

Sustainability Insights: Leveraging Data in Green Compass Framework

Introduction

Green Compass

Assessment

Green Compass™, as detailed by Lee et al. (2020), is an assessment and strategic roadmapping tool designed to aid companies in either starting or enhancing their environmental sustainability goals. By effectively managing carbon emissions, energy usage, water consumption, and waste impacts, companies can address key sustainability challenges while maintaining a competitive edge in their respective industries. While various sustainability frameworks and methodologies exist, Green Compass distinguishes itself by focusing on tailored solutions that are specifically designed for implementation within businesses.

Green Compass Scope

The Green Compass scope consists of an assessment to understand their environmental sustainability maturity over a range of domains. The scope was created in collaboration among leading organisations, including the Agency for Science, Technology and Research (A*STAR), JTC Corporation, and TÜV SÜD. The Green Compass scope comprises of three layers:

1. The topmost layer is broken into two primary building blocks: Green Organisation and Green Business. Green Organisation focuses on the strategic planning of a company, consisting of the internal and external structure of management, and long-term direction for the organisation. Whereas for Green Business, it gives an overview on the tactical and operational processes of the company. It measures day-to-day activities along with its environmental impact.
2. The second layer is further broken down into 5 dimensions, where companies are to focus on to enhance their environmental sustainability.
3. The last layer consists of 17 domains, representing specific areas of focus for sustainability improvement across the 5 dimensions.

Green Compass™ Scope

Building Blocks	Green Organisation		Green Business		
	Talent Readiness Management	Structure & Management	Operations Management	Supply Network Management	Product Life Cycle Management
Domains	Leadership Competency	Strategy & Governance	Carbon	Carbon	Carbon
		Policy & Compliance	Energy	Energy	Energy
	Workforce Learning & Development			Water	Water
			Stakeholder Engagement	Material	Material

Figure 1: The Green Compass scope, where building blocks are vertically subcategorized into dimensions and further vertically subcategorized into domains.

Prioritisation & Roadmapping

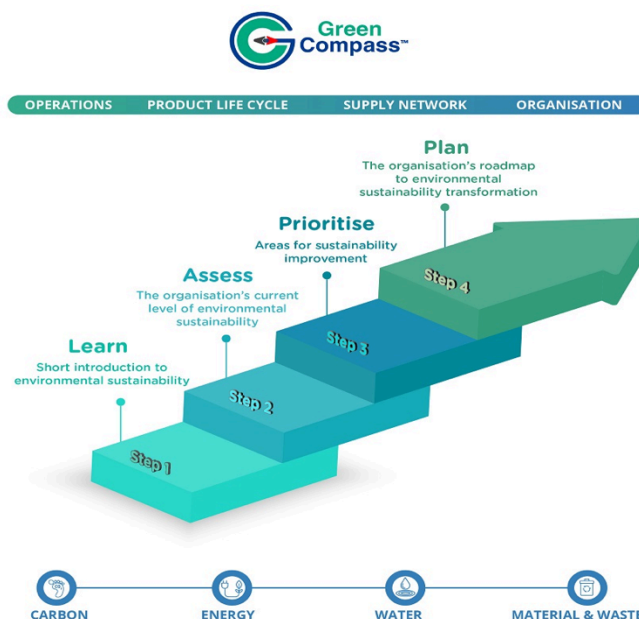


Figure 2: Learn-Assess-Prioritise-Plan Model

The Green Compass tool can be broken down into a structured, four-step **Learn-Assess-Prioritise-Plan** model.

1. **Learn:** Companies are introduced to sustainability trends and management approaches, enhancing their understanding of sustainability issues. This is also

where companies will be exposed to the Green Compass Scope, whereby the assessment domains are elaborated on to reflect how the maturity levels are calculated.

2. **Assess:** Companies will then conduct a comprehensive assessment to better understand their sustainability performance. This assessment helps identify maturity levels for each domain and subsequently allow the identification of specific areas for improvement.
3. **Prioritise:** From the assessment results, companies use a decision analysis framework, where they prioritise domains for improvement based on cost, business value creation, and strategic impact. This step ensures that efforts are focused on areas that offer the most significant benefits.
4. **Plan:** Companies are guided in planning sustainability transformation plans, including timelines, responsible departments, and actions to achieve higher sustainability maturity levels. The plan is then presented to upper management for endorsement and implementation.

Insights: Assessment results of companies with Green Compass

1.1 Understanding the profiles of 36 participating companies

Green Compass is actively seeking data driven insights to better understand how different categories of companies can strategically prioritise and allocate resources to achieve their sustainability goals. Moving on, it provides empirical evidence of the effectiveness of structured sustainability frameworks in driving organisational change. Lastly, by identifying trends and correlations in sustainability metrics, this study contributes to the broader discourse on sustainable business practices and informs future research directions in the field.

The companies are categorised based on the following characteristics:

Characteristic	Examples

Type of Industry	1. Manufacturing 2. Non-manufacturing
Number of Employees	1. 1-50 Employees 2. 51-1000 Employees 3. More than 1000 Employees
Annual Revenue	1. Less than \$1,000,000 2. \$1,000,000 - \$100,000,000 3. More than \$100,000,000
Type of Enterprise	SMEs, MNCs, LLEs, Others (R&D Educational Institutes)

1.2 Analysing Green Compass Maturity profiles at the Percentile level (Across Industry & Enterprise Type)

Number of Companies in Each Percentile by Industry Type					
	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile	Total (Industry)
Manufacturing	5	4	4	4	17
Non-manufacturing	4	5	5	5	19
Total (Percentile)	9	9	9	9	36

Figure 3 : Breakdown of Company Count in Percentiles by Industry Type

Number of Companies in Each Percentile by Enterprise Type					
	1st Quartile	2nd Quartile	3rd Quartile	4th Quartile	Total (Enterprise)
MNCs	3	2	2	1	8
LLEs	3	0	0	1	4
SMEs	2	5	5	3	15
R&D	1	2	2	4	9
Total (Percentile)	9	9	9	9	36

Figure 4 : Breakdown of Company Count in Percentiles by Enterprise Type

In an effort to gain further insights and trends with respect to the maturity levels from the assessment scores, the 36 companies were binned by percentile across the 4

quantiles, along with a breakdown on the company profile and industry as shown in Figures 1 & 2. This allows Green Compass to provide an overview on how businesses perform in various sustainability domains based on their maturity levels:

1. 1st Quartile, representing the top 25% of companies
2. 2nd Quartile, representing the top middle 25% of companies
3. 3rd Quartile, representing the bottom middle 25% of companies
4. 4th Quartile, representing the bottom 25% of companies

Percentile Level Comparison

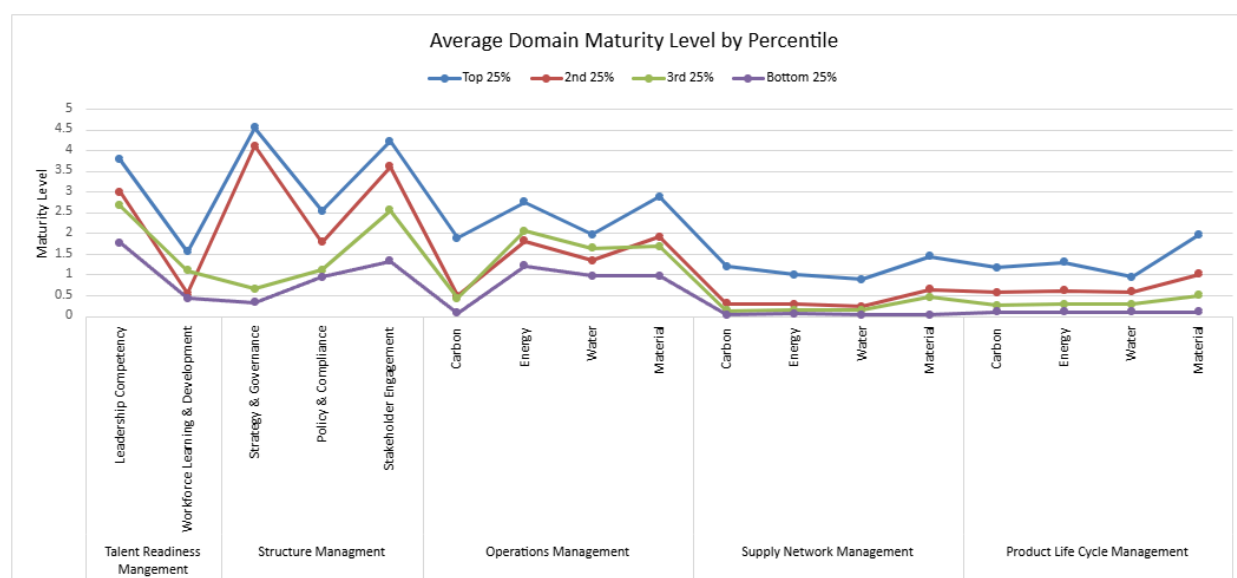


Figure 15: Average maturity levels for each band of percentile

Domain maturity level comparison by Percentile

The chart shows that companies in the top 25% consistently demonstrate the highest maturity across all domains, excelling in areas like leadership competency, stakeholder engagement, and energy management, likely due to their strong focus on sustainability and robust management practices.

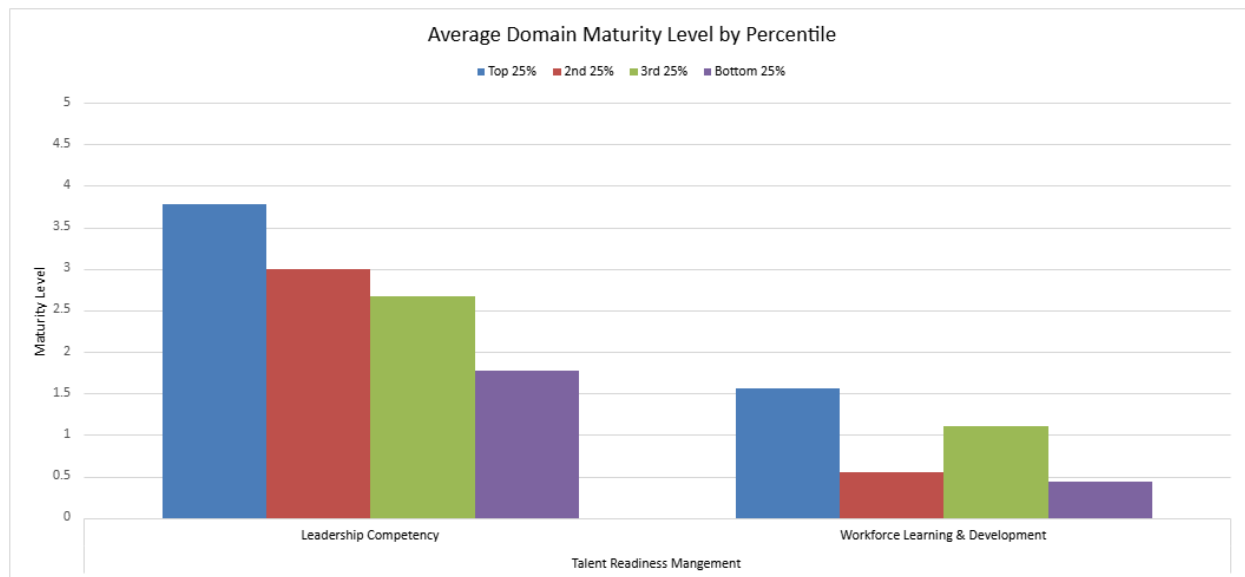
The bottom 25% exhibit the lowest maturity across all domains, particularly in structure management and stakeholder engagement, suggesting limited resources and lower investment in sustainability initiatives. Overall, the data shows a clear correlation between a company's percentile and its ability to mature in both strategic and operational management practices.

[Indicate which domains don't have sub-domains](#)

Start analysis with “Talent readiness Management” Dimension

- In talent readiness management dimension, leadership competency is generally higher than workforce learning and development across the board

Among the 17 domains, 3 domains do not have sub-domains: ‘Leadership Competency’, ‘Workforce Learning & Development’ and ‘Strategy & Governance’. Apart from the two aforementioned domains, we will be diving deeper into the scores of those with subdomains in the report.



Talent Management Dimension Comparison

We can observe that Leadership Competency consistently shows higher maturity levels across all percentiles compared to Workforce Learning & Development. This trend can be explained due to Leadership Competency only requiring upper management stakeholders to drive environmental projects and concepts. Compared to Workforce Learning & Development, training programmes for their employees would require significant investments in training and curriculum design. As such, this would explain the higher maturity levels in Leadership Competency compared to Workforce Learning & Development.

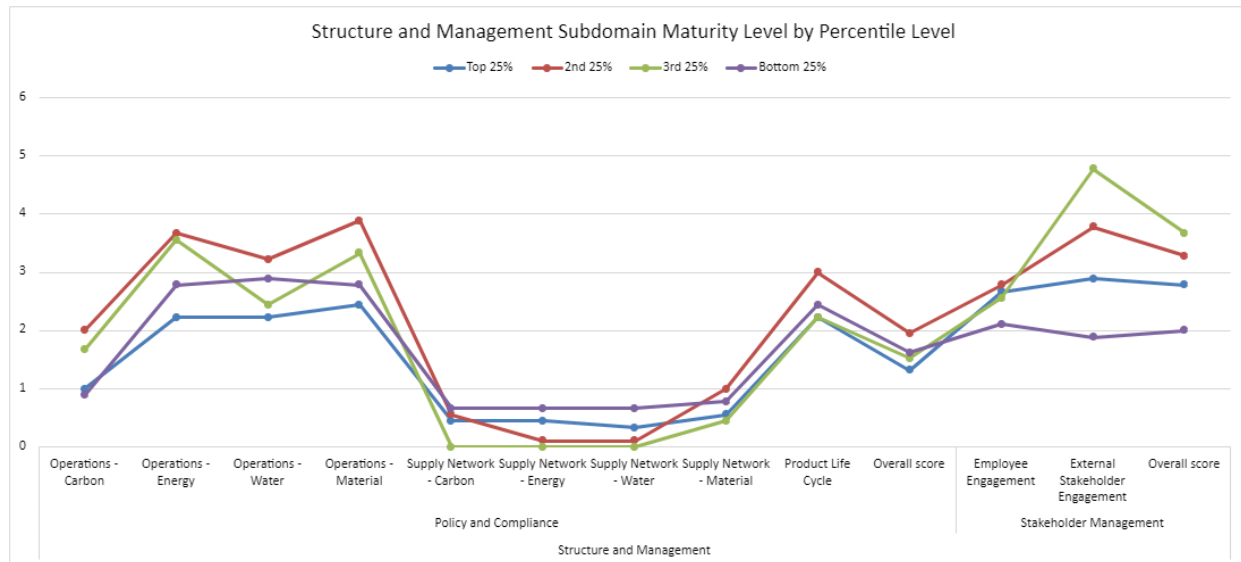


Figure 16: Average subdomain maturity levels for each band of percentile

Structure and Management Subdomain Comparison

Include strategy and governance in figure 16.

The biggest difference between top 50% and bottom 50% across all domains occurs here - why might this be the case?

