

FARM BEES

AGRICULTURAL CARBON CREDIT PROJECT

Detailed Feasibility, Implementation, MRV, Registration & Commercialisation Framework

Pilot Model	Proposed Scope
Participating Farmers	50 farmers
Total Agricultural Area	80 acres (approximately 32.37 hectares)
Project Orientation	Organic, natural, regenerative and sustainable agriculture
Project Development & Implementation Partner	Farm Bees
Primary Market Pathways	Indian Carbon Market / CCTS Offset Mechanism and suitable international voluntary carbon standards, subject to methodology eligibility

From Farm Practice to Measurable Climate Impact

Prepared as a project-development concept report. Final carbon-credit eligibility, quantity, registration route, issuance and commercial value depend on the approved methodology, baseline, additionality, monitoring results, independent validation/verification and registry decisions.

1. Executive Summary

Farm Bees proposes an integrated agricultural carbon programme that converts verified improvements in farm management into measurable greenhouse-gas (GHG) reductions and/or carbon removals. The initial model covers **50 farmers and 80 acres**. This first cluster is recommended as a **pilot and data-building phase**, with a clear pathway to aggregate larger acreage once the baseline, field implementation and MRV system are proven.

Farm Bees will coordinate the end-to-end project-development work within its agreed scope: farmer mobilisation, eligibility screening, baseline surveys, farm mapping, soil-sampling plans, implementation support, training, digital records, monitoring, GHG/carbon calculations, project documentation, coordination with accredited independent validators/verifiers, registration support, issuance support and carbon-market linkage.

India now has an operational institutional framework for the **Indian Carbon Market (ICM)** under the **Carbon Credit Trading Scheme (CCTS)**. The Offset Mechanism allows non-obligated entities to voluntarily register eligible mitigation projects for emission reduction, avoidance or removal and seek issuance of Carbon Credit Certificates (CCCs). The Bureau of Energy Efficiency (BEE) is the administrator, while Grid Controller of India Limited functions as the ICM Registry. Carbon Credit Certificates are to be issued on the ICM Registry and may be traded through the approved market framework.

This creates a significant future opportunity for agricultural projects in India. However, registration is methodology-specific. As of October 2026, BEE lists agriculture as an approved offset sector, but the currently published agriculture methodology is BM AG04.001 - Methane recovery from livestock and manure management at households and small farms. Therefore, a soil-carbon or regenerative-cropping project should not be presented as automatically eligible for Indian CCC issuance until an applicable BEE-approved methodology is available or adopted.

The 50-farmer/80-acre pilot should therefore be designed to be registry-ready: robust farmer agreements, geospatial farm boundaries, defensible baseline data, soil and activity data, traceability, monitoring records and evidence of implementation. This allows Farm Bees to select the best registration pathway as Indian methodologies expand or, where appropriate, evaluate an eligible international voluntary standard.

2. How Agricultural Carbon Credits Work

A carbon credit generally represents one metric tonne of carbon dioxide equivalent (1 tCO₂e) that has been reduced, avoided or removed compared with an eligible baseline. In agriculture, potential climate benefits can arise from changes in soil management, fertilizer management, crop-residue handling, water management, tree-based systems, livestock/manure management and energy use.

A credible project must normally demonstrate:

- **Eligibility:** the activity, geography and project type fit the selected standard and methodology.
- **Baseline:** a defensible description of what would occur without the project.
- **Additionality:** the claimed mitigation is additional to the relevant baseline and applicable requirements.
- **Quantification:** reductions/removals are calculated using approved equations, models, measurements and emission factors.
- **Monitoring:** project activities and parameters are tracked through an approved monitoring plan.
- **Permanence / non-permanence:** where removals are claimed, reversal risk is managed as required.
- **Leakage:** material emissions displaced outside the project boundary are assessed.
- **No double counting:** the same climate benefit is not issued or claimed twice.
- **Independent validation/verification:** an approved third party assesses the project where required.
- **Registry issuance:** credits/certificates become tradable only after the applicable programme completes its issuance process.

