

Assessing Manufacturing Green Logistics Performance: A Strategic Roadmap for the East Midlands

2026



In partnership with



HEADLINES

Based on a 2026 survey of 103 manufacturers across the East Midlands, spanning all major sectors and firm sizes.

103

FIRMS SURVEYED

Across the principal East Midlands manufacturing sectors.

3.55

MATURITY INDEX (/5)

Moderate green-logistics adoption, with clear room to grow.

3.71

STRONGEST AREAS

Packaging and environmental management lead the seven areas.

3.33

WEAKEST AREA

Reverse logistics, the region's most common gap.

+1.0

SIZE GAP

Mid-sized firms (3.91) outscore small firms (2.88).

3.95 / 2.88

ENVIRONMENTAL POLICY

Firms with a policy report substantially higher maturity than those without.

$r = 0.90$

TRAINING & PRACTICE LINKED

Training and adoption rise together, area by area.

33/37/30

LEADERS·MOVERS·STARTERS

Share of firms in each maturity tier (%).

SPATIAL DISTRIBUTION MAP

Dot colour = primary industrial sector • 1,030 establishments

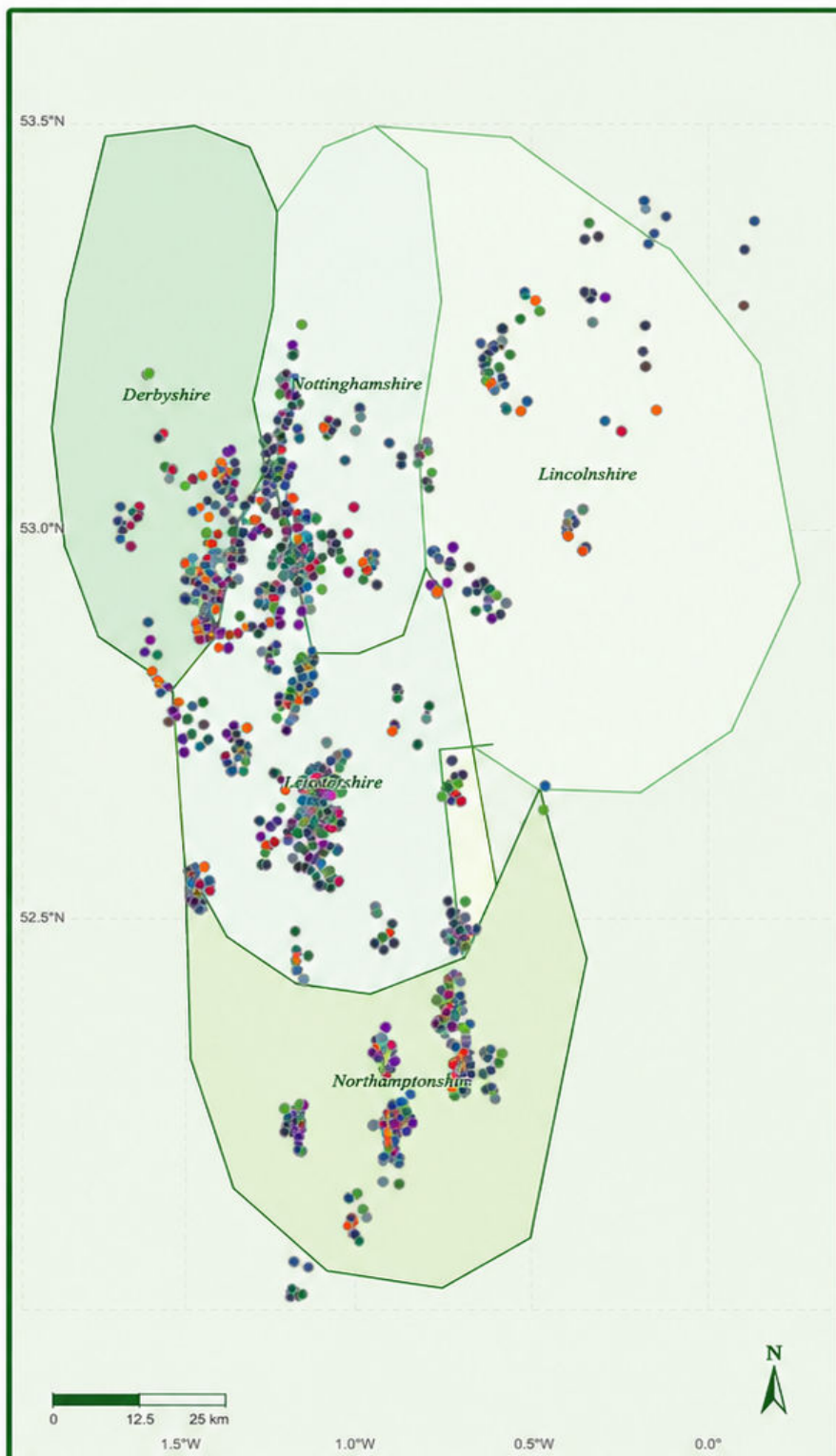


Fig. 1. Spatial distribution of 1,030 East Midlands manufacturing establishments. Dots coloured by primary industrial sector. County boundaries generalised – WGS 84.