Describe a bit about what Policy and Compliance measures.

The 3rd 25% may focus heavily on employee and stakeholder engagement as part of their strategy to build strong relationships and maintain operational stability, which results in higher maturity in these areas. The 2nd 25% performs well in operations management, likely due to their investment in process efficiency and resource management, enabling them to optimise their carbon, energy, and material practices.

The top 25%, while excelling in product life cycle and external stakeholder engagement, may prioritise long-term sustainability goals, which can detract from immediate operational maturity. The bottom 25% struggles across most subdomains, likely due to limited resources, a lack of strategic focus, and minimal investment in sustainability or advanced management practices. This overall distribution highlights how different strategic priorities and resource allocation affect maturity level.

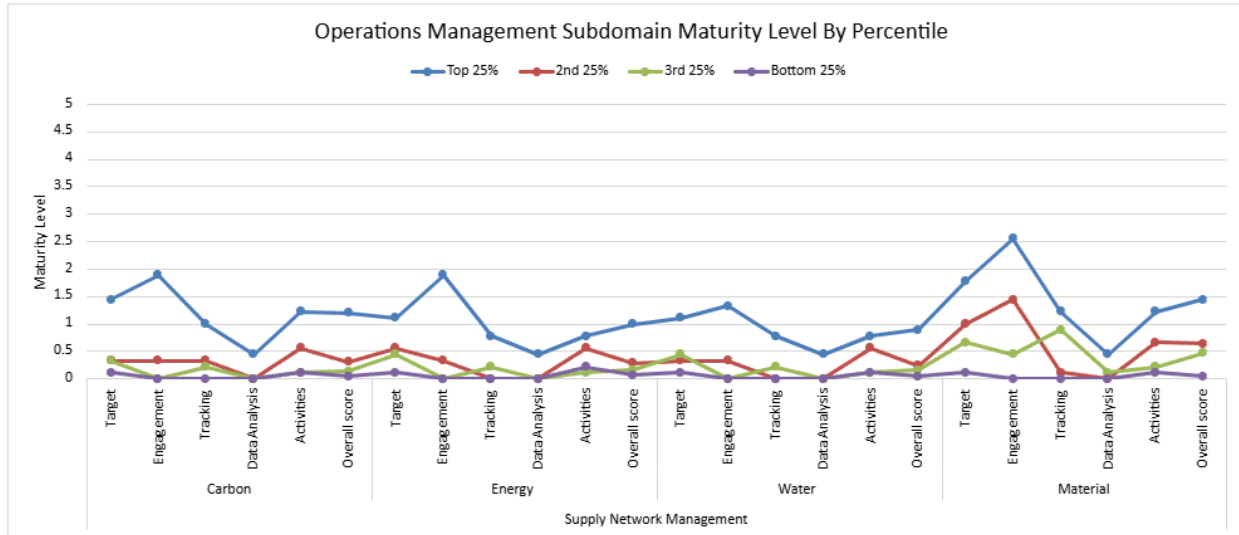


Figure 17: Average subdomain maturity levels for each band of percentile

Operations Management Subdomain Comparison

Bottom 25% tend not to have any targets set, and do not monitor carbon at all.

What's the difference between a 1 and a 3 in measurement?

For energy, water and material, there are pronounced dips in data analysis across all the percentiles (people measure and do activities, but don't analyse) - confirm what we define as "analysis"

Within the Operations Management Subdomain, metrics are measured across Carbon, Energy, Water and Material. In addition, each material is broken down into its own evaluation metrics:

1. Target: Certain targets are set with regards to said material
2. Measurement (I & II): Any forms of consumption to said material is measured
3. Data Analysis: Consumption data of said material is applied for subsequent action
4. Activities: Initiatives are planned or implemented for reduction of said material's consumption

The top 25% focuses heavily on optimising processes and integrating sustainability across their operations, resulting in higher maturity in data-driven and measurable metrics. The 2nd 25% likely invests in solid operational structures but may not have the same resources or strategic focus on advanced metrics like data analytics. The 3rd 25% may focus on foundational processes, maintaining steady but moderate performance, while the bottom 25% likely struggles due to limited resources and minimal investment in advanced operational and sustainability practices.

We can also observe that for the bottom 25%, these companies do not set targets across all 4 material groups. It may be the case due to differing business objectives. They may focus on short-term financial goals that would as such de-prioritise sustainability initiatives.

Specifically, we can also see that the bottom 25% barely does any tracking, analysis or initiatives for the carbon front. This may be the case due to energy, water and material being more directly measurable compared to carbon emissions. They can be tracked by procurement records and utility bills. However with carbon, especially for scope 3, would be complex to measure. In addition, reducing energy consumption, water usage or even material waste can often result in a direct cost saving to the company. However with carbon reduction, it can be hard to observe any direct financial benefits.

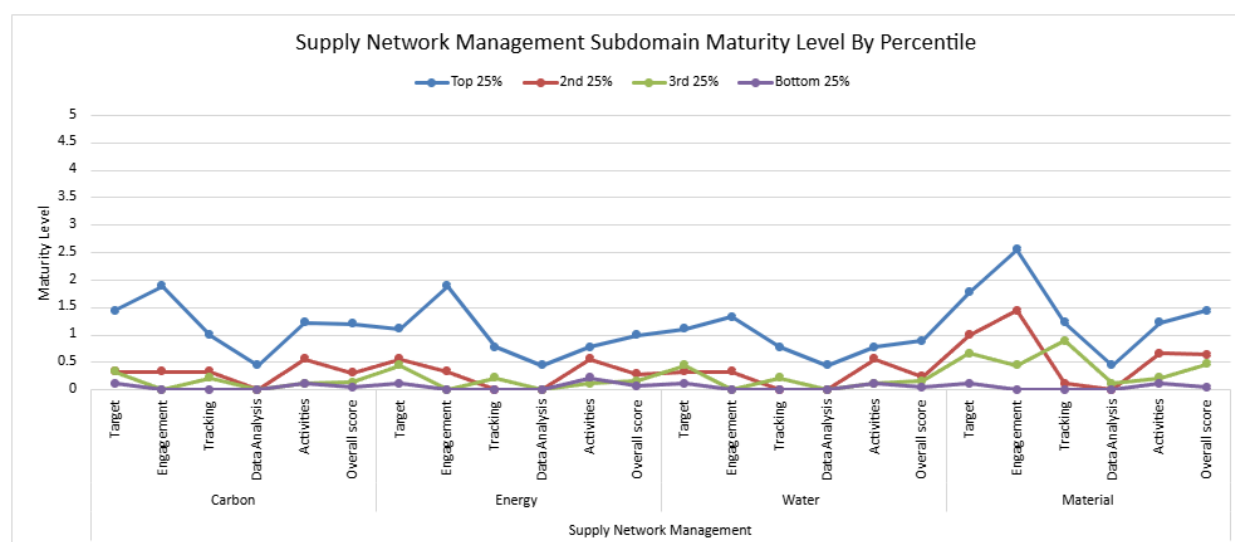


Figure 18: Average subdomain maturity levels for each band of percentile

Supply Network Management Subdomain Comparison

Bottom all less than 0.5 - they have little control. Top are MNCs and LLEs - able to influence. Even then, their scores are less than 2.5. Spikes in engagement, which is a good first step, and is coupled with higher scores for targets.

Top 25% prioritises optimising their supply chain, investing heavily in engagement and analytics to maximise efficiency and performance. The 2nd 25% likely focuses on core supply chain operations but may lack the resources or strategic emphasis on data analytics, leading to lower performance in advanced areas. The 3rd 25% may emphasise basic supply chain functions, which results in moderate but limited maturity. Meanwhile, the bottom 25% likely faces resource constraints and minimal investment in advanced supply chain practices, causing consistently lower maturity across all metrics.

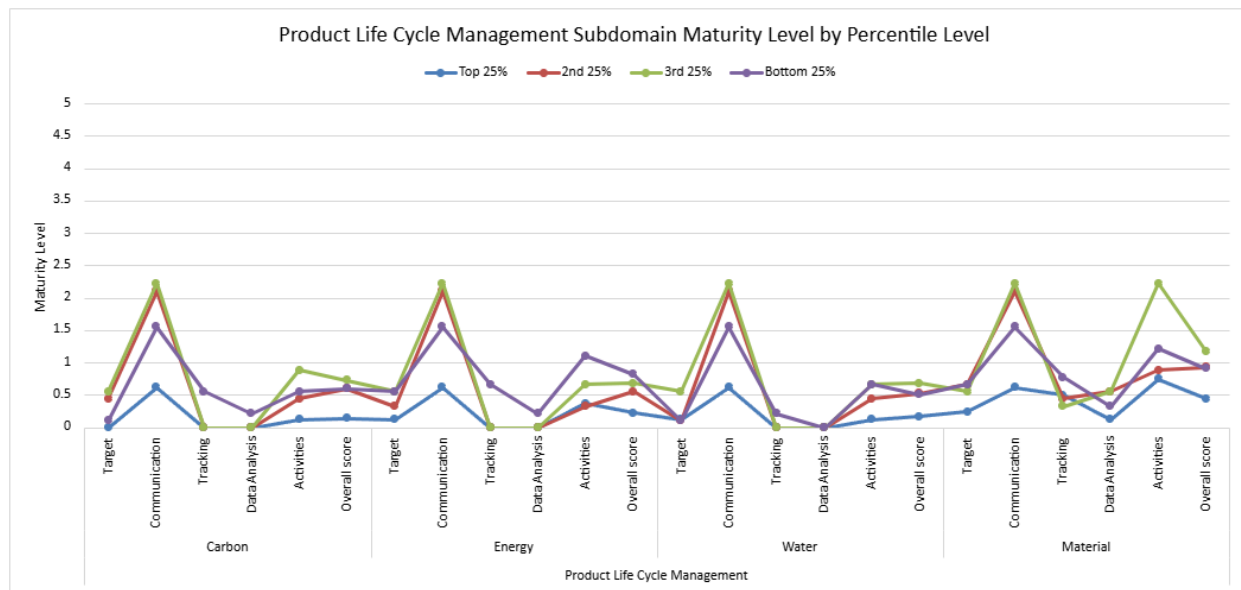


Figure 19: Average subdomain maturity levels for each band of percentile

Product Life Cycle Management Subdomain Comparison

Spikes in communication - what are they doing well?

Across all materials evaluated, we can observe consistent peaks in the communication metric. This can be due to consumers increasing awareness in environmental issues, and as such, companies would be expected to align with these values and demonstrate a degree of awareness as well. Therefore, they would invest more effort in their communication efforts, ensuring they effectively convey environment related information for their products.

The 3rd 25% focuses heavily on practical, operational management tasks like communication and tracking to maintain solid performance across product life cycle management. The 2nd 25% may invest more in foundational processes such as target setting and tracking, leading to consistent but slightly lower overall maturity. The top 25%, while emphasising strategic areas like tracking, might prioritise different aspects of the product life cycle, leading to more varied performance across metrics. Meanwhile, the bottom 25% likely faces resource limitations and lacks a strategic focus on detailed monitoring, contributing to consistently lower maturity in advanced areas like data analysis and tracking.

Manufacturing VS Non-manufacturing Domain Comparison

Add a table with the number of companies in each band

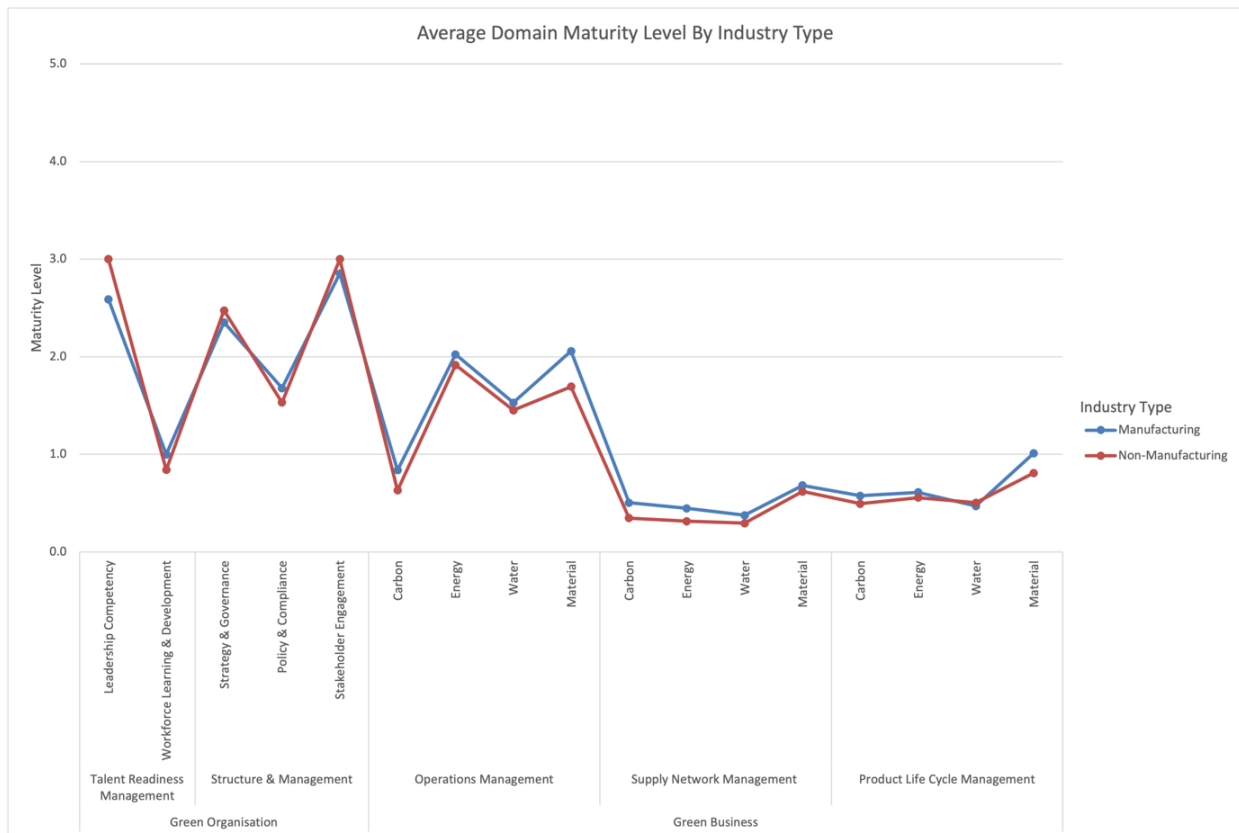
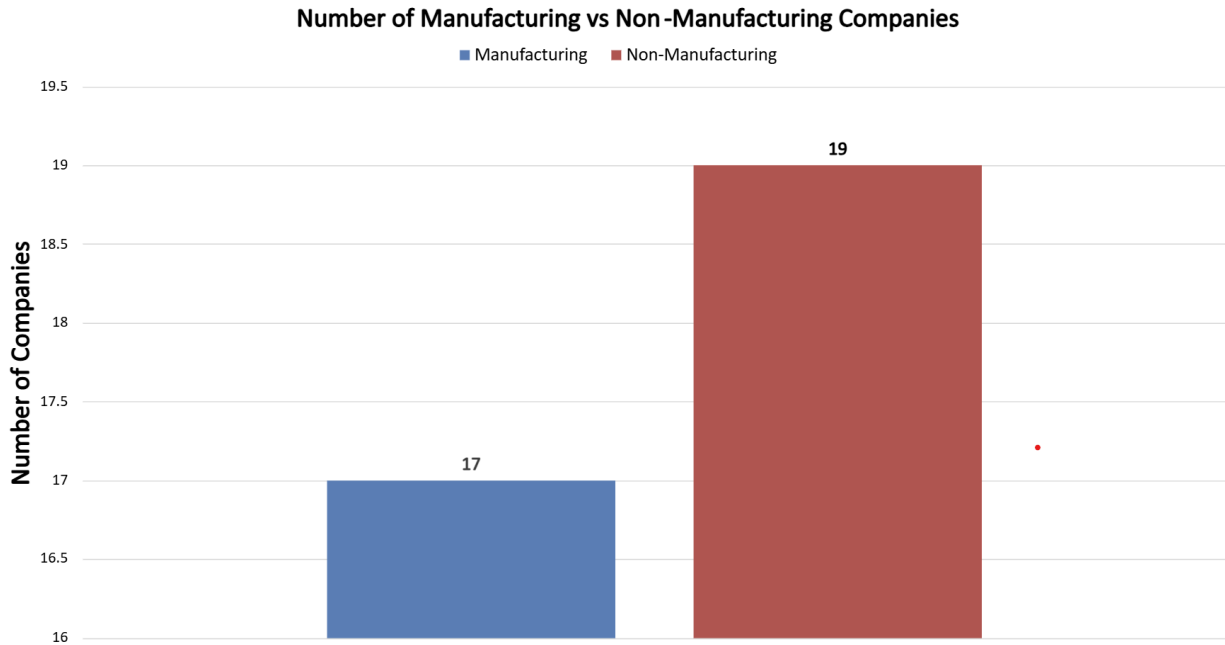


Figure 25: Average maturity levels for each band of industry

Across both industries, the maturity levels for all dimensions have relatively stayed consistent. Nonetheless, there are still certain disparities when diving further into specific dimensions.

