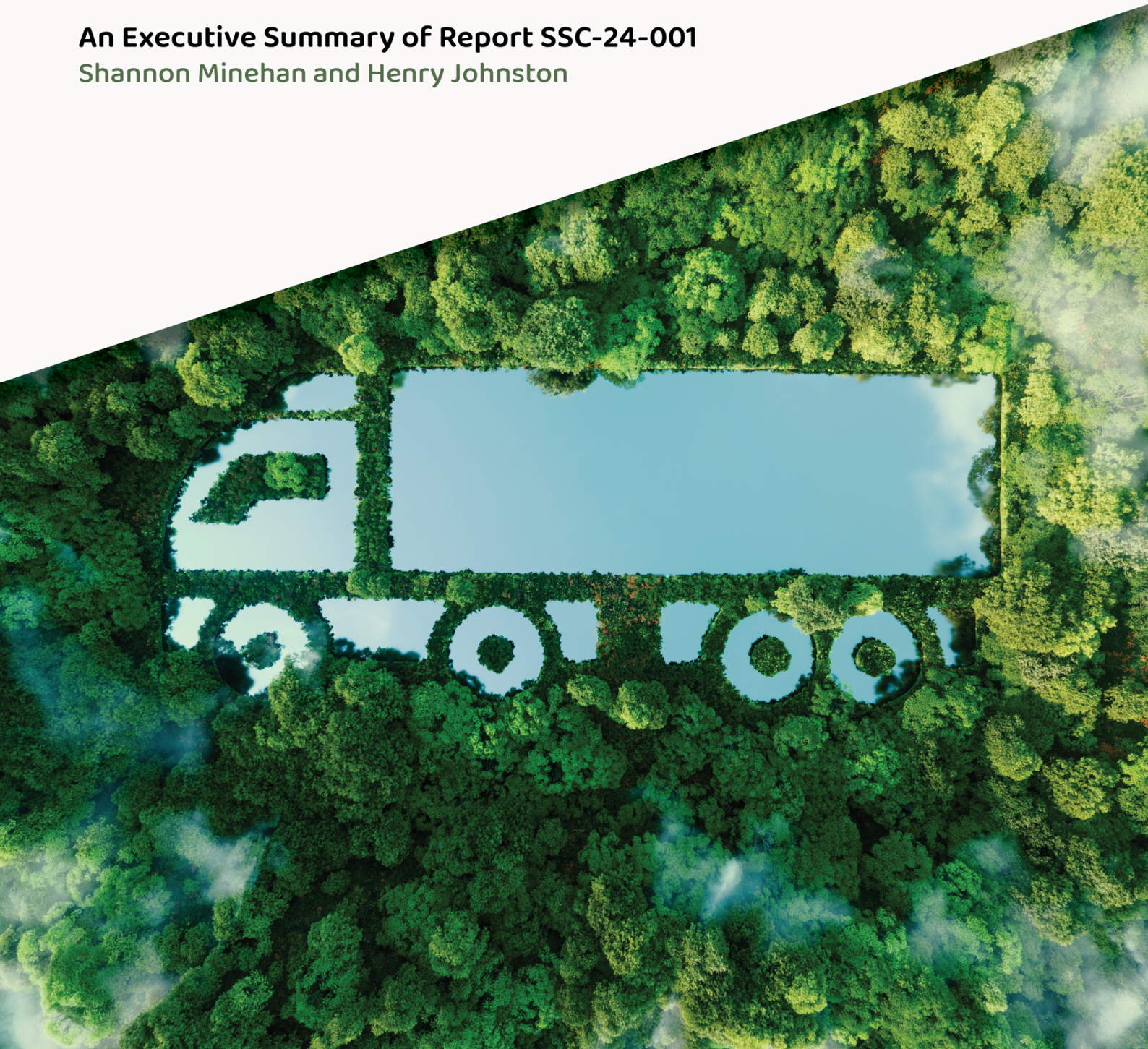


# Sustainable Supply Chains: Branching into a greener economy

**An Executive Summary of Report SSC-24-001**

Shannon Minehan and Henry Johnston



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# **SUSTAINABLE SUPPLY CHAINS: BRANCHING INTO A GREENER**

## **An Executive Summary of Report SSC-24-001**

Henry Johnston and Shannon Minehan

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## **INTRODUCTION**

As deforestation, growing landfills, excessive greenhouse gas emissions, and climate change come to a head, the need for companies to adopt sustainable supply chains has never been more essential. A sustainable supply chain “aims to embed environmental issues into supply chain processes and functions” (Varsei, 2016, p.413). They are an essential pathway for businesses to mitigate poor environmental outcomes. Specifically, they enable companies to limit their emissions, reduce waste, and improve processes, guiding businesses towards greener solutions.

This paper analyses trends in sustainable supply chains. We examine the political environment that facilitates the transition to greener practices as well as motivating factors that drive corporations towards sustainability. We also investigate common trends companies face relating to the implementation of sustainable supply chains. Specifically, we analyse the challenges, solutions, technologies, and benefits companies encounter in sustainable supply chain implementation.



## BACKGROUND

Domestically, the United Kingdom has implemented several pieces of legislation to improve environmental awareness and increase sustainable practices. The most overarching of these is the Environmental Act, implemented in 2021. This sanctioned the creation of the Office for Environmental Protection, a regulatory power that creates legally binding targets on air quality, water quality, and conservation practices. They also prevent the export of plastic waste to developing countries.

The UK also implemented the Electronic Trade Documents Act in 2023 which grants the same legal power to electronic documentation which was previously only applied to physical (i.e. paper) documents. This helps companies shift towards environmentally conscious supply chains as it eliminates legal barriers to paperless operations.