3. India Carbon Market Opportunity

India's CCTS creates two mechanisms: the Compliance Mechanism and the Offset Mechanism. The Offset Mechanism is particularly relevant to voluntary agricultural projects because non-obligated entities may register eligible projects that reduce, remove or avoid GHG emissions and seek Carbon Credit Certificates.

Institution / Element	Role in Indian Carbon Market
Bureau of Energy Efficiency (BEE)	Administrator of CCTS; publishes procedures/methodologies, registers offset projects and administers issuance processes.
Grid Controller of India Limited	Registry operator for the Indian Carbon Market; enables entity registration, maintains credit accounts and transaction records, and functions as India's meta-registry.
Central Electricity Regulatory Commission (CERC)	Regulator for trading activities under the Indian Carbon Market.
Accredited Carbon Verification Agency (ACVA)	Carries out independent validation and/or verification as required under CCTS.
Non-obligated Entity	May voluntarily register an eligible offset project under an approved sectoral methodology.

Current development relevant to Farm Bees

- BEE is accepting ICM account-registration interest for entities seeking participation as non-obligated entities in the Offset Mechanism.
- BEE has published the Detailed Procedure for the Offset Mechanism, including registration, issuance, project standards, validation/verification, SDG requirements and methodology development/adoption.
- Agriculture is an approved sector under the Offset Mechanism.
- BEE has empanelled Accredited Carbon Verification Agencies with agriculture in their offset scope.
- BEE is publishing draft Project Design Documents (PDDs) for public comment, showing that project-registration processes under the Offset Mechanism are actively being implemented.
- The Indian framework is therefore strategically important for Farm Bees, but each proposed activity must be matched to an approved methodology before any promise of CCC issuance is made.

Farm Bees positioning: Build agricultural projects now with strong MRV and documentation so that farmer clusters are technically prepared for Indian Carbon Market registration when the relevant methodology is available, while also evaluating other eligible standards where appropriate.

4. Potential Carbon-Credit Areas in Agriculture

Opportunity	Carbon / Sustainability Potential
Soil Organic Carbon (SOC)	Cover crops, diversified rotations, residue retention, organic amendments, reduced disturbance and other eligible improved agricultural land-management practices can potentially increase soil carbon.
Nitrogen / Fertilizer Management	Optimised nitrogen application, improved timing, reduced excess application and integrated nutrient management may reduce nitrous-oxide emissions where the methodology permits.
Crop Residue Management	Avoided burning, mulching, composting or eligible residue retention may reduce emissions and support soil organic matter.
Reduced / Conservation Tillage	Reduced tillage or no-till can potentially reduce fuel use and/or influence soil carbon, depending on local conditions and methodology.
Cover Crops & Crop Rotation	Additional biomass, continuous soil cover and diversified rotations may support soil carbon, soil health and resilience.
Rice Methane Reduction	Water-management approaches such as alternate wetting and drying may reduce methane where applicable methodologies and monitoring systems are used.
Agroforestry / Tree Systems	Boundary trees, agroforestry and other eligible tree-based systems can potentially create biomass removals under suitable methodologies.

Opportunity	Carbon / Sustainability Potential
Livestock & Manure	Methane recovery, biogas, anaerobic digestion and improved manure systems can reduce methane. This is directly relevant to the currently published Indian agriculture methodology BM AG04.001.
Farm Energy	Solar pumps, renewable electricity, efficient irrigation and reduced fossil-fuel use may be eligible under energy methodologies rather than soil-carbon methodologies.

5. Proposed 50-Farmer / 80-Acre Pilot Model

Parameter	Pilot Design
Farmers	50
Total Area	80 acres
Equivalent Area	Approx. 32.37 hectares
Average Area	Approx. 1.6 acres per farmer
Recommended Status	Pilot / demonstration / MRV-development cluster
Lead Coordinator	Farm Bees
Core Outputs	Farmer registry, GIS boundaries, baseline, sampling dataset, implementation plans, MRV records, carbon estimates and registry-readiness assessment

Because project-development, sampling, validation, verification and registry costs can be material, an 80-acre standalone project may not be commercially efficient. Farm Bees should use the pilot to prove the system and then aggregate larger farmer clusters.

