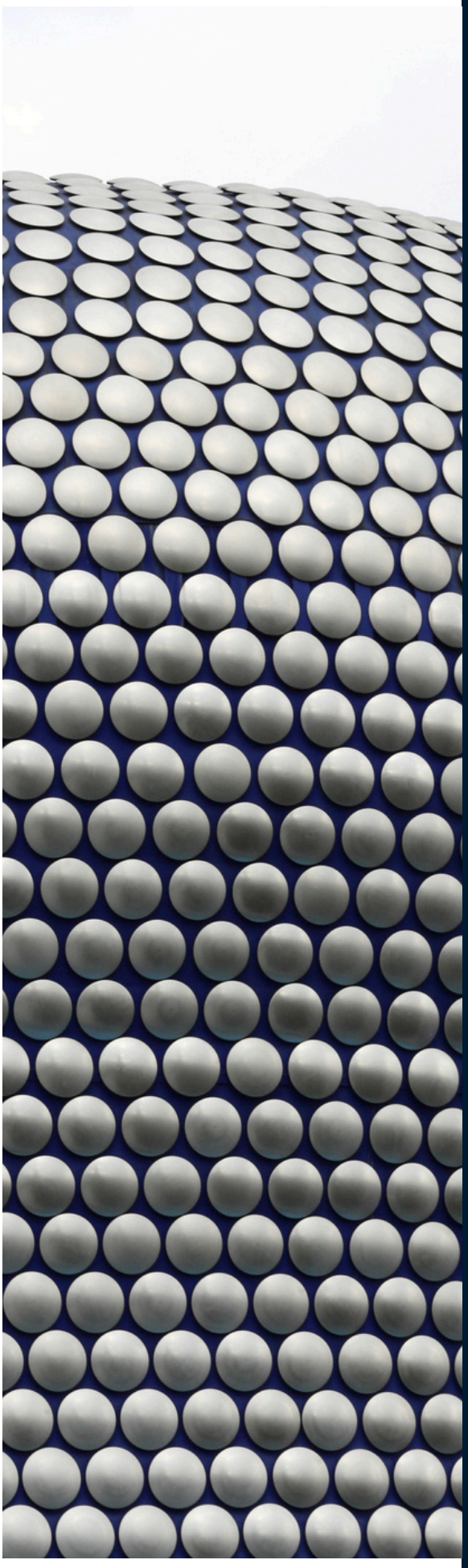

The Building **Blocks of Britain**

Securing the Future of UK Metals

www.alfed.org.uk/publications

Foreword

It is a pleasure to provide a Foreword to this discussion paper, The Building Blocks of Britain. Both authors are well known to ALFED through their previous engagement with the Federation, whether through research projects that have helped to evidence the role of aluminium in the UK economy and counsel or through their long-standing involvement in industry leadership, including the ALFED Presidency.

This paper sets out many of the strategic challenges and opportunities facing the UK metals sector and the vital importance of the metals sector to UK national economic competitiveness, defence and infrastructure. Several themes resonate particularly strongly with the aluminium industry: the urgent need for competitive industrial energy prices to safeguard investment and decarbonisation; the importance of aligning UK and EU trade frameworks to prevent carbon leakage and protect competitiveness; and the opportunity to retain more value at home through a stronger approach to recycling and circularity.

These priorities are closely aligned with the direction ALFED is taking through the UK Aluminium Alliance – a new industry-led initiative designed to bring together producers, downstream users, government, and academia to develop a coherent framework for the sector's future. The Alliance is already beginning to shape discussions on energy, trade, and sustainability, offering a platform through which many of the recommendations in this paper could be taken forward.

This report has been prepared independently by the authors, drawing on their deep understanding of the sector and awareness of industry priorities. That independence is valuable, offering an external perspective on the scale of the challenges and the importance of long-term policy support for metals.While the views expressed are the authors' own, ALFED welcomes this thoughtful, evidence-based intervention.

These priorities align with the direction we are taking through the UK Aluminium Alliance, bringing producers, downstream users, government and academia together to shape practical solutions on energy, trade and sustainability. We see this paper as a useful input to that work and to wider cross-metal dialogue.

I commend this paper as a timely and thoughtful contribution to the debate on the future of UK metals, and as a reminder of the critical role that aluminium – and the wider sector – will play in ensuring the UK's industrial resilience and Net Zero ambitions.

Nadine Bloxsome
Chief Executive Officer,
Aluminium Federation (ALFED)

ALFED
ALUMINIUM FEDERATION

The Building Blocks of Britain: Securing the Future of UK Metals

Simon MacVicker
Professor Andrew Perchard, PhD

December 2025

Summary

This version of *The Building Blocks of Britain*, originally published in October 2025 and launched at the Aluminium Federation's 2025 Annual Business Briefing, has been reissued to take account of the welcome publication by the UK Government of *Vision 2035: Critical Minerals Strategy* in November 2025. In his foreword to *Vision 2035*, the Minister for Industry Chris McDonald MP emphasized the importance of metals to modern society, the vulnerability of supply chains, and the welcome commitment of the UK Government to grow domestic metals production.[1] Alongside the Department of Business and Trade's announcement on 31 October 2025 of an uplift to the Network Charging Compensation Scheme for energy intensive industries from 60% to 90%, building on the British Industry Supercharger measures introduced in 2024, these are encouraging steps, which are long overdue.[2]

These measures also start to address concerns raised in the UK Critical Materials Intelligence Centre (CMIC) 2024 criticality assessment of vulnerability in vital metals ranging from aluminium through to zinc.[3]

As we make clear in *The Building Blocks of Britain*, metals are pivotal to national economic competitiveness, defence, decarbonisation and infrastructure. We highlight how vulnerable the UK has become because of deindustrialisation and the importance of reshoring metals production and the conditions necessary to ensure national self-sufficiency.