3.55/5

REGIONAL GL INDEX
Moderate adoption

1,030

ESTABLISHMENTS
100.0% shown

3.71

STRONGEST AREA
Packaging & Env. Mgt

3.33

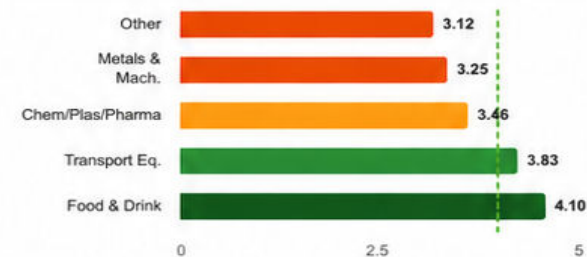
WEAKEST AREA
Reverse logistics

COLOUR BY

GL Score

Sector

GL SCORE BY SECTOR



Dashed line = regional index (3.55)

ESTIMATED GL BY COUNTY



Weighted by sector composition per postcode area

SECTOR LEGEND

Wood, Paper & Packaging	204
Machinery & Equipment	178
Electronics & High-tech	160
Other / Unspecified	106
Automotive & Aerospace	89
Construction Materials	82
Textiles & Consumer Goods	61
Chemicals & Plastics	49
Food & Beverage	43
Metals & Fabrication	39



For dynamic
map scan

KEY MESSAGES

Five findings frame the rest of this report.

Regional manufacturers sit mid-way on green logistics maturity, strong on packaging and environmental management, weakest on reverse logistics.

Size is the sharpest divide. Mid-sized firms outperform small firms by a full point on every practice area.

Firms with an environmental policy report substantially higher green-logistics maturity than firms without one.

Training and practice adoption rise together, moving in lockstep across every practice area.

Reverse logistics is the region's shared gap, the weakest area in three of the five priority sectors.

INTRODUCTION

This report presents the first regional assessment of green logistics (GL) performance across East Midlands manufacturing, drawing on a 2026 survey of 103 manufacturers, from more than 1,000 firms invited across the region, spanning fewer than 50 employees to large enterprises, answered by senior logistics, operations and general managers.

The region is one of the UK's most manufacturing-intensive and a national logistics gateway, yet little evidence has existed on how far its manufacturers embed green logistics day to day. This study sets that baseline and turns it into clear, evidence-based priorities for action.

Seven practice areas were measured, purchasing, end-of-life, transport, packaging, inventory, environmental management and reverse logistics, plus training, each scored 1 (not in place) to 5 (fully embedded). A score near 3 means a practice is partly in place; above 4 means it is largely embedded across the firm. The report details every area, then answers the four objectives in turn.



Figure 1. The seven green logistics practice areas, plus training.

HOW WE MEASURED

Every practice item was scored 1 (not in place) to 5 (fully embedded). A practice-area score is the mean of its items; the green-logistics maturity index is the mean of the seven practice areas. The Association for Supply Chain Management (ASCM) framework groups practices into three pillars, ecological, economic and ethical, and we map our measures onto them as below, adding logistics-efficiency KPIs to the economic pillar and training to the ethical pillar.

The ASCM three pillars, what goes into each

Ecological

Green purchasing · End-of-life · Transport · Packaging · Reverse logistics

Economic

Inventory · Logistics-efficiency KPIs (on-time, fill rate, inventory turns, cycle time)

