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GREEN HRM PRACTICES AND ITS INFLUENCE ON TRANSFORMATIONAL LEADERSHIP IN MANUFACTURING ENTERPRISES OF TAMIL NADU

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Abstract
Manufacturing enterprises in Tamil Nadu operate under rising regulatory, customer, and supply-chain pressures to decarbonize, reduce waste, and demonstrate credible environmental stewardship. Within this context, Green Human Resource Management (GHRM) has emerged as an internal capability that aligns people-management systems with environmental objectives through green recruitment, training, performance management, rewards, and employee involvement. At the same time, transformational leadership—particularly in its "green" form—mobilizes employees toward higher-order purpose, innovation, and continuous improvement. This article develops a manufacturing-focused framework explaining how GHRM practices can shape (and strengthen) transformational leadership behaviours by building green competencies,reinforcing green norms, and institutionalizing environmental accountability. Drawing on AMO logic and resource-based perspectives from the GHRM and green leadership literature, the article proposes testable hypotheses and an implementable research design suitable for Tamil Nadu's manufacturing ecosystem. Managerial implications emphasize sequencing: build GHRM infrastructure first, then amplify leadership development to translate environmental intent into shop-floor routines and measurable outcomes.

Key Words: Green HRM, Green Leadership,Transformational Leadership, Manufacturing industries.

1. Introduction

Tamil Nadu is one of India's most industrialized states, with large manufacturing clusters spanning automotive and components, electronics, textiles, cement, chemicals, and engineering goods. These sectors face a dual mandate: maintain productivity and cost competitiveness while meeting escalating sustainability expectations from regulators, global customers, and investors. In practice, this means environmental goals must be embedded not only in technology and operations but also in workforce behaviour—how employees follow processes, identify waste, maintain equipment, innovate, and comply with standards.

Green Human Resource Management (GHRM) addresses this challenge by integrating environmental objectives into core HR processes (e.g., staffing, training, appraisal, rewards, and involvement). Transformational leadership (TL) is equally critical because manufacturing sustainability transitions require cultural change, cross-functional coordination, and employee engagement beyond routine compliance. Recent research increasingly examines GHRM and green transformational leadership together, often finding complementary effects on green climate, innovation, and environmental performance.

However, most studies emphasize how leadership influences green outcomes or how leadership complements GHRM, rather than how robust GHRM systems can shape and elevate transformational leadership behaviours—especially in a manufacturing setting where formal systems, KPIs, and capability-building strongly condition leadership practice. This article addresses that gap by arguing that

GHRM is not merely an outcome of leadership; it can also be an antecedent that enables and institutionalizes transformational leadership, particularly "green" transformational leadership, within Tamil Nadu's manufacturing enterprises.

2. Conceptual Background

2.1 Green Hrm In Manufacturing

GHRM refers to the systematic alignment of HR policies and practices with environmental management goals—building employee abilities (skills/knowledge), motivation (incentives/commitment), and opportunities (participation/voice) to deliver environmental performance. A widely used framing is the AMO (Ability–Motivation–Opportunity) perspective, which positions HR practices as levers for shaping employee behaviour and organizational capabilities.

Typical GHRM bundles Include

1. **Green Recruitment And Selection** (Hiring For Environmental Values/Competencies).
2. **Green Training And Development** (Eco-Literacy, Energy/Waste Reduction, EMS/ISO Routines).
3. **Green Performance Management** (Eco-Kpis, Audits, Behavioural And Outcome Measures).
4. **Green Rewards And Recognition** (Incentives For Suggestions, Compliance, Innovation).
5. **Employee Involvement** (green teams, kaizen events, suggestion schemes).

Manufacturing organizations are particularly suitable for GHRM because environmental impacts are tangible (energy, water, scrap, emissions) and improvement routines (lean, TPM, kaizen) can be "greened" through structured people systems.

2.2 Transformational Leadership And "Green" Transformational Leadership

Transformational leadership is characterized by idealized influence, inspirational motivation, intellectual stimulation, and individualized consideration. In sustainability contexts, "green transformational leadership" (GTL) emphasizes articulating environmental vision, modelling eco-responsible behaviour, stimulating green innovation, and supporting employees' green initiatives. Empirical studies across manufacturing contexts show that GTL is associated with stronger environmental performance and green innovation, often through mediators such as green HRM, green climate, or employee green behaviour.