In confronting increasing geopolitical uncertainty and the threat to disruption of supply chains, as well as the need for supporting and expanding existing downstream capacity, we reflect on public-private initiatives during the interwar years of 1919 – 1939 to ensure minerals supply and self-sufficiency and to support the industry in maintaining

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[1] UK Government, *Vision 2035: Critical Materials Strategy*: https://assets.publishing.service.gov.uk/media/6937fa7833c7ace9c4a41e25/uk-critical-minerals-strategy-vision-2035.pdf

[2] Department of Business and Trade (2025): https://www.gov.uk/government/consultations/network-charging-compensation-scheme-uplift-for-energy-intensive-industries/outcome/proposed-uplift-to-the-network-charging-compensation-scheme-for-energy-intensive-industries-eiis-government-consultation-response

[3] UK CMIC, *UK 2024 Criticality Assessment: Decarbonisation and Resource Management Programme* (2024): https://www.ukcmic.org/downloads/reports/ukcmic-2024-criticality-assessment.pdf

competitiveness and encouraging capital investment. These were a direct result of the raw materials supply crisis during the First World War and ensured that in 1939 Britain was far better prepared for war than she had been in 1914.

To ensure the UK's metals resilience, we suggest requires partnership again of government and industry, as well as energy suppliers and the infrastructure of industrial R&D, crucially the UK's world-class university sector. It also requires instilling a changed mindset, one that embraces a cooperative long-term commitment embodied in a coordinating body involving all the key stakeholders with acuity to the present needs of nation and industry, and alertness to future scenarios and agility to respond.

Simon MacVicker & Andrew Perchard

1. This position paper discusses urgent questions that need to be addressed by industry and government about the UK's metals supply and the long-term resilience of domestic metals production. Metals are of both *critical* importance to UK national economic resilience (infrastructure, manufacturing, and decarbonisation) and *strategically* important to its defence requirements. The need to take stock of these questions is made more pressing by significantly heightened geopolitical provocations and disruption to settled global trade agreements. Considering these challenges to international trade and geopolitical risks, this paper examines how the metals sector and government have responded to such challenges historically.[4]

2. The authors of this discussion paper bring accrued knowledge and experience of the UK and global metals sector and the energy and industrial policy landscape. *Simon MacVicker* has worked for 37 years in the UK metals industries, was formerly Managing Director of Bridgnorth Aluminium, President of the Aluminium

[4] There are lengthy academic and policy debates over the use of 'criticality' and 'strategically' important raw materials. Here we delineate between the *criticality* of metals for manufacturing and infrastructure and the supply chain, and their *strategic* importance for defence. See, for example: David Haglund. "Strategic minerals: A conceptual analysis". *Resources Policy*, 10 (3) (1984): 146 – 152; David Haglund. "What good is strategic culture? A modest defence of an immodest concept." *International Journal*, 59 (3) (2004): 479-502; National Research Council, *Minerals, Critical Minerals, and the US Economy* (Washington, DC: NRC, 2008); UK House of Commons, Science and Technology Committee, *Strategically important metals* (HC 726). (London: House of Commons, 2011): https://publications.parliament.uk/pa/cm201012/cmselect/cmsctech/726/726.pdf

Federation (ALFED) and Chair of the UK Metals Council.[5] *Professor Andrew Perchard* (University of Otago, New Zealand, and Birkbeck, University of London) has written extensively on the history of the global metals trade and energy supply industries, is a co-founder of the History and Strategic Raw Materials Initiative (a UK-NZ-Norwegian research project), has advised the metals industry, and was formerly Head of Energy Supply Policy in the Scottish Executive (now Scottish Government).[6]

3. The urgency of this discussion is highlighted by a significantly changed geopolitical situation and global economic outlook with profound implications for security of supply, as well as continued demands to maintain national economic competitiveness and infrastructure and meet increasing defence requirements. Brexit, the Russian invasion of Ukraine, and more recently the profound uncertainty introduced by unpredictable US trade tariffs and foreign policy are calling into question international security alliances and trade rules. Where "resource nationalism" and a "new mercantilism" was spoken about as a regional matter a decade ago, and even challenged as a concept recently, resource nationalism is once again very visible on a global stage.[7] There is growing acknowledgment that we have entered a neo-mercantilist era of nationalist economic policy forefronted by China, Russia and the United States.[8] It is important that we are prepared to meet the new challenges of these changed geopolitical circumstances. This paper is also informed by a deep historical view of the metals industry. Concurrently, UK metals producers are struggling to maintain competitiveness particularly in the face of far higher energy costs than many of their global competitors.

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[5] Contact: simonmacvicker226@gmail.com

[6] Contact: andrew.perchard@otago.ac.nz; Andrew Perchard, *Aluminiumville: Government, Global Business and the Scottish Highlands* (Carnegie, 2012); Mats Ingulstad, Andrew Perchard and Espen Storli (eds.), *Tin and Global Capitalism, 1850 - 2000: A History of the "Devil's Metal"* (Routledge, 2014); A.Perchard, M. Ingulstad and E. Storli. (2023), 'The Mining Industry: Expanding, Deepening and Widening since the 1750s'. In M. Kipping, T. Kurosawa and D. E. Westney (eds.), *Oxford Handbook of Industry Dynamics* (Oxford University Press, 2023). DOI: https://doi.org/10.1093/oxfordhb/9780190933463.013.35; A. Perchard, R. M. MacLeod and J. Mouat, '"British Empire in Metals": Non-State Actors and the Political Economy of Imperial Minerals, 1913 – 39', *Business History* (2025). DOI: 10.1080/00076791.2025.2606356

[7] David Humphreys. "New mercantilism: A perspective on how politics is shaping world metal supply". *Resources Policy*, 38 (3) (2013): 341 – 349; David Humphreys, *The Remaking of the Mining Industry*. (London: Palgrave, 2015); Woijech Ostrowski. "The twilight of resource nationalism: from cyclicality to singularity?". *Resources Policy*, 83 (2023): https://doi.org/10.1016/j.resourpol.2023.103599

[8] For background: Eric Helleiner, *The Neomercantilists: A Global Intellectual History* (Ithaca: Cornell University Press, 2021).

