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Finding tipping points in the global steel sector: a comparison of companies in Australia, Austria, South Korea and the USA

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Abstract-

The global steel sector is responsible for 7% of global greenhouse gas emissions, highlighting the need for significant changes in production practices and the adoption of low-carbon breakthrough technologies to achieve net-zero emissions. This study was conducted to explore positive tipping points at the company level, taking into account socio-political, economic and industry pressures that initiate the tipping process. The study operationalizes tipping points using the Triple Embededdness Framework, which incorporates indicators from the socio-political and economic environment, as well as the industry regime of companies. An analysis is performed of secondary data from four steel companies: BlueScope (Australia), POSCO (South Korea), voestalpine (Austria), and U.S. Steel (USA). The findings indicate that voestalpine is on the verge of reaching a positive tipping point, and POSCO is also on a promising track. In contrast, both BlueScope and U.S. Steel are lagging behind. In the tipping process, national policies play a critical role in expediting the transition to low-carbon steel production for frontrunners, while global climate policy has a greater leverage by influencing producers who operate in a less stringent national policy context. Additionally, the customer demand for low-carbon steel serves as a driving force for innovation and can incentivize steelmakers to produce low-carbon products.

Index Terms- Steel; Hydrogen; Transition; Tipping dynamics; Climate neutrality

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