



BIO-NO BURN™ : Agricultural PM2.5 Reduction Innovation

PUBLIC REFERENCE EDITION

A no-burn agricultural-residue management system using biological processes and composting to return biomass to soil, reduce high-carbon inputs and build plot-level traceability evidence.

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2,500 rai

Reported FY2025/2026 implementation area

1,000 tonnes

Modelled compost at 2 tonnes per 5 rai

5,000 rai / 500 farmers

FY2026/2027 expansion target

1,237,995 kgCO₂e

FY2025/2026 estimated net reduction

Document status

This edition uses the signed Official Performance Report dated 10 August 2026 as its canonical dataset. GHG figures are project estimates, not issued carbon credits.



The problem and the innovation system

Open burning persists because turnaround time is short, residues are bulky and wet, machinery and labour are limited, and transport is costly. BIO-NO BURN™ addresses the cause of burning by creating local value from residues.

- Pilot-area residue management and a no-burn policy
- Composting and quality-control processes without public disclosure of proprietary formulations
- Return of compost to soil to reduce chemical fertilizer and restore organic matter
- No-Burn Ledger: plot ID, coordinates, biomass, inputs, compost batch and evidence images
- Future MRV for measurement, reporting and verification
- A Digital Knowledge Platform for documents, video, podcasts and updates

Boundary

The later-stage ambition of 1,000 households depends on evidence, staffing and resources. It is not a completed result.



Scientific basis and know-how boundary

A 1991 Prince of Songkla University study reported 22 isolates capable of growth at 50°C from Khao Chaison Hot Spring, Phatthalung, and reported peroxidase activity, particularly in isolates 11/4 and 15/5.

- This research provides scientific context for thermophilic microorganisms; it does not prove that the project inoculum is identical to the reported isolates.
- The project is studying applications to rice straw, sugarcane leaves, crop residues and pelletised chicken manure, subject to batch-level quality and safety controls.
- Public documents exclude microbial formulas, cultivation methods, inoculum ratios and propagation procedures that constitute internal know-how.

Trademark notice

The ™ symbol identifies the project/innovation and does not confirm trademark registration.



Reported field performance: FY2025/2026

The project reports implementation across 2,500 rai and has begun GPS/polygon data collection for traceability. Plot-level evidence must be reconciled before assurance-level publication.

100%

No-burn policy announced for pilot plots

50 → 4 kg/rai

46-0-0 fertilizer: 92% below project baseline

1 litre/rai

Diesel use in the project scenario

1,000 tonnesModelled compost; reconcile with
weighbridge records

- Field records and farmer testimonials are implementation evidence, not controlled scientific trials.
- Reported yield increases of 5–8 tonnes per rai, if cited, must remain clearly labelled as farmer-reported observations.
- Before/after images, timestamps, coordinates, biomass weights and batch IDs should be collected continuously.



PM2.5 reduction potential: literature indicators

Avoiding biomass burning can prevent direct particulate formation. The values below are literature-based indicators, not measured ambient-air results from project plots.

- The indicative range of 1.2–8.4 kg PM2.5 per dry tonne varies with biomass type, composition, moisture and burning conditions.
- This is avoided particulate mass, not ambient concentration in $\mu\text{g}/\text{m}^3$.
- Area-level claims require biomass records, no-burn evidence, meteorological data and a documented measurement method.

1 tonne dry residue	Potential PM2.5 avoided	Status
Rice straw/stubble	about 8.4 kg	Literature indicator
Sugarcane leaves/residue	about 1.2 kg	Literature indicator
Illustrative 1:1 mix	about 4.8 kg	Communication example



FY2025/2026 greenhouse-gas estimate

2,500 rai • 1,000 tonnes of compost in the model • $ER = BE - PE - LE$, with LE provisionally set at zero and requiring evidence.

Activity	Baseline	Project	Net reduction
46-0-0 fertilizer	189,750	15,180	174,570
Diesel	10,275	6,850	3,425
Residue burning	1,115,000	0	1,115,000
Organic composting	0	55,000	-55,000
Total kgCO ₂ e	1,315,025	77,030	1,237,995

Estimated net result

1,237,995 kgCO₂e, or 94.14% below the baseline. This is not an issued carbon credit.



FY2026/2027 expansion target

The target covers Phakdi Chumphon, Nong Bua Daeng and Kaset Sombun districts in Chaiyaphum: 500 farmers, 5,000 rai and 2,000 tonnes of compost in the model.

Activity	Baseline	Project	Net reduction
46-0-0 fertilizer	379,500	30,360	349,140
Diesel	20,550	13,700	6,850
Residue burning	2,230,000	0	2,230,000
Organic composting	0	110,000	-110,000
Total kgCO ₂ e	2,630,050	154,060	2,475,990

Target status

The 5,000 rai, 500 farmers and 2,475,990 kgCO₂e net-reduction estimate are planned/modelled targets, not confirmation of completed implementation.



MRV and minimum evidence package

- Participant register, plot IDs, consent and evidence of land-use rights
- KML/GeoJSON files, maps, geotagged photographs and boundary-change history
- Purchase, issue and plot-level use records for fertilizer and fuel
- No-burn inspections, before/after evidence, hotspot data and exception logs
- Weighbridge tickets, batch IDs, temperature, moisture, pH and compost inventory
- Data-quality review, validation and independent verification

Project factors

46-0-0 fertilizer 1.518 kgCO₂e/kg; diesel 2.74 kgCO₂e/litre; burning 446 kgCO₂e/rai; compost 55 kgCO₂e/tonne. Several factors still require a locked source and version before assurance-level use.



Reservations, safety and publication

- Carbon credits: project estimates must not be sold, transferred or represented as credits until methodology, validation, verification and registration are completed.
- EUDR: GPS/polygon data support traceability; sugarcane is not currently directly covered by the EUDR and the project must not be described as EUDR-certified.
- Land: plots use agricultural-use documents such as S.P.K., BDS.10 or BDS.07. Rights, consent, restrictions and disputes require plot-level checks.
- Safety: use PPE; control dust, mould, odour, temperature, moisture and contamination; stop a batch when abnormal conditions are found.
- Copyright: third-party images, music, logos, research and personal media must be used with the applicable rights and consent.

IP NOTICE

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References and further study

- BIO-NO BURN™ Master Official Performance Report, 10 August 2026
- TDRI (2025): sustainable management of rice straw and sugarcane residues
- JGSEE/KMUTT research on PM2.5 emissions from agricultural-residue burning
- Prince of Songkla University, Faculty of Science (1991): thermophilic microorganisms from Khao Chaison Hot Spring
- Thailand Greenhouse Gas Management Organization emission-factor database; cite the exact version used
- BIO-NO BURN™ Documentation Center: field evidence, images, video, podcasts and four-language documents

Cooperation contact

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