

Green Human Resource Management in Maritime and Logistics Operations: A Sector-Ranked Analysis and Synthesis of an Emerging Literature

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ABSTRACT

Green human resource management has grown into a large literature, and its distribution across industry sectors has not been measured. This paper establishes that distribution and synthesises what the maritime portion of it contains. A corpus of 3,887 journal articles was assembled from OpenAlex and screened, and eight industry sectors were measured with symmetrical term lists. Maritime and logistics operations rank 8th of eight at 0.93% of the field, against 10.96% for hospitality and tourism, a 11.8-fold difference. Two further findings follow. The field as a whole engages recruitment channels in 0.57% of its output and employer branding in 1.29%, although green recruitment is one of its core constructs. Within the maritime evidence base, 13 studies were identified, of which all but one date from 2024 onward. Those studies share no common outcome variable, rely almost entirely on cross-sectional variance models, sample seafarers in only two cases, and disagree on which green human resource management dimension carries the strongest effect. No study of recruitment channels or employer branding appears in the maritime subset, and the paper sets out why that count is uninformative about sector-level neglect at this subset size. The contribution is a measured denominator for a field that has been described only in aggregate, and the first synthesis of its maritime component.

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1. Introduction

Shipping carries around eighty per cent of world merchandise trade by volume, and the International Maritime Organization has set the sector on a course to net-zero greenhouse gas emissions by or around 2050. Meeting that target requires technical change in vessels and fuels, and it also requires people who operate, maintain and manage those assets differently. Human resource management is one of the instruments through which an organisation turns an environmental commitment into daily behaviour.

Green human resource management describes that instrument. It covers green recruitment and selection, environmental training, green performance management, green reward, and green employee involvement (Renwick et al., 2012; Tang et al., 2017). The construct has generated a large research literature over the past decade, and several reviews describe that literature in aggregate (Bahuguna et al., 2022).

What no published work establishes is how that research is distributed across industry sectors. Reviews report author, journal and country patterns, and they report themes (Bahuguna et al., 2022). Two recent reviews come closer. One covers human resource management across the whole transport sector, with sustainability as one theme among several (Rahman, 2025). The other reviews workforce transformation in marine sectors and treats eco-friendly human resource management as one of three mechanisms (Pitaloka and Latif, 2026). Both synthesise studies. Neither measures how large the maritime share

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Table 1: Corpus construction. Source: OpenAlex Database.

Stage	<i>n</i>
Records downloaded from OpenAlex	4061
Removed as duplicates (title, year, author)	173
Records after deduplication	3888
Excluded as off-topic (clinical recruitment)	1
Records in the analysis corpus	3887
of which classifiable on abstract	2707
of which classifiable on title only	1180

of the field is. A reader who wants to know whether the evidence base for maritime operations is comparable to the evidence base for hotels has nowhere to look. That question matters for a maritime readership, because a practice recommended on the strength of hospitality evidence may transfer poorly to a vessel, a port terminal, or a crewing agency.

This paper answers it. Section 2 describes the corpus and the measurement. Section 3 reports the sector distribution, the field's coverage of two specific topics, and a synthesis of the maritime studies. Section 4 discusses what follows and states plainly one claim the analysis does not support. Section 5 gives limitations.

2. Method

2.1. Corpus

The corpus was retrieved from OpenAlex using a title-and-abstract query for green human resource management and its common variants, restricted to journal articles published from 2000 onward and with no restriction on sector, language, or the availability of an abstract. Restricting on abstract or full-text availability would have removed records on a criterion unrelated to the research question and biased the denominator. Those properties are reported as attrition.

Table 1 gives the flow. Because the export carries no persistent identifier, duplicates were removed on normalised title, publication year and first author. Records sharing a title while differing on year or first author were retained, since generic titles recur across genuinely different works.

2.2. Measuring sector representation

Eight industry sectors were measured. Each is defined by a narrow term list of comparable breadth, applied to the title and abstract with word boundaries. Symmetry across sectors is what makes the resulting ranking a like-for-like comparison. Term lists were declared before any count was produced. One amendment was made and is recorded: the singular form “logistic” was removed after every record it matched proved to be “logistic regression”.

Sectors overlap, since a study may name two, so shares do not sum to one hundred. Confidence intervals are exact binomial. Comparisons between the sector subset and the remainder of the corpus use Fisher's exact test (Fisher, 1935), which is appropriate where expected cell counts are small (Sharafuddin et al., 2026).

Table 2: Green human resource management research by industry sector. Sectors overlap, so shares do not sum to 100. Source: OpenAlex Database.