2.3 Why GHRM can drive transformational leadership

The central argument of this article is directional: GHRM Transformational leadership behaviours, through four mechanisms:

1. **Competence mechanism (Ability):** Green training, job design, and staffing improve managers' and supervisors' environmental knowledge, enabling credible inspirational messaging and intellectually stimulating problem-solving.
2. **Accountability mechanism (Motivation):** Green appraisals and eco-KPIs make environmental objectives salient, pushing leaders to communicate purpose and coach employees to achieve targets.
3. **Norms mechanism (Culture/Climate):** Consistent HR signals (selection, rewards, recognition) establish green norms that reinforce leader role-modelling and legitimacy.
4. **Participation mechanism (Opportunity):** Involvement platforms (green teams, suggestion systems) create arenas for leaders to practice individualized consideration and empowerment.

In manufacturing enterprises—where routines, metrics, and standard work are central—HR system architecture can strongly shape how leadership is enacted on the shop floor.

3. Proposed Conceptual Framework And Hypotheses

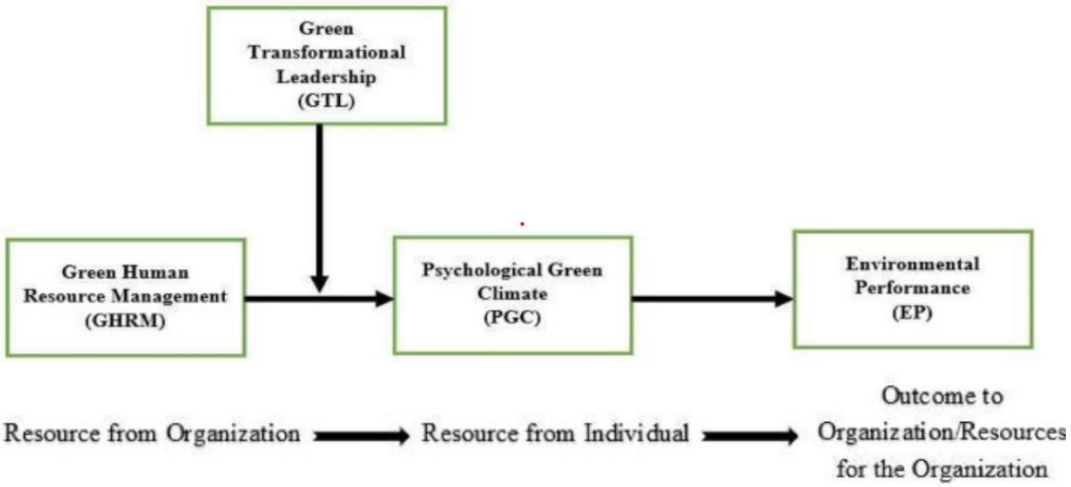

Figure 1: Conceptual Model

Table 1. Key Constructs and Operational Definitions

Construct	Operational Definition (Manufacturing Context)	Indicative Indicators
Green HRM Practices	Degree to which HR policies embed environmental goals across hiring, training, appraisal, rewards, and involvement	Green training hours, eco-KPIs in appraisal, green recognition, hiring for eco-values
Transformational Leadership / Green TL	Extent supervisors/managers articulate eco-vision, model green behaviour, stimulate improvement/innovation, support employees	Vision communication, coaching, empowerment, problem-solving encouragement
Green Climate (optional mediator/outcome)	Shared perception that the organization prioritizes and supports environmental responsibility	"Green is valued here", resources for eco initiatives
Sustainability outcomes	Measurable operational environmental performance and behavioural outcomes	Reduced scrap/energy, green suggestions, compliance, audits

Table 2. Hypotheses (Testable Propositions)

Code	Hypothesis
H1	GHRM practices have a positive and significant impact on transformational leadership behaviours in manufacturing enterprises.
H2	Green training and development have a positive impact on leaders' intellectual stimulation behaviours (continuous improvement/innovation orientation).