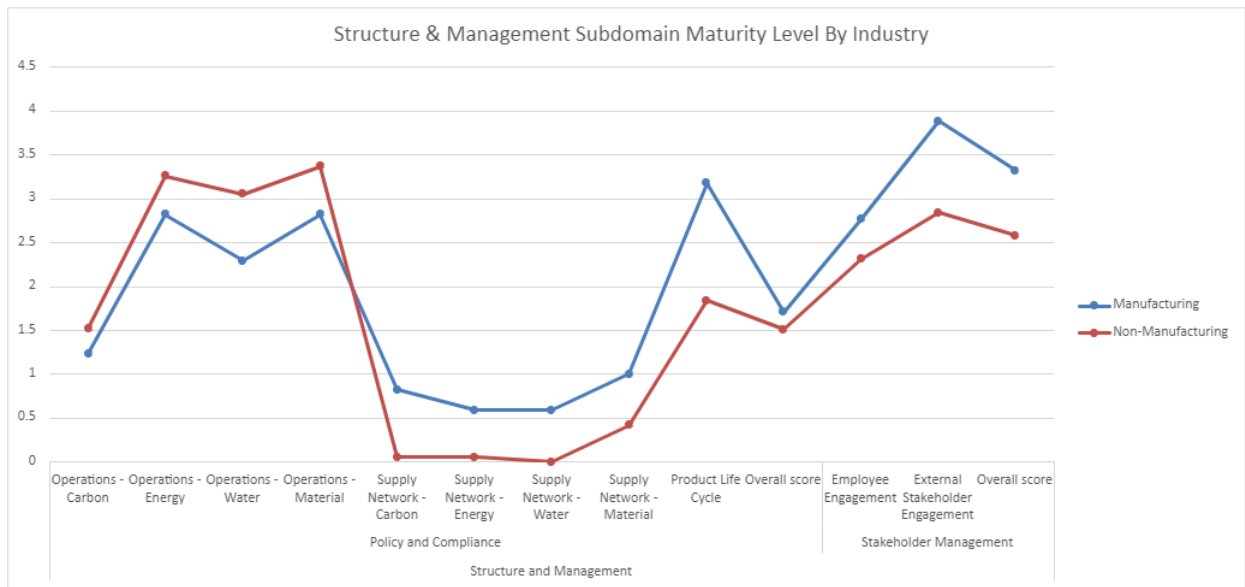


Figure 26: Average subdomain maturity levels for each band of industry

Structure and Management Subdomain Comparison

From figure 26, we can observe that non-manufacturing has scored better in “Operations” categorised subdomains. This can be due to the nature of non-manufacturing companies, where they produce services instead of physical goods. Manufacturing companies would require factories and machinery to produce goods, which can make it more challenging to lower emissions. Compared to non-manufacturing companies, many can adopt digital practices such as remote work or virtual meetings that reduce their emission output, allowing them to comply more with external regulations or implement internal sustainability initiatives without extensive changes to their business models.

That being said, Non-Manufacturing companies have scored lower in “Supply Network” categorised and “Product Life Cycle” subdomains. Economically, manufacturing companies naturally may have more complex and extensive supply networks for raw material or components. As such companies would want to invest more in tracking the performance of such suppliers, including environmental impacts such as waste emission across the entire production life cycle. In addition, consumers generally take into account the environmental impact of physical goods from manufacturing industries compared to services from non-manufacturing industries. This perception may have allowed non-manufacturing companies to focus less on the environmental impact such as energy use on their services, resulting in companies to not take into account the sustainability practices from their suppliers.

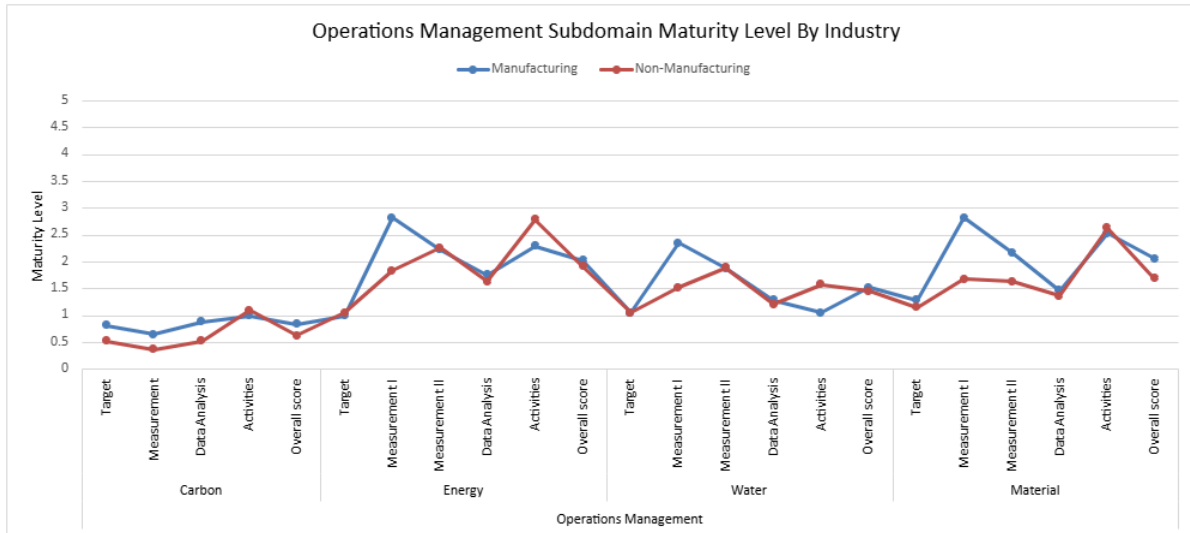


Figure 27: Average subdomain maturity levels for each band of industry

Operations Management Subdomain Comparison

Non-manufacturers typically don't use materials (check spending percentage), so it may not be so important to monitor. Is it things like paper and stationary etc vs raw materials for manufacturers?

All other sub-domains are similar

From figure 27, we can observe that the maturity levels in the activities (seem quite similar to me) subdomain is higher in non-manufacturing industries than manufacturing. This can be due to the nature of non-manufacturing companies already having a smaller direct carbon footprint, selling services or skilled labour that do not require raw materials. Any initiatives introduced may not directly impact their products, allowing for quicker implementation. In contrast, manufacturing industries that often involve different complex production stages would require a significant amount of time and effort to implement or pilot new initiatives to cut down wastage, explaining the lower maturity levels in manufacturing industries.

From figure 27, it indicates that average maturity scores for sub-domain Measurement I is significantly higher in Manufacturing industries than Non-Manufacturing. In manufacturing industries, energy and water costs can be a large portion of their operational expenses. As such, it would be intuitive for such industries to employ various measurement methods across their facilities to optimise their production processes. Compared to non-manufacturing companies, their business models typically have less complex ways of utilising such resources, not requiring any detailed measurement systems.

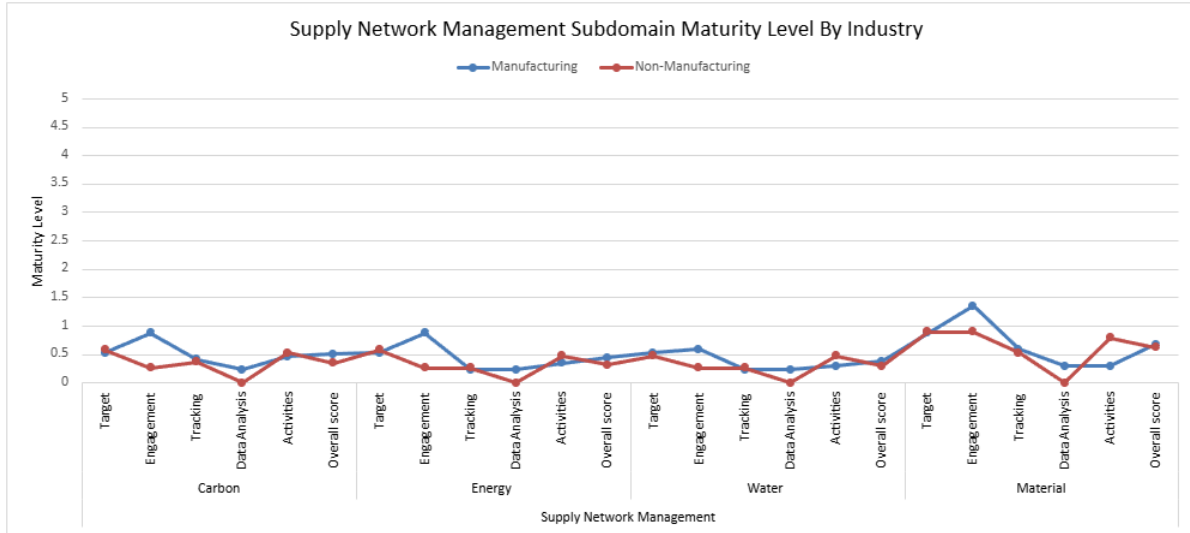


Figure 28: Average subdomain maturity levels for each band of industry

Supply Network Management Subdomain Comparison

Note that all scores are quite low. Manufacturing tend to have high engagement compared to the other sub-domains.

Non-manufacturing tend to have low data analysis. Is this also related to the fact that they don't need so many inputs (E,W,M) to their businesses?

Within the Supply Network Management Domain, we can observe that the maturity scores for engagement and data analysis are higher in manufacturing industries than non-manufacturing. A significant factor that can drive manufacturing industries to request environmental data from suppliers can be the regulations when importing and using raw materials for production of goods. Manufacturing industries are usually required to comply with these regulations and to avoid penalties, they would require environmental data to ensure that their entire supply network meets certain environmental standards. Compared to non-manufacturing industries, they typically have less complex supply chains with fewer direct environmental impacts. As such, they may not require the same level of detail of environmental data from suppliers.

Similar explanations can be made to explain the data analysis maturity scores as well. Non-manufacturing industries may have different priorities when producing their goods of service. They typically do not have complex supply chains that require in-depth supplier data analysis and may only focus more on their internal practices for production.

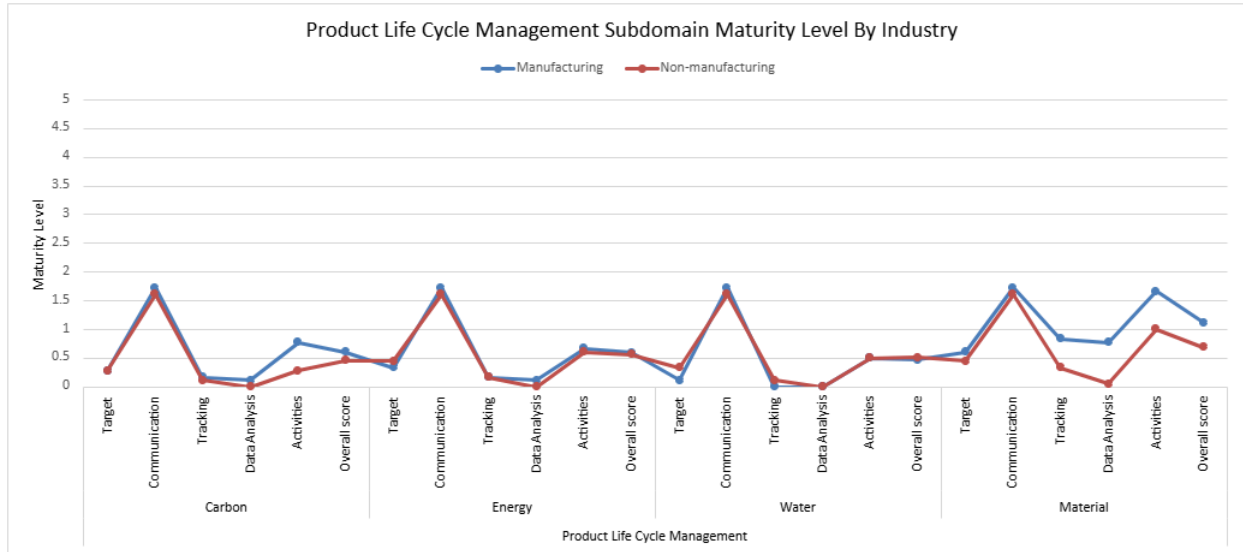


Figure 29: Average subdomain maturity levels for each band of industry

Product Life Cycle Management Subdomain Comparison

Across most domains, data analysis and activities subdomains in manufacturing industries have scored higher than non-manufacturing industries. Naturally, services provided by non-manufacturing require less physical materials compared to the goods of manufacturing companies, and thus would be faced with lesser regulatory pressure by governments. As such, non-manufacturing companies may be less inclined to implement any new sustainability practices, explaining the lower activities scores compared to manufacturing companies.

To explain the difference in maturity levels in data analysis, it can be due to the complexity in supply chains with multiple suppliers. This would require a higher degree of tracking and analysis to manage the environmental impact of their suppliers, and resources used throughout the product life cycle. Compared to non-manufacturing sectors, they tend to have simpler supply chains, and as such will not require the same level of data analysis compared to manufacturing companies.

