



VAZHNDHU KATTUVOM PROJECT
(Tamil Nadu Rural Transformation Project)
Department of Rural Development and Panchayat Raj

GREEN AUDITING OF
RURAL ENTERPRISES
Insights, Findings and Recommendations

Technical support by



AFC INDIA LIMITED
(Formerly Agricultural Finance Corporation Limited)



GREEN PRODUCER COLLECTIVES

Name of the PC	Green practices followed	Green grade
Ayyampalayam Farmer Producer Company Limited, Dindigul	Established weather station, agro forestry, microbial bio input production, vermicompost production, water shed management	G1
Kodai Hills Farmer Producer Company, Dindigul	Solar-powered refrigerator, solar dryer, bio input production, PGS registration	G1
Malai Millets Farmer Producer Company, Erode	Distribution of dashaparani and panchakavya to 400 farmers. VAM and biofertilizer kit provided to 58 farmers. 19 farm ponds constructed and 58 farmers are NPOP certified. Mulching sheet provided to 179 farmers growing horticultural crops. Drip irrigation in 14 acres	G1
Gomukhi Farmer Producer Company, Kallakurichi	Possesses valid seed, fertilizer, and pesticide license; Restricts use of non-permissible pesticides	G1
Valanadu Sustainable Farmer Producer Company, Mayiladuthurai	Adopted vacuum-packaging of traditional rice, pulses and millets to reduce pest infestation. MRL test taken before exporting; 690 farmers doing organic farming. Registered with NPOP for agriculture production and processing	G1
Nainamalai Farmer Producer Company Limited, Namakkal	Using biofertilizers. 3 tons of vermicompost supplied to members; Planted 1000 trees on World Environmental Day	G1
Keeranur Farmer Producer Company, Pudukkottai	Solar-powered rice mill, solar dehydrogenation unit. Promotion of climate-resilient crops and farming practices	G1
Perunthalaivar Banana Farmer Producer Company Limited, Thoothukudi	Promotion of drip irrigation by members, banana fibre extraction, integrated banana and aquaculture farm, promotion of bio inputs through KVK.	G1
Trichy Pasumai Groundnut Producer Company, Tiruchirappalli	Rainwater harvesting tank, dust collection room, solar tunnel dryer for chemical-free drying of coconut kernels; fire extinguishers provided in both processing and storage units	G2
Agathiar Farmer Producer Company, Tiruchirappalli	Conservation and promotion of indigenous vegetable seeds, millet seeds and pulses. Distribution of bio inputs and natural pesticides. Promotion of multi manure mixture seeds for soil enrichment	G2
Irula Tribal Women Welfare Society, Chengalpattu	Conservation of indigenous herbal plants, promotion of herbs-based value-added products, use of solar dryer, propagation of indigenous herbal plants nursery	G2

SUMMARY OF GREEN AUDITING

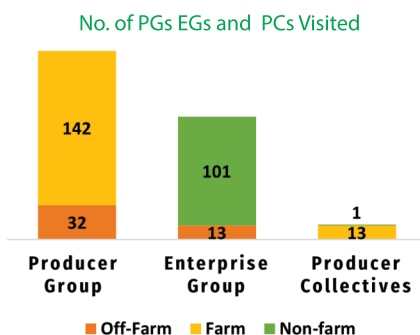
The Vazhndhu Kattuvom Project (VKP) supports producer groups (PGs), enterprise groups (EGs) and farmer producer collectives (PCs) in Tamil Nadu. The project aims to assess and improve the environmental sustainability of business activities and encourage green practices. To ensure this, VKP conducts Green Audits (GAs) to assess the green measures adopted by EGs, PGs and PCs and to evaluate the environmental performance of project-supported business activities.

The objective of Green Audit is to promote green business practices and sustainable production systems. It helps to identify challenges and opportunities for improving the sustainability of businesses.

The State Environmental Resource Agency (SERA) of VKP has conducted audits for identifying the implementation of environmental safeguard policies and adoption of environmentally friendly and climate-resilient practices of 302 enterprises consisting of 174 PGs, 114 EGs and 14 PCs in 17 districts.