4. This paper asks: 1) What government across the home nations of the UK and metals sector are prepared to do to meet defence, economic and infrastructure requirements in the event of serious disruptions to supply chains of critical and strategically-important metals?; 2) whether the UK has the mechanisms to ensure security of supply of vital metals?; and 3) what conditions and mechanisms are necessary to ensure this?

5. The metals sector has already instigated proactive initiatives to highlight the importance of the domestic metals production to the UK, such as the UK Aluminium Alliance (launched by ALFED) and the Back British Metals Initiative.[9] These complement the broader manufacturers' initiative, Make UK.[10]

6. The paper is structured as follows:

   Section A outlines the strategic significance of the metals industry to UK defence, and their critical importance to the economy, and highlights the urgency of the precarious position the UK metals industry now faces and explanations for that;

   Section B considers historical precedents in exploring UK preparedness for strategic raw materials supply (with studies of 1914 – 1918, and 1939 – 1953) and of innovative cooperative industrial alliances and government-industry initiatives in the aluminium industry and other non-ferrous metals. These historical insights of organisation and collaboration between industry, government and universities, from a period of geopolitical turbulence and international trade disruption, are timely;

   Section C identifies key priorities for ensuring the resilience of UK metals production, and security of supply for the nation, including addressing long term energy costs and supply, carbon taxation, funded R&D partnerships, and an oversight body and a pressing need for scenario planning;

   Section D provides suggestions for policy and public information; and

   Section E outlines some suggested necessary further research to support these activities.

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[9] UK Aluminium Alliance: https://alfed.org.uk/policy-areas/uk-aluminium-alliance/ ; Back British Metals Initiative: https://backbritishmetals.org/

[10] Make UK: https://www.makeuk.org/

Section A: UK Metals Contribution and Situation

The strategic and critical importance of metals to the UK

7. Metals are the building blocks of major modern economies, including Britain. The secure supply of metals is vital to the smooth running of most key sectors of the economy and public services; maintaining infrastructure, serving communities and regions, and national security. Other major economies recognise domestic metals production as a source of national competitive advantage, to meet decarbonisation targets, and for defence requirements: Most notably, China has pursued an industrial strategy means that it now produces 60% of the world's primary aluminium and 53% of the world's steel.[11] In the US, the Biden administration launched the $675m Bipartisan Infrastructure Law Programme to secure and expand domestic US critical materials supply, and the Trump administration has also followed this, with aluminium and steel viewed as critical raw materials.[12] The Canadian government has reinforced the strategic importance and its support for its domestic aluminium and steel industries to defence and infrastructure.[13] The EU has already approved €5bn in German government subsidy to its steel industry to support German decarbonisation initiatives and is seeking further approval for subsidies to support defence expansion, crucial to supplying Ukraine.[14] While the EU's *Steel and Metals Action Plan* (2025) combines defence, industrial and

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[11] International Aluminium Institute, Primary Aluminium Production (2024): https://international-aluminium.org/statistics/primary-aluminium-production; World Steel Association, Total Production of Crude Steel (2024): https://worldsteel.org/data/annual-production-steel-data.

[12] US Department of Energy (2022): https://www.energy.gov/articles/biden-harris-administration-launches-675-million-bipartisan-infrastructure-law-program; US Geological Survey (2022): https://www.usgs.gov/news/national-news-release/us-geological-survey-releases-2022-list-critical-mineralshttps://www.usgs.gov/news/national-news-release/us-geological-survey-releases-2022-list-critical-minerals.

[13] Department of Finance, Canadian Government (19 June 2025): https://www.canada.ca/en/department-finance/news/2025/06/canada-bolsters-its-measures-to-protect-canadian-steel-and-aluminum-workers-and-industries.html

[14] European Commission (24 March 2025): https://ec.europa.eu/commission/presscorner/api/files/document/print/es/ip_25_846/IP_25_846_EN.pdf

decarbonisation renewal programmes to support a strategically important sector, expressing particular concern about the shortfall in vital aluminium and nickel.[15]

8. In the UK, the Johnson government's *Resilience for the Future: The UK's Critical Materials Strategy* acknowledged the critical and strategic importance of metals.[16] The UK Critical Materials Intelligence Centre (CMIC), commissioned by the Department of Business and Trade, UK criticality assessment (2024), identified the growing vulnerability of the UK to disruption of security of supply of metals and expanded the list of critical materials to include such vital metals as aluminium, chromium, germanium, iron, nickel, zinc, which are all deemed to fall within the criticality threshold as giving cause for concern.[17] CMIC's 2024 assessment, which included 82 rather than the 26 of their first survey after formation in 2022, underlines the importance of the work to be undertaken and pressing need for increasing preparedness. However, aside from selective references to steel, *The UK's Modern Industrial Strategy* (2025) made no reference to any other of the vital metals critical to meeting defence and infrastructure needs.[18] The urgency of that assessment has been made even more acute by recent geopolitical shocks combined with longer-term trends and threats to domestic production. The recent crisis over British Steel Ltd has highlighted the urgent need to coordinate efforts to sustain critical domestic metals production as part of UK resilience and security of supply. The publication of *Vision 2035: Critical Minerals Strategy* (2025) reinforces the pressing need for UK metals resilience and makes a commitment to support that through the support of domestic production and building resilient global supply chains.[19] The bipartisan acknowledgement of the pressing need to support domestic production – as highlighted by *Resilience for the Future* (2022) and *Vision 2035* (2025) - provides the acknowledgment of the urgency to build UK metals resilience and the basis for cross-party support of that. However, that will

