

MANAGE Agricultural Extension "Evening4Learning (E4L)" Webinar Series

Topic: "Innovations in Climate Smart Strategies"

Schedule:
22-11-2022, 19:45-20:30 PM

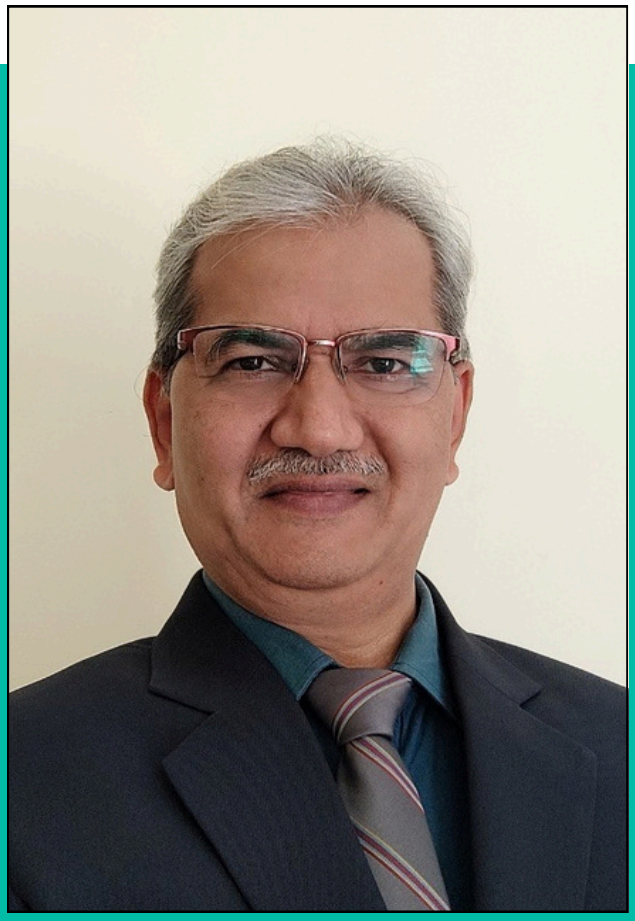
MANAGE - Center for Agricultural Extension Innovations, Reforms and Agripreneurship (MANAGE- CAEIRA)
National Institute of Agricultural Extension Management (MANAGE)
Rajendranagar, Hyderabad- 500 030, INDIA



About the Program

The MANAGE Agricultural Extension "Evening4Learning" Webinar Series is aimed at enhancing knowledge and professional engagement in the field of agricultural extension. The twelve-day series is structured with each day focusing on a distinct topic under a common theme, allowing participants to gain comprehensive insights into key areas of extension. The program is intended for a diverse audience, including postgraduate and doctoral students, agricultural faculty, and industry professionals. It covers broad themes ranging from entrepreneurship and sustainability to emerging technologies in agriculture.





Speaker

Mr. Vijay Kolekar
Agronomist and Soil Science Specialist at PoCRA
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Vijay Kolekar

About the Speaker

Mr. Vijay Kolekar is an experienced agricultural professional with over three decades of service in the Department of Agriculture, Government of Maharashtra. He currently serves as Agronomist and Soil Science Specialist with the Project on Climate Resilient Agriculture (PoCRA) and is associated with the Maharashtra Agribusiness and Rural Transformation (SMART) Project as a Capacity Building Specialist. His areas of expertise include climate-resilient and regenerative agriculture, conservation agriculture, carbon sequestration and carbon credits, digital agriculture, participatory extension management, watershed and biodiversity management, agricultural value chains, capacity building, and project management. Through PoCRA and related initiatives, he has played a significant role in promoting climate-smart farming practices, natural resource management, digital extension systems, and farmer-centric approaches to enhance agricultural sustainability and resilience.