Methodology:

SERA identified 10 different business activities comprising farm, non-farm, and off-farm sectors, and selected 30 samples from each. SERA conducted field visits of the businesses and collected the data through GA tools. They covered 302 PGs, EGs and PCs from



a total of 6055* from October to December 2022, in which 174 PGs out of 5000, 114 EGs from 1000 and 14 Pcs out of 55.

Based on the green index indicators, the enterprises are assessed and rated for environmental friendliness and greening performance.

* Data source: Details of PGs, EGs and PCs supported was received from MIS of Vazhndhu Kattuvom Project as on August 2022.

The main indicators are environmental safeguard compliances, farmer/worker safety practices, adoption of sustainable and climate-smart practices in terms of water conservation, energy efficiency, waste management, innovative product/process/system, and green initiatives.

Rating of Green Enterprises:

The selected enterprises are graded as G1 (scores above 7.5 to 10) or G2 (scores above 5 to 7.5) or G3 (scores above 2.5 to 5) in the green rating assessment, based on legal compliance requirements,

mitigation measures, innovative practices, and greening initiatives, they were categorized accordingly. Only enterprises graded under G1, G2 and G3 are called 'Green Enterprises'. Compliance is a basic requirement: even if an enterprise obtains a high score or obtained a score above 2.5 without fulfilling the compliance requirements it was disqualified and has not been considered as a green enterprise. Only green enterprises will be considered for further evaluation. Grades/rating will remain active/subject to change throughout the project period.



Picture 1 : Biodegradable Mulching Sheets– Soil moisture conservation practice

Outcome:

Outcome of the green audit led to categorizing the enterprises and business activities into grade 1, grade 2, grade 3 and grade 4. Grade 1 enterprises are environmentally friendly and found to be adopting greening measures and innovative practices in their respective production processes and services.

The outcome of the grading of enterprises is as follows:

Table 1 : Green Rating

Rating or Grade	No. of EG/PG/PC	Features
Grade 1 (G1)	12	Adoption of green measures and innovative practices
Grade 2 (G2)	74	Adoption of green measures and innovative practices with potential for improvement
Grade 3 (G3)	85	Adoption of green measures is minimal, with more scope for improvement
Grade 4 (G4)	131	Recommendations on greening measures



Picture 2 : Solar tunnel Dryer

From the overall grading results, the following were found:

Producer Groups : Out of the total 142 PGs involved in farm activity, 32% (45) were graded under G2 and G3 while the remaining 68% (97) of were graded under G4. PGs should be given more importance in the context of adoption of eco-friendly practices, non-use of restricted pesticides conforming to environmental safeguards and use of bioinputs.

Enterprise Groups: 80% of EGs were found to fall under G1, G2 and G3 while 20% under G4. Enterprises in food processing, pottery, garment making and tailoring, handloom and handicrafts constitute 70% (80 units) of the total 114 EGs of which 81% (65 units) are graded under G2 and G3.

Producer Collectives: Among the 14 Green-Rated PCs that were audited, 71% (10) were graded under G1 and the remaining 4 (29%) as G2.

Calculation of Carbon Emissions:

VKP has taken the initiative to measure and reduce carbon emissions from the activities of PGs, EGs and PCs. The Greenhouse Gas Protocol method** is a standard introduced by the World Resources Institute and the World Business Council for Sustainable Development in 2001 for calculating the carbon emissions of various processes and value chains. SERA follows the Greenhouse Gas Protocol method for calculating greenhouse gas emissions, which divides emissions into three categories, namely direct, indirect from energy, and indirect from other sources, for calculating the greenhouse gases emitted from business activities.

