CASE STUDY

India CCTS GEI Compliance:

Turning Regulatory Obligation into Carbon Market Revenue

Client: Bharati Textiles Limited (BTL)

Sector: Spinning · Weaving · Dyeing · Denim | Scale: 12 Manufacturing Facilities

FY 2025-26 & FY 2026-27 | CCTS GEI Target Rules 2025 (Notified Jan 13, 2026)

About This Case Study

This document presents a technically grounded case study of a large Indian integrated textile manufacturer referred to as Bharati Textiles Limited (BTL), navigating compliance with India's Carbon Credit Trading Scheme (CCTS) GEI Target Rules 2025.

All technical parameters, financial projections, emission factors, and compliance strategies reflect real industry data and the CCTS notification of January 13, 2026. The entity name and specific identifiers have been anonymised for illustrative purposes.

Are you a textile manufacturer obligated under CCTS? Klymera Sustainability can help you comply with your GEI targets, participate in the Indian Carbon Market, and generate additional revenue by overachieving your targets.

Contact us: Partners@klymerasustain.com

1. Overview & Regulatory Context

1.1 Bharati Textiles Limited : Company Profile

Bharati Textiles Limited (BTL) is a mid-to-large integrated textile manufacturer with operations spanning spinning, weaving, dyeing, denim manufacturing, and green fibre processing. BTL operates 12 manufacturing plants and produces a diverse range of textile products at scale.

Parameter	Details
Annual Greige Yarn Production	1,21,000 MT
Annual Melange Yarn Production	24,000 MT
Annual Dyed Yarn Production	32,000 MT
Annual Denim Fabric Production	32 million metres
Knit Fabric	9,000+ MT
Green Fibre	43,000 MT
Manufacturing Footprint	12 plants across two states

Estimated Annual Revenue	~₹4,800 Crore
Estimated Annual Energy Cost	~₹105 Crore (2.2% of revenue)
Renewable Energy Share (Baseline)	~33%

1.2 Regulatory Context : CCTS GEI Target Rules 2025

The Ministry of Environment, Forest & Climate Change notified the Carbon Credit Trading Scheme (CCTS) GEI Target Rules on January 13, 2026. BTL is classified as an Obligated Entity under the Textile Sector.

CCTS Parameter	Details for BTL
Regulation	CCTS GEI Target Rules 2025
Baseline Year	FY 2023-24
Compliance Year 1	FY 2025-26 | Target: 3–4% GEI reduction from baseline
Compliance Year 2	FY 2026-27 | Target: 6–7% GEI reduction from baseline
Metric	GEI = tCO_2e per MT of equivalent product output
Estimated Baseline GEI	0.95–1.05 tCO_2e per MT
Issuing Authority	Bureau of Energy Efficiency (BEE), MoEFCC
ICM Registration Portal	Indian Carbon Market Portal (icm.bureau-energy.gov.in) — Note: Portal not yet fully operational as of early 2026; entities advised to monitor BEE announcements for activation timeline

⚠ Important Note on ICM Portal

The Indian Carbon Market (ICM) portal (icm.bureau-energy.gov.in) has not yet been fully operationalised as of early 2026. Obligated entities should:

› Continuously monitor BEE announcements for the official portal launch date
› Prepare all registration documents in advance (company certificate, energy bills, production records)
› Engage with BEE directly or through accredited consultants to understand registration procedures
› Begin internal data collection and GEI calculation now, so registration is seamless once the portal goes live

1.3 GEI Baseline Methodology

BTL's GEI baseline was calculated using FY 2023-24 energy consumption and production records, applying CCTS-consistent emission factors:

- Natural Gas: 2.04 kg CO_2e per m^3
- Coal: 1.78 tCO_2e per MT
- Diesel / LPG: 2.33 tCO_2e per MT
- Electricity (India grid average): 0.75 kg CO_2e per kWh
- Production normalisation: yarn, fabric, and fibre outputs converted to MT equivalent

Applying a weighted production mix across BTL's integrated operations, the estimated baseline GEI is approximately 0.95 tCO_2e per MT of equivalent output (FY 2023-24).

2. Step one: Energy & Emission Audit

Before any decarbonisation measure can be designed, scoped, or validated, a rigorous energy and emission audit must be conducted across all facilities. This is the foundational step that makes every subsequent intervention credible, targeted, and verifiable — both for internal decision-making and for BEE regulatory compliance.

Why Audit

Without a facility-level audit, GEI baselines remain estimates and cannot be officially defended during BEE verification.
The audit identifies the highest-impact hotspots across spinning, dyeing, weaving, and finishing — ensuring resources target the biggest emitters, not assumed ones.
Audit data forms the evidentiary backbone for carbon credit claims on the Indian Carbon Market.