Background

Climate change is increasingly affecting agricultural production and rural livelihoods through rising temperatures, irregular rainfall patterns, prolonged dry spells, frequent droughts and floods, water stress, declining soil health, and an increased incidence of pests and diseases. These challenges have intensified production uncertainties, affected crop productivity, and increased the vulnerability of small and marginal farmers. The growing frequency of extreme weather events also poses significant risks to agricultural resources, farm incomes, and food security. In this context, strengthening the resilience of agricultural systems has become essential to ensure sustainable production, livelihood security, and the long-term viability of farming communities. Addressing these challenges requires a shift from conventional production-oriented approaches towards adaptive, resource-efficient, and climate-responsive agricultural practices.

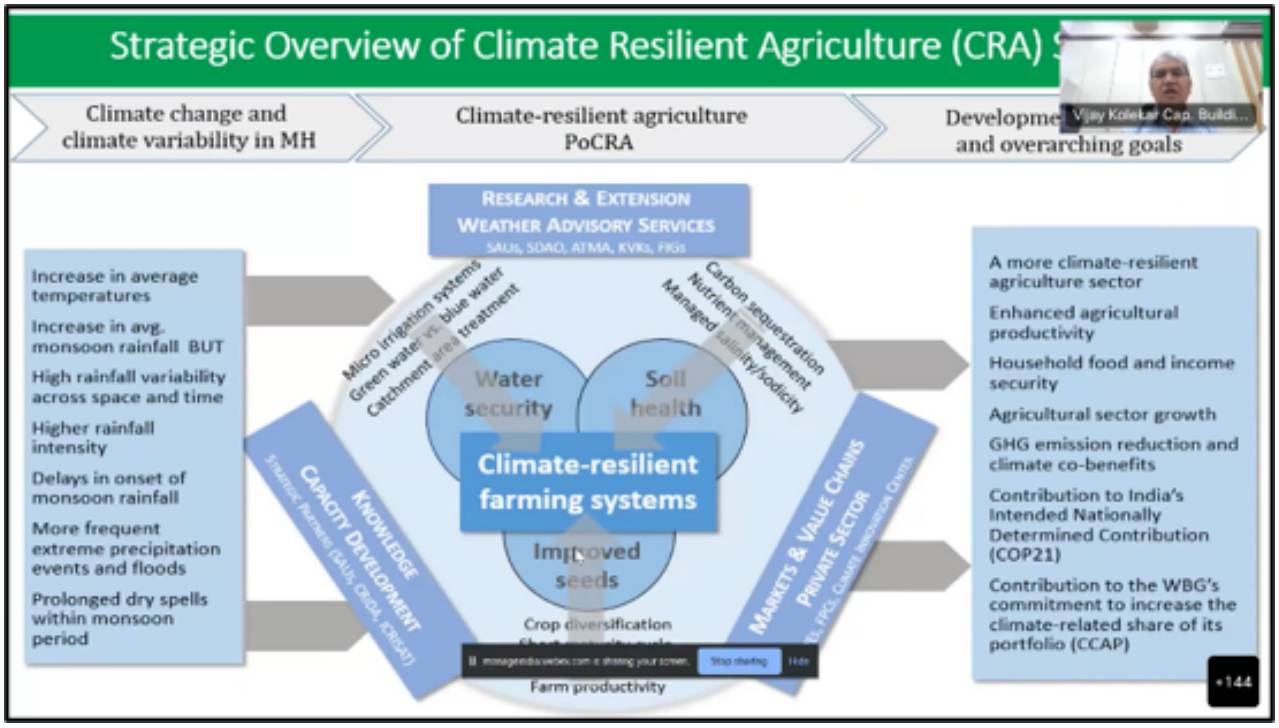
Building climate-resilient farming systems necessitates an integrated and participatory approach that combines sustainable natural resource management, climate-resilient technologies, crop diversification, efficient water management, and community-based adaptation strategies. The integration of digital tools, weather-based advisories, climate information services, and evidence-based extension approaches can support timely decision-making and improve farmers' capacity to anticipate, respond to, and recover from climate-related risks. Agricultural extension professionals play a critical role in facilitating knowledge exchange, promoting context-specific innovations, strengthening institutional convergence, and enabling collective action among farmers, Farmer Producer Organizations (FPOs), research institutions, and other stakeholders. Such integrated efforts can contribute to enhancing adaptive capacity, improving resource-use efficiency, reducing production risks, and promoting sustainable and resilient agricultural livelihoods.