6. End-to-End Work Programme

Phase	Farm Bees Work
Phase 1 - Pre-feasibility	Define crops, geography, farmer profile, historical practices, likely interventions, methodology options, data gaps, estimated mitigation potential and commercial constraints.
Phase 2 - Farmer onboarding	Register 50 farmers, execute participation/data/carbon-rights agreements, collect land/tenure evidence and establish unique farmer and plot IDs.
Phase 3 - GIS mapping	Capture farm GPS coordinates and plot polygons; reconcile mapped area with farmer records and create a project geodatabase.
Phase 4 - Baseline survey	Document crop history, tillage, fertilizer, irrigation, residue handling, yields, livestock, trees, energy use and previous sustainable practices.
Phase 5 - Sampling & testing	Develop a statistically defensible soil-sampling plan where SOC is relevant; collect, label, geotag, transport and test samples through competent laboratories.
Phase 6 - Project design	Select eligible interventions and prepare farmer-level carbon-management plans consistent with the selected methodology.
Phase 7 - Training & implementation	Train farmers, field staff and coordinators; support actual adoption of project practices.
Phase 8 - MRV	Maintain farm diaries, input records, photographs, remote/GIS evidence, sampling results, monitoring visits and data-quality checks.
Phase 9 - Carbon quantification	Calculate baseline and project emissions/removals, uncertainty, leakage and applicable deductions using the approved methodology.
Phase 10 - PDD & validation	Prepare project documentation and coordinate independent validation by the applicable accredited/approved body.
Phase 11 - Registration	Submit through the selected registry/programme and address findings or requests for clarification.
Phase 12 - Monitoring & verification	Complete the monitoring period, compile monitoring reports and support independent verification.
Phase 13 - Issuance & market linkage	Support issuance, registry account administration, buyer/offtake engagement and transparent benefit sharing.

7. Farmer Data & Documentation Required

- Farmer name, contact details and unique Farmer ID.
- Village, taluk, district and state.
- Land ownership/tenure evidence and survey/Khasra/plot number.
- Total farm area and exact project area.
- GPS coordinates and geospatial polygon of each participating plot.
- Current crop and at least the historical management period required by the selected methodology.
- Crop rotation, sowing and harvest dates, yield records and residue practices.
- Fertilizer type, quantity, nitrogen content, application timing and method.
- Organic manure, compost, green manure and other amendments.
- Pesticide/herbicide/fungicide use where relevant to the sustainability programme.
- Tillage equipment, number of passes and fuel/energy data where relevant.
- Irrigation source, pumping energy and water-management practices.
- Livestock numbers and manure-management practices.
- Existing trees, new plantations and agroforestry information where applicable.
- Training attendance, implementation photographs, inspection records and corrective actions.
- Farmer consent, data-sharing terms, carbon-rights allocation and benefit-sharing agreement.

8. Soil Sampling, Field Sampling & Data Consolidation

Where soil organic carbon is part of the selected methodology, sampling must be planned scientifically. Farm Bees will not rely on isolated convenience samples. The sampling design will consider the methodology, project stratification, soil variability, land-use history, management practices, required confidence/precision, sampling depth and bulk-density requirements.

Proposed sampling workflow

Stratification -> Sampling Plan -> Geotagged Sample Collection -> Chain of Custody -> Laboratory Testing -> Quality Review -> Dataset Consolidation -> Baseline / Monitoring Analysis -> Carbon Calculation

All samples and field observations will be consolidated into a controlled project dataset. Farm Bees will link laboratory results to farmer ID, plot ID, GPS location, sampling date, depth, management history and monitoring period. The consolidated dataset will form the basis for the detailed technical report, carbon calculations and subsequent verification evidence.

Sampling / Data Item	Control Requirement
Sample ID	Unique, traceable and linked to farmer/plot.
GPS / Geotag	Recorded for sampling point or composite-sampling protocol as applicable.
Depth	Consistent with methodology and sampling plan.
Bulk Density	Measured/handled where required for SOC stock calculation.
Laboratory Method	Documented and appropriate for the selected methodology.
Chain of Custody	Sample collection, transport, receipt and testing traceable.
QA/QC	Duplicate/check samples and data review where required.