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[15] *EU Steel and Metals Action Plan* (2025): https://single-market-economy.ec.europa.eu/document/download/7807ca8b-10ce-4ee2-9c11-357afe163190_en?filename=Communication%20-%20Steel%20and%20Metals%20Action%20Plan.pdf

[16] Department for Business, Energy & Industrial Strategy, *Resilience for the Future: The UK's Critical Minerals Strategy* (2022): https://www.gov.uk/government/publications/uk-critical-mineral-strategy/resilience-for-the-future-the-uks-critical-minerals-strategy#foreword-from-the-secretary-of-state-for-business-energy-and-industrial-strategy

[17] UK CMIC, *UK 2024 Criticality Assessment: Decarbonisation and Resource Management Programme* (2024): https://www.ukcmic.org/downloads/reports/ukcmic-2024-criticality-assessment.pdf

[18] UK Government, *The UK's Modern Industrial Strategy* (2025): https://assets.publishing.service.gov.uk/media/68595e56db8e139f95652dc6/industrial_strategy_policy_paper.pdf

[19] UK Government, *Vision 2035: Critical Minerals Strategy*.

now need concerted action, sustained political support and a shared commitment to long-term planning and support to realise that vision.

9. *Defence*: The UK *Strategic Defence Review 2025* summarises the threats to the UK from the changing geo-political landscape, and identifies "a thriving, resilient innovation and industrial base" as fundamental to the transformation of UK defence and notes that "innovation and industrial power are central to deterrence and decisive factors in war."[20] The Review calls for improved working with industry at a strategic level and the building up of national supply chains. UK defence spending will increase to 2.5% of GDP by 2027, which will include a significant focus on rebuilding depleted stockpiles, munitions and 'enablers' (transport, weapons delivery systems and communications). UK defence spending also typically includes civil defence, including stockpiling of food and equipment. As well as rare earths, defence requirements rely heavily on metals such as aluminium, cobalt, platinum, steel, titanium, and tungsten. For example, fighter aircraft require three tonnes of aluminium, and main battle tanks and self-propelled artillery systems respectively 50-60 and 100 tonnes of steel, while TA6V alloy and PER718 superalloy used extensively in defence applications require significant quantities of aluminium, chromium, nickel, titanium, and vanadium.[21] Some of these metals must be imported in processed form. In other cases, such as aluminium, steel, and tungsten, there is some but limited domestic production of the raw metal (primary aluminium at Alvance British Aluminium's Lochaber smelter in the Scottish Highlands, steel at British Steel's Scunthorpe blast furnace in Lincolnshire, and wolframite into tungsten at Wolf Minerals' project at Hemerdon in Dorset). Vital secondary and downstream production of these metals is spread across the UK, with the possibility for regional expansion based on defence requirements, thus also contributing vital jobs and support for local businesses and communities and for the regional tax base. The UK Government has also confirmed that it will also be supporting British companies to compete for EU defence contracts so demand may rise even more.

10. *National Economic Competitiveness and Net Zero*: Metals are also critical to UK national competitiveness and meeting the needs of the core areas identified in the

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[20] Ministry of Defence, *Strategic Defence Review: Making Britain Safer: Secure at Home, Stronger Abroad* (HMSO, 2025): 44 & 51: https://www.gov.uk/government/publications/the-strategic-defence-review-2025-making-britain-safer-secure-at-home-strong-abroad

[21] EU, *Raw materials in the European defence industry* (2016): https://op.europa.eu/en/publication-detail/-/publication/5d0ca1b4-aaff-11e6-aab7-01aa75ed71a1/language-en

UK Government's Green Paper, *Invest 2035: the UK's Modern Industrial Strategy*: advanced manufacturing; clean energy industries; defence; digital; and technologies. The recent UK industrial strategy's scant references to steel and omission of other critical metals are striking. Metals, such as aluminium, are critical to delivering Net Zero commitments (notably in renewable energy, infrastructure and transport), while both the base and peak load energy requirements of upstream and downstream metals producers offers considerable opportunities for Great British Energy.[22] Securing long-term resilience in metals supply will be vital to supporting Scotland's primacy in renewables, as well as other growth areas such as high value and low carbon manufacturing, space, and the circular economy, as the Scottish Government have recognised, including in their financial guarantees for ALVANCE British Aluminium Lochaber smelter and Liberty Steel Dalzell.[23] The Welsh Government have also highlighted the critical importance of metals supply to the Welsh economy.[24] UK aluminium industry has also been a leader in proactively supporting Net Zero, with a programme to achieve this following the publication of their *Towards Net Zero* strategy in 2022.[25] They are of paramount importance to infrastructure (from construction through electricity supply to transportation); maintaining current infrastructure to ensure stability and connectivity

11. *Contribution to the UK economy and employment*: Scrutiny of a number of these metals gives some indication of metals as the building blocks of Britain and their strategic importance. Aluminium, for example, is vital to construction, defence, electricity supply, civil transportation, as well as food, beverage and

