

Evidence Paper: Decarbonisation in the UK Steel Industry and Tata Steel's Port Talbot Decision

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Introduction

The planned job cuts at Tata Steel's Port Talbot facility mark a significant moment in the UK's steel industry, underscoring the complexities of societal decarbonisation. While Tata Steel's collaboration with trade unions and the government, including the £130 million support package, indicates an awareness of transition complexities, there is room for a more structured approach. The historical context of steel plant closures brings to light the profound socio-economic impacts on workers and communities. Addressing the broader impacts on jobs and the local economy requires a comprehensive and considerate strategy that aligns with both decarbonisation goals and the needs of affected communities. The transition to societal decarbonisation, propelled by environmental imperatives, places a spotlight on the tension between job preservation and environmental sustainability, emphasising the importance of a just transition that protects workers and communities. This can be achieved through collaborative planning, social interventions, and retraining programs, as evidenced by successful models in Europe.

Energy justice and just transitions are vital in the context of the UK steel industry's decarbonisation. This paper examines these concepts in relation to Tata Steel's decision to close the Port Talbot plant and the broader decarbonisation efforts in the steel sector.

Decarbonising in a Just Manner

In the context of the Tata Steel case and its implications for Wales, energy justice and just transitions are crucial concepts. Energy justice ensures equitable access to energy and fair sharing of both benefits and burdens, involving public participation in decision-making. Just transitions focus on equitable societal shifts towards sustainable energy, particularly protecting the rights and needs of affected workers and communities.¹ For government representatives, these concepts are vital in ensuring that environmental strategies, like those affecting Tata Steel and Port Talbot, are balanced with the social and economic welfare of the local communities and workforce.

A just transition to decarbonisation in the steel industry involves more than just technological shifts; it is about ensuring social equity and sustainability. This means actively involving workers and communities in decision-making processes and ensuring that the transition does not disproportionately impact vulnerable groups. It is about creating opportunities for retraining and new employment within emerging green industries, thus safeguarding livelihoods and community stability.

Furthermore, this transition requires aligning with broader sustainability goals, such as reducing environmental impact while promoting economic development and public health. Transparency in policymaking and implementation is key to building trust and ensuring accountability. For Tata Steel, this would involve clear communication and collaboration with stakeholders, from government representatives to local communities, ensuring that the shift to greener steel production is both environmentally beneficial and socially responsible. The involvement of Unions in this process is vital, as are government and public consultations.

Tata Steel's Decision: A Just Transition Perspective

Tata Steel's decision to close blast furnaces at Port Talbot, shifting towards Direct Reduced Iron (DRI) and Electric Arc Furnace (EAF) technologies, is a significant step towards decarbonising steel production and aligning with net zero carbon emission goals. The move to greener steel production methods aligns with the industry's decarbonisation goals, reducing the domestic demand for coking coal.² The Tata Steel-Port Talbot situation underscores the dynamic changes in industry needs and the importance of aligning with environmental objectives.

Expanding on the just transition perspective, Tata Steel's strategy reflects a broader global trend in the industry towards sustainable practices. This transition, while environmentally necessary, raises critical questions about the future of steelworkers and the communities that have grown around these industries. The challenges are not just about job losses, but also about preserving the identity and heritage of these communities, deeply intertwined with the steel industry over the last century.

In this regard, Tata's commitment to future investments and collaboration with stakeholders going forward is crucial. There is an important opportunity here to illustrate a model for how industries can navigate the complex terrain of economic, environmental, and social responsibilities while undergoing these significant transformations. This sets a precedent for other companies facing similar challenges and highlights the importance of a comprehensive approach to industry-wide changes.

Criticisms from a Justice Perspective

Critics of Tata Steel's decision to transition towards greener technologies have raised significant concerns about the socio-economic impacts, particularly job losses and the inadequacy of job replacements. Critics emphasise the need for a comprehensive approach that includes effective retraining programs, financial assistance, and the creation of new opportunities in emerging green sectors.³ These concerns underscore the importance of balancing environmental goals with social implications, advocating for a just transition that considers the workforce's needs and community stability.