Strategic Overview of Climate-Resilient Agricultural Systems

The approach to developing climate-resilient farming systems was structured around three major components:

- **Water Security:** Ensuring water availability through watershed and catchment treatment, water conservation, and efficient utilization of available water resources. Water security was emphasized as a fundamental requirement for sustaining crop growth, productivity, and other farm-based activities.
- **Improved Soil Health:** Enhancing soil quality, particularly through improving soil organic carbon and gaining a better understanding of soil characteristics. The presentation emphasized that extension interventions should move beyond a narrow focus on NPK and micronutrient status and incorporate soil depth, texture, landforms, and organic carbon into farm-level decision-making.
- **Climate-Resilient Productivity:** Promoting crop diversification, climate-resilient agricultural practices, and improved climate-resilient crop varieties. The objective is to improve farm productivity while reducing vulnerability to climatic risks.

These interventions are supported by technological backstopping from research and development institutions and implemented through coordinated extension mechanisms.



A Case study of the Project on Climate Resilient Agriculture (PoCRA) from Maharashtra

The Project on Climate Resilient Agriculture (PoCRA), implemented in Maharashtra with World Bank support, focused on extension strategies, institutional mechanisms, digital innovations, and community-based approaches to transform climate-vulnerable villages into climate-resilient farming communities. Climate resilience cannot be achieved through isolated technological interventions; it requires coordinated action involving farmers, communities, extension personnel, institutions, and local governance structures.

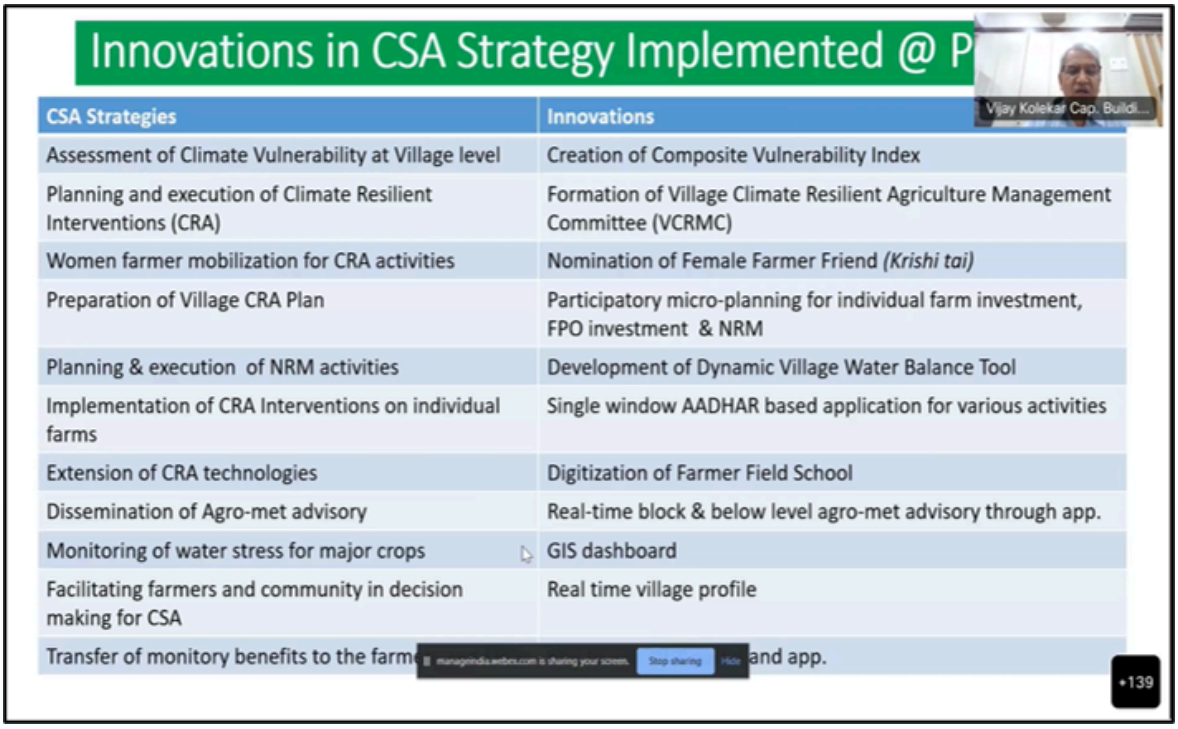
Multi-Sectoral and Community-Based Approach