Ethical

Environmental management · Training

Two complementary lenses

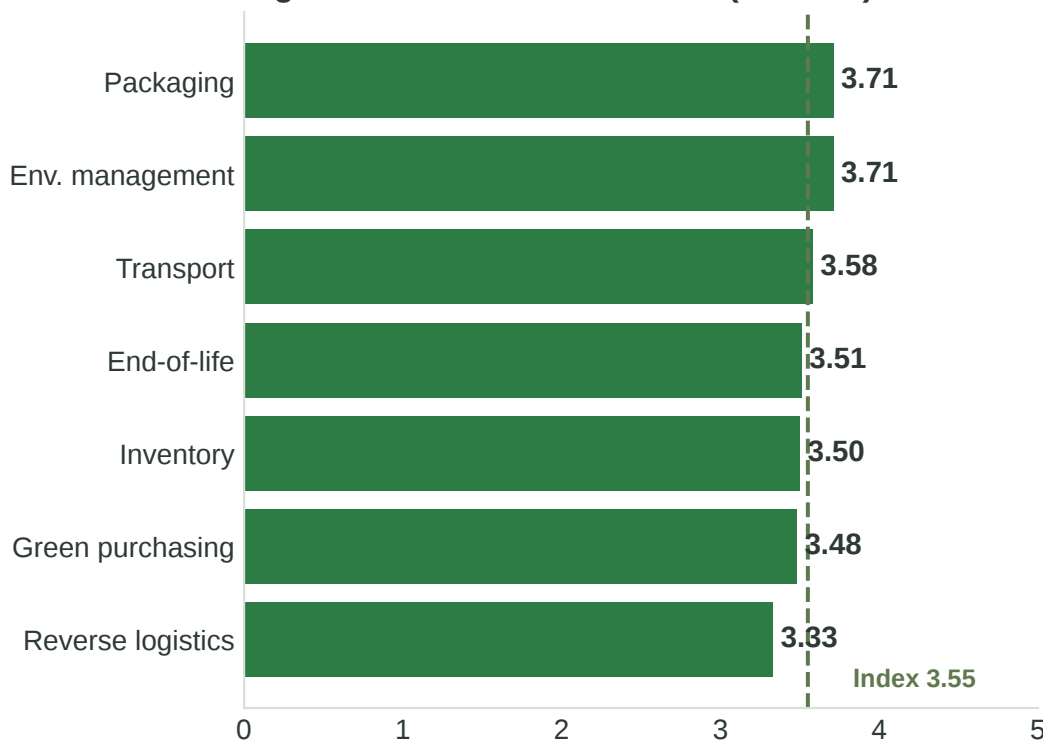
- » The maturity index and the pillars are two lenses on the same data: the index summarises the seven green practices, while the pillars place them in the ASCM sustainability framework so results can be compared with other studies that use it.

PRACTICE PERFORMANCE

A descriptive overview of the seven areas

Across the seven practice areas, manufacturers average 3.55 out of 5, moderate adoption with room to grow. Packaging and environmental management lead; reverse logistics sits lowest. The pages that follow break each area down item by item.

Figure 2. Practice-area scores (mean /5)



Two patterns run through the detail that follows.

1. First, firms favour measures that use existing assets, payload utilisation, waste handling, environmental monitoring, over capital-heavy change such as low-emission fleets and product take-back.
2. Second, the spread is wide: most items have a sizeable group of firms at the top of the scale and another at the bottom, so regional averages hide real differences between leaders and laggards.

PRACTICE DEEP-DIVE

Objective 1, each practice area, item by item

% of firms rating each item: 1 Not in place 2 3 4 5 Fully embedded

Green Purchasing

Sourcing materials and products with lower environmental impact, from green suppliers and eco-friendly inputs.



Around a third of firms (33%) fully embed eco-friendly sourcing, yet a similar share sit near the bottom of the scale, purchasing is established for the leaders and still aspirational for the rest. Eco-friendly raw materials score highest (3.56), while aligning purchases with formal waste criteria lags (3.43): intent is running ahead of written procurement standards. Mean 3.49.

Bottom line: the intent is there, formalising green criteria into procurement is the next step.

End-of-life

Handling products and materials at the end of their use, recycling, reuse and recovery rather than disposal.



Recycling and reuse are reasonably embedded, with roughly a third of firms fully committed on each item. The clear weak point is contracting suppliers into end-of-life schemes (3.35), cross-firm arrangements are harder to stand up than in-house recycling. Around one in six firms (17%) still operates no formal collection of used packaging. Mean 3.51.

Bottom line: in-house recycling is solid; cross-firm take-back is the gap to close.