[22] International Energy Agency (IEA), *The Role of Critical Minerals in Clean Energy Transitions* (2020): https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions
[23] Scottish Manufacturing Advisory Board, *A Manufacturing Future For Scotland* (2016): https://www.gov.scot/binaries/content/documents/govscot/publications/corporate-report/2018/09/a-manufacturing-future-for-scotland-action-plan/documents/a-manufacturing-future-for-scotland/a-manufacturing-future-for-scotland/govscot:document/A+manufacturing+future+for+Scotland.pdf; Scottish Government, *Delivering Economic Prosperity: Scotland's National Strategy for Economic Transformation* (2022): https://www.gov.scot/binaries/content/documents/govscot/publications/strategy-plan/2022/03/scotlands-national-strategy-economic-transformation/documents/delivering-economic-prosperity/delivering-economic-prosperity/govscot%3Adocument/delivering-economic-prosperity.pdf
[24] Welsh Government, *A Manufacturing Future for Wales: A Framework For Action* (2021): https://www.gov.wales/sites/default/files/publications/2021-02/manufacturing-future-for-wales-framework.pdf; Welsh Government, *A Manufacturing Future for Wales: Our Journey to 'Wales 4.0'* (2023): https://www.gov.wales/sites/default/files/publications/2023-06/manufacturing-future-wales-our-journey-wales-4-0.pdf
[25] Aluminium Federation, *Towards Net Zero* (2022): https://alfed.org.uk/wp-content/uploads/2023/11/NET-ZERO-Sept-2022_final.pdf

pharmaceuticals packaging. The aluminium industry generated £9.4bn in Gross Value Added (GVA) and contributed 108,000 jobs across the UK in 2023.[26] Steel contributed £1.7bn in GVA and employed 37,000 in 2024 (House of Commons, 2025).[27]

The current situation in UK Metals

12. The UK metals sector is in a precarious situation, after many years of capacity curtailments and closures. A legacy of debilitating UK energy and policy costs, the mainly international ownership of metals companies, and place in global supply chains, led to UK metals plants developing strategies to serve distinct market niches according to their strengths. This has often led to more general commoditised markets being served by imports, at first by other metals facilities in the EU27, but increasingly by other origins especially China. The introduction of the British Industry Supercharger Scheme, introduced in 2024, which provided some long overdue relief to energy intensive industries through 100% exemptions on contracts for difference, Renewables Obligation, Feed-in Tariffs, costs arising from the Capacity Market, and the energy intensive industries (EII) Network Charging Compensation Scheme (NCCS), were a welcome corrective. As was the extension to the latter in October 2025 uplifting compensation from NCCS from 60% to 90% for EIIs.[28] As with bipartisan commitments to critical minerals, these provide the basis upon which cross-party support might be built for a commitment to long-term solutions.

13. In aluminium, primary capacity has been reduced to barely minimal levels, with only ALVANCE British Aluminium's primary aluminium smelter at Lochaber left after the closure of smelters at Lynemouth in 2012 and Anglesey in 2013. Bridgnorth Aluminium is the only facility in the UK rolling aluminium coils but has sold less than 10% of its production in the UK, whilst the market relies almost totally on imports.[29] Novelis UK's site in Latchford exports 100% of its production to Group facilities outside the UK. Hydro Aluminium Deeside exports a significant percentage of its production. Metals facilities still operating in the UK today have

[26] Fraser of Allander Institute/ ALFED, *The Aluminium Industry in the UK* (2024): https://alfed.org.uk/wp-content/uploads/2024/09/ALFED-FAI-Report-2024.pdf
[27] House of Commons Library, *UK Steel Industry: Statistics and policy* (2025): https://researchbriefings.files.parliament.uk/documents/CBP-7317/CBP-7317.pdf
[28] DBT (2025): https://www.gov.uk/government/consultations/network-charging-compensation-scheme-uplift-for-energy-intensive-industries/outcome/proposed-uplift-to-the-network-charging-compensation-scheme-for-energy-intensive-industries-eiis-government-consultation-response
[29] Bridgnorth Aluminium, *Annual Reports and Accounts*: https://find-and-update.company-information.service.gov.uk/company/04155640/filing-history

their own stories of specialism which have enabled their survival. But for the UK economy as a whole, this core strategic supply chain has become totally hollowed out and reliant on imports. The market share of wrought production is low especially in rolled products and under threat from imports. With the changed geo-political context this is a strategic weakness for the UK as an advanced economy.

14. For steel, the domestic market share of UK steel producers was running at only 32% in 2024, Port Talbot's blast furnace in South Wales, managed by Tata Steel, was forced to close. This year, the UK government was forced to step in to prevent the closure of the last remaining blast furnaces operated by British Steel Scunthorpe in Lincolnshire, and further job losses have been announced at Tata's Corby mill. The UK risks being the first G7 country to cede the fundamental ability to produce all grades of steel for its economy, infrastructure and defence, leaving it reliant on imports.[30]

15. Recently Pensana have shelved longstanding plans to refine Rare Earths at Saltend in Yorkshire to relocate to the US.

16. This situation exists despite the fundamental demand for both steel and aluminium increasing on a world basis, including in Net Zero scenarios. The World Bank forecasts that demand for aluminium will more than double in a 2-degree climate scenario.[31] Whilst the International Energy Agency (IEA) projects that worldwide consumption per capita of aluminium will rise from the current 13kg per capita to 16-17kg per capita by 2050.[32] The UK as an advanced economy uses considerably more, but self-sufficiency even at the average would have required a domestic production of 910kt in 2023 (around double our actual production) and 1.2Mt by 2050 in the Net Zero scenario.[33] For steel, only 40% of the UK's steel demand of 7.7Mt in 2023 was met from domestic production, while on a world average basis production and demand should have been at least 15Mt, even while the economy progresses towards Net Zero.[34] In 2024, CMIC identified 34 out of 82 materials as

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[30] UK Steel, *Steel Trade Beyond 2026: Addressing Global Non Market Excess Capacity* (October 2024): https://www.uksteel.org/steel-trade-new-policies-post-2026-1

[31] World Bank, 'Cost-Competitive, Low-Carbon Aluminum Is Key To The Energy Transition' (2023): https://egps.worldbank.org/blog/cost-competitive-low-carbon-aluminum-key-energy-transition; OECD, Steel Outlook 2025: file:///Users/andrewperchard/Downloads/28b61a5e-en.pdf

[32] IEA *World Energy Outlook 2024* derived from tables A.3a-c and A.5a-c: https://www.iea.org/reports/world-energy-outlook-2024

[33] IEA, *World Energy Outlook 2024*.

