibha Dubey, Senior Agricultural Development Officer,
Development Block – Ghatiya, Ujjain

Santosh Kumar, Senior Agricultural Development Officer,
Development Block – Aaron, Guna

Aakriti Singh, Office Fertilizer Quality Control
Laboratory, Sagar

Pooja Tripathi, Office of Deputy Director
Agriculture, Chhindwara

Mahak Khatri, Under Deputy Director
Agriculture, Tikamgarh

Shivangi Tiwari, Office of Joint Director
Agriculture, Shahdol

Angurbala Dhakad, Under Deputy Director
Agriculture, Mandsaur

Ankita Dhote, Office of Deputy Director Agriculture, Betul

Chetan Patidar, Under Deputy Director
Agriculture, Mandsaur

Mahesh Patidar, Office of the Sub-Divisional Agriculture
Officer, Neemuch

Pradeep Kushwaha, Office of Deputy Director
Agriculture, Shahdol

Sooraj Bhan Patel, Senior Agricultural Development
Officer, Development Block – Naugaon, Chhatarpur

Kamlesh Kumar Bhadeker, Under Deputy Director
Agriculture, Harda

Rahul Kumar Jaiswal, Under Deputy Director
Agriculture, Dewas

Santosh Patidar, Under Deputy Director
Agriculture Section, Dhar

Dan Singh Patta, Office of Deputy Director
Agriculture, Anuppur

Snehlata Tripathi, Office of the Principal Agricultural
Extension and Training Center Naugaon, Chhatarpur

Ashish Gupta, Under Deputy Director
Agriculture, Tikamgarh

Satyanarayan Jat, Senior Agricultural Development
Officer, Development Block – Indore, Indore

Ravindra Yadav, Senior Agricultural Development Officer,
Development Block – Chander, Chanderi

Megha Agrawal, Sub-Divisional Agriculture Officer,
Development Block – Sihora, Jabalpur

Pankaj Sharma, Senior Agricultural Development Officer
Development Block – Panagar, Jabalpur

Roopesh Baghel, Senior Agricultural Development Officer
Development Block – Gyaspur, Vididha

Manglesh Patel, Senior Agricultural Development Officer
Development Block – Chhegaonmakhan, Khandwa

Kallu Koli, Senior Agricultural Development Officer
Development Block - Badarwas, Shivpuri

Anupama, Sub-Divisional Agricultural Development Officer
Section - Baihar, Balaghat

Yadvendra Singh Ninama, Senior Agricultural
Development Officer Development Block – Sailana, Ratlam

Saurabh Gupta, Senior Agricultural Development Officer
Development Block – Shahnagar, Panna

Pratibha Tembhare, Senior Agricultural Development
Officer Development Block – Varasivani, Balaghat

Vinita Rangari, Senior Agricultural Development Officer
Development Block – Khairlanji, Balaghat

Kuldeep Ganveer, Senior Agricultural Development Officer
Development Block – Lanji, Blaghat

Ghanshyam Baggad, Senior Agricultural Development
Officer Development Block – Badnawar, Dhar