Building climate resilience in agriculture requires a multi-sectoral approach in which short-term interventions are complemented by long-term measures. The speaker emphasized the importance of generating and utilizing up-to-date analytical evidence to facilitate transformative changes in the enabling environment.

At the farm level, climate resilience can be strengthened through triple-win solutions focusing on:

- Enhancing water security.
- Improving soil health.
- Increasing farm productivity through crop diversification.

These integrated measures contribute to sustainable agricultural production, improved resource-use efficiency, and enhanced resilience of farming systems to climate-related risks.



A key principle highlighted during the presentation was that climate-resilience measures become sustainable when they are owned and managed by local communities. Accordingly, village-level climate-resilient management committees, Panchayati Raj Institutions, and other local institutions play an important role in planning, implementation, and long-term maintenance of interventions. Extension personnel are expected to provide continuous handholding support, strengthen institutional capacities, and encourage greater community ownership of climate-resilience activities.

Village-Level Climate Vulnerability Assessment

An important innovation highlighted during the presentation was the assessment of climate vulnerability at the village level. While vulnerability assessments are often undertaken at district, state, national, or larger geographical scales, localized assessments are essential for designing context-specific interventions.

A Composite Vulnerability Index, developed with technical support from ICRISAT, was highlighted as a mechanism for assessing and ranking villages according to their vulnerability. Such assessments can help extension agencies prioritize villages, identify vulnerable resource systems, and plan appropriate climate-resilience interventions based on local conditions.

Women Farmer Mobilization and Participatory Planning

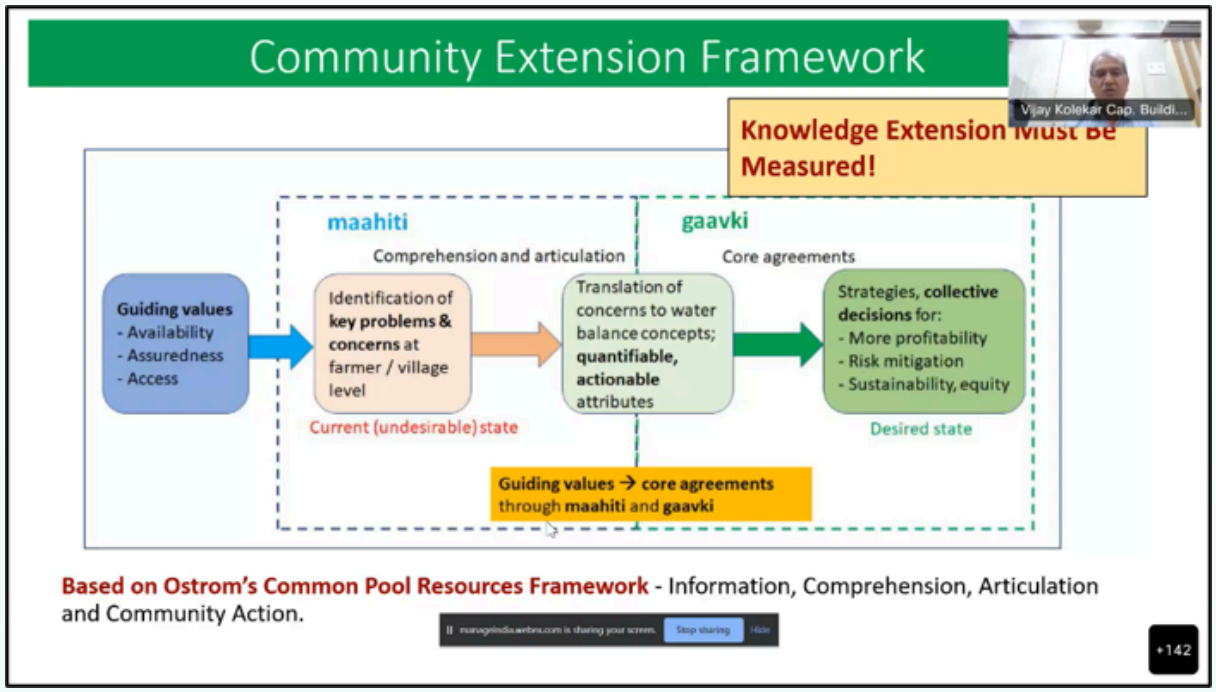
The importance of mobilizing women farmers, promoting participatory planning, and preparing village-level climate-resilient agriculture plans should be emphasized. Backward planning and systematic identification of interventions were highlighted as important tools for translating village-level needs into practical and implementable plans.