[34] World Steel Association, *2024 World Steel in Figures*: https://worldsteel.org/data/world-steel-in-figures/world-steel-in-figures-2024/ ; UK Steel (2025): https://www.uksteel.org/steel-news-2025/us-25-

being critical and called for a viable, proactive and far-reaching strategy to secure UK metals supply.[35] These demand projections all pre-date recent commitments for increased defence spending, therefore demand will increase markedly on defence requirements alone after expenditure is converted into new additional demand for metals. CMIC's Director Dr Gavin Mudd noted in that report 2024 that: "... the growing diversification of the UK economy – alongside the expanding reliance on global trade – brings an increasing vulnerability in terms of disruption to the supply of critical materials." Dr Mudd further underlined the imperative for the UK to confront and address the seriousness of the situation: "There are similarities to other criticality assessment lists across the globe, but the demands and challenges facing the UK economy are dynamic and we need to match the demand for minerals with sustainable and reliable supply."[36]

17. Having experienced an uncompetitive energy environment in the UK for the last 20-30 years, combined with the extraordinary increase in non-market excess capacity in steel and aluminium by China, the UK has contracted its domestic capacity relying instead on imports, initially from France and Germany and increasingly from China and Turkey.[37] This situation leaves the UK vulnerable, as *Vision 2035* acknowledges.[38] As the *Strategic Defence Review 2025* makes clear, UK defence will only be possible with an effective and innovative domestic supply chain.[39] Even in a scenario where the imminent threat of conflict is avoided, China's self-imposed cap on primary aluminium capacity at 45Mt, and demographic pressures, notably a 22% drop in working age population, will likely cause supply constraints from China over the period to 2050.[40]

18. The problems in government intervention in domestic capacity were highlighted in a recent submission by Professor David Edgerton to the House of Commons Select Committee on Business and Trade. Whilst Professor Edgerton is correct in highlighting the inconsistencies in HMG's reactive responses to the crisis in UK

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tariffs-on-uk-steel-imports-come-into-effect#:~:text=The%20UK%20steel%20sector%3A,further%2042%2C000%20in%20supply%20chains

[35] CMIC, *UK 2024 Criticality Assessment*.

[36] CMIC, *UK 2024 Criticality Assessment.*

[37] Michael Grubb and Paul Drummond, *UK Industrial Electricity Prices: Competitiveness in a Low Carbon World* (UCL Energy Institute/ UCL Institute for Sustainable Resources, 2018): https://www.ucl.ac.uk/bartlett/sites/bartlett/files/uk_industrial_electricity_prices_-_competitiveness_in_a_low_carbon_world.pdf

[38] UK Government, *Vision 2035*.

[39] Ministry of Defence, *Strategic Defence Review.*

[40] United Nations, *World Population Prospects 2024*.

steel, the following risks are overlooked, of relying exclusively on imports of the primary metal and why securing the future of domestic metals production is vital.[41]

19. How then will the UK attract the metals investment required to support a functioning advanced economy and assure security of supply for its defence requirements?

UK metals vulnerabilities

20. Metals production is highly energy, capital and trade intensive:

    Capital intensity means that considerable capital investment is required to establish, maintain and improve production capacity. Because the level of initial and ongoing investments are high, returns can only be achieved over longer time frames. In order for a financial reward to be earned for the high initial risk over a longer time frame, companies look for as much stability as possible, including policy stability. Lack of stability creates a loss of confidence, which in turn creates a hesitation or refusal to establish or maintain the capital investments, resulting in degradation or curtailment of production capacity.

    Energy intensity means that a very significant proportion of the company's cost base is heavily contingent on energy, which is a variable cost. Higher energy costs are higher variable costs, which in turn means that companies afflicted cannot trade their way out of the problem, because higher sales volumes create even bigger losses, and so the only strategy is reduction of production and sales volume, and potentially total curtailment.

    Trade intensity means that the metals industry has high proportions of internal trade both in terms of imports to the UK market and exports by UK producers to other geographies. As a result, pricing is international, and therefore domestic policy costs cannot be passed on to downstream customers, because they will source cheaper products from international competitors.

21. Energy intensive industries cannot be sustainable in the long term in high energy price environments and will look for other investment opportunities. If the UK wishes to have a strong and resilient domestic industry to support national security

[41] Evidence to the House of Commons Select Committee on Business and Trade (22 May 2025): https://committees.parliament.uk/writtenevidence/141244/pdf/

and national economic competitiveness, it needs to create the conditions for the industry to thrive, notably the key factors of energy costs, trade defence, and policy stability.

22. *Energy costs*: A major vulnerability for UK metals production given the energy intensity of this group of industries is industrial energy pricing, with UK industrial customers paying significantly higher rates than all of their competitors.[42] The IEA has calculated that UK industrial customers pay 50% more for energy than their French or German counterparts, and 46% more than the IEA median.[43] The Office of National Statistics has highlighted that the impact of industrial energy prices has fallen most severely on UK metals production with a drop in output of 46.5%.[44] UK Steel, for example, has calculated that domestic producers pay £15-22/MWh more than their French and German counterparts in an industry in which 20%-40% of their costs derive from energy.[45] These anomalies in pricing have their foundations in the UK's privatization of the Central Electricity Generating Board, the North of Scotland Hydro Electric Board, and the South of Scotland Electricity Board between 1990 and 1991 leading to a fragmented energy network and one, through its embrace of price-cap regulation, which incentivized maximising profits to ensure sufficient investment and led to spiralling industrial energy prices. This is in sharp contrast to the situation in the UK's European and most global competitors, who benefit from greater connectivity (and by contrast the need for the UK to invest adequately in its ageing grid) and far more extensive use of long-term contracts for energy-intensive industries.[46] In the UK not only has metals production become extremely expensive due to high energy costs, significantly diminishing margins which could be re-invested for capacity upgrades, notably for energy efficiency and decarbonisation initiatives, those facilities with captive electricity supply have