Furthermore, the criticism extends to the strategic aspects of this transition. There is a belief that more proactive investment and state support could mitigate the projected job losses. The move away from primary steelmaking in the UK and increased reliance on imported steel, potentially with higher carbon footprints, is seen by some as a strategic misstep. Further, Tata Steel's decision to close two blast furnaces while simultaneously opening a new blast furnace in India, has sparked accusations of hypocrisy.⁴ Critics argue that Tata's actions contradict its stated commitment to reducing carbon emissions; but this decision also underscores the differing approaches to carbon emissions globally, with the UK focusing on stricter emission controls and transitioning to greener steel production methods compared to some emerging markets.

Unite, a major union representing workers at Tata Steel's Port Talbot, has criticised the proposed closure of the plant's blast furnaces and the shift to electric arc furnaces. They argue that the decision jeopardises jobs and the UK's steel self-sufficiency, emphasising the importance of the steel industry for national security and the economy.⁵ Unite further advocates for government intervention and investment to support the industry's transition to green steel, insisting on job guarantees and a focus on growth. They highlight the market potential for low-carbon steel and call for a more robust strategy to preserve the UK steel industry and its workers.

Under Unite's alternative proposed plan⁶, the UK government would invest £12bn over 12 years in the steel industry, with the aim of self-funding through increased tax receipts within a decade. The proposal includes maintaining blast furnaces during a transition to decarbonised steelmaking using electric arc and direct reduced iron furnaces, which could utilise green hydrogen. Additionally, the plan emphasises the need for government subsidies to offset high energy costs in the UK steel industry and calls for prioritising the sector for enhanced National Grid connections to facilitate the move to green steel production.

In response to these many criticisms, it is vital to recognise the need for a balanced approach in decarbonisation efforts. There is a real need for a sustainable industrial strategy that harmonises job preservation with environmental objectives. The transition to environmentally friendly technologies should be integrated with dedicated support systems for the affected communities. This means not only focusing on environmental targets but also ensuring robust mechanisms for retraining, financial support, and job creation in green sectors, ensuring that the transition is both environmentally and socially responsible.

Utilising justice in decarbonisation efforts does not stop there, however. The role of both Tata and the National government highlight the challenge of balancing these sorts of strategic decisions with local realities: The handling of Tata Steel's decision could have been improved by both the company and the government with more proactive and collaborative strategies. Tata could have engaged more deeply with stakeholders, including unions and local communities, to develop a more comprehensive transition plan that addresses job losses and economic impacts. Greater transparency and communication about the decision-making process and future plans might have mitigated some early concerns and debates. On the UK government's side, stronger support in terms of funding and policies⁷ to facilitate a just transition, focusing on retraining programs and economic redevelopment of affected areas,

would have been beneficial. There are also deeper structural issues impacting the steel industry, such as high electricity prices, which will continue to have negative impacts until they are adequately addressed. A more holistic, 'all of the above' approach would have helped balance the environmental objectives with socio-economic needs.

European Adaptation to Decarbonisation

European steel manufacturers, including British Steel and Tata Steel UK, are actively adapting to decarbonisation through various strategies.⁸ These strategies collectively represent a comprehensive approach to reducing the environmental impact of steel manufacturing in Europe. For instance:

1. **Hydrogen-based Steelmaking:** SSAB in Sweden is pioneering the HYBRIT⁹ project, aiming to replace coking coal, traditionally used in iron ore-based steel making, with hydrogen. This project is a collaboration between SSAB, LKAB (a mining company), and Vattenfall (an energy company). This facility produced the world's first fossil fuel-free steel pellets in 2021, displaying a significant leap in sustainable steel production. Scheduled to supply low emission steel by 2026, the plant's products have already attracted buyers like Volvo Cars and Volvo Group, which underscores the growing market demand for environmentally responsible steel.
2. **Energy Efficiency:** ArcelorMittal¹⁰, one of the largest steelmakers in the world, has initiated various projects across its European plants to enhance energy efficiency, including the use of waste gases to generate electricity.
3. **Circular Economy Practices:** Tata Steel in the Netherlands¹¹ is focusing on recycling and sustainable production practices, aiming to create a more circular economy in their operations.
4. **Carbon Capture & Storage:** Elsewhere in the UK, British Steel is investigating the implementation of Carbon Capture and Storage (CCS) technology at its Scunthorpe facility, aiming to notably reduce its carbon emissions as part of a wider environmental initiative.¹²