Community Extension and Common Resource Management

The presentation highlighted the need to shift from conventional extension approaches focused solely on maximizing individual farm yields towards community-level resource optimization and resilience building.

Rather than expecting every farmer in a village to achieve the yield levels of the highest-performing farmer, extension interventions should focus on narrowing yield gaps and enabling a larger proportion of farmers to attain realistic and sustainable levels of productivity.

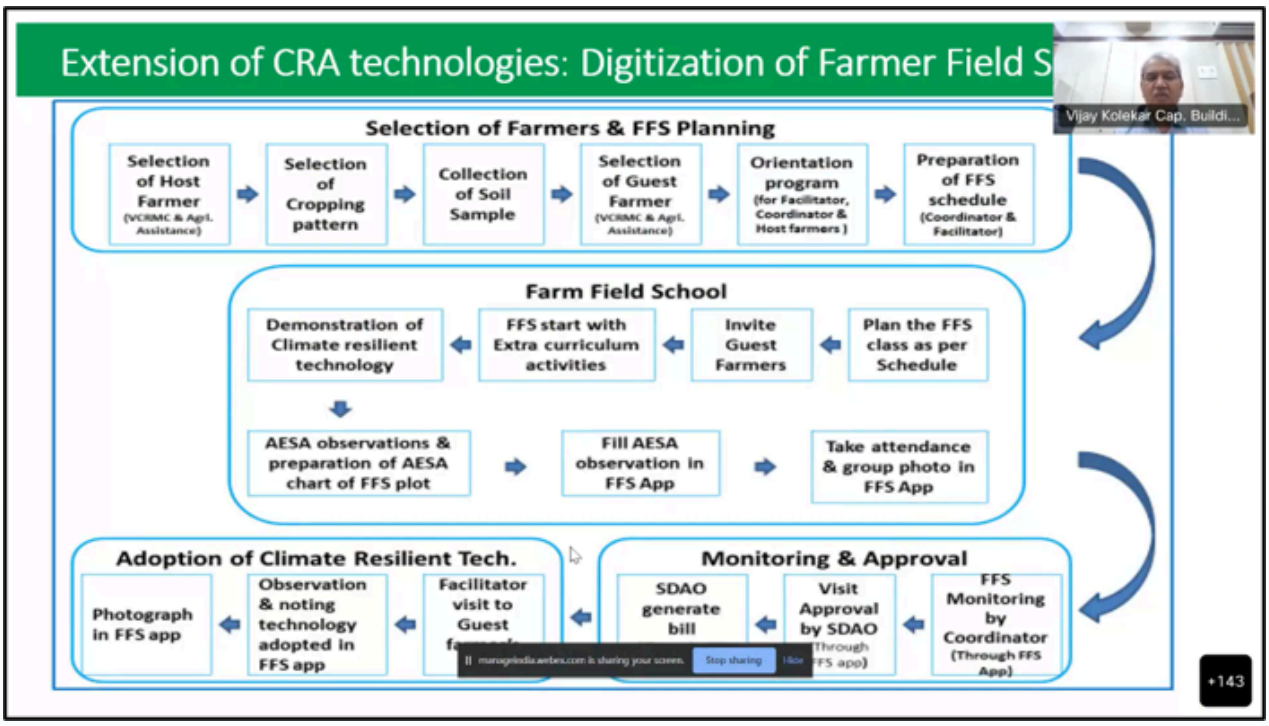
This approach also requires consideration of the common-pool resources available within villages. The principles of common-pool resource management emphasize the importance of engaging farmers in collective decision-making to ensure the sustainable utilization and management of shared natural resources.