Rank	Sector	<i>n</i>	%	95% CI
1	hospitality and tourism	426	10.96	9.99–11.98
2	manufacturing	369	9.49	8.59–10.46
3	education	230	5.92	5.20–6.71
4	banking and finance	175	4.50	3.87–5.20
5	healthcare	126	3.24	2.71–3.85
6	information technology	67	1.72	1.34–2.18
7	construction	41	1.05	0.76–1.43
8	logistics and maritime	36	0.93	0.65–1.28

Table 3: Coverage of two topics across the full corpus. Source: OpenAlex Database.

Topic	<i>n</i>	%	95% CI
Recruitment channels	22	0.57	0.36–0.86
Employer branding	50	1.29	0.96–1.69

2.3. Identifying and screening the maritime evidence base

A manual screening was done with the 57 candidates by reading the title and abstract of the maritime and logistics records and 36 were included, out of which 13 of them maritime. 21 were excluded because they were predominantly studies set in another sector that name a transport term in passing.

3. Results

3.1. Where green human resource management research is done

Table 2 and Figure 1 give the distribution. Maritime and logistics operations rank last of the eight sectors measured, at 0.93% of the corpus with 36 records. The leading sector, hospitality and tourism, holds 10.96%. The confidence intervals of the two do not approach one another.

The vocabulary of the corpus corroborates the ranking independently. Figure 2 reports log-likelihood keyness on stemmed abstract terms. The terms most characteristic of the remainder of the field are *manufactur*, *hotel*, *bank* and *hospit*, which name four of the sectors that outrank maritime and logistics in Table 2.

3.2. What the field leaves alone

Green recruitment is a standard component of the construct. Research into the channels through which recruitment happens, and into how an employer is perceived as a result, is a different matter. Table 3 reports coverage of both across the whole corpus.

Both proportions are small and both intervals are tight. The field studies green recruitment as a practice and has largely left the channel and the resulting employer perception to a separate literature.

3.3. The maritime evidence base

13 maritime studies were identified. Table 4 summarises them. Ten are characterised from their abstracts, retrieved from OpenAlex and supplemented from Crossref. 3 require the full text and are marked accordingly, so those rows are provisional.

Green HRM research by industry sector

Share of 3,887 OpenAlex articles, with 95% confidence intervals

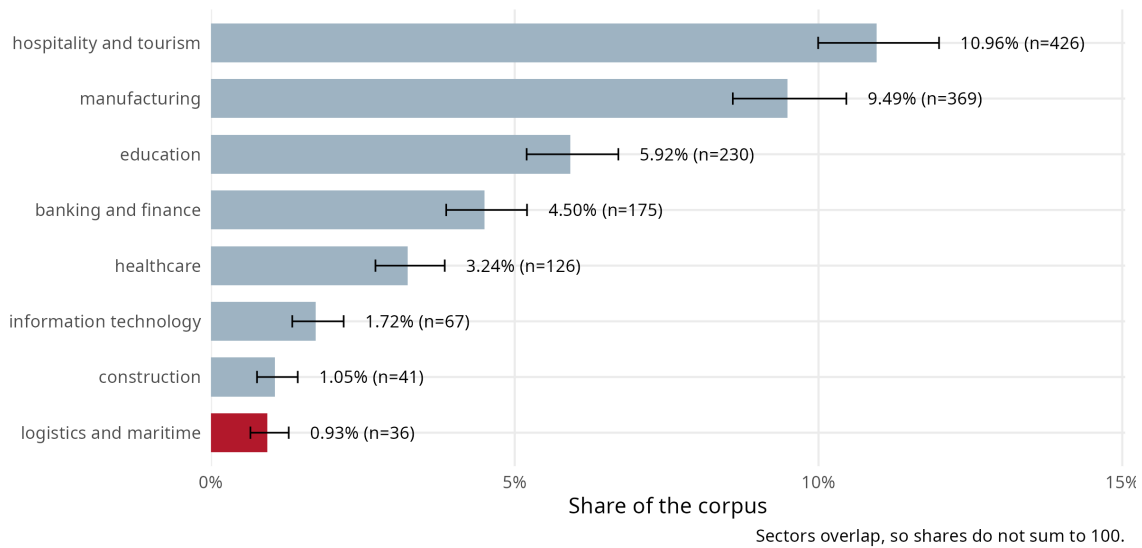


Figure 1: Sector distribution with exact binomial intervals. Source: Authors.

Distinguishing vocabulary

Log-likelihood keyness over 2,529 English abstracts. Descriptive only.

Terms are stemmed for analysis and labelled with the commonest surface form of each stem.