Employee Size Level Comparison

Add a table with the number of companies in each band

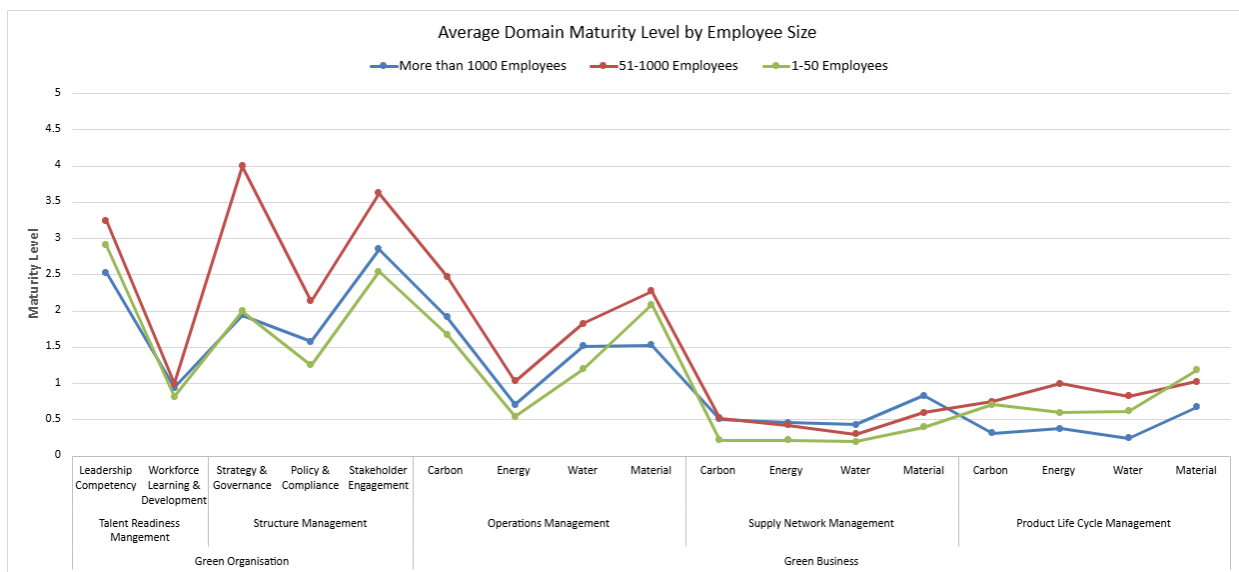
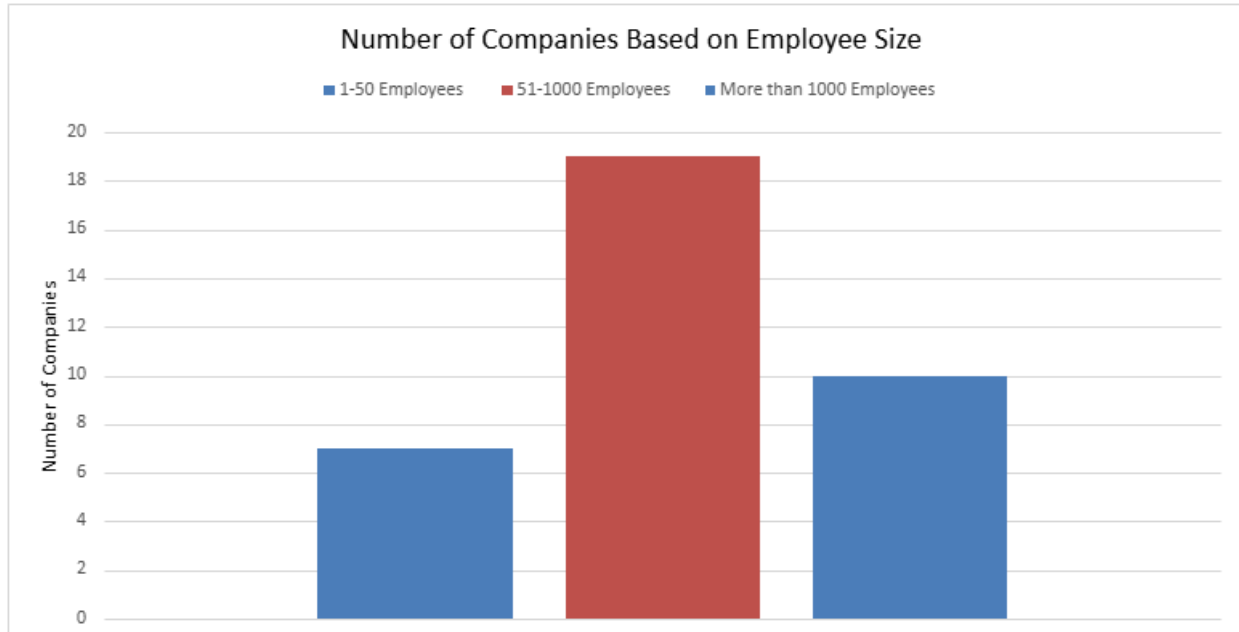


Figure 10: Average maturity levels for each band of employee size

Domain Maturity Level Comparison

Medium-sized companies tend to exhibit higher maturity levels in areas like talent readiness management and structure management because they are often in a growth phase, requiring a stronger focus on leadership, strategy, and governance to scale effectively. They may also have more flexible structures than larger companies, allowing them to adopt new practices quickly, but with more resources than smaller companies, enabling them to invest in talent development and governance

Large companies, while stable, may face bureaucratic challenges that slow down the adoption of new strategies, leading to more moderate maturity levels. Small companies, on the other hand, often have fewer resources and may focus on core operational activities, resulting in lower maturity levels in strategic and governance areas.

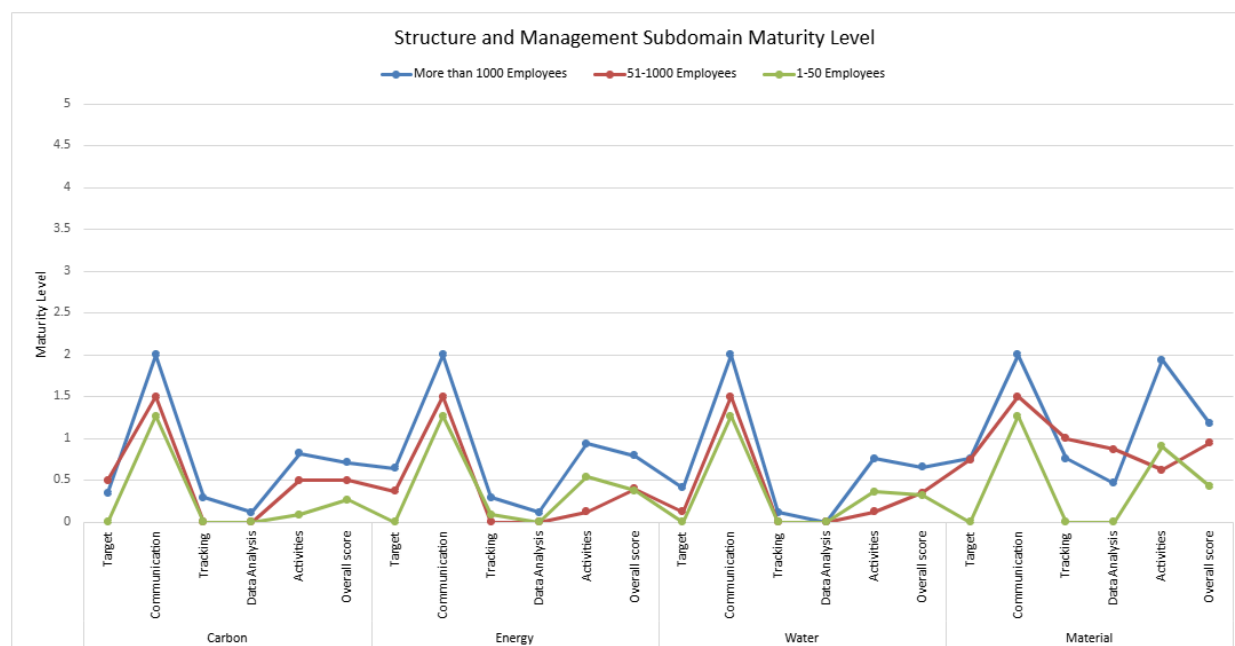


Figure 11: Average subdomain maturity levels for each band of employee size

Structure and Management Subdomain Comparison

Profile is mostly similar, where supply network-related policy and compliance are low.

Medium-sized companies consistently outperform large and small companies in operational subdomains such as "Operations - Carbon," "Operations - Energy," and "Supply Network Management," likely due to their ability to balance flexibility and resource availability, allowing them to adopt sustainable practices more effectively.

Large companies perform moderately, possibly hindered by bureaucratic structures that slow down the implementation of new initiatives. Small companies, with limited resources and capacity, exhibit the lowest maturity levels across most subdomains, focusing on core operations rather than investing heavily in sustainability measures.

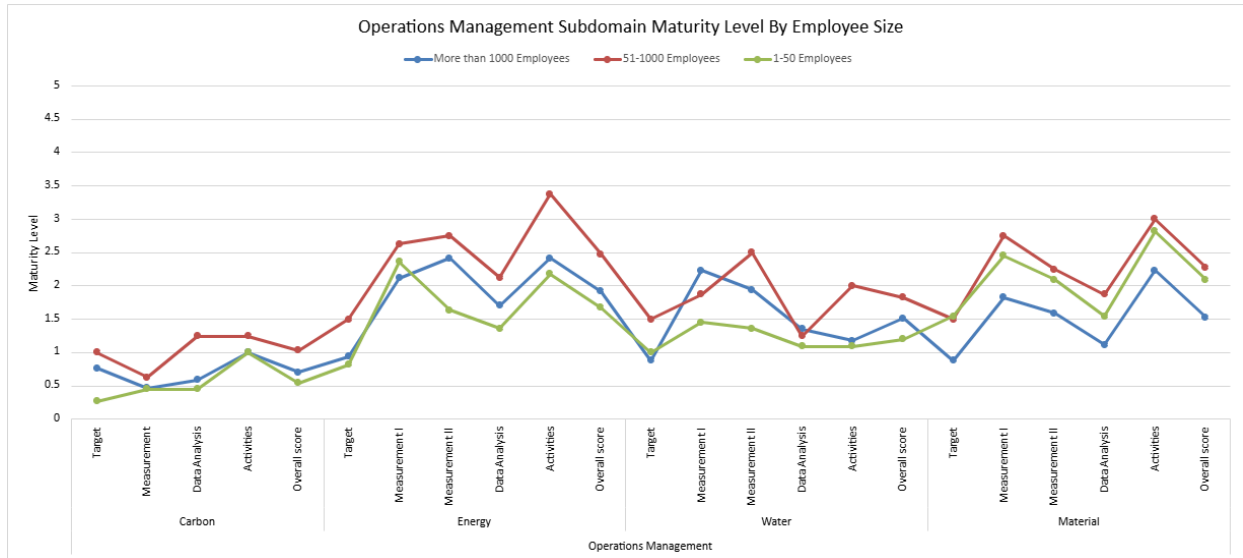


Figure 12: Average subdomain maturity levels for each band of employee size

Operations Management Subdomain Comparison

Profile also similar, medium does slightly better than large

Small companies consistently exhibit the lowest maturity across all metrics, likely due to limited resources and a focus on core operations rather than sustainability initiatives. The higher maturity levels of medium-sized companies can be attributed to their focus on sustainability to remain competitive and scalable, while large companies may face bureaucratic delays in implementing new strategies, and small companies prioritize essential business functions over comprehensive sustainability efforts.

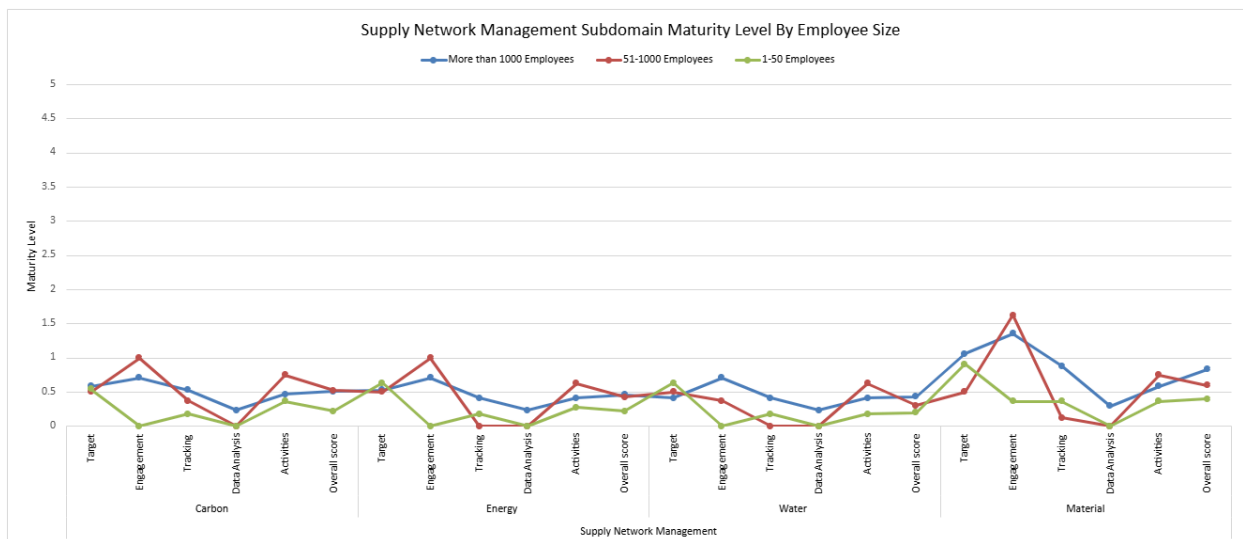


Figure 13: Average subdomain maturity levels for each band of employee size

Supply Network Management Subdomain Comparison

Would we expect large companies to do significantly better? Why?

Medium-sized companies generally lead in supply network management maturity, particularly excelling in areas like engagement targets and data analysis for carbon and energy management. Large companies perform well in certain areas, such as material management, but exhibit more variability, possibly due to their complex organisational structures, which can slow decision-making and implementation of initiatives. Small companies consistently show the lowest maturity across all metrics.

Medium-sized companies may benefit from being agile enough to implement changes quickly while still having sufficient resources, whereas large companies face operational challenges, and small companies focus more on survival and essential operations.