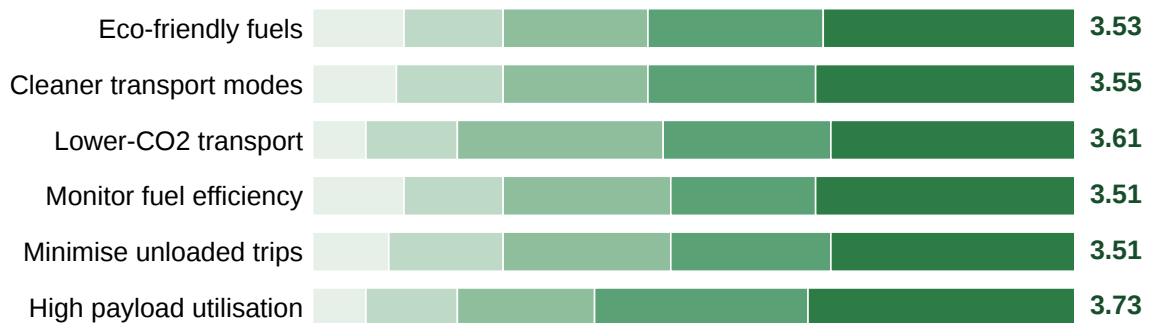
PRACTICE DEEP-DIVE (cont.)

Objective 1, each practice area, item by item

% of firms rating each item:  1 Not in place  2  3  4  5 Fully embedded

Transport

Cutting the footprint of moving goods, cleaner fuels and vehicles, fuel efficiency and fuller loads.



Firms optimise the assets they already own: payload utilisation leads at 3.73 and minimising unloaded trips is widespread. Investment-heavy moves trail, environmentally friendly fuels sit at 3.53 and cleaner vehicles only a little higher, reflecting the capital cost of fleet change. It is a textbook pattern: squeeze efficiency first, replace assets later. Mean 3.58.

Bottom line: efficiency gains are banked; the emissions prize needs fleet investment.

Packaging

Reducing packaging impact, reusable and recycled materials, renewable energy and less waste.



The strongest area overall (3.71). Responsible handling of distribution waste tops the entire survey at 3.97, with 46% of firms fully embedding it, and renewable-energy packaging is widely adopted (3.73). The softer spot is monitoring packaging energy use (3.54), firms act on packaging before they measure it.

Bottom line: a genuine regional strength to showcase and build on.

PRACTICE DEEP-DIVE (cont.)

Objective 1, each practice area, item by item

% of firms rating each item:  1 Not in place  2  3  4  5 Fully embedded

Inventory

Lowering the energy and resource use of storing and holding stock.



Energy-aware storage is moderately embedded and unusually even: the two items score 3.49 and 3.52 with near-identical spreads. It is a steady mid-table performer with no standout strength or weakness, and about a third of firms have it fully in place. Mean 3.50.

Bottom line: quietly competent, neither a worry nor a headline.

Environmental management

The governance behind green logistics, principles, monitoring, auditing, emissions reduction and cleaner technology.



The most consistently governed area (3.71). Most firms operate to environmental principles (3.82, with 42% fully embedded) and run monitoring and auditing (3.71), the governance backbone that anchors the ethical pillar. Cleaner-technology adoption (3.65) is the next frontier rather than a current gap.

Bottom line: strong governance gives firms a platform the other areas can build on.

PRACTICE DEEP-DIVE (cont.)

Objective 1, each practice area, item by item

% of firms rating each item: 1 Not in place 2 3 4 5 Fully embedded

Reverse logistics

Bringing products back after use, collection, returns and partner take-back schemes.



The weakest area (3.33) and the report's clearest single opportunity. Nearly a quarter of firms (23%) do not collect products back at all, and partner take-back schemes are thin (3.30). Only legal compliance (3.49) holds the area up, firms do the minimum the law requires rather than building circular flows. This is where a regional programme can move fastest.

Bottom line: the clearest single opportunity for a regional programme to act on.

Across all practices

The single strongest and weakest items, ranked across the seven areas.

Strongest

- 3.97 Distribution waste handled
- 3.82 Operates to env principles
- 3.73 High payload utilisation
- 3.73 Packaging: renewable energy
- 3.71 Monitoring & auditing