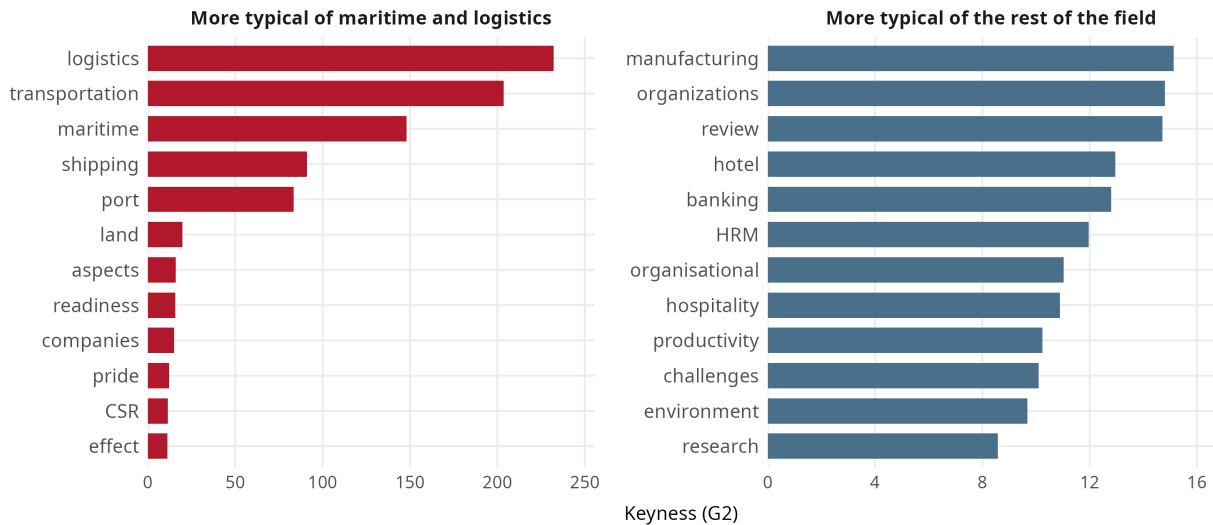


Figure 2: Distinguishing vocabulary. Descriptive. Source: Authors.

Four patterns are visible. The literature is new, with all but one study dated 2024 or later and half of the set dated 2026. Designs are homogeneous, with cross-sectional variance models estimated by structural equation modelling in most of the empirical entries (Liu et al., 2026; Özbağ et al., 2026; Jesusanlu and Ifeanyi, 2026; Kalangi et al., 2026; Gerou et al., 2026). Two depart from that pattern, a multilevel model of shipping employees nested within departments (Sandhu, 2026) and a qualitative multiple case study of twelve shipping companies (Kristiyanti and Wati, 2026). Outcomes are heterogeneous, and no two studies share a dependent variable, which rules out pool-

ing: environmental performance of shipping firms (Liu et al., 2026), green port performance (Özbağ et al., 2026), governance performance (Jesusanlu and Ifeanyi, 2026), social sustainability (Gerou et al., 2026), employee green behaviour (Sandhu, 2026; Kalangi et al., 2026) and technology adoption (Kristiyanti and Wati, 2026). Seafarers are the sampled population in only two studies (Liu et al., 2026; Jesusanlu and Ifeanyi, 2026), so most of this evidence describes shore-based staff at maritime organisations. One entry is a conceptual treatment of maritime supply chains anchored on the Maritime Labour Convention and International Maritime Organization standards (Ugrinov et al.,

Table 4: Maritime green human resource management studies. Entries marked *full text not available* could not be characterised from any indexed abstract. Source: Authors.

Study	Context	Method	Sample	Outcome
Zhang (2011)	Shipping enterprises	–	–	<i>full text not available</i>
Nurcholis et al. (2024)	Shipping industry	Scale development	–	<i>full text not available</i>
Karakasnaki (2024)	Maritime companies, Greece	PLS-SEM	109 maritime companies	Social sustainable performance
Rahmat and Rumambi (2024)	Shipping department of a marine supply firm, Indonesia	Survey regression	80 of 100 employees	Environmental performance
Ugrinov et al. (2025)	Maritime supply chains	Conceptual	Not applicable	Workforce well-being and standards compliance
Gerou et al. (2026)	Coastal maritime and shipping firms, Greece	EFA CFA regression	96 senior executives	Social sustainability
Sandhu (2026)	Shipping industry	Multilevel HLM with CFA	–	<i>full text not available</i>
Özbağ et al. (2026)	Ports, Turkey	SEM	Not stated in abstract	Green port performance
Liu et al. (2026)	Shipping firms, China	SEM	519 seafarers	Firm environmental performance
Oktariato et al. (2026)	Class I port authority office, Indonesia	Descriptive census	All office employees	GHRM implementation readiness
Kristiyanti and Wati (2026)	Shipping companies, Indonesia	Qualitative multiple case	12 companies 36 informants	Green transportation technology adoption
Kalangi et al. (2026)	Shipping employees, Indonesia	PLS-SEM	293 employees	Employee eco-friendly behaviour
Jesusanlu and Ifeanyi (2026)	Maritime companies, Nigeria	PLS-SEM	360 seafarers across 24 firms	Governance performance