Further, the UK has plans to implement several future strategies to aid in sustainable transitions. They plan to ban the sale of new fossil fuel vehicles by 2030, convert all cars to zero emission vehicles by 2035, and invest £200 million into EV charging infrastructure (HM Government, 2021).

Internationally, numerous pieces of legislation and policies have also been put in place to encourage sustainable supply chains. Accords such as the Kyoto Protocol and Paris Agreement provide national environmental targets and considerations for signatories, binding countries and, in turn, companies, to environmental commitments. To corroborate these, organisations such as the International Organisation of Standards have also implemented organisational frameworks to help corporations improve sustainability. ISO 14001, for example, is an organisational framework which helps corporations manage their resource and waste management systems, environmental performance, and stakeholder obligations.

## EXISTING LITERATURE

We identify four key motivators for companies to transition to sustainable supply chains in existing literature. The first of these is sustainability. As companies are heavy contributors to poor environmental outcomes, they have an ethical and practical obligation to reduce their impact. Secondly, companies can be motivated by social pressures. Environmental groups, governments, and customers can place social pressure on companies to become more sustainable. The costs of not conforming to this social pressure can include widespread backlash, public scrutiny, negative media attention, boycotts, and scandals (Marculetiu and Ataseven, 2023), thus motivating companies to adopt sustainable practices. A third and related motivator is reputation.

Increasing a firm's reputation is a driving factor for implementing sustainable practices (ElAlfy and Weber, 2019, p.3). By implementing and subsequently promoting sustainability initiatives, a firm's reputation improves. This can deter public scrutiny and benefit companies financially as people and suppliers are more likely to buy from and