Weakest

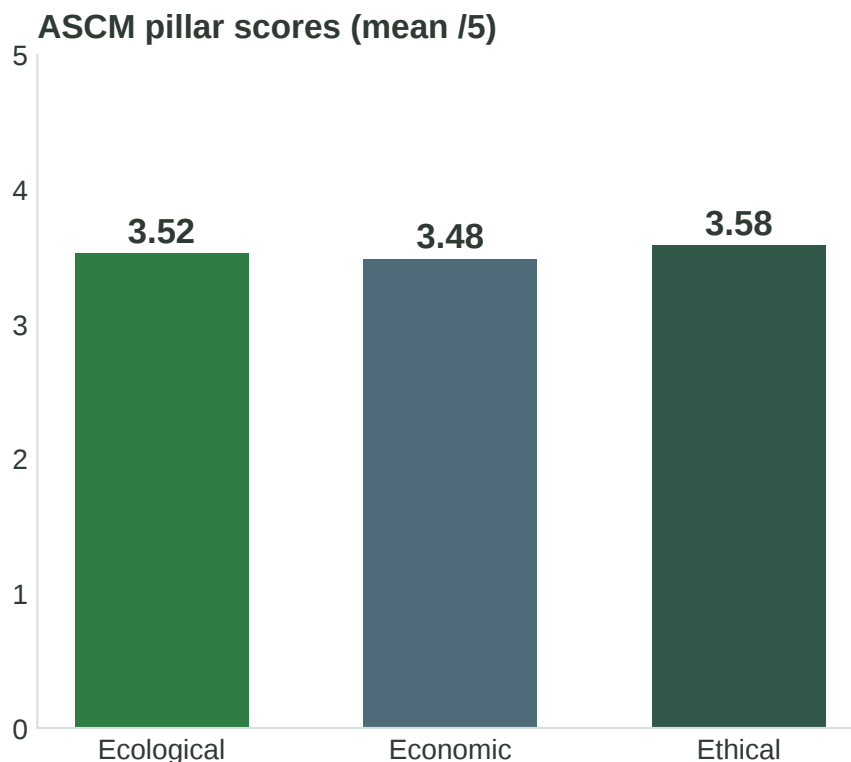
- 3.21 Collect products after use
- 3.30 Driver & fleet training*
- 3.30 Partner collection schemes
- 3.35 Suppliers in EOL schemes
- 3.43 Materials meet waste criteria

* training item, shown for comparison

THE ASCM THREE PILLARS

Objective 1, the state of adoption, in the ASCM framework

Mapped onto the ASCM framework, the three pillars sit close together, no single dimension dominates. Firms advance on environmental practice, cost-efficiency and governance at a broadly similar pace, with the ethical (governance and skills) pillar marginally ahead.



What the pillars tell us

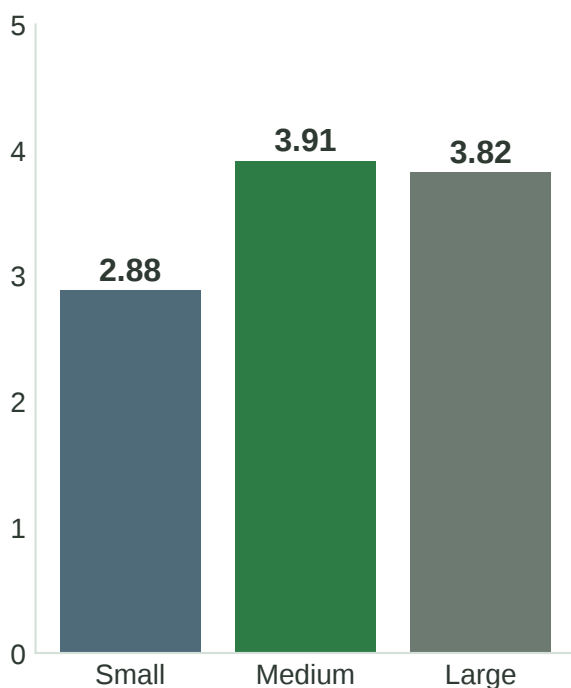
- » Ecological practice (3.52) draws on green purchasing, end-of-life, transport, packaging and reverse logistics. The economic pillar (3.48) combines inventory with logistics-efficiency KPIs. The ethical pillar (3.58) covers environmental management and training. Because the three move together, a firm strong in one tends to be strong across all, which is why the maturity tiers later in this report are so clean.

DIFFERENCES BY FIRM SIZE

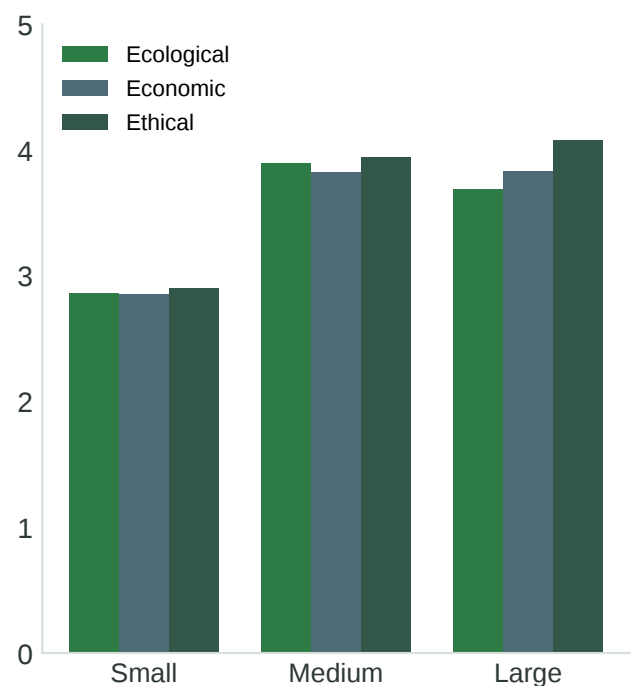
Objective 2, variation by firm size

Firm size is the sharpest divide in the data. Mid-sized firms (50–249 employees) score a full point above small firms, and the gap holds across every practice area and every ASCM pillar. Size bands here are small (under 50 employees), medium (50 to 249) and large (250 and above).