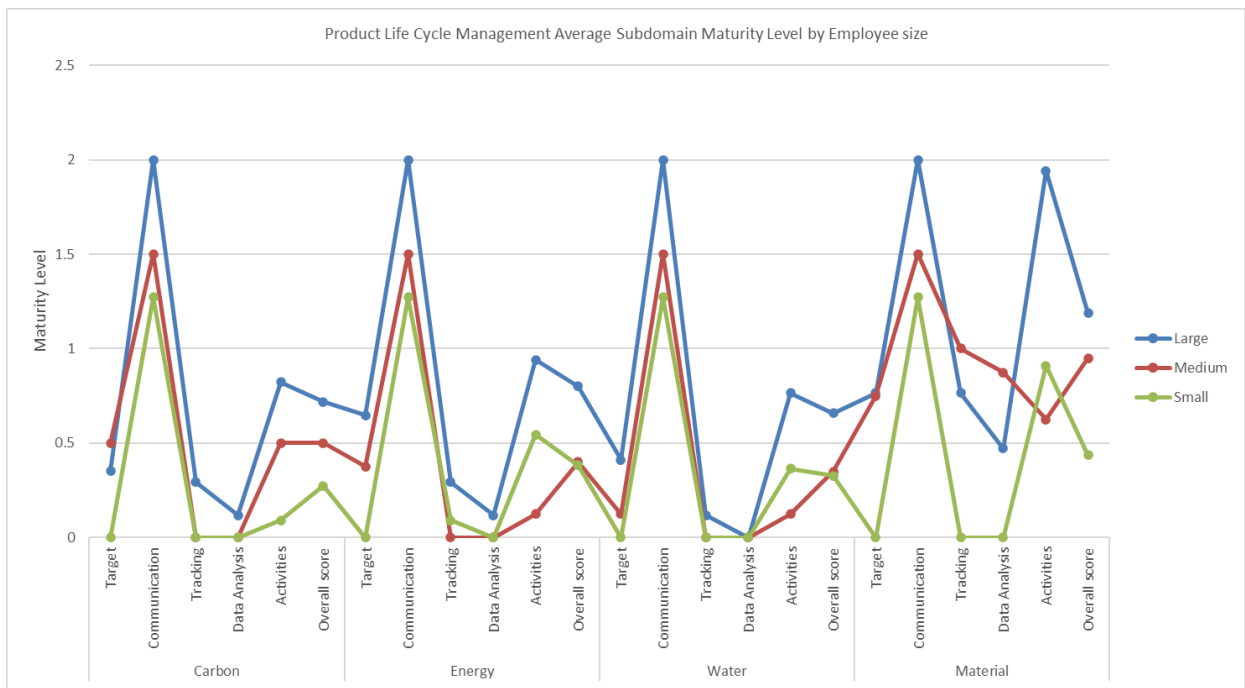


Figure 14: Average subdomain maturity levels for each band of employee size

Product Life Cycle Management Subdomain Comparison

Large companies consistently demonstrate higher maturity across all subdomains of product life cycle management, particularly excelling in areas like communication, training, and data analytics for carbon, energy, water, and material management. Medium-sized companies follow closely but generally lag behind large firms, reflecting moderate maturity as they advance but with fewer resources and less extensive systems in place. Small companies show the lowest maturity across all metrics.

Revenue Level Comparison

Add a table with the number of companies in each band

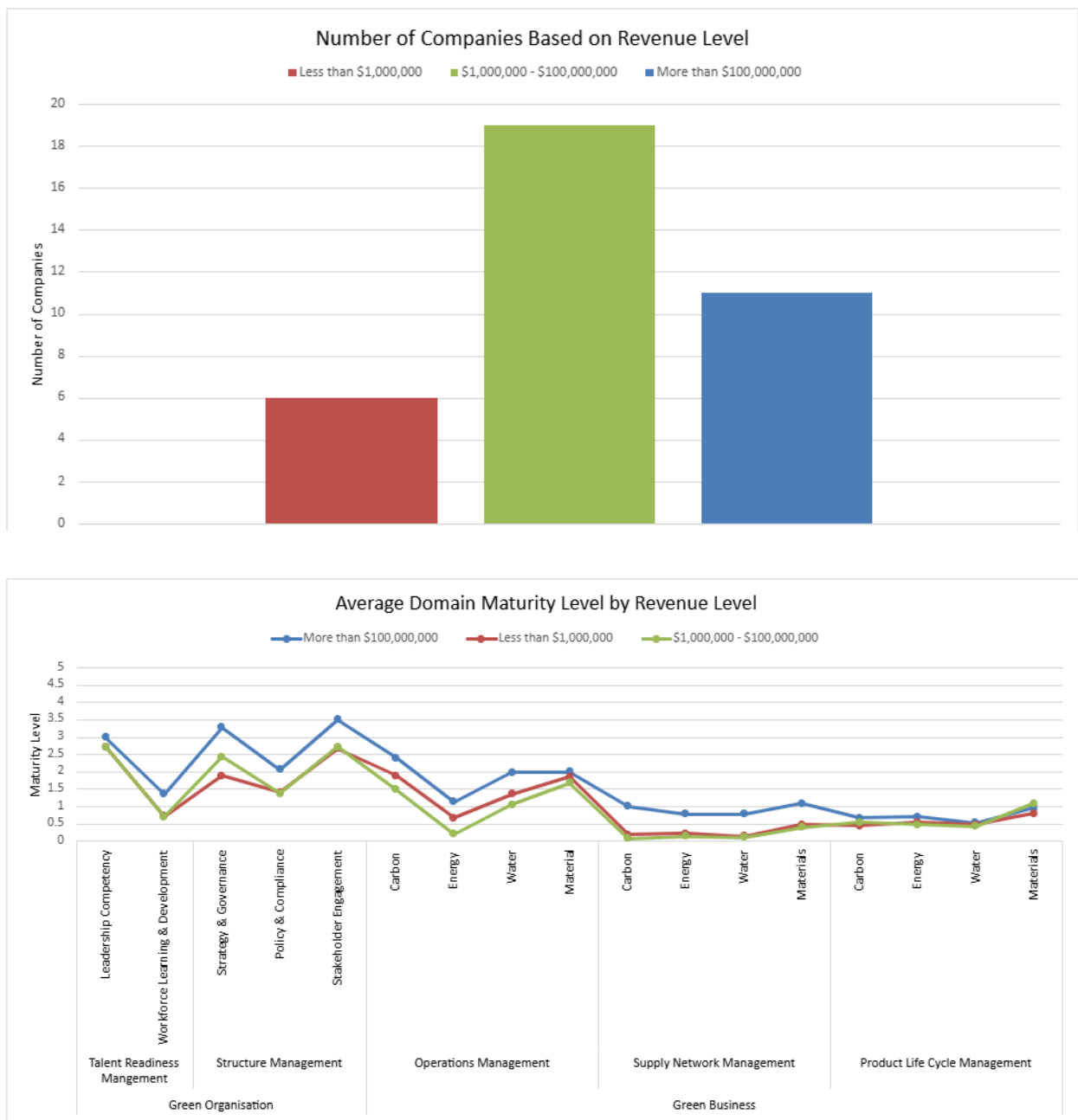


Figure 5: Average maturity levels for each band of revenue

Domain Maturity Level Comparison

There is an overall similar trend for all types of revenue fluctuating in the same domains with dips in maturity level for operations management - carbon and peak in structure management - stakeholder management. This may be due to similar planning strategies that are prioritised by companies of all revenues.

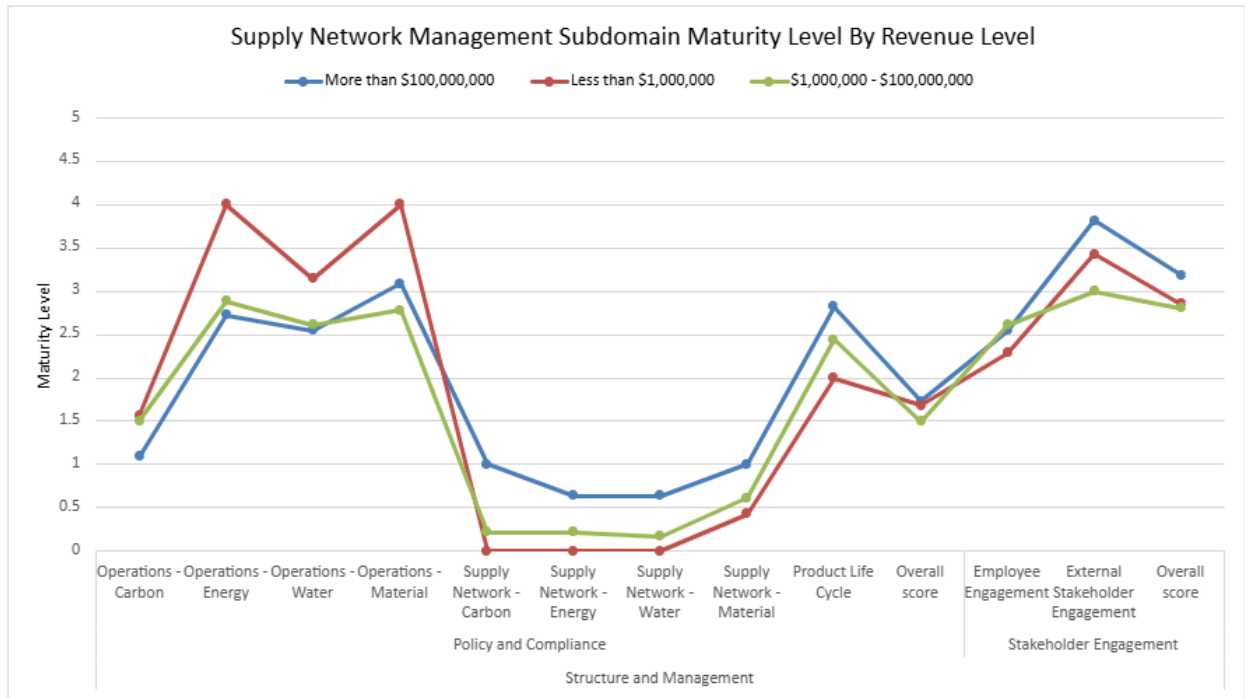


Figure 6: Average subdomain maturity levels for each band of revenue

Structure and Management Subdomain Comparison

The maturity levels fluctuate across all revenue bands, with high revenue companies showing more pronounced peaks and dips. Specifically, companies with high revenue exhibit notable peaks in "Supply Network - Material" and "External Stakeholder Engagement," suggesting a strong focus on these areas. Conversely, they show dips in subdomains such as "Operations - Energy" and "Supply Network - Energy," which may indicate lower prioritisation or more complex challenges in those areas.

These trends suggest that larger companies, with higher revenue, tend to have more advanced and structured sustainability strategies, while mid and low revenue companies, though engaged, may not have the same resources or focus.

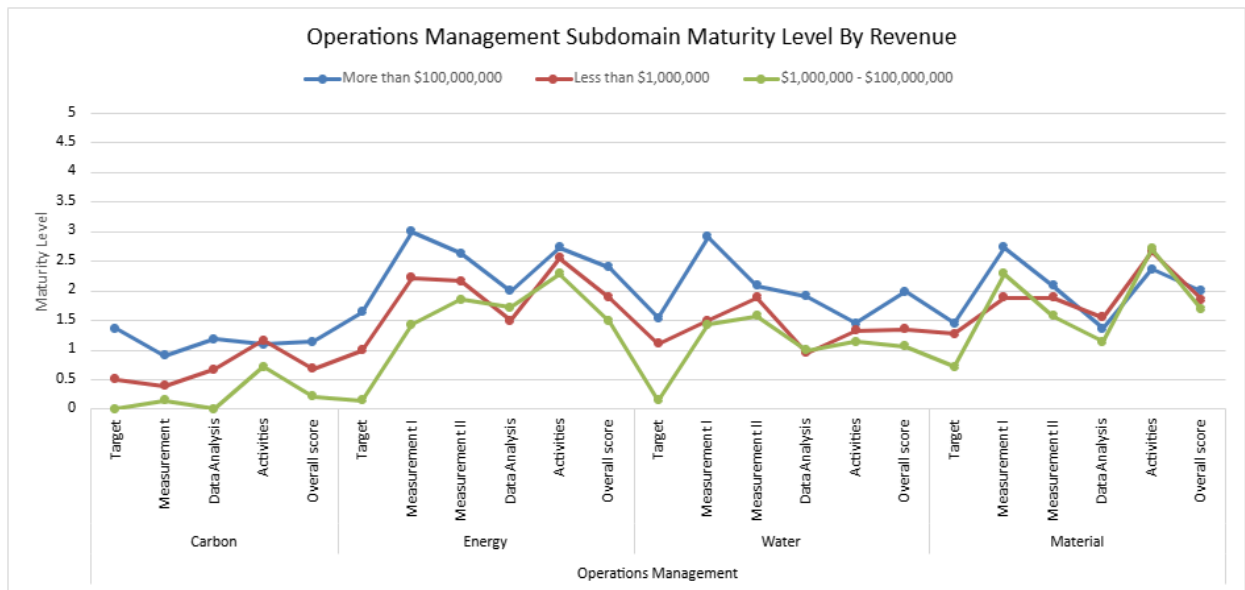


Figure 7: Average subdomain maturity levels for each band of revenue

Operations Management Subdomain Comparison

High revenue companies consistently demonstrate the highest maturity levels across almost all subdomains, particularly in advanced measurements and data analysis, reflecting their ability to implement more sophisticated and comprehensive management systems.

Mid-revenue companies show significant fluctuation, often dipping in key areas such as measurement and data analysis, which may indicate less structured or resource-intensive processes.

Low-revenue companies maintain a more steady but lower performance across all metrics, likely due to fewer resources and a narrower focus on basic operational metrics.

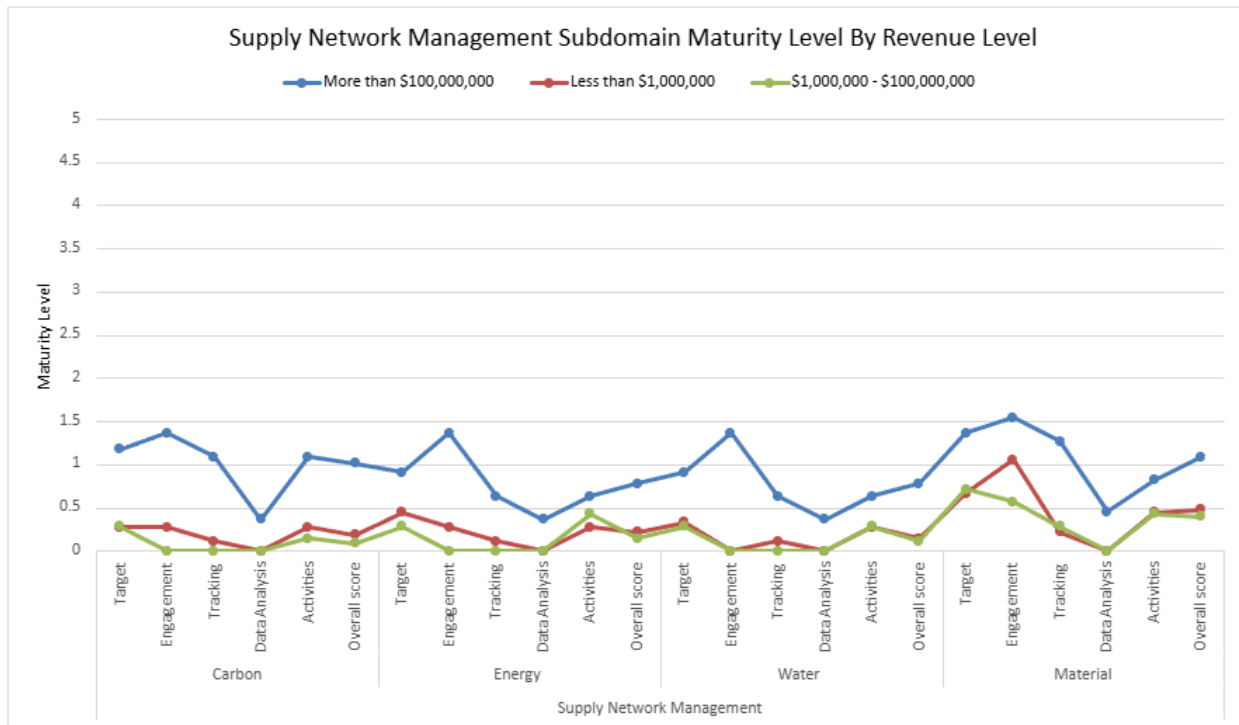


Figure 8: Average subdomain maturity levels for each band of revenue

Supply Network Management Subdomain Comparison

High-revenue companies consistently demonstrate higher maturity in supply network management across all categories, particularly excelling in "Engagement Targets" and "Overall score." This suggests that they have more structured and advanced approaches to managing their supply networks, supported by better analytics and engagement strategies.