Vikas Shakya, Rural Agricultural Extension Officer, Vidisha

Satyaveer Singh, Rural Agricultural Extension
Officer, Shivpuri

Rajesh Kumar, Rural Agricultural Extension
Officer, Shivpuri

Jagdish Gurjar, Rural Agricultural Extension
Officer, Vidisha

Pawan Patidaar, Rural Agricultural Extension
Officer, Neemuch

Trilokchandra Dawar, Rural Agricultural Extension
Officer, Ratlam

Sanjeev Mina, Rural Agricultural Extension Officer, Guna

Sanjay Thakur, Rural Agricultural Extension
Officer, Shajapur

Jitendra Choudhary, Rural Agricultural Extension
Officer, Mandsaur

Vinay Prakash Bagde, Rural Agricultural Extension
Officer, Balaghat

Rakesh Kumar Thakre, Rural Agricultural Extension
Officer, Balaghat

Devilal Patel, Rural Agricultural Extension
Officer, Mandsaur

Vijay Maurya, Rural Agricultural Extension Officer, Ujjain

Vineet Mandeliya, Rural Agricultural Extension
Officer, Neemuch

Ankit Kale, Rural Agricultural Extension Officer, Betul

Pradeep Mairda, Rural Agricultural Extension
Officer, Ratlam

Sanjay Bhura, Rural Agricultural Extension Officer, Alirajpur

Dharvendra Singh Rajput, Rural Agricultural Extension
Officer, Chhatarpur

Ram Avtar Dangi, Rural Agricultural
Extension Officer, Katni

Varun Lal Ahirwar, Rural Agricultural Extension
Officer, Raisen

Shailendra Kumre, Rural Agricultural Extension
Officer, Raisen

Paysivni Yadav, Rural Agricultural Extension Officer, Guna

Umesh Kumar Yadav, Rural Agricultural Extension
Officer, Chhatarpur

Vivek Kumar Dube, Rural Agricultural Extension Officer, Mandla

Rajesh Rajput, Rural Agricultural Extension Officer, Rajgarh

Satish Chandravanshi, Rural Agricultural Extension Officer, Rajgarh

Hemant Parmar, Rural Agricultural Extension Officer, Katni

Purushottam Patidar, Rural Agricultural Extension Officer, Agar Malwa

Narendra Savle, Rural Agricultural Extension Officer, Ujjain

Rahul Mandloi, Rural Agricultural Extension Officer, Barani

Ashish Maurya, Rural Agricultural Extension Officer, Bhind

Jaihind Singh Ahirwar, Rural Agricultural Extension Officer, Morena

Damodar Jatav, Rural Agricultural Extension Officer, Morena

Jitendra Nigval, Rural Agricultural Extension Officer, Barwani

Ankit Tiwari, Rural Agricultural Extension Officer, Rewa

Shakil Ansari, Rural Agricultural Extension Officer, Rewa

Bvakil Kumar Chakravarti, Rural Agricultural Extension Officer, Mandla

Pream Narayan, Rural Agricultural Extension Officer, Shajapur

Mohan Patidar, Rural Agricultural Extension Officer, Khargone

Durgesh Patel, Rural Agricultural Extension Officer, Damoh

Prince Kumar Jain, Rural Agricultural Extension Officer, Damoh

Bhajanlal Ingla, Rural Agricultural Extension Officer, Khandwa

Kuldeep Bhawar, Rural Agricultural Extension Officer, Dewas

Shivam Akole, Rural Agricultural Extension Officer, Indore

Sandeep Kumar Gupta, Rural Agricultural Extension Officer, Indore

Bharat Singh Baghel, Rural Agricultural Extension Officer, Alirajpur

Ashish Raghuvanshi, Rural Agricultural Extension Officer, Narsinghpur

Amar Kaurav, Rural Agricultural Extension Officer, Narsinghpur

Ramvijay Loghi, Rural Agricultural Extension Officer, Panna

Ravindra Singh Patel, Rural Agricultural Extension Officer, Khandwa

Pawan Kumar Sharma, Rural Agricultural Extension Officer, Datia

Shrikishan Ahirwar, Rural Agricultural Extension Officer, Datia

Gajendra Malviya, Rural Agricultural Extension Officer, Sehore

Lakhan Lal Bakoria, Rural Agricultural Extension Officer, Sehore

Rajesh, Rural Agricultural Extension Officer, Dewas

Kamlesh Malakar, Rural Agricultural Extension Officer, Guna

Arvind Tanvar, Rural Agricultural Extension Officer, Guna

Deepak Bhuriya, Rural Agricultural Extension Officer, Ujjain

Pradeep Solanki, Rural Agricultural Extension Officer, Ujjain

Lokesh Yadav, Rural Agricultural Extension Officer, Ujjain

Anna Biswas, Managing Director, Forum for the Future, India

Hansika Singh, Principal Change Strategist, Forum for the Future, India

Bhairevi G. Aiyer, Change Strategist, Forum for the Future, India

Ruchika Singh, Executive Program Director, WRI India

K. M. Jayahari, Country Coordinator, FOLU India.

Dr. R. K. Sony, Senior Manager, FOLU India

Rajat Pandey, Program Manager, WRI India

Dr. Pradeep Dubey, Program Manager, WRI India

Parul Jain, Project Associate, FOLU India

Meenakshi Kakar, Senior Program Associate, WRI India

Kritika Gadhvi, Program Communication Associate, WRI India

Shweta Nikam, Senior Project Associate, FOLU India

Parveen Kumar, Program Associate, FOLU India

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FOR MORE INFORMATION

Dr. Seema Yadav, Program Manager at WRI India's Food, Land, and Water program
E-mail: Seema.Yadav@wri.org

Shweta Nikam, Senior Project Associate at FOLU India
E-mail: Shweta.Nikam@wri.org

Rajat Pandey, Program Manager at WRI India's Food, Land, and Water program
E-mail: Rajat.Pandey@wri.org

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WRI INDIA

LGF, AADI, 2 BALBIR SAXENA MARG, HAUZ KHAS,
NEW DELHI 110016, INDIA
+91 11 40550776
WWW.WRI-INDIA.ORG