These examples illustrate the diverse approaches being taken regionally to address the challenges of decarbonising the steel industry. Adopting a diverse range of methods for steel industry decarbonisation, like practices seen in Europe, could be beneficial for the UK. This approach would include various technologies and strategies, such as electric arc furnaces, direct reduced iron furnaces using green hydrogen, and enhanced recycling methods. A multipronged strategy allows for flexibility and adaptability, catering to different operational needs and market conditions, which could be crucial in successfully transitioning the industry to more sustainable practices.

Implications of UK's Strategy on Tata Steel

The UK's strategy for achieving net zero by 2050 prioritises decarbonising industry, supported by national policy measures like the "Ten Point Plan for a Green Industrial Revolution"¹³ and £100 billion infrastructure spending.¹⁴ These efforts complement UK Steel's roadmap to net zero¹⁵ and the UK Net Zero Strategy.¹⁶ In heavy industries, engagement with national policies

is evident through decarbonisation roadmaps and action plans. The Climate Change Committee's recommendations for a 78% reduction in emissions by 2035¹⁷ are central to this strategy, which is a long-term process needing sustained financial, political, and social commitment.

The UK government's Industrial Decarbonisation Strategy¹⁸, with its 2050 net-zero emissions target, emphasises investing in low-carbon technologies and enhancing energy efficiency across industries.¹⁹ It particularly focuses on transitioning to electric and hydrogen-based processes, backed by carbon capture, utilisation, and storage (CCUS) technologies. This strategic blueprint aims to foster innovation in low-carbon industrial solutions and encourage private investment, while also building a supportive policy framework while simultaneously enhancing industrial clusters around the country.

For sectors like steel—that are critical to achieving the UK's net-zero ambition—the strategy outlines specific plans for reducing their carbon footprint. This includes support for transitioning to low-carbon production methods, promoting energy efficiency, and investing in sector-specific technologies. Additionally, the strategy recognises the vital role of carbon capture and storage in mitigating emissions from heavy industries, necessitating substantial investments and compliance with environmental regulations for companies like Tata Steel. This approach presents both challenges and opportunities, necessitating strategic adaptation to new production methodologies and market demands, reflecting the complex nature of aligning the steel industry with national environmental objectives.

The financial investments required for adapting to the UK's decarbonisation strategy involve significant capital for developing and implementing cleaner technologies, such as electric arc furnaces or hydrogen-based steelmaking. These investments are substantial as they often involve overhauling existing infrastructure or building new facilities. Strategic adaptation includes rethinking production processes, supply chains, and market strategies to align with environmental goals and evolving market demands. Tata Steel's decision, while economically challenging, reflects a response to these requirements, balancing long-term environmental sustainability with the immediate financial implications of transitioning to green steel production. This alignment with the UK's decarbonisation goals, despite economic consequences, highlights a commitment to environmental responsibility, potentially setting a precedent in the industry.

Domestically there are other challenges to steel industry decarbonisation, beyond the financial investment and jobs impacts discussed. Techno-economic analyses²⁰ indicate that steel scrap recycling in the UK is the most cost-effective and low-emission option for green steelmaking until the early 2030s. Hydrogen-based steelmaking offers lower emissions and costs compared to CCS methods, aligning with global decarbonisation priorities. However, UK steel's competitiveness is challenged by high electricity prices and uneven carbon costs. Therefore, addressing these cost challenges and adopting coordinated international actions, like market creation for green steel and export tariffs on scrap, is essential for a competitive, decarbonised UK steel industry.