In contrast, mid-revenue companies show significant variability, particularly in material and water management, while low-revenue companies maintain a flat but lower maturity across all metrics. This may be due to them being amateurs in the industry with limited capitals and connections restricting their abilities to hit higher maturity levels.

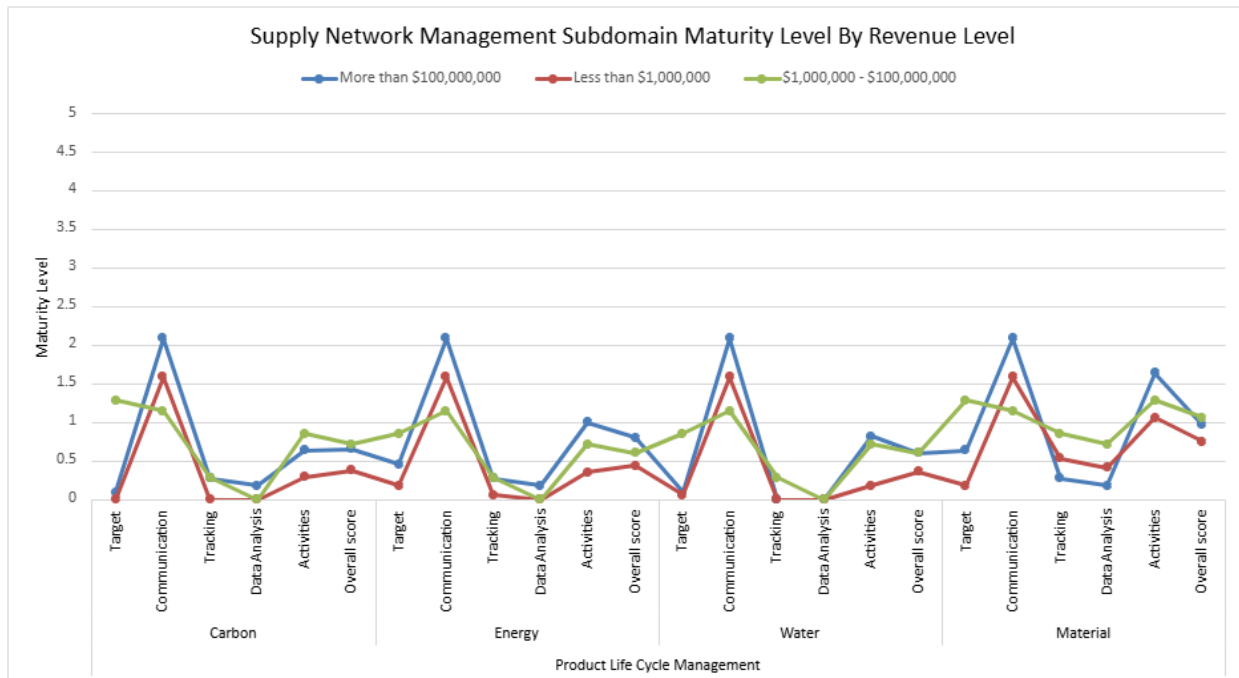


Figure 9: Average subdomain maturity levels for each band of revenue

Product Life Cycle Management Subdomain Comparison

High-revenue companies consistently demonstrate the highest maturity across all subdomains, particularly excelling in target-setting, communication/training, and data analytics, indicating a more advanced and structured approach to product life cycle management.

Mid-revenue companies show inconsistent performance, with occasional improvements in areas like data analytics but generally lower maturity levels compared to high-revenue organisations, likely due to resource constraints or less comprehensive management practices.

Low-revenue companies maintain the lowest and most stable maturity levels across all metrics, suggesting a focus on basic operational activities and limited capacity to implement advanced practices like data analytics or robust product life cycle strategies.

Enterprise Level Comparison

Add a table with the number of companies in each band

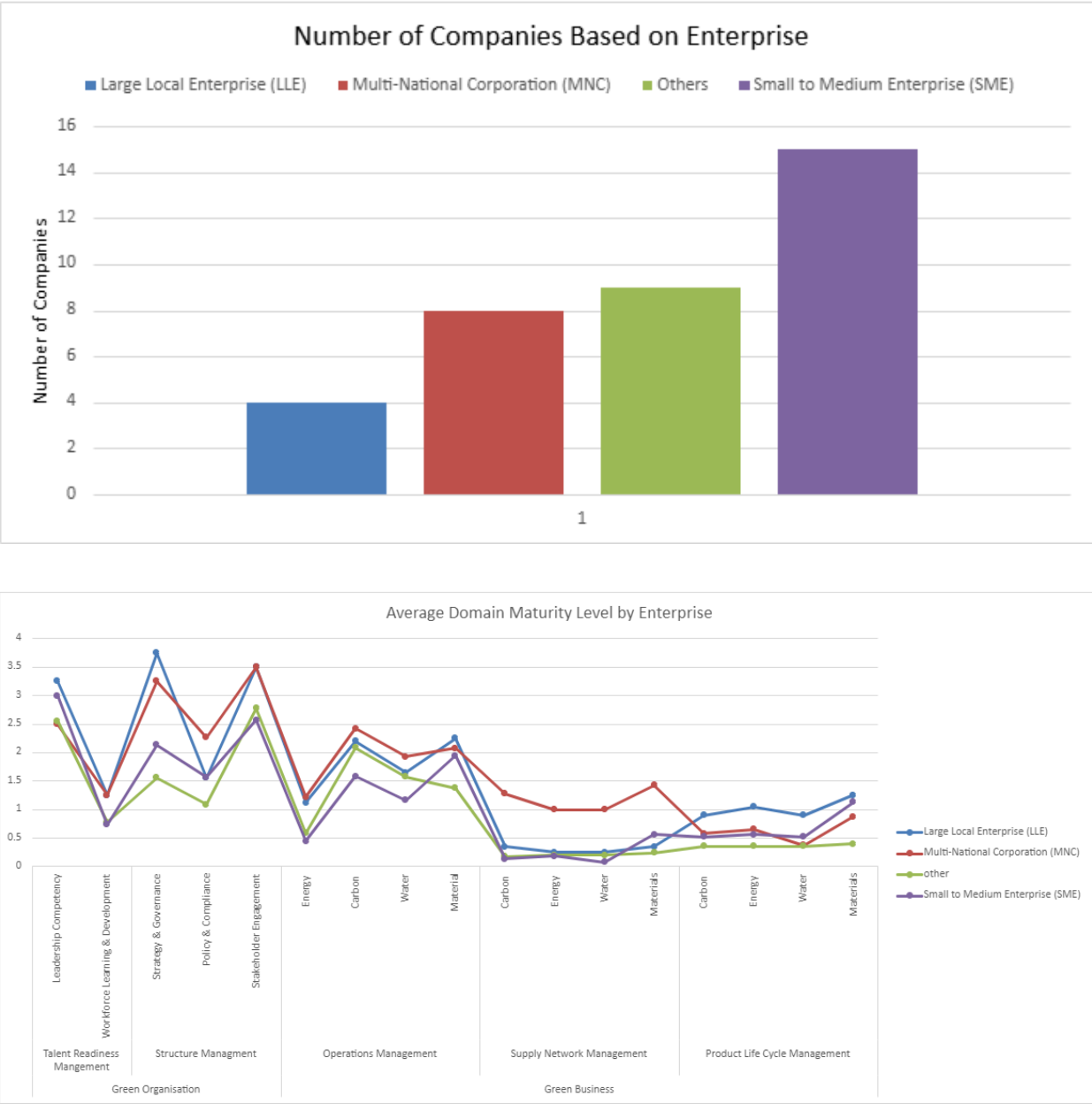


Figure 20: Average domain maturity level by enterprise type

MNCs are more mature on average compared to other enterprise types for domains

MNCs had significantly better maturity levels (average of 1) for Supply network management compared to the rest of the enterprises (average of 0). 'Others' and SMEs tend to fare poorer across all domains as compared to LLEs and MNCs. A crucial factor resulting in this observation is the high barriers to sustainability for SMEs. These barriers are often lack of resources, high initial capital cost of implementing sustainability measures, and lack of expertise.

LLEs scored best for Product life cycle management. LLEs have more direct control over their operations and suppliers, a closer monitoring of resource usage and waste generation across the entire life cycle. Local companies may be more responsive to stricter environmental regulations and consumer demand for sustainable products in their specific markets. This can incentivise them to adopt cleaner technologies and optimise resource usage. Simpler supply chains and potentially less complex products make it easier to track resource use and implement sustainable practices throughout the life cycle. However, they might lack dedicated resources for managing sustainability across the entire chain.

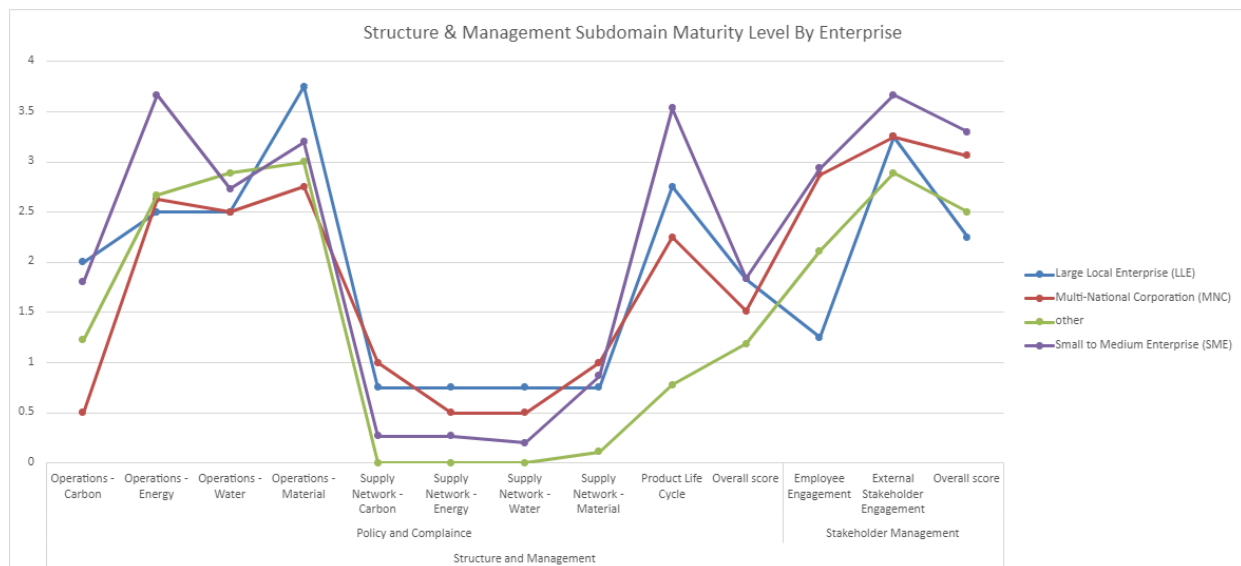


Figure 21: Average subdomain maturity levels for each band of enterprise

Operations Categorised Subdomains have scored significantly higher than Supply Network Categorised Subdomains

From figure 21, we can observe that across all enterprises, “Operations” categorised subdomains have scored significantly higher than “Supply Network” categorised subdomains. A reason for this can be the fact that companies often have more direct control over their internal operations and policies, allowing for easier implementation and tracking of sustainability practices. In addition, regulations and laws established by countries cannot be avoided. As such, companies will have to implement more established practices for compliance, leading to higher maturity scores.

Compared to the “Supply Network” categorised subdomains, engaging suppliers to adhere to sustainability practices, especially if companies have a more complex supply network can prove to be challenging. Companies naturally would source suppliers based on the lowest cost option and not better sustainability practices. As such, there is a noticeable disparity between operations and supply network maturity levels.

Dimensions for Carbon within Operations Subdomains are scoring lower than the other dimensions in the same subdomain across all Enterprises

From figure 21, we can observe that the scores for “Operations - Carbon” are performing worse than the rest of the dimensions within the Operations Subdomain across all enterprises. The lower maturity levels can be due to the fact that capturing carbon emissions can be challenging, compared to energy or water capturing. There are indeed technologies available to manage carbon emissions, but the complexity or costs incurred may deter companies to do so. Compared to water or energy capturing which can be done through the metres already installed in buildings, carbon would require additional tools to be measured.

In addition, to completely capture and report carbon emissions, scope 2 and 3 emissions will have to be measured as well. This includes knowing the carbon emissions from both upstream and downstream activities within all sold products, which can be hard to obtain if their suppliers are externally sourced. As such, this can explain the lower maturity scores compared to the other resources within the operations subdomain.

