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Willingness to Adopt "Green Steel" Products: A Case Study from the Automotive Sector

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Abstract : This paper aims to examine consumer behaviour towards, and the willingness to adopt, green steel use in the automotive sector, in order to identify potential barriers and opportunities for its widespread adoption. Semi-structured interviews were held with experts from global, regional and country-specific industry associations and automakers. The analysis shows there is a new shift towards lifecycle thinking in the sector, although these efforts have been voluntary and driven by customer and employee pressures rather than regulation. The paper further appraises possible demand for green steel within different vehicle types (based on size and powertrain), and shows that manufacturers of electric heavy-duty vehicles are most likely to adopt green steel in the first instance, given the amount of incorporated steel in the vehicles and the fact that lifecycle emissions lie predominantly in their manufacturing phase. A case for green advanced higher-strength steels (AHSS) can also be made in light-duty passenger vehicles, which may mitigate competition from light-weight alternative materials in terms of cost and greenness (depending on source and utilisation zones). This work builds on a wide sustainability-related literature in the automotive sector and highlights areas in need of urgent action if the sector as a whole were to meet its Paris Agreement climate targets, in particular a need to revisit current CO2 performance regulations to include Scope 1 and Scope 2 emissions, engage in educational green marketing campaigns, and explore innovative market-based mechanisms to bridge the gap between relatively-low carbon abatement costs of steelmaking and high abatement costs of vehicle manufacturing.

Keywords : Green steel, Consumer behaviour, Automotive industry, Environmental sustainability
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