Sampling / Data Item	Control Requirement
Consolidated Database	Farmer + plot + practice + sample + result + monitoring evidence linked in one controlled dataset.

9. Measurement, Reporting & Verification (MRV)

MRV is the backbone of the project. Farm Bees will establish a practical field-to-registry evidence chain so that every material carbon claim can be traced back to a farmer, plot, activity record and supporting evidence.

Farmer ID -> Plot Polygon -> Baseline Practice -> Project Practice -> Input/Activity Records -> Photos / Remote Evidence -> Sampling / Test Results -> Internal Review -> GHG Calculation -> Monitoring Report -> Independent Verification

Farm Bees MRV responsibilities

- Design farmer and plot registers.
- Prepare baseline and monitoring forms.
- Train field teams on evidence requirements.
- Maintain digital and physical records.
- Conduct risk-based internal inspections.
- Check data completeness and plausibility.
- Track non-conformities and corrective actions.
- Consolidate activity data and laboratory results.
- Coordinate carbon calculations/models with competent technical specialists where needed.
- Prepare monitoring reports and evidence packs.
- Coordinate independent validation/verification.

10. Carbon Quantification Framework

The final calculation must follow the selected methodology. A simplified conceptual formula is:

Net Creditable Climate Benefit = Baseline Emissions - Project Emissions + Eligible Removals - Leakage - Uncertainty / Buffer / Other Required Deductions

Farm Bees will not guarantee a fixed number of credits before methodology selection, baseline establishment and technical assessment. Carbon outcomes vary materially by soil, climate, crop, historical practice, intervention, adoption rate, sampling uncertainty, model assumptions and permanence requirements.

11. Illustrative 80-Acre Scenario Model

Illustrative Net Benefit	80-Acre Gross Illustration	Important Note
0.5 tCO ₂ e/acre/year	40 tCO ₂ e/year	Planning illustration only
1.0 tCO ₂ e/acre/year	80 tCO ₂ e/year	Planning illustration only
2.0 tCO ₂ e/acre/year	160 tCO ₂ e/year	Planning illustration only
3.0 tCO ₂ e/acre/year	240 tCO ₂ e/year	Planning illustration only

These figures are not forecasts and not guaranteed credits. They are included only to demonstrate how project scale affects potential annual volume. Actual issuance can only be determined after applying the selected methodology and completing the required validation, monitoring and verification.

12. Proposed Indian Carbon Market Registration Pathway

For an activity that fits an approved CCTS methodology, Farm Bees can structure the project toward the following pathway:

ICM Account / Non-obligated Entity -> Approved Methodology Screening -> PDD -> Public / Procedural Requirements -> ACVA Validation -> BEE Project Registration -> Monitoring -> ACVA Verification -> Issuance Process -> CCCs on ICM Registry -> Trading / Use under Applicable Rules

The exact steps, forms, fees, timelines and market arrangements must be checked against the latest BEE/CCTS procedures at the time of submission. The Indian market is developing, and methodologies are being added over time.

Current agriculture-specific caution

The presence of agriculture as an approved sector does not mean every agricultural practice can immediately generate Indian CCCs. As of October 2026, the published agriculture methodology is focused on methane recovery from livestock and manure management at households and small farms. Soil-carbon, regenerative-cropping, agroforestry or rice activities require confirmation of a suitable approved methodology before registration.

13. International / Voluntary Carbon Route

If the proposed agricultural activities are not yet covered by an Indian methodology, Farm Bees may evaluate an appropriate international voluntary carbon standard, subject to eligibility, economics, host-country considerations and buyer requirements. For improved agricultural land management, methodologies may cover combinations of soil carbon, fertilizer management, tillage, residues, cover crops, water management and grazing.

The final route should be selected only after comparing: methodology fit, minimum scale, sampling burden, modelling requirements, permanence rules, validation/verification cost, registry fees, issuance timeline, buyer demand, credit integrity and legal/carbon-rights implications.