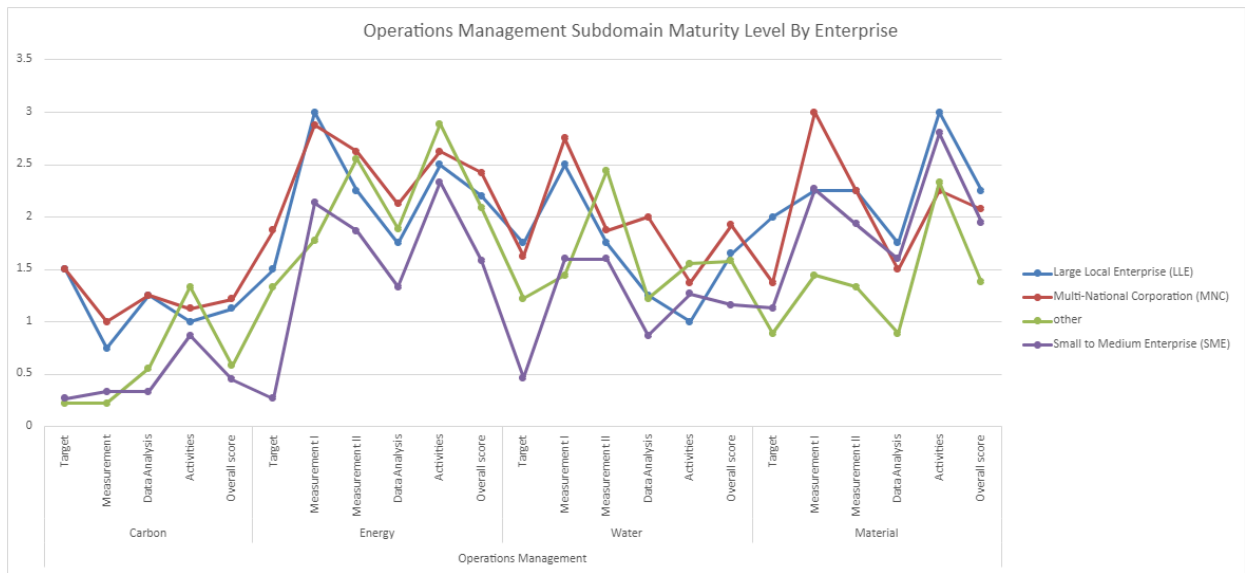


Figure 22: Average subdomain maturity levels for each band of enterprise

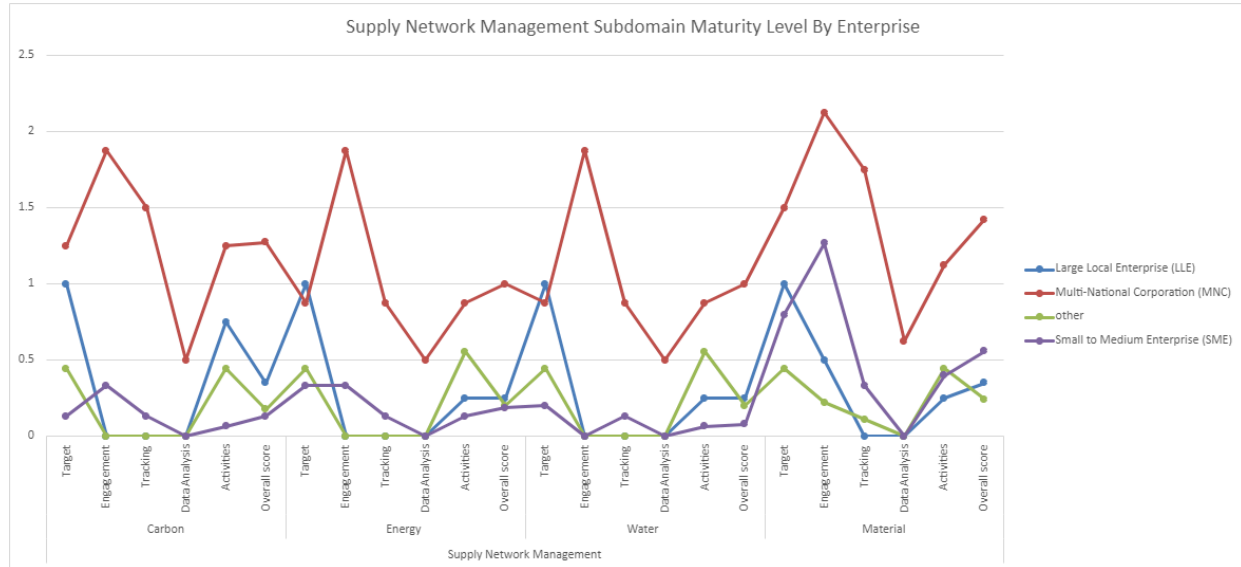


Figure 23: Average subdomain maturity levels for each band of enterprise

MNCs has generally shown higher maturity levels across all subdomains compared to other enterprises

From figure 23, we can see that MNCs have higher maturity levels compared to all the other enterprises, specifically significant spikes in “Target” and “Engagement” subdomains. This can be due to the rising demand in sustainable, environmentally friendly products, resulting in MNCs facing more market pressure for more sustainable practices. As such, MNCs would want to be more aware about the environmental initiatives or regulations that their direct suppliers have adopted, explaining the higher maturity levels in the “Target” subdomain.

In addition, larger companies like MNCs produce goods or services on a greater scale and complexity. Therefore, such companies would select their suppliers based on past data, including compiling environmental data for further assessment. This explains the large disparity in the “Data Analysis” subdomain between MNCs and other enterprises.

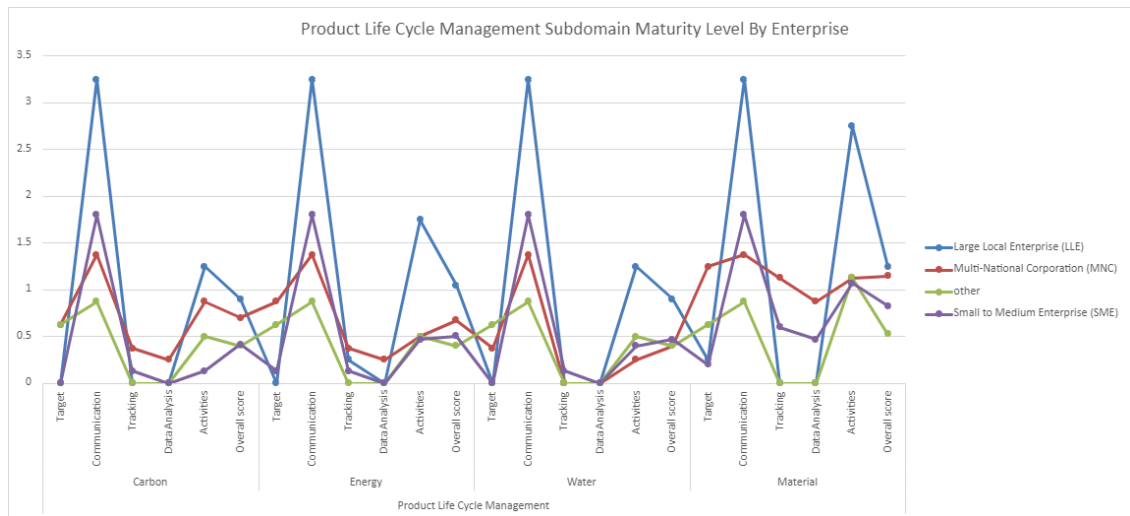


Figure 24: Average subdomain maturity levels for each band of enterprise

Consistent peak in specific subdomains across all enterprises

Shown in figure 24, we can observe a consistent spike in maturity level for communication subdomains across all product life cycle management domains. With an increased focus on sustainability and the environment by consumers, it would be natural for companies to align such goals to maintain a positive reputation as well. As such, companies would reflect their efforts in their products as well, providing information on how to prolong their products or downstream product management.

1.3 Analysing Prioritising and Roadmapping data of companies

Taking a closer look into the Prioritising and Roadmapping data, it has three different categories: Planning Horizon, Cost Categorisation and Value Creation. Planning Horizon focuses mainly on finding out whether companies opt for long term or short term planning approaches. Cost Categorisation looks at the budget allocation for each aspect. Lastly, Value Creation indicates the top three priorities of companies.

Planning Horizon	Mid Term (1-2 years)
	Long term (>2 years)

Cost Categorisation	Carbon Emission (Direct Tax)
	Energy Consumption
	Water Consumption & Discharge
	Waste Disposal
	Raw Materials / Consumables
	Labour
	Maintenance & Repair
	Rental & Operating Lease
	Research & Development
	Aftermarket Service & Warranty
	SG&A
	Transportation & Distribution
	Cost Factor

Value Creation	Business Risk Management
	Reputation Management
	Regulatory Management
	Environmental Stewardship
	Green sales and Marketing
	Composition of Business Portfolio
	Innovation of New Products or Business Model

	Reaching New Customers and Markets
	Attract Funding and Investments

Enterprise Level Comparison

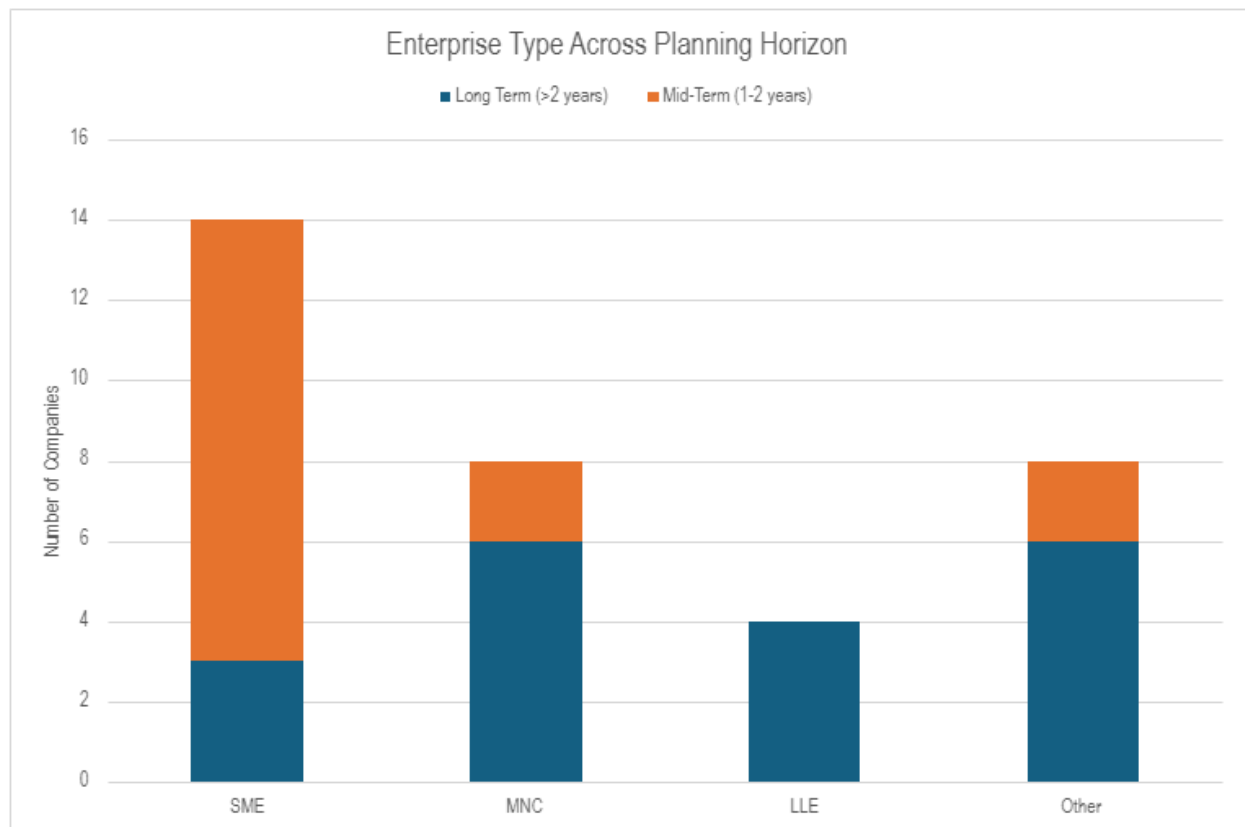


Figure 30: shows enterprise types distribution across planning horizons showing SMEs focus on mid-term while others vary.

Enterprise Level Comparison for Planning Horizon

In the mid-term planning horizon (1-2 years), most enterprises are SMEs (Small to Medium Enterprises), indicating a stronger focus on mid-term goals among SMEs. In contrast, the long-term planning horizon (>2 years) shows a more balanced distribution among different types of enterprises.

Bigger and more well established companies are capable of planning for the long run as they are less impacted by short term fluctuations in comparison to smaller companies. Hence, Larger companies usually have more substantial financial resources, allowing them to invest in long-term projects and strategies without immediate pressure to generate returns.

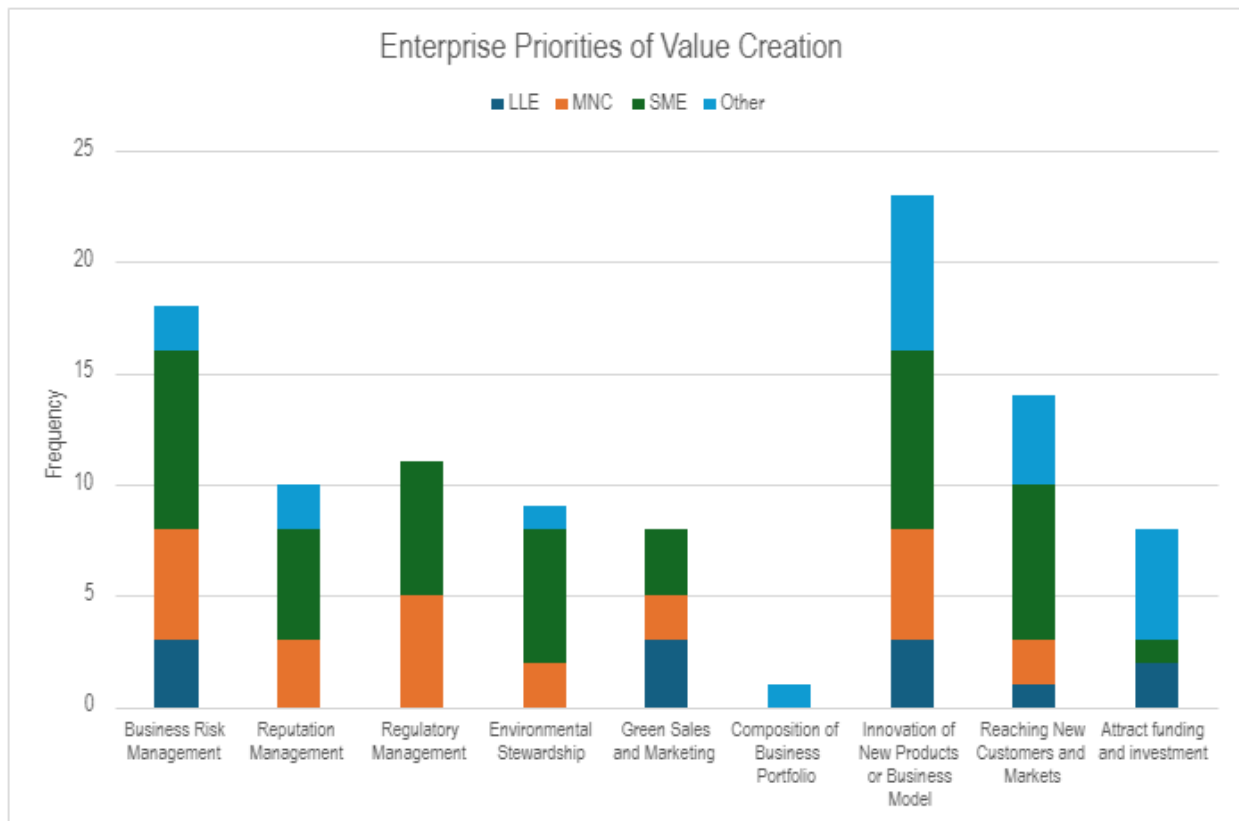


Figure 31 shows bar graph showing the priorities for different enterprises categories with their respective categories

Enterprise Level Comparison for Value Creation

2 clear winners - business risk management and innovation of new products or business model (the rest pretty similar except for composition of business portfolio and attract new funding and investment)

Comment on the types of companies for “others” and why they might be skewed toward certain value creations.