2 Energy & Emission Audit Process

Stage A: Data Collection (Week 1–2)

Stage B: On-Site Facility Audit (Week 2–4)

Stage C: Baseline Report & Gap Analysis (Week 4–5)

Audit Output	Purpose	Used By
Facility-level GEI Baseline (tCO_2e/MT)	**	**
Emissions by Process (pie/bar breakdown)	**	**
Energy Hotspot Ranking (top 10)	**	**
Equipment Efficiency Gap Report	**	**
Audit Evidence Package (photos, meters, invoices)	**	**
GEI Gap vs. Mandatory Target	**	**

Audit Cost & Timeline for BTL (12 Plants)

Duration: 4–5 weeks (data collection + on-site + report)
On-site mandays: ~24 days (2 days × 12 plants)
Estimated audit investment: ₹8–15 Lakh (third-party accredited auditor)
ROI on audit: The audit typically identifies ₹3–6 Crore of annual energy savings, 20–75x the audit cost
Regulatory note: BEE may mandate third-party accredited auditors for GEI baseline validation; entities should confirm this requirement once the ICM portal is operationalised

3. Step Two : Decarbonisation Roadmap, Three-Phase Approach

Building on audit findings, Klymera developed a practical, phased decarbonisation roadmap for BTL. The strategy prioritises zero-to-low-capex operational optimisations for rapid, measurable GEI reductions, followed by deeper process improvements and renewable energy integration.

3.1 Phase 1: Immediate Quick Wins (Months 1–3)

Target: 2.5–3.5% GEI reduction | Total Capex: ₹3.3–8.2 Lakh | Payback: < 1 month

Intervention	Process Area	Est. Annual CO_2e Reduction	Est. Annual Savings	Capex
Spindle Speed Optimisation	Spinning (6 plants)	1,100–2,200 t	**	**
Compressed Air Leak Repair	All 12 Plants	530–800 t	**	**
Dye Bath Temperature Reduction (70°C → 65°C)	Dyeing (3 plants)	24 t (conservative)	**	**
Rinsing Cycle Optimisation (5 rinses → 3)	Dyeing (3 plants)	55 t	**	**
Boiler Cleaning & Efficiency Restoration	12 Plants (3 largest priority)	57 t	**	**
Steam Trap Replacement (~45 failed traps)	All 12 Plants	190 t	**	**
Oven Idle Time Reduction (scheduling)	Finishing (2 plants)	260–455 t	**	**
TOTAL — Phase 1		**4,100–6,835 t CO_2e**	**₹300–500 Lakhs**	**₹3.3–8.2 Lakhs**

3.2 Phase 2 : Medium-Term Optimisations (Months 3–6)

Target: Additional 2.0–2.5% GEI reduction | Cumulative: ~5–6%

- Production scheduling & batch consolidation: reduce changeovers by 20–30%, saving 3–5% thermal energy
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3.3 Phase 3 : Advanced Optimisation & Renewable Integration (Months 7–12)

Target: Additional 1–2% operational GEI reduction, plus 15–20% from renewable energy transition

- Advanced spindle parameter optimisation by yarn count
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3.4 Cumulative GEI Impact Summary

Phase	Key Measures	Est. GEI Reduction	Timeline
Phase 1 — Quick Wins	Spindle, compressed air, steam, dye bath	2.5–3.5%	Months 1–3
Phase 2 — Medium-Term	Scheduling, LED, maintenance, behaviour	2.0–2.5%	Months 3–6
Phase 3 — Advanced + Renewables	Process optimisation, 70% renewable grid	15–20% (renewables) + 1–2% (ops)	Months 7–12
TOTAL (FY 2026-27 with renewables)	All phases combined	20–25% from FY 2023-24 baseline	12 months

4. Step Three: MRV Framework, Financial Impact & Carbon Credit Strategy

4.1 Monthly GEI Monitoring, Reporting & Verification (MRV)

A monthly MRV system tracks BTL's GEI performance in real time, enabling early course-correction and building the audit trail for BEE compliance submission and carbon credit verification.