Approximate carbon emissions from various sectors are as follows:

Table 2 : Carbon emissions from various sectors

Sector	Source of Emissions	No of Enterprises Visited	Average Total Carbon Emissions (tons/month)	Average Carbon Emissions per unit (kgs/month)
Agriculture	Irrigation	30	7.62	0.254
Garment & Tailoring	Operations & Logistics	30	3.42	0.114
Food Processing	Operations & Logistics	30	2.57	0.085
Pottery	Operations & Logistics	30	10.3	0.346

** Green House Gases Protocol Standards and Guidance

Based on the outcome of the green audit, SERA has suggested recommendations for complying with the environmental compliances and implementing green measures for the improvement of environmental performance by businesses.



Picture 3 : Solar water pumps used for irrigation

Farm Sector

Water conservation:

Drip irrigation is practiced in 42 out of the 111 PGs that are involved in farming practices, indicating that 37% of PGs are following micro irrigation practices. 400 acres of land is irrigated through drip irrigation.

Farm ponds and rainwater harvesting pits: 3 PGs have built farm ponds (3 farm ponds of size 60x40 sq. ft. and 4 ponds of size 70 x 45 sq. ft.) for harvesting rainwater and 1 PC has constructed a rainwater harvesting structure of 20 kilolitre capacity.



Energy Conservation:

A few farmers have installed solar-powered water pumps for irrigation purposes and pest control in the farm sector. A 5-kW capacity solar-powered water pump was installed by a member of Agathiar Farmer Producer Company Ltd., Trichy District, for irrigation. Approximately 266 units (in kWh) of grid electricity is saved in a month due to installation of solar water pumps for irrigation of 3 acres land. By switching to solar water pumps, 0.22 tCO₂ carbon footprint reduction can be achieved in a year.

Solar energy is tapped for drying the agri products hygienically. Trichy Pasumai Producer Company, Keeranur Farmer Producer Company and Gomukhi Farmer Producer Company have installed a walk-in type solar tunnel dryer mainly for bulk drying of coconut kernels and for many other agricultural operations. The Kodai Hills PC has installed a solar-powered refrigerator for storing vegetables.

Non-Farm Sector

Energy Conservation:

The Saibaba JLG EG uses solar panels (30 W) to power one sewing machine. It uses only 92.85 units of electricity for other electrical appliances in a year. Adopting solar energy for lights and fans by all 30 EGs can reduce 13.66 tCO₂ in a year.

The tailoring EGs use energy-efficient industrial sewing machines with capacity above 210 VA or watts, which have energy-saving servomotors installed to transmit power without loss.

Other Green practices:

1. Use of BEE-rated energy-efficient tools/appliances in tailoring and food processing enterprises.
2. Adoption of energy-efficient lighting (LED tube light/bulbs).
3. Ensuring occupational health safety to prevent health hazards, and providing standard basic amenities (toilets, drinking water), first aid box, fire safety, etc. in all enterprises.





Way Forward:

To reduce carbon footprint and improve the environmental sustainability of the business activities of the EGs, PGs and PCs, the following practices are suggested:

01

Participatory Guarantee System (PGS) – Encouraging the PGs to shift to organic farming practices which will help in improving the soil health and quality of food products while reducing greenhouse gas emissions.

02

Micro irrigation – Drip and sprinkler irrigation practices are promoted for horticulture crops for conserving water.

03

Farm ponds – To improve the ground water table and water conservation practices in the farmlands for better yield.

04

Climate-resilient crops – Promoting climate-resilient crops for increasing yield and for reducing inorganic input supply.

05

BEE-rated equipment – Energy-efficient equipment rated by BEE will be promoted for implementation in both farm and non-farm sector businesses for improving efficiency, reducing energy consumption, and reducing overall carbon footprints.

06

Waste management – Recycling of waste will be promoted in both farm and non-farm sector businesses to reduce pollution and provide an auxiliary source of income to the PGs and EGs.





Abbreviations

BEE Ratings – Bureau of Energy Efficiency Ratings

EG -Enterprise Group

KVK -Krishi Vigyan Kendra

MRL -Maximum Residue Level

NPOP -National Programme for Organic Production

PG -Producer Group

PC -Producer Collectives

PGS -Participatory Guarantee System

SERA -State Environment Resource Agency

VAM - Vesicular Arbuscular Mycorrhiza





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