For “others”, the companies mainly focused on Innovation of New products or Business Models and attracting funding and investment. This may be due to lack of resources to generate cash flow for the companies and hence unable to focus on more environmentally focused goals in the short run.

SMEs prioritise attracting new customers to increase revenue, expand their market presence, and achieve economies of scale. Customer acquisition is essential for generating cash flow, which is crucial for reinvestment and sustaining operations. Larger companies like LLEs and MNCs often already have a well-established customer base and market presence. Their focus shifts from aggressive growth to maintaining stability and ensuring sustainable long-term performance.

Summary of Prioritised Domain

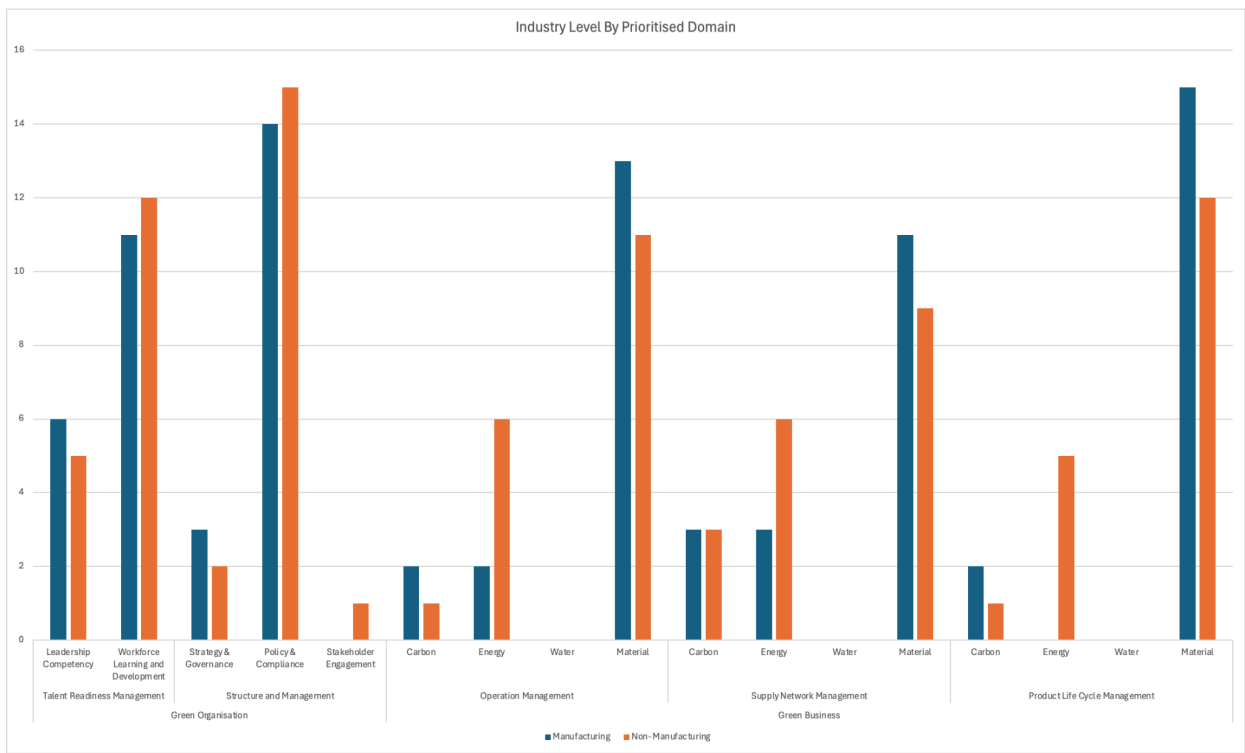


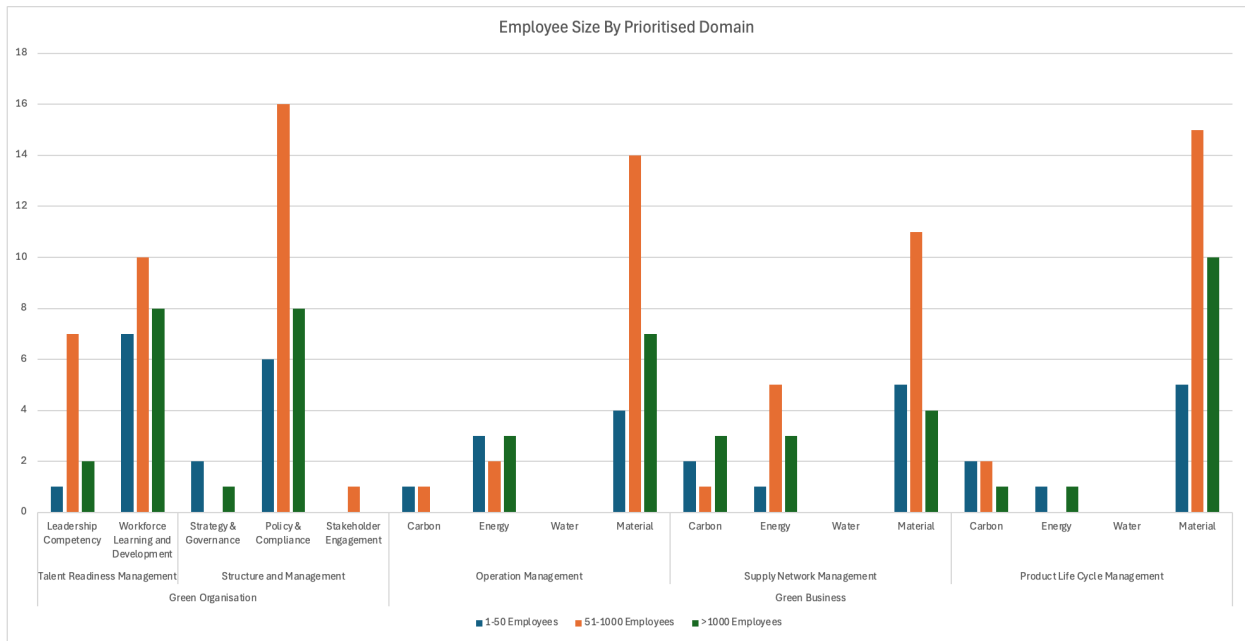
Figure 32 shows bar graph showing the priorities for different industrial categories with their respective categories

Industry Level Comparison

Company priorities across manufacturing and non-manufacturing sectors in key domains, including Talent Readiness, Operations, and Product Life Cycle Management. Companies in both sectors show strong emphasis on Workforce Learning & Development and Material Management, with non-manufacturing companies especially prioritising materials. Carbon Management and Policy & Compliance also receive significant attention across sectors.

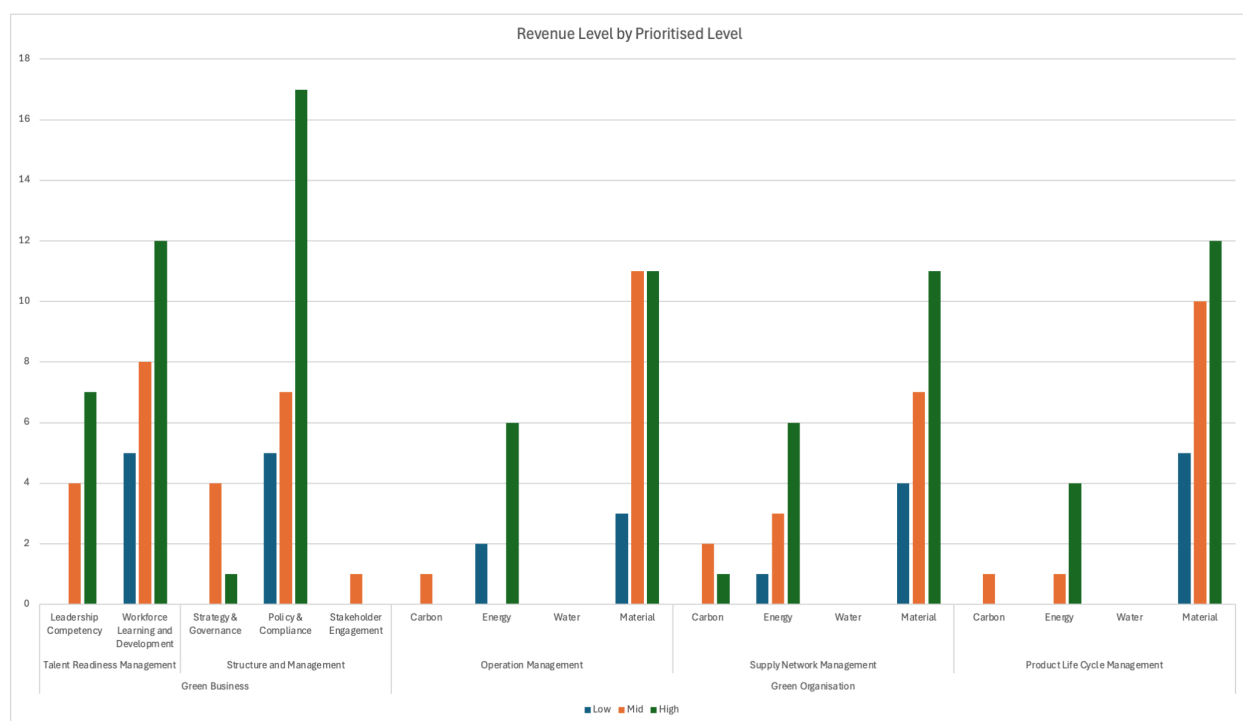
Manufacturing firms tend to focus more on structured domains like Policy & Compliance and Workforce Learning, while non-manufacturing firms lean towards Material and

Energy management. This highlights diverse strategic focuses depending on industry type, with overall emphasis on sustainability and talent development.



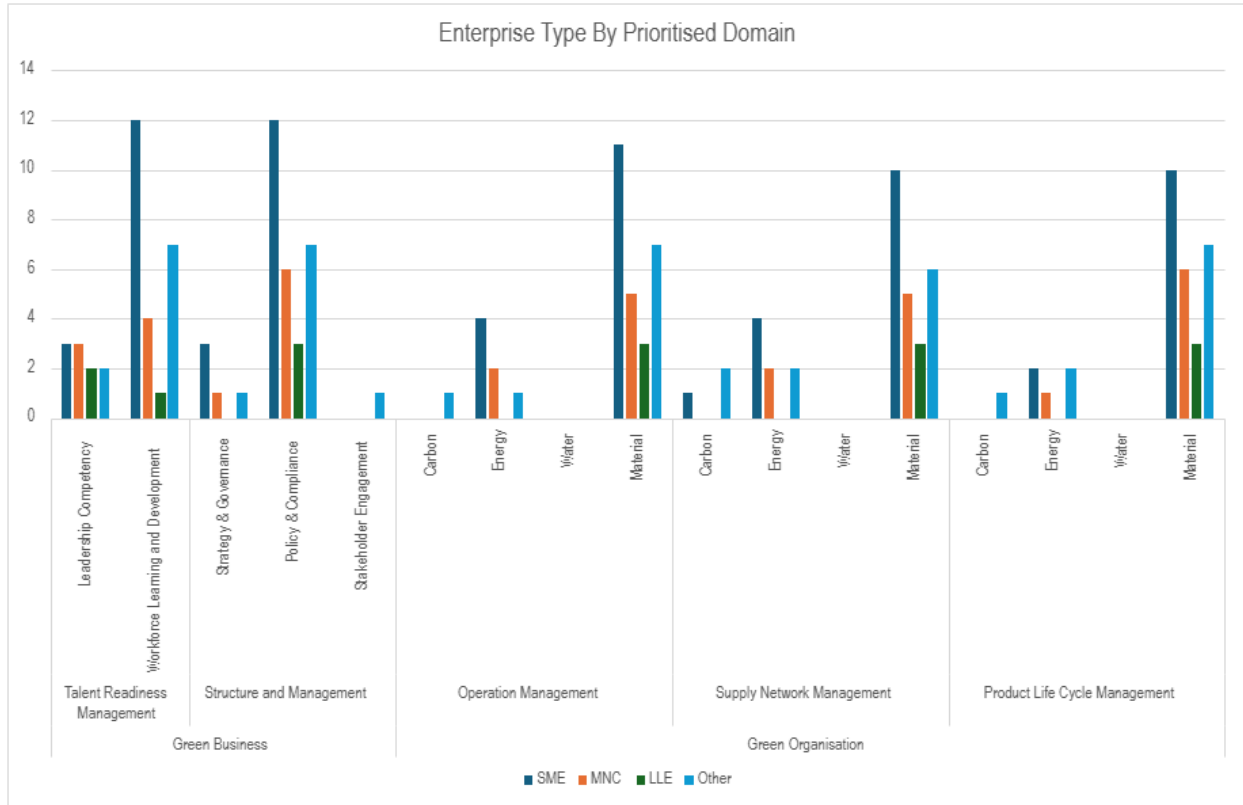
Employee Size Comparison

The chart reveals that medium-sized organisations (51-1000 employees) dominate sustainability efforts across most domains, particularly excelling in Policy & Compliance and Material Management, while larger organisations (>1000 employees) focus significantly on Material Management within product life cycles and Carbon Management in supply networks. Small organisations (1-50 employees) show limited activity, likely due to resource constraints. Notably, areas like Energy, Water, and Stakeholder Engagement are underrepresented across all sizes, highlighting gaps in sustainability priorities. These insights suggest the need for targeted support for smaller organisations and increased emphasis on energy and water management across the board to achieve holistic sustainability goals.



Revenue Level Comparison

The chart shows the prioritisation of sustainability domains by organisations categorised into low, mid, and high revenue levels. High-revenue organisations (green bars) dominate most domains, especially Policy & Compliance, Material Management under both supply network and product life cycle management, and Workforce Learning and Development, indicating significant investment in sustainability practices. Mid-revenue organisations (orange bars) also show considerable focus, particularly in Material Management, but with slightly less emphasis across other domains compared to high-revenue firms. Low-revenue organisations (blue bars) have minimal representation, with scattered focus mainly in Leadership Competency, Carbon, and Material Management, likely reflecting resource constraints. This highlights the correlation between revenue levels and the capacity to prioritise and invest in sustainability practices, with material management emerging as a universal focus across all revenue groups.



Enterprise Type Comparison

The chart illustrates the prioritisation of sustainability domains across different enterprise types: SMEs, MNCs, LLEs, and others. SMEs (blue bars) dominate most domains, particularly in Workforce Learning and Development, Policy & Compliance, and Material Management under multiple themes, suggesting a strong focus despite their smaller scale. MNCs (orange bars) show consistent representation, with notable emphasis on Material Management and Carbon Management. LLEs (green bars) display limited activity across domains, with some focus on Policy & Compliance and Material Management, likely reflecting more targeted efforts. The "Other" category has minimal presence overall. Material management appears as a critical focus across all enterprise types, while areas like Stakeholder Engagement, Energy, and Water Management are underrepresented, highlighting potential gaps in sustainability initiatives across the board.