Maturity index by size



Pillars by size



Why size matters

- » The size effect is consistent: larger firms have deeper sustainability resources and absorb the cost of greener logistics more easily. Small manufacturers, a third of the sample, sit well behind and are the clearest target for regional support. Only five firms sit above 250 employees, so that band is read with caution.

DIFFERENCES BY SECTOR

Objective 2, variation by industrial sector

Food and drink leads the five priority sectors; metals and machinery and the smaller sectors trail. Training provision follows the same order, reinforcing the link between skills and practice.



The sector picture

- » Food & drink leads on every pillar (ecological 4.13). Transport equipment is strongest economically (4.03), reflecting efficient logistics operations. Metals & machinery trails across the board (around 3.2). Sector cells are small for some groups, so these are read as indicative direction rather than precise rankings, but the spread is wide enough to guide where sector-specific support will land best.

CAPABILITY GAPS & PRIORITIES

Objective 3, sector gaps and priority intervention areas

The matrix shows the mean score for every practice area by sector. The black box marks each sector's weakest area, its priority for intervention.

Mean score by sector and practice area

	Green Purchasing	End-of-life	Transport	Packaging	Inventory	Environment Management	Reverse Logistics
Food & Drink	4.2	4.2	4.2	4.2	4.0	4.0	3.9
Transport Eq.	3.6	3.7	3.9	4.0	4.0	3.9	3.8
Metals & Mach.	3.0	3.2	3.4	3.4	3.2	3.4	3.1
Chem/Plas/Pharma	3.6	3.2	3.3	3.5	3.8	3.7	3.1
Other	3.0	3.1	3.1	3.4	2.9	3.6	2.8

Reverse logistics is the weakest area for three of the five sectors, food & drink, chemicals/plastics/pharma and the remaining sectors. For transport equipment and metals & machinery, green purchasing is the gap.

Where to act first

- » A regional programme that tackles reverse logistics first would lift the most sectors at once, while size- and sector-targeted support closes the deeper gaps for the firms furthest behind.

MATURITY TIERS

Objective 3, leaders, movers and starters

Grouping firms by their overall maturity reveals three clear tiers. The tiers map closely onto size and policy: leaders are mostly mid-sized firms with an environmental policy; starters are mostly small firms without one.

Share of firms



- Leaders (≥ 4.0), 34 firms (33%), index 4.76**
 Mostly mid-sized; nearly all hold a policy
- Movers (3.0–3.99), 38 firms (37%), index 3.43**
 Mixed size; policy split evenly
- Starters (< 3.0), 31 firms (30%), index 2.36**
 Mostly small firms; mostly no policy

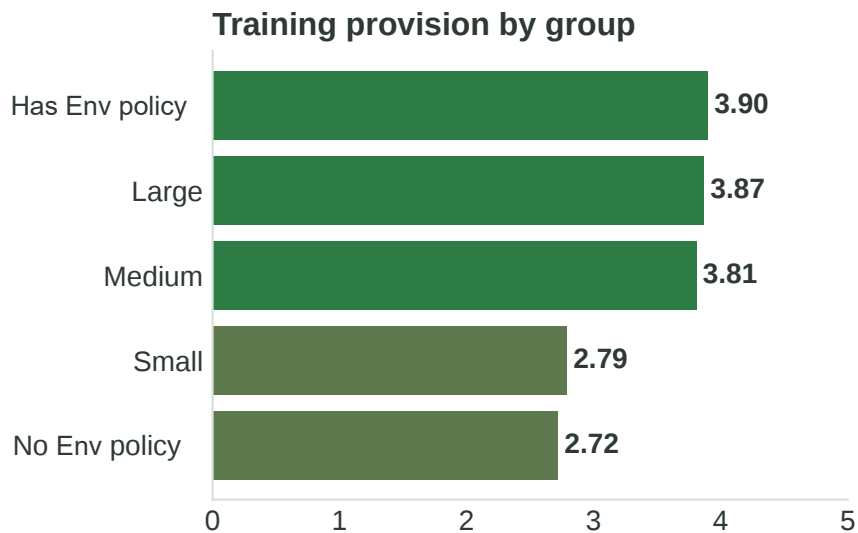
Reading the tiers

- » A third of firms are leaders, already strong across the board. The largest group, movers, are advancing but uneven, and respond fastest to targeted help. Three in ten are starters, early in adoption; lifting them is where regional support delivers the biggest gain.