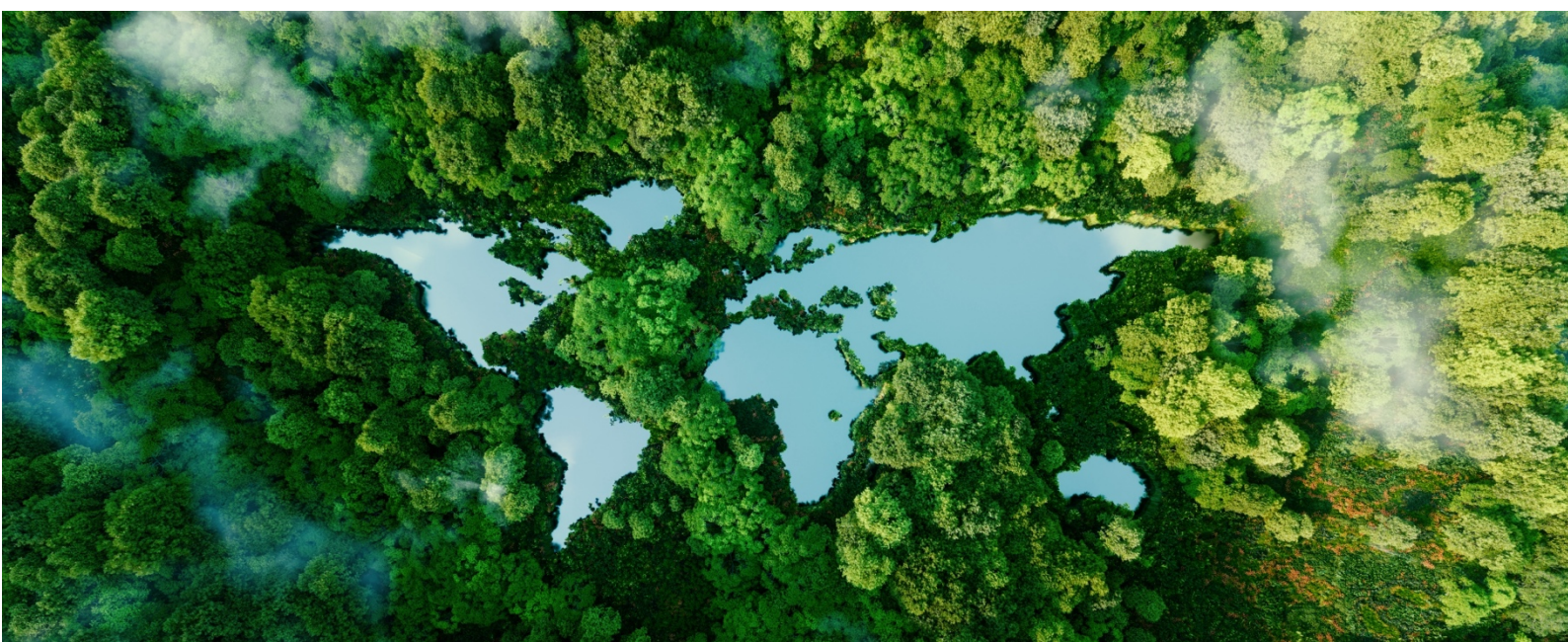
work with a company who has a stronger reputation. This can in turn give these companies a competitive advantage in the market too. The final motivator is financial. There is a clear positive link between companies who 'go green' and improved market performance (Hasan, 2013, p.43). It is worth noting, however, that this profitability tends to be a long-term outcome. Implementing sustainability in the short-term can be costly, in part due to high upfront costs and because of a lack of support from external agencies.

We highlight several popular trends within the literature for corporations transitioning to sustainable supply chains. Emissions reduction is a popular trend, as are fleet modification, and operational efficiency. We also observed a rise in the popularity of waste reduction strategies, particularly the use of sustainable materials and reductions in packaging. Sustainable procurement was also identified as another popular method through which companies mitigated their environmental impacts.

## **DATA**

We use a novel data set constructed from 19 case studies of sustainable supply chain projects sourced from Akabo Media. For each case study, we manually collected the data, gathering information on the challenges projects sought to improve, the solutions implemented, technologies employed, and benefits reaped.