Digitization of Farmer Field Schools

Farmer Field Schools (FFSs) were highlighted as an important extension mechanism for technology dissemination and experiential farmer learning. Under the emerging digital architecture, field-level facilitators capture information during field visits, which can subsequently be used for decision-making, analysis, and the generation of advisories.

The digitization of FFSs can facilitate systematic field-data collection and strengthen linkages among farmers, extension personnel, and scientists. Such data-driven approaches can improve the accuracy and location-specific relevance of agricultural advisories.

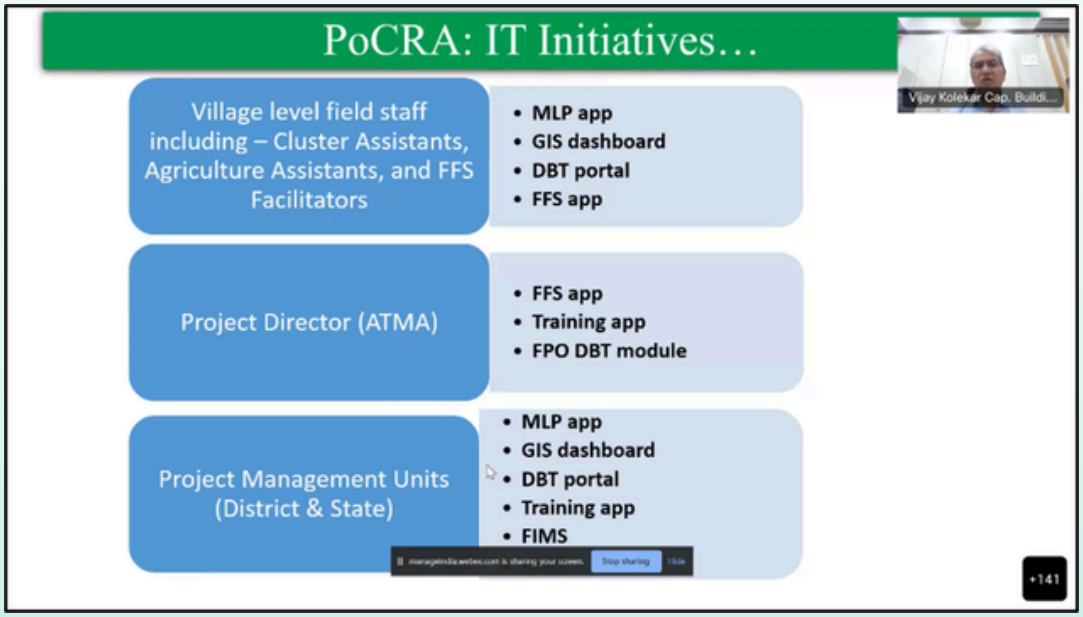


IT Initiatives of PoCRA

Digitization was identified as an important component of modern climate-resilient extension. Several digital applications and systems have been developed under the project to facilitate farmer registration, verification, financial assistance, advisory services, monitoring, and service delivery.

The extension system is increasingly being designed as a digital touchpoint system, in which different stakeholders enter and verify information at their respective stages of the implementation process. This reduces dependence on separate data-entry operators and improves the efficiency and traceability of service delivery.