TRAINING & UPSKILLING

Objective 4, upskilling needs and the link to performance

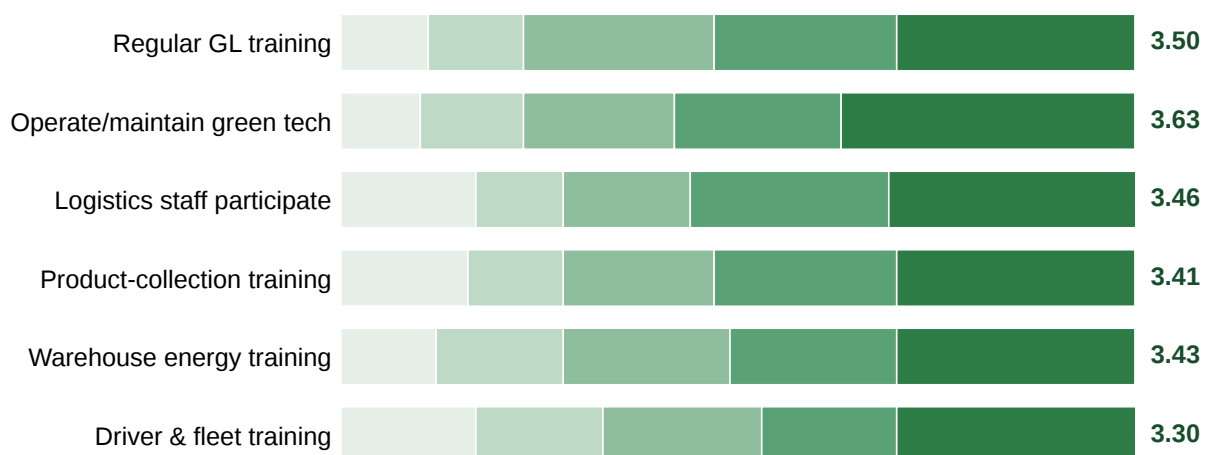
Training provision has a mean of 3.45 and tracks the same divides as practice. Small firms and firms without a policy lag furthest; driver, product-collection and warehouse-energy training are the weakest provisions.



$$r = 0.90$$

Training and practice adoption rise together across every area, the strongest association in the study.

Training provision, item by item (1–5 distribution)



% of firms rating each item: 1 Not in place 2 3 4 5 Fully embedded

TOWARD A STRATEGIC ROADMAP

Objective 4, translating the evidence into priorities

Three priorities follow directly from the evidence. Each names what to do, who to aim it at, and why it pays off.

1

Close the reverse-logistics gap

The region's shared weak spot, the lowest-scoring area and the weakest in three of the five sectors. Back product take-back trials, shared third-party collection hubs, and partnerships that pool reverse flows across firms. Prepare firms for extended-producer-responsibility rules so early movers avoid a later scramble. With nearly a quarter of firms collecting nothing back today, the headroom here is the largest in the study.

2

Target the firms furthest behind

Small manufacturers, and firms in metals & machinery and the smaller sectors, sit a full point below their peers (2.88 vs 3.91). Direct grants, shared services and procurement alliances at them to lower the cost of greener logistics. Because the maturity tiers track size and policy so closely, support aimed here lifts the whole regional average rather than only its leaders.

3

Invest in upskilling where it counts

Driver and fleet eco-driving, product-collection handling and warehouse energy efficiency are the weakest provisions (3.30–3.43). Fund short, role-specific training: it moves in lockstep with practice ($r = 0.90$), and it is the provision most strongly associated with adoption. Prioritise the firms that train least, small firms (2.79) and those without an environmental policy (2.72).

One cross-cutting point: an environmental policy is the single clearest marker of a stronger performer. Encouraging policy adoption among the 38% of firms without one is a low-cost regional intervention with wide reach.

CONCLUSION

East Midlands manufacturers sit mid-way on green logistics, scoring 3.55 out of 5 overall. The foundations are genuinely in place, packaging, environmental management and transport efficiency all score well, and a third of firms already rank as leaders across every area.