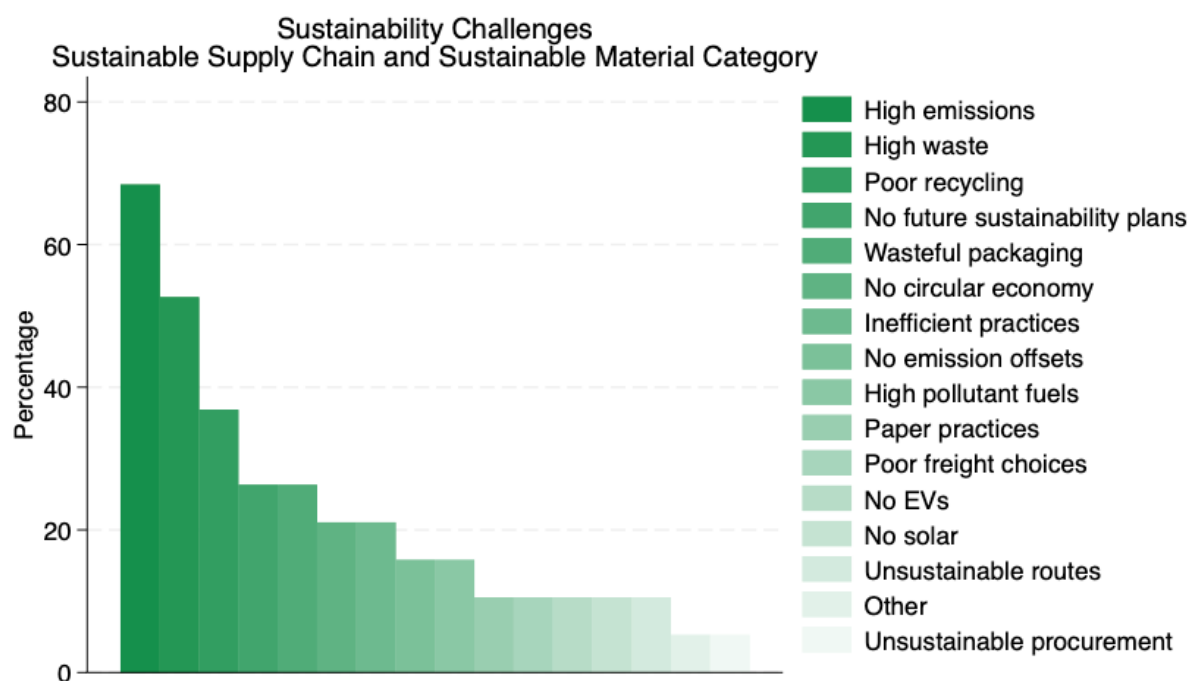
Overall, our sample consisted of 19 projects involving 35 companies. On average, 1.84 companies were involved in each project. Approximately 37% of our sample were end-users, and 63% were suppliers. Around 80% of companies involved had 250 or more employees, and 89% were headquartered in the UK. A quarter of the sample operated in the logistics industry. Projects, on average, took 1-2 years to implement.





## TRENDS IN CHALLENGES

We find 100% of the sample reported challenges with sustainability within their operations. Other common challenges companies reported facing were high growth and space constraints. When stratifying the sustainability challenges each project sought to improve, the most prevalent challenge faced was high emissions, reported by over two thirds of the sample. Over half of the sample also reported challenges regarding waste production. The next most common sustainability challenge was recycling.



## TRENDS IN SOLUTIONS

The most prevalent method with which companies improved sustainability was innovation. This makes intuitive sense in that existing supply chains were designed to focus on productivity and profitability. Thus, the transition to sustainable supply chains requires significant research, development, and new technologies.

Circular economies were another popular tool used to implement sustainable practices. A circular economy is a 'closed-loop' which regenerates material use and reduces toxic material and waste output, and which re-uses finite materials (Tsai et al., 2021, p.16). These were often used within our sample to ensure products were re-used as often as possible, decreasing the amount of waste being taken to landfill.

Data analytics were also commonly used in solutions. These were used to identify sustainability leaks within companies' supply chains. By identifying these areas, companies were able to implement sustainable solutions much more efficiently.