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[42] Department of Energy Security and Net Zero (DESNZ), *International Industrial Energy Prices* (2013-2023): https://www.gov.uk/government/statistical-data-sets/international-industrial-energy-prices
[43] DESNZ, *International Industrial Energy Prices*.
[44] ONS, *The impact of higher energy costs on UK businesses: 2021 to 2024* (2025): https://www.ons.gov.uk/economy/economicoutputandproductivity/output/articles/theimpactofhigherenergycostsonukbusinesses/2021to2024#:~:text=Electricity%20prices%20for%20UK%20industrial,median%20(see%20Figure%203).
[45] UK Steel, *Industrial electricity prices: A barrier to growth competitiveness and profitability* (2024): https://www.uksteel.org/electricity-prices . See also: House of Commons Library, *UK Steel Industry: Statistics and policy* (2024).
[46] DESNZ, *International industrial energy prices*; Martin Chick, "The Power of Networks: Defining the Boundaries of the Natural Monopoly Network and the Implications for the Restructuring of Electricity Supply Industries", *Annales historiques de l'électricité*, 2 (2004): 89-106; Martin Chick, *Electricity and Energy Policy in Britain, France and the United States since 1945* (Cheltenham, 2009); Grubb and Drummond, *UK Industrial Electricity Energy Prices*.

had the opportunity of making higher returns simply by selling electricity to the open market, reducing production volumes even further. Whilst the British Industry Supercharger Scheme and the NCCS uplift have provided some mitigation, maintaining a commitment to low energy costs to the metals industry in the long-term is imperative to UK metals resilience, defence and national economic competitiveness.

23. The challenges of energy supply and pricing will only become more acute with the UK government's ambitious plans for the £47bn AI Opportunities Action Plan and its planned construction of 100 new data centres by 2025.[47] The IEA recently projected that by 2030, data centres global electricity consumption will have more than doubled to reach 945 Terawatt hours (TWh) and will consume more energy than Japan and outstrip all other industries consolidated in the US, with arising data centre consumption in Britain is set to reach 72TWh, accounting for a quarter of consumption.[48] Meanwhile the National Energy Systems Operator (NESO) estimated in 2024 that data centre electricity consumption in Britain is set to rise from around 7.1TWh to 28.5TWh.[49] IEA modelling of extant literature on data centres identifies average energy usage of 5.7-8.9TWh or 5700-8900 Gigawatt hours (GWh) based on Nvidia figures for 2023 (one of the largest investors in data centres planned for the UK).[50] Planning for the future energy demands from the new data centres is also complicated by a lack of clarity; IEA (2025) note: "There is substantial uncertainty both about data centre consumption today and in the future. The uncertainty surrounding future electricity demand requires a scenario-based approach to explore alternative pathways and provide perspectives on timelines relevant for energy sector decision-making". Whilst the scale of this uplift is significant, there is also considerable variation in the projections for energy consumption making energy planning very difficult and uncertain.[51] There are also marked differences between energy (and industry) planning and that of the digital technology sector demands (IEA, 2025): "While the technology sector moves quickly and a data centre can be operational in two to three years, the broader energy system requires longer lead times to schedule and build infrastructure,

[47] Department for Science, Innovation & Technology, *AI Opportunities Action Plan* (2025): https://www.gov.uk/government/publications/ai-opportunities-action-plan/ai-opportunities-action-plan
[48] IEA, *Energy and AI: World Energy Outlook Special Report* (2025): https://www.iea.org/reports/energy-and-ai
[49] NESO, *Clean Power 2030: Advice on achieving clean power for Great Britain by 2030* (2024): https://www.neso.energy/document/346651/download
[50] IEA, *Data Centre Energy Use: Critical Review of Models and Results* (2025): https://www.iea-4e.org/wp-content/uploads/2025/05/Data-Centre-Energy-Use-Critical-Review-of-Models-and-Results.pdf
[51] IEA, *Data Centre Energy Use* (2025).

which often requires extensive planning, long build times and high upfront investment."[52] Furthermore, with over 60% of the energy demand from data centres arising from servers producing significant fluctuations in peak, rather than base, load and the expansion of Long Duration Electricity Storage facilities some way off, such exponential demand (and uncertainty about its full scale) and the pressure on peak load means that energy-intensive industries, such as metals, and government must be attentive to the risks. This is even more acute given the rising grid congestion issues faced by Britain.[53] As an indication of possible energy scenarios created by this extra demand, AI data centres demand in Ireland, already consuming 21% of grid output (and demand from Irish AI data centres having risen by 400% since 2015), has already come close to causing several national blackouts, and the Irish government has now imposed a moratorium on the construction of new data centres until 2028.[54] In the US, the leading aluminium producer recently warned about the impact of the construction of data centres on energy prices forcing out metals producers and prompting the closure of a number of smelters on the west coast. They contrast this with actions of the New York Power Authority and Quebec governments in mitigating energy costs and protecting industries vital to the economy and society.[55]

Moreover IEA predicts that a full 40% of that energy for AI globally will come from coal, oil and gas, while the UN's International agency for digital technologies has reported that carbon emissions from AI-technology industries has increased by 150% significantly breaching their emissions targets, with significant implications for the UK government's Net Zero targets.[56] It is imperative that the industry and government undertake rigorous scenario planning around security of energy supply. The aluminium industry has experience of the serious risks associated with policy misjudgements over the introduction of new technologies impacting energy supply and prices with devastating effects. In 1967, the Wilson government promoted new Advanced Gas-cooled Reactors (AGR) linked to a new generation of primary aluminium smelters for the UK. The government promised that this new