The gaps, though, are specific and addressable: reverse logistics, the smallest firms, and a handful of targeted training needs. A focused regional roadmap, backed by partnerships, shared services and short, practical upskilling, would move the sector from moderate adoption toward maturity, and sharpen the competitiveness of East Midlands manufacturing as regulation tightens and customers ask harder questions about sustainable logistics.

In summary, the regional snapshot



Lead strength

Packaging & environmental management (3.71)

Priority gap

Reverse logistics (3.33)

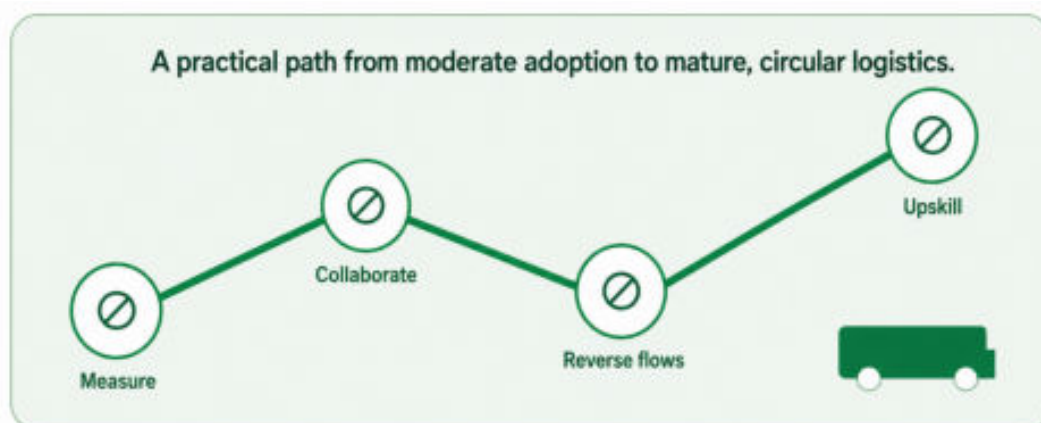
Strongest link

Training & practice rise together ($r = 0.90$)

REFERENCES

The study applies the ASCM Green Logistics framework. The sources below informed its design, measures and interpretation.

1. Association for Supply Chain Management (ASCM) (2022) SCOR Digital Standard: sustainability framework (ecological, economic and ethical dimensions). Chicago, IL: ASCM.
2. Chepurna, M., Alvarez-Palau, E.J., Castillo Gutierrez, C. and Viu Roig, M. (2025) 'Green logistics: in pursuit of a final definition', *Business Strategy and the Environment*, 34(7), pp. 8983-9007.
3. de Souza, E.D., Kerber, J.C., Bouzon, M. and Rodriguez, C.M.T. (2022) 'Performance evaluation of green logistics: paving the way towards circular economy', *Cleaner Logistics and Supply Chain*, 3, 100019.
4. Fugate, B.S., Mentzer, J.T. and Stank, T.P. (2010) 'Logistics performance: efficiency, effectiveness, and differentiation', *Journal of Business Logistics*, 31(1), pp. 43-62.
5. Lai, K.-H. and Wong, C.W.Y. (2012) 'Green logistics management and performance: some empirical evidence from Chinese manufacturing exporters', *Omega*, 40(3), pp. 267-282.
6. Rao, P. and Holt, D. (2005) 'Do green supply chains lead to competitiveness and economic performance?', *International Journal of Operations & Production Management*, 25(9), pp. 898-916.
7. Srivastava, S.K. (2007) 'Green supply-chain management: a state-of-the-art literature review', *International Journal of Management Reviews*, 9(1), pp. 53-80.
8. Zhu, Q. and Sarkis, J. (2004) 'Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises', *Journal of Operations Management*, 22(3), pp. 265-289.



Supply Chain and Sustainability Research Group

Dr Ayham Jaaron

Associate Professor / Reader in
Sustainable Management

ayham.jaaron@dmu.ac.uk

Dr Amila Jayarathne

Senior Lecturer in Marketing

amila.jayarathne@dmu.ac.uk

Dr Gulesin Sena Das

Senior Lecturer in Supply Chain
Management

sena.das@dmu.ac.uk

Dr Haris Aslam

Senior Lecturer in Operations and
Supply Chain Management

haris.aslam@dmu.ac.uk

Dr Selman Karagoz

Lecturer in Business Management

selman.karagoz@dmu.ac.uk

Dr Emmanuel Odumosu

Research Associate

emmanuel.odumosu@dmu.ac.uk

Dr Tung Dao

Senior Lecturer in Business
Management

tung.dao@dmu.ac.uk

The Institute for Responsible Business and Social Justice

De Montfort University

The Gateway, Leicester, LE1 9BH, United Kingdom

dmu.ac.uk