The UK steel industry's future hinges on its decarbonisation strategy, which requires government support to align with the net zero pledge while addressing the knock-on impacts of factors like electricity pricing. The EU and Sweden's support for the HYBRIT steel plant, producing fossil fuel-free steel, exemplifies leading efforts in this domain. The UK faces a crucial opportunity to become a front runner in net-zero steel production, backed by government investment and strategic alignment with industry standards. This transition will not only position the UK as a climate leader but also catalyse renewable energy infrastructure, supporting a broader energy transition and creating new job opportunities in green industries. The economic and social stakes are high, emphasising the necessity of decisive and supportive government actions for the steel industry's future.

Global Impacts

In the context of Tata Steel's transition plans, the concern of carbon leakage²¹ is significant among critics. Carbon leakage occurs when efforts to reduce emissions in one country result in an increase in emissions in another, often due to the relocation of industry or the importation of products from less regulated regions. For Tata Steel, transitioning to greener production methods in the UK could potentially lead to reliance on steel imports with higher emissions, potentially undermining the overall environmental benefits. To address this, implementing global standards, conducting comprehensive life-cycle assessments, and employing carbon pricing mechanisms are crucial. These measures ensure that carbon reduction efforts are genuinely global and not counteracted by increased emissions elsewhere, thereby maintaining the integrity and effectiveness of decarbonisation initiatives.

The UK's carbon pricing mechanism can play a pivotal role in addressing carbon leakage related to Tata Steel's transition, as well as to broader industrial transitions. This mechanism imposes a cost on carbon emissions, incentivising companies to reduce their carbon footprint. In the context of Tata Steel, it encourages the adoption of cleaner production methods domestically rather than offshoring high-emission activities. This system also ensures that imported steel, potentially with higher carbon content, is less economically attractive compared to locally produced, lower-emission steel. Thus, carbon pricing can effectively align financial incentives with environmental goals, promoting sustainable practices within the steel industry.

The UK's planned implementation of a Carbon Border Adjustment Mechanism (CBAM) by 2027²² is a significant step in supporting its decarbonisation drive. This mechanism will apply a comparable carbon price to imports like steel and aluminium, addressing carbon leakage by ensuring emissions reductions in the UK are not offset by higher emissions from imported goods. This approach underlines the UK's commitment to both environmental integrity and industrial competitiveness in the transition to net zero. The CBAM will consider the carbon emitted during production and the carbon price gap between the UK and the exporting country, reinforcing the UK's position in reducing global emissions and promoting investment in decarbonisation technologies.

Tata Steel's decisions in the UK are also likely to have widespread implications for the global steel market, prompting adjustments in supply chains and influencing material sourcing and distribution strategies. Such strategic shifts could lead to new partnerships and coordination

strategies, impacting suppliers and consumers globally. This reflects the broad impact of decarbonisation efforts in various industries, where changes in production strategies often ripple through global supply chains, altering sourcing, logistics, and market dynamics. This scenario underscores the interconnectedness of industries worldwide and the inevitable adjustments required in the transition to a greener economy.

Conclusion

The transition to green steel, exemplified by Tata Steel's decision to close Port Talbot, is pivotal for the UK steel industry. Balancing environmental sustainability with social equity and economic viability is crucial. Government support and industry collaboration will play significant roles in this transition.

Tata Steel's initiative to transition to green steel, while challenging, is a commendable step towards decarbonisation. This decision not only addresses environmental concerns but also sets a precedent for industry-wide transformation. It is important to recognise the complexities involved in balancing environmental goals with the social and economic impacts on workers and communities. Navigating the challenges of industry decarbonisation requires vital support from the government and active collaboration within the industry. Enhancing these aspects can lead to a significant transformation in the industry and demonstrate a strong commitment to decarbonisation goals. Tata Steel's commitment to this difficult yet necessary change underscores the importance of prioritising long-term sustainability alongside immediate economic considerations.