Extension personnel need to become familiar with relevant digital applications, portals, and ICT tools and use them effectively while keeping farmers at the centre of the extension process.



Data-Driven and Downscaled Advisories

The integration of multiple datasets was highlighted as an important innovation for developing location-specific advisories. Advisories are currently being generated at the block level using available datasets, with the objective of progressively downscaling them to cluster- and village-level scales.

There is a need to integrate information on soil characteristics, water stress, crop conditions, climate, and other relevant parameters to generate more precise advisories. GIS-based visualization and monitoring of water stress in major crops were also identified as useful tools for strengthening agricultural decision-making.

Climate and Market Information in Extension

The climate information alone is insufficient for effective agricultural decision-making. Climate and market information need to be integrated into extension materials and advisories.

The need to progressively customize extension materials, including Seasonal Agricultural Operations (SAOs), for village clusters by incorporating locally relevant climate and market information should be highlighted. Such contextualized information can help farmers make informed decisions regarding crop planning, resource allocation, and market-oriented production.

Direct Benefit Transfer to Individual Farmers under the PoCRA Project

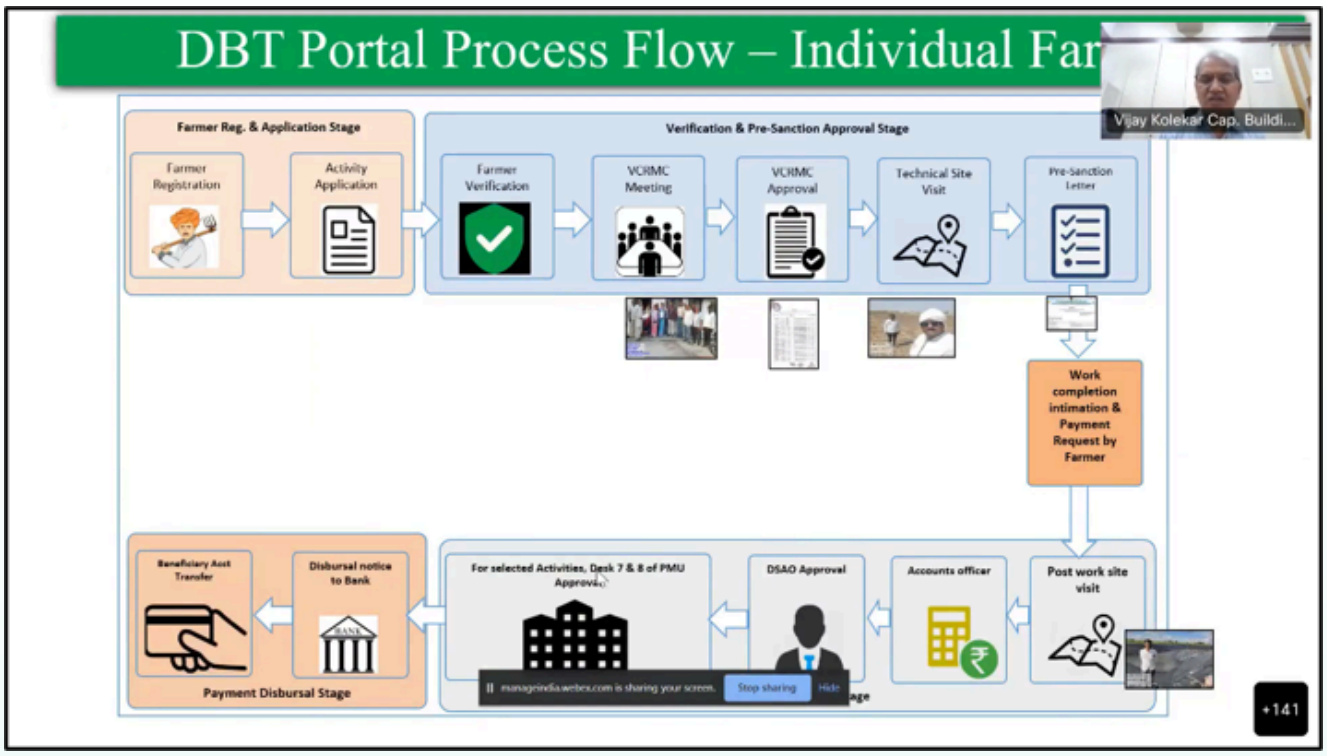
The implementation of a Direct Benefit Transfer (DBT) system for individual farmers under the Project on Climate Resilient Agriculture (PoCRA), aimed at facilitating the transparent, efficient, and timely delivery of financial assistance. The portal was developed to enable farmers to register and apply online for project assistance, thereby streamlining the application, verification, approval, and disbursement processes.