Code	Hypothesis
H3	Green performance management strengthens leaders' inspirational motivation by increasing goal clarity and environmental accountability.
H4	Green rewards and recognition strengthen leaders' idealized influence (role-modelling and credibility) by reinforcing consistent eco-signals.
H5	Employee involvement mechanisms strengthen leaders' individualized consideration (coaching/support for green initiatives).

These propositions align with prior evidence that GHRM and green transformational leadership jointly shape psychological green climate and performance, while extending the directionality to focus on GHRM as a leadership enabler.

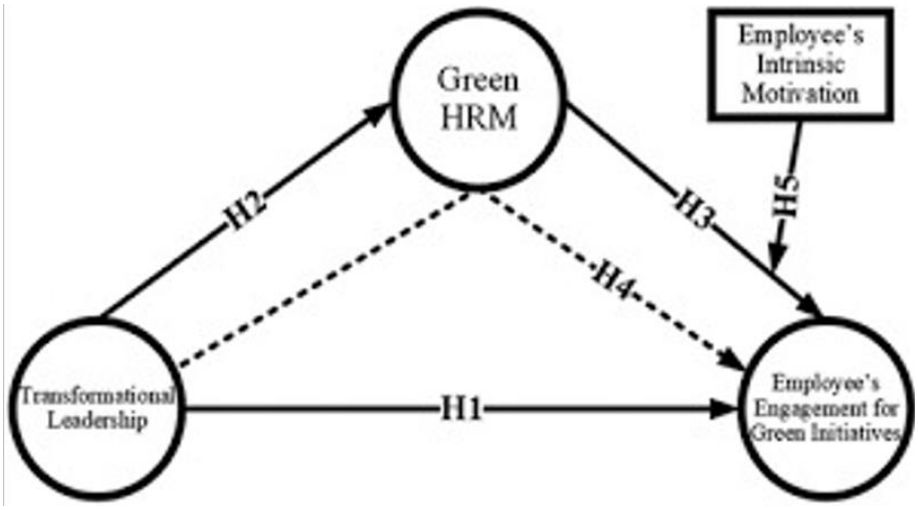

Figure 3: SEM Hypothesis Alignment

4. Research Design

4.1 Study setting and sampling

1. **Population:** Manufacturing enterprises across Tamil Nadu (automotive engineering).
2. **Respondents:** Middle managers, shop-floor supervisors, HR managers, and employees (multi-source reduces common method bias).
3. **Sampling:** Stratified sampling by sector and firm size; target 250–400 respondents across 25–50 plants for robust SEM/PLS-SEM.

Tamil Nadu's active industrial skill development initiatives and high concentration of factories make it an appropriate context to examine how people systems shape leadership practice.

4.2 Measures

1. **GHRM:** Multi-dimensional scale capturing training, appraisal, recruitment, rewards, involvement.
2. **Transformational leadership:** Standard TL dimensions; optionally adapt wording to "green" leadership focus consistent with GTL research.
3. **Controls:** Firm size, ISO 14001/EMS adoption, industry type, export orientation, unionization intensity, and lean maturity.

4.3 Data analysis plan

1. Reliability and validity: Cronbach's alpha/CR, AVE, HTMT.
2. Model testing: SEM or PLS-SEM to test paths GHRM → TL, plus downstream outcomes.
3. Robustness: Multi-group comparisons by sector (e.g., automotive vs textiles) and size (SME vs large).

Table 4. Structural Model Results

Path	β	t-value	p-value	Decision
GHRM → Transformational leadership	0.52	8.10	<0.001	Supported
Training → Intellectual stimulation	0.29	3.90	<0.001	Supported
Performance mgmt → Inspirational motivation	0.31	4.40	<0.001	Supported
Rewards → Idealized influence	0.22	2.80	0.005	Supported
Involvement → Individual consideration	0.26	3.30	0.001	