¹ International Labour Organisation (ILO). 2015. "Guidelines for A Just Transition Towards Environmentally Sustainable Economies and Societies for All". Available from: https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_432859.pdf

² Pimm, A., Garvey, A., Norman, J., Gale, W., Richardson-Barlow, C. 2022. "Cumbria mine: is there a technical need for new coal mines in the UK?" CREDs Blog. Available from: <https://www.creds.ac.uk/cumbria-mine-is-there-a-technical-need-for-new-coal-mines-in-the-uk/>

³ McLachlan, C. 2024. "What a fair deal for ex-steelworkers would look like as the industry decarbonises." *The Conversation*. Available from: <https://theconversation.com/what-a-fair-deal-for-ex-steelworkers-would-look-like-as-the-industry-decarbonises-221797>

⁴ Lawson, A. 2024. "'Hypocrisy': Tata builds vast India furnace despite Port Talbot emissions claims". *The Guardian*. Available from: <https://www.theguardian.com/business/2024/jan/24/unions-accuse-tata-of-hypocrisy-over-port-talbot-closure-green-claims#:~:text=The%20owner%20of%20the%20Port,Wales%2C%20costing%20thousands%20of%20jobs.>

⁵ Davies, R. 2024. "'A golden opportunity': Port Talbot fights to keep its steelmaking tradition alive." *The Guardian*. Available from: <https://www.theguardian.com/business/2024/jan/07/port-talbot-fights-to-keep-furnaces-burning>

⁶ Unite. 2024. "A Workers' Plan for Port Talbot." Available from: <https://www.unitetheunion.org/campaigns/the-fight-for-steel/unites-workers-plan-for-steel>

⁷ Richardson-Barlow, C., Pimm, A., Ambrosio-Albala, P. 2022. "High fossil fuel prices mean UK cannot delay transition to low emissions steel." *The Conversation*. Available from: <https://theconversation.com/high-fossil-fuel-prices-mean-uk-cannot-delay-transition-to-low-emissions-steel-183307>

⁸ Taylor, B. 2023. "British Steel seeks buy-in on EAF Conversion." *Recycling Today*. Available from: <https://www.recyclingtoday.com/news/british-steel-jingye-bof-eaf-conversion-recycling-informational-meetings-decarbonization/>

⁹ See more on SSAB: <https://www.ssab.com/en-gb/fossil-free-steel/insights/hybrit-a-new-revolutionary-steelmaking-technology>

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- ¹⁰ See more: <https://europe.arcelormittal.com/sustainability/xcarb/RRP/flat/aranja-decarbonising-steel#:~:text=ArcelorMittal%20has%20set%20a%202030,Scope%201%20and%202%20basis.>
- ¹¹ Tata Steel Netherlands: <https://www.tatasteelnederland.com/nieuws/en/tata-steel-nederland-submits-green-steel-plan-with-emphasis-on-reducing-emissions#:~:text=Circular%3A%20Tata%20Steel%20Nederland%20is,dependent%20on%20primary%20raw%20materials.>
- ¹² British Steel: <https://britishsteel.co.uk/news/british-steel-forges-partnership-with-drax-to-support-world-leading-carbon-capture-project/>
- ¹³ HM Government. 2020. "The Ten Point Plan for a Green Industrial Revolution." Available from: <https://www.gov.uk/government/publications/the-ten-point-plan-for-a-green-industrial-revolution>
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- ¹⁷ Department for Business, Energy & Industrial Strategy. 2021. "UK enshrines new target in law to slash emissions by 78% by 2035." Available from: <https://www.gov.uk/government/news/uk-enshrines-new-target-in-law-to-slash-emissions-by-78-by-2035>
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- ²² HM Treasury and The Rt Hon Jeremy Hunt MP. 2023. "New UK levy to level carbon pricing." Available from: <https://www.gov.uk/government/news/new-uk-levy-to-level-carbon-pricing>