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[52] IEA, *Energy and AI*.
[53] IEA, *Energy and AI*.
[54] Amber Jackon, "Power -Hungry Data Centres Put Pressure on Ireland's Grid', *DataCentre Magazine*, 3 August 2024.
[55] 'Alcoa: Smelters will struggle to compete with data centres on energy', *Aluminium International Today*, 9 December 2025: https://aluminiumtoday.com/news/alcoa-smelters-will-struggle-to-compete-with-data-centres-on-energy#:~:text=US%20aluminium%20producer%2C%20Alcoa%2C%20has,smelters%20to%20negotiate%20power%20costs.
[56] IEA, *Energy and AI.*

generation of nuclear reactors would produce electricity that would be too cheap to meter. Parliament and nuclear scientists warned that the technology had significant flaws but were overruled. The resulting delays and crippling energy costs arising from significant delays and shortcomings in the AGR programme resulted in the closure of British Aluminium's smelter at Invergordon after only a decade in operation. Anglesey Aluminium's smelter would have faced a similar fate had their costs not been absorbed by the CEGB but was effectively subsidised. Only Alcan, who declined to participate in the government's scheme and instead brokered a contract with the National Coal Board, avoided these risks.[57] It is therefore imperative that ensuring secure energy supply and long-term affordable energy contracts to UK metals producers be a priority and that government, along with energy providers and NESO and Ofgem plan for variable energy scenarios, in conjunction with the metals industry.

24. *Imports and anti-dumping regulations*: The UK's hitherto more laissez-faire approach to trade policy compared to the EU and USA, with lower import duties and a less punitive approach to anti-dumping has created adverse conditions for domestic metals producers as well as a disincentive to invest. The effects can be seen with multiple steel and aluminium curtailments and closures and the current crises in the main UK steel plants. The UK's heavy reliance on imports exposes it to risks of supply disruptions and price volatility. Recent analysis and modelling of EU-China trade balances, with metals particularly exposed, along with the ongoing uncertainty about US tariffs, highlight the potential risks to UK aluminium and steel exports and reliance on imports.[58] However, any response to this requires sensitivity to the requirements of different parts of the supply chain, underlining the importance of a representative oversight body and the need for joined up planning informed by up-to-date market intelligence.

Timing

25. A review and rethink of the UK's metals resilience is particularly pressing. This position paper comes while the government's new critical materials strategy is awaited. The previous government's Critical Minerals Strategy (2023) suggested that efforts would be focused on: a) accelerating growth of UK's domestic

[57] Perchard, *Aluminiumville*; Niall G. MacKenzie, 'Be careful what you wish for: Comparative advantage and the Wilson Smelters Project, 1967 – 1982' in Hans Otto Frøland and Mats Ingulstad (eds.), *From Warfare to Welfare: Business-Government in the Aluminium Industry* (Trondheim, 2012), 163-198.
[58] Rym Momtaz, "Taking the Pulse: In Light of Trump's Tariffs, Should Europe Get Closer to China", Carnegie Endowments Strategic Europe: https://carnegieendowment.org/europe/strategic-europe/2025/04/taking-the-pulse-in-light-of-trumps-tariffs-should-europe-get-closer-to-china?lang=en

capabilities; b) collaborating with international partners; and c) enhance international markets to make them more responsive, transparent and responsible. Geopolitics and the global economic landscape have changed dramatically since the 2023 Critical Minerals Strategy was published. Assumptions made then cannot be relied on now. *Vision 2035* recognises the urgent need for supporting domestic metals production and securing secure minerals supply chains. This includes naming aluminium, for example, both as a strategic and growth metal.[59] The metals industry is strategically important to the UK in meeting climate, defence and industrial priorities but the country faces a criticality risk across a range of metals. However, UK domestic metals producers are exposed and vulnerable because of the identified conditional weaknesses. In considering possible mechanisms, within this changed climate, to encourage long-term planning and mechanisms for oversight for the metals sector, we look next to historical precedents.

Section B: Historical precedents

26. Metals have been recognised as strategically significant throughout history, from the Romans development of metals production in modern day Britain and Spain, through the Napoleonic, US Civil War, the Franco-Prussian War, and the Anglo-Boer War but the upscaling of a range of metals production became of paramount importance with fully fledged modern industrial warfare through WWI, WWII, the Korean and Vietnam wars. Whilst any historical comparison needs careful application for distinctions in context and actors, historical precedents also provide valuable insights in real time while the UK confronts significant geopolitical disruption and to the global economy than we have since 1945. The situation is contextually distinct from both 1914 and 1939 because the UK was supplied by a global empire. Despite that, at the outbreak of war in 1914 Britain was woefully unprepared and suffered a major metal and munitions supply crisis by 1915. However, as after 1914 and in the interwar era of 1919-1939 so now economic nationalism is resurgent and the threat to global security and strategic autonomy is heightened. The UK is now even more vulnerable geopolitically and a far less important economic and political actor.

27. *First World War*: The so-called Shells Crisis of 1915 in which the British Army was running out of ammunition supplies is a misnomer in that it exposed a far more profound and widespread lack of preparedness for critical raw materials supply for

[59] UK Government, *Vision 2035.*

a war economy. In 1914, Britain was committed to being a free trade nation. Then it was at the centre of a large global empire. However, in the years running up to the war, several British dominions, notably Australia, had expressed growing concern over German metals trading companies purchasing of much of the output of important metallic ores and stockpiling of those. This was highlighted in the Dominions Royal Commission (1913-1918). By 1915, Britain was overseeing supply of British and Commonwealth armies and the home front, as well as that of its allies. The Shells Crisis led to major reorganization of the British war economy, bringing in business leaders to government to completely reorganize wartime supply and industry. A key concern of the Imperial War Cabinet – composed of British ministers and those of the dominions – arose from German control over metals and other minerals. Amongst the measures that emerged from various discussions within the Imperial War Cabinet and in internal ministry committees over 1916-1918, were