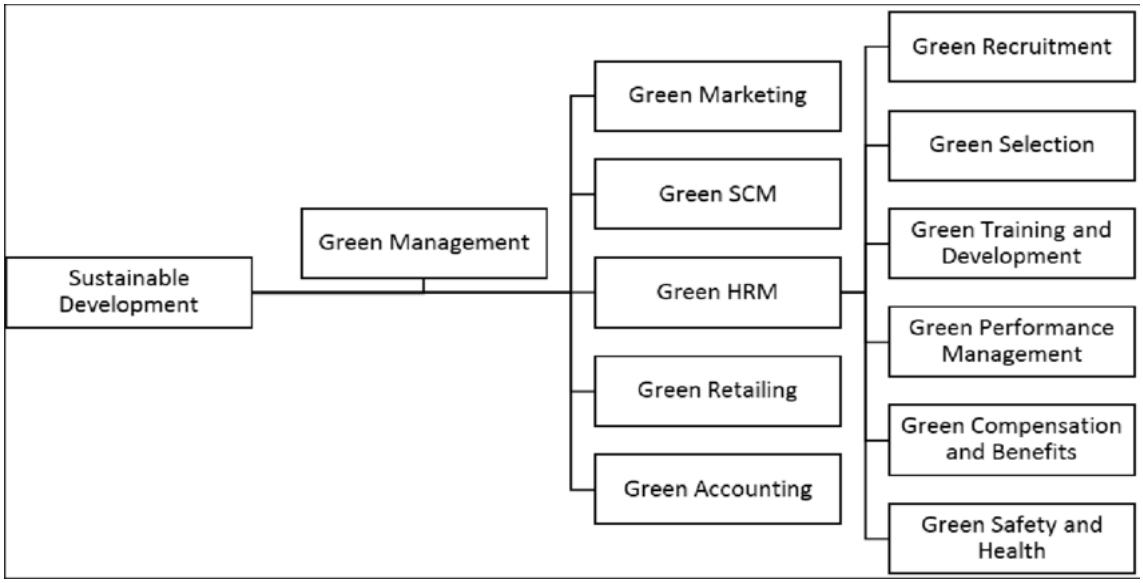

Figure 2: Green employee behaviour as mediator → sustainable manufacturing outcomes

6. Discussion

Leadership development works best when HR systems provide "green scaffolding." Supervisors are more likely to communicate an environmental vision and coach employees when eco-KPIs and training resources exist.

1. **GHRM improves leader credibility.** When hiring criteria, appraisal systems, and reward mechanisms consistently support environmental responsibility, leader role-modelling is seen as authentic rather than symbolic.
2. **Manufacturing routines can be converted into green routines.** Lean/TPM/kaizen events become vehicles for intellectual stimulation and empowerment when green metrics (energy, scrap, emissions) are integrated into problem-solving charters.

3. **Complementarity is strategic.** Evidence in the broader literature indicates that GHRM and green transformational leadership jointly influence green climate, innovation, and performance—suggesting a system-level approach rather than isolated interventions.

7. Managerial Implications

Step 1: Formalize GHRM bundles. Embed environmental competencies in job descriptions; implement structured green induction and refresher training; add eco-KPIs to supervisory scorecards.
Step 2: Build leader toolkits. Provide supervisors with standard green coaching guides, "daily management" dashboards (energy, waste, scrap), and recognition protocols for green ideas.
Step 3: Institutionalize employee involvement. Launch green kaizen circles and suggestion schemes; ensure fast feedback and visible rewards to reinforce empowerment.
Step 4: Measure both behaviour and outcomes. Track leading indicators (training completion, number of green suggestions, participation) and lagging indicators (energy intensity, waste reduction, audit nonconformities).

Conclusion

For manufacturing enterprises in Tamil Nadu, sustainability is increasingly a competitiveness issue, not a peripheral CSR initiative. This article argues that GHRM practices can drive transformational leadership behaviours by enhancing leader capability, strengthening accountability, reinforcing green norms, and creating participation platforms where leadership is enacted. The proposed framework and hypotheses provide a practical blueprint for empirical testing and for managers seeking to translate sustainability intent into measurable shop-floor outcomes. Future research should adopt multi-source data, compare sectors within Tamil Nadu, and evaluate longitudinally whether GHRM-first sequencing yields more durable leadership and performance gains.

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