14. Farm Bees Scope of Work

Workstream	Farm Bees Responsibility
Feasibility	Opportunity screening, project concept, methodology comparison, data-gap assessment and scale recommendation.
Farmer Aggregation	Mobilisation, onboarding, farmer/plot registration and participation agreements.
Agricultural Implementation	Practice design support, training, field implementation guidance and corrective-action support.
Sampling & Testing	Sampling plan coordination, geotagging, chain of custody, laboratory coordination and data consolidation.
GIS & Data	Farm mapping, plot polygons, master farmer database and digital evidence management.
MRV	Monitoring system, internal checks, farm diaries, evidence packs, QA/QC and monitoring reports.
Carbon Accounting	Coordinate methodology-based calculations, models and technical inputs; document assumptions and evidence.
PDD / Documentation	Prepare or coordinate project design documentation and supporting annexures.
Validation / Verification	Coordinate with independent accredited/approved validators/verifiers; respond to findings and close evidence gaps.
Registry & Issuance	Support account/project registration, submissions, monitoring-cycle documentation and issuance process.
Commercialisation	Support buyer identification, offtake discussions, transaction records and benefit-sharing administration.

Independence principle: Where the carbon programme requires independent third-party validation or verification, Farm Bees will coordinate and support the process but the independent validation/verification decision must be made by the appropriately accredited/approved body.

15. Farmer Implementation Package

- Farmer registration and carbon participation agreement.
- Plot map and baseline farm profile.
- Farm-specific carbon/sustainability management plan.
- Training on required agricultural practices.
- Farm diary and input-use register.
- Residue/tillage/fertilizer/water-management records as applicable.
- Sampling participation and access for monitoring.
- Periodic Farm Bees field visits and internal inspections.
- Corrective-action support for missing records or implementation gaps.
- Annual/periodic performance summary and carbon-project status.

16. Carbon Rights, Revenue & Farmer Benefit Sharing

Before registration, the project must clearly define who owns or controls the carbon claim, who is the project proponent, how farmers authorise project participation, how long the commitment lasts, how withdrawal is handled and how any net carbon revenue is shared.

Recommended transparent waterfall

Gross Carbon Revenue -> Registry / Verification / Transaction Costs -> Agreed Project Development & MRV Costs -> Risk / Reserve if applicable -> Net Distributable Benefit -> Farmer / Project-Partner Share according to signed agreement

The exact commercial model should be disclosed to participating farmers in plain language. No fixed farmer income should be promised until the project has a validated methodology, verified volume, issuance and a buyer/market price.

17. Recommended Scale-Up Strategy

Stage	Indicative Scale	Objective
Pilot	50 farmers / 80 acres	Build baseline, sampling, MRV and farmer-management system.
Cluster Expansion	500+ acres	Improve sampling efficiency and spread fixed project costs.
Commercial Aggregation	2,000-5,000+ acres	Develop meaningful annual credit volume and buyer interest.
Programme Scale	10,000+ acres / multiple clusters	Portfolio approach, stronger data systems and recurring issuance potential.

These acreage thresholds are strategic planning ranges, not regulatory minimums. Farm Bees should calculate the true break-even scale after obtaining indicative costs for sampling, technical modelling, validation, verification, registry and project management.

18. Indicative Implementation Timeline

Period	Main Activities
Month 1	Pre-feasibility, methodology screening, farmer shortlist and project governance.
Months 2-3	Farmer onboarding, agreements, GIS mapping, baseline survey and sampling design.
Months 3-4	Baseline sampling/testing, data consolidation and farm-management plans.
Months 4-6	Training and implementation of improved practices; MRV system live.
Months 6-12	Monitoring, internal inspection, data QA/QC and methodology-specific calculations.
Thereafter	PDD/registration pathway, validation, monitoring period, verification and issuance according to selected programme.

Actual crediting timelines can be longer than one year and depend on the methodology, required monitoring period, sampling schedule, validation/verification, registry review and issuance cycle.