The system incorporates the following key features:

- **Workflow-Based Processing:** A digital workflow facilitates application submission, verification, processing, approval, and disbursement of financial assistance.
- **Aadhaar-Enabled Payments:** Financial assistance is transferred directly to beneficiaries through the Aadhaar Enabled Payment System.
- **Geo-Tagging:** Project activities are geo-tagged to facilitate location-based monitoring and verification.
- **Real-Time Tracking:** Applications and benefit disbursements can be continuously tracked and monitored.
- **Paperless Approvals:** A fully paperless approval mechanism helps expedite processing and reduce administrative delays.

- **Transparency and Accountability:** Digital records and real-time monitoring strengthen transparency and accountability in programme implementation.
- **Decentralized Data Entry:** Decentralized Data Entry: Data are entered directly by officials responsible for registration, verification, and payment processing at their respective operational levels, eliminating the need for a separate data-entry operator.

The workflow-based digital mechanism could serve as a model for strengthening agricultural extension systems through simplified service delivery, reduced manual intervention, improved administrative efficiency, and direct access to benefits for farmers.



Emerging Role of Extension Personnel

The role of extension personnel is evolving beyond conventional technology transfer. Extension professionals are increasingly required to function as:

- Facilitators of community-based climate-resilience planning.
- Coordinators of multi-sectoral interventions.
- Users and interpreters of digital and spatial information.
- Facilitators of collective management of natural resources.
- Providers of location-specific and evidence-based advisories.
- Mobilizers of women farmers and community institutions.
- Linkages between farmers, research institutions, government agencies, and digital service platforms.

The extension professional of the future therefore needs competencies in data interpretation, digital technologies, community mobilization, climate-risk management, participatory planning, and evidence-based decision-making.

Key Highlights

- **Integrated Climate-Resilience Approach:** Climate-resilient agriculture requires an integrated focus on water security, improved soil health, crop diversification, and climate-resilient technologies to reduce production risks and strengthen farm resilience.
- **Community-Centred Climate Action:** Sustainable climate-resilience interventions depend on community ownership, participatory planning, women farmer mobilization, and active involvement of Panchayati Raj Institutions and local institutions.
- **Village-Level Vulnerability Assessment:** Localized climate-vulnerability assessment, including the use of a Composite Vulnerability Index, can support the identification of vulnerable villages and facilitate context-specific planning and interventions.
- **Digital and Data-Driven Extension:** Digitization of Farmer Field Schools, digital touchpoint systems, GIS applications, and integration of field-level datasets can strengthen monitoring, decision-making, and the delivery of location-specific agricultural advisories.
- **Integration of Climate and Market Information:** Extension services need to integrate locally relevant climate and market information and progressively customize advisories and Seasonal Agricultural Operations (SAOs) to support informed farm-level decision-making.
- **Evolving Role of Extension Personnel:** Extension professionals are increasingly expected to function as facilitators, coordinators, knowledge intermediaries, and data-enabled decision-support providers, requiring competencies in digital technologies, climate-risk management, community mobilization, participatory planning, and evidence-based decision-making.

YouTube Link: https://youtu.be/AC2LFWHNosk?list=PLcfEugbo2RL0&t=1936

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