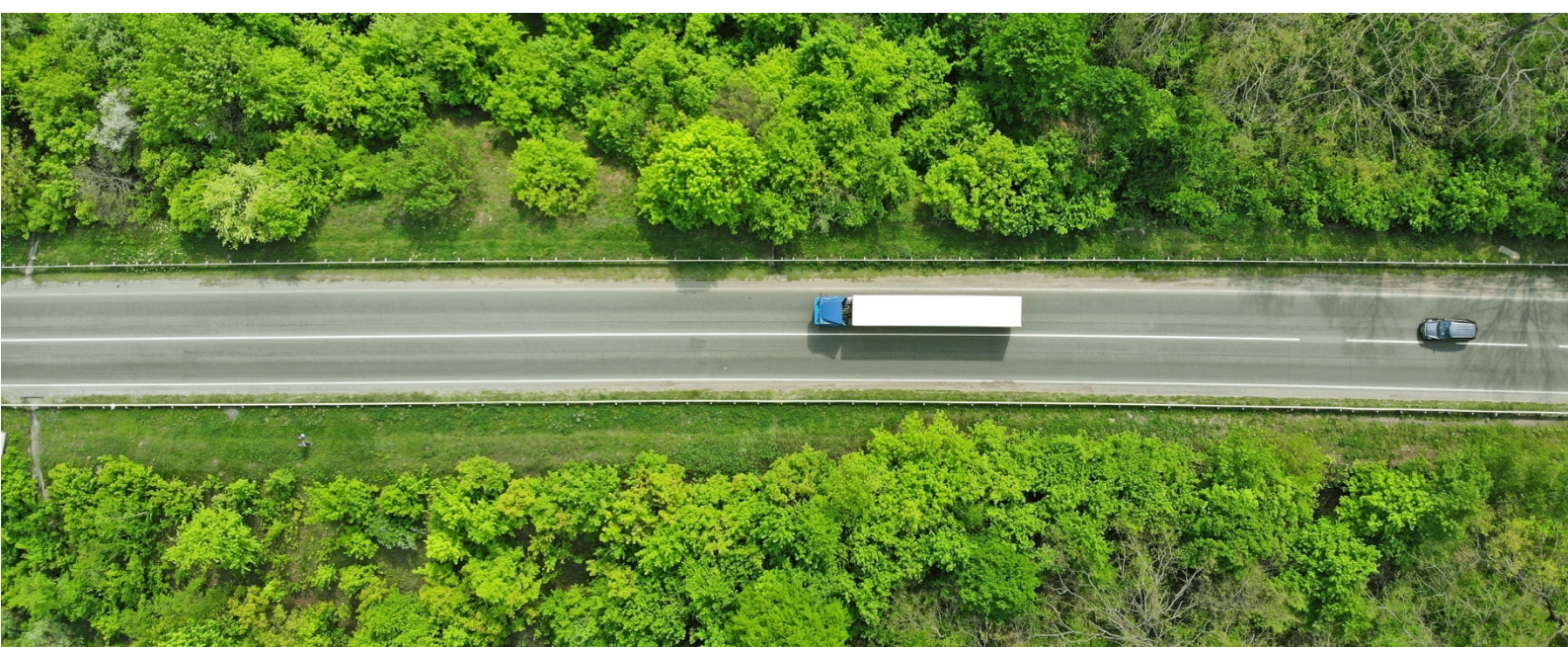
Further, data analytics enabled companies to anticipate potential future sustainability issues and address them before they become concerns.

## **TRENDS IN BENEFITS**

Remarkably, all projects within our sample improved their sustainability through the solutions they implemented. This was the most prevalent benefit. This suggests pursuing strategies such as emission reductions, waste reductions, and improved recycling are successful techniques to improve sustainability and reduce poor environmental impacts for companies. Furthermore, over a third of the sample reported lower costs following the implementation of sustainable solutions. This finding was in line with existing literature which suggests, while sustainability requires high upfront investment, the long-term profitability makes it valuable. The third most prevalent benefit experienced was an increase in customer satisfaction. Customers were pleased with companies' refocusing on mitigating their environmental impact.

## **CONCLUSION**

In conclusion, as sustainability continues to grow in both popularity and necessity, it remains pivotal that companies adjust their operating systems to be more sustainable. Sustainable supply chains are essential for companies to mitigate their environmental impact and can provide a wide array of benefits including reduced costs, increased customer satisfaction, and increased profitability.





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