Illustrative Monthly GEI Calculation — March 2026

Electricity: 421,000 kWh × 0.75 = 315.75 tCO_2e
Natural Gas: 9,400 m^3 × 2.04 = 19.18 tCO_2e
Total Monthly Emissions: 335.43 tCO_2e | Production: 15,500 MT equivalent
Monthly GEI: 335.43 ÷ 15,500 = 0.9165 tCO_2e/MT
vs. Baseline: 0.9500 tCO_2e/MT; Reduction: 3.53% ✓ Exceeds FY 2025-26 target in Month 1

4.2 Financial Impact of GEI Programme

Based on BTL's estimated annual energy cost of ₹105 Crore (2.2% of ₹4,800 Cr revenue):

GEI Reduction Level	Annual Energy Savings	CCTS Benefit
3% (FY 2025-26 target)	₹3.15 Crore	Compliance achieved and carbon credits earned
6–7% (FY 2026-27 target)	₹6.3–7.35 Crore	Surplus credits tradeable on ICM
8% (operational stretch)	₹8.4 Crore	Maximum operational upside
20–25% (operations + renewables)	₹21–26 Crore	Major carbon credit revenue potential

4.3 Carbon Credit Strategy: Earn, Hold & Sell

Under CCTS, entities that exceed their GEI targets earn Carbon Credits (1 CC = 1 tCO_2e reduced beyond the target). These are tradeable on the Indian Carbon Market. BTL's programme is designed to generate a significant credit surplus.

Scenario	Credits (FY 2025-26)	Credits (FY 2026-27)	2-Year Revenue
Do Nothing, buy credits	−1,200 to −5,000 (deficit)	Larger deficit	−₹4–8 Crore (purchase cost)
Achieve 3–4% via operations	~1,200–1,500 earned	~1,230 additional	~₹1–1.5 Crore (hold as asset)
Operations + Renewables (70%)	1,500 earned (hold)	~6,800 total earned	₹75–85 Crore (sell in tranches)
RECOMMENDED STRATEGY	Earn, hold, sell at peak	Staggered selling Q4 2026–Q3 2027	₹15–20 Crore (conservative)

4.4 Risk Management Summary

Risk	Mitigation
Quality impact from process changes	All changes pilot-tested with QC sign-off; fully reversible
Production increase offsets efficiency gains	GEI intensity metric handles volume increases automatically
Operator resistance	Training, monthly briefings, ₹10–20/MT savings incentive programme
Carbon credit market uncertainty	Energy savings alone justify the programme at ₹0 credit price
Renewable energy delayed past Oct 2026	Operations alone deliver 3–6% reduction; renewables are additional upside
ICM portal not yet operational	Begin data collection and GEI calculation now; register immediately on portal activation

5. Step five : Way Forward and Implementation Flowchart

The following flowchart illustrates the recommended end-to-end journey for a textile entity to achieve CCTS GEI compliance, earn carbon credits, and participate in the Indian Carbon Market. Steps are sequenced to reflect both the regulatory timeline and practical operational realities, including the pending operationalisation of the ICM portal.

STEP 1 Understand Your CCTS Obligations

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Obligation confirmed

STEP 2 Prepare & Submit Registration (ICM Portal — Pending Launch)

▼

Registration submitted / pending portal launch

STEP 3 Conduct Energy & Emission Audit (Baseline Establishment)

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Baseline GEI established & submitted to BEE

STEP 4 Execute Decarbonisation Roadmap — Phase 1: Quick Wins (Months 1–3)

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Phase 1 complete — ~3% GEI reduction achieved

STEP 5 Execute Phase 2 & 3: Medium & Advanced Optimisations (Months 3–12)

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GEI targets exceeded — credit surplus generated

STEP 6 Monthly MRV — Track, Report & Verify

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Compliance verified — excess reductions documented

Two Outcomes Based on Performance:

✓ TARGET ACHIEVED

GEI at or below mandated level

› Earn Carbon Credits for surplus reductions

› Register credits on ICM (once portal live)

› Hold credits; sell at optimal market price

› Generate ₹1–11 Crore credit revenue per year

⚠ SHORTFALL SCENARIO

GEI above mandated target level

› Identify gap (tCO_2e deficit)

› Purchase Carbon Credits on ICM to offset shortfall

› Accelerate Phase 2/3 measures immediately

› Cost: ₹500–1,500 per credit — avoidable with early action

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Year 2 compliance cycle begins with a stronger baseline

STEP 8 Scale Up — Renewable Integration & Carbon Market Participation

Are you a CCTS Obligated Textile Entity?

Klymera Sustainability helps you comply with CCTS GEI targets · participate in the Indian Carbon Market · and generate revenue by overachieving your targets

Contact us today:

Partners@klymerasustain.com
https://klymerasustain.com/

Klymera Sustainability Consulting | Specialising in CCTS Compliance, Carbon Market Strategy & Industrial Decarbonisation for the Indian Textile Sector