19. Key Risks & Controls

Risk	Issue	Farm Bees Control
Methodology risk	No suitable approved methodology for the desired activity.	Complete methodology screening before making commercial claims; keep pilot registry-ready.
Scale/economic risk	80 acres may not cover transaction costs.	Use pilot as aggregation platform; expand acreage before full registration if needed.
Data risk	Missing historical farm records.	Structured baseline interviews, corroborating evidence, conservative assumptions and early data-gap assessment.
Adoption risk	Farmers do not maintain project practices.	Training, clear agreements, field support, inspections and corrective actions.
Sampling risk	Poor sampling design creates uncertainty.	Methodology-aligned statistical plan, geotagging, chain of custody and QA/QC.
Permanence risk	Stored carbon may be reversed.	Apply required permanence/non-permanence controls, buffers and monitoring.
Double-counting risk	Same benefit claimed in another programme.	Farmer declarations, registry checks and controlled carbon-rights records.
Market-price risk	Credit price varies.	Conservative financial model; do not guarantee price or farmer income.

20. Farm Bees Project Deliverables

- Carbon Project Pre-Feasibility Report.
- Farmer Master Register and Plot Register.
- GIS Farm Boundary Database.
- Baseline Agricultural Practice Report.
- Sampling Plan and Chain-of-Custody System.
- Consolidated Soil / Field Sample Report.
- Farm Carbon Management Plans.
- Farmer Training Records and Implementation Evidence.
- Carbon MRV Manual / SOPs.
- Monitoring Database and Internal Inspection Reports.
- Methodology-Based Carbon Calculation Workbook / Technical Note.
- Project Design Document (PDD) support.
- Validation / Verification Evidence Pack.
- Registry / ICM Registration Support File.
- Monitoring Report and Issuance Support Documentation.
- Carbon Buyer / Commercialisation Support, where contracted.
- Farmer Benefit-Sharing and Payment Reconciliation Records, where applicable.

21. Conclusion & Recommended Next Step

Agriculture has meaningful carbon-market potential because farm-management changes can reduce emissions and increase removals while also supporting soil health, resource efficiency and climate resilience. India has now

established the Indian Carbon Market framework, including an Offset Mechanism, BEE administration, an ICM Registry operated by Grid Controller of India and accredited verification agencies. This creates a credible domestic pathway for eligible projects as sectoral methodologies continue to develop.

For Farm Bees, the strongest approach is to begin with the proposed **50 farmers / 80 acres** as a structured pilot. The immediate objective should be to create high-quality baseline, sampling and implementation data - not to promise a fixed credit volume. All field samples and monitoring data should be consolidated into a detailed technical dataset and report. Once the project has a defensible baseline and clear methodology fit, Farm Bees can determine the appropriate registration pathway, expected carbon volume, commercial scale and farmer benefit-sharing model.

Recommended immediate action: Conduct a 30-45 day Carbon Project Feasibility & Baseline Study covering farmer onboarding, GIS mapping, historical practice survey, methodology screening, sampling design, initial field/soil sampling, data consolidation, preliminary carbon estimation and a scale-up/business case.

22. Key Regulatory & Technical References

- Government of India / Bureau of Energy Efficiency - Carbon Credit Trading Scheme (CCTS) and Indian Carbon Market framework.
- Bureau of Energy Efficiency - Detailed Procedure for Offset Mechanism.
- Bureau of Energy Efficiency - Methodologies and Tools under Offset Mechanism (updated July 2026).
- Bureau of Energy Efficiency - Invitation for ICM Account Registration for non-obligated entities.
- Bureau of Energy Efficiency - List of Accredited Carbon Verification Agencies under CCTS.
- Ministry of Power, Government of India - Parliamentary responses confirming Grid Controller of India Limited as the Registry for the Indian Carbon Market.
- Applicable methodology and registry rules selected for the final agricultural carbon project.

Regulatory status note: This report reflects publicly available Indian Carbon Market information reviewed in October 2026. Carbon-market rules and methodologies evolve; Farm Bees should re-check the latest official BEE/CCTS documents immediately before project registration or commercial commitment.