Table 5: Studies reporting standardised coefficients for green human resource management dimensions. Source: Authors.

Study	Context	Standardised coefficients
Özbağ et al. (2026)	Ports, Turkey	Green training 0.504; green performance management 0.050
Jesusanlu and Ifeanyi (2026)	Maritime companies, Nigeria	Performance management 0.564; reward 0.202; recruitment 0.161

2025), and one is a measurement study developing green competency scales for the shipping industry (Nurcholis et al., 2024).

A fifth pattern is a direct disagreement. Two studies report standardised coefficients for the same green human resource management dimensions and reach opposite conclusions about which dimension matters most. Table 5 sets the two side by side. In Turkish ports green training carries the strongest effect and green performance management the weakest (Özbağ et al., 2026). Among maritime companies sampling 360 seafarers, green performance management carries the strongest effect (Jesusanlu and Ifeanyi, 2026). The dimension that is weakest in one setting is strongest in the other, a difference of an order of magnitude.

4. Discussion

The maritime and logistics share of green human resource management research is small and it is measured here for the first time. Existing maritime reviews synthesise the studies without establishing that share (Rahman, 2025; Pitaloka and

Latif, 2026), and field-wide reviews report themes without decomposing them by sector (Bahuguna et al., 2022). The practical consequence is that guidance offered to maritime employers rests substantially on evidence generated in hospitality, manufacturing and banking. Whether green human resource management practices transfer across those settings is an empirical question that the present evidence base cannot answer.

The disagreement between the two studies that report comparable coefficients is the most useful signal for future work (Özbağ et al., 2026; Jesusanlu and Ifeanyi, 2026). It suggests that the effective dimension is contingent on setting, which is a testable proposition and one that a small number of comparable studies could settle. Establishing it would require the field to converge on a shared outcome measure, and the scale development already available for shipping is a starting point (Nurcholis et al., 2024; Tang et al., 2017).

4.1. Interpreting the subset counts

The screened maritime and logistics subset contains no study of recruitment channels and none of employer branding. That

count does not establish sector-level neglect, and the reason is a property of the sample size rather than of the sector.

At the field rates in Table 3, the expected number of such studies in a subset of 36 records falls below one for both topics. Zero is therefore the single most probable observation for a subset drawn from a field with these base rates, and it arises whether or not the sector differs. Fisher's exact test (Fisher, 1935) comparing the subset against the remainder of the corpus returns $p = 1.000$ for both topics, and the confidence intervals on the odds ratios span an order of magnitude in each direction. The distinction between an absence of evidence and evidence of absence at small n is treated at length by Sharafuddin et al. (2026). A deficit large enough to be substantively interesting would require several hundred sector studies to detect, and the literature contains a few dozen.

The results in Sections 3.1 and 3.2 are estimated on the full corpus, where the intervals are narrow. They are reported at field level for that reason, and no inference is drawn from combining them with the subset counts.

5. Limitations

The corpus is drawn from a single database. Roughly three in ten records carry no abstract, so those were classified on the title alone. Term lists are in English, and 6.6% of usable abstracts are in another language, so those records can be matched only on English terms appearing in their titles. This affects all eight sectors in the same direction. The absence of a persistent identifier in the export means deduplication rests on title, year and first author, and a small number of records sharing a title were retained. Publication year 2026 was incomplete at the retrieval date, so growth cannot be read across that boundary.

6. Conclusion

Maritime and logistics operations hold the smallest share of green human resource management research among the eight sectors measured. The field as a whole rarely studies recruitment channels or employer branding. The maritime evidence base is two years old, methodologically homogeneous, heterogeneous in its outcomes, and internally inconsistent on which practice dimension matters most. It is a literature at its beginning, and the measurements reported here give it a baseline against which its growth can be read.

Declaration of Generative AI Use

During the preparation of this work, the authors used Claude (Anthropic) for language proofing. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

Declaration of Competing Interest

The authors declare no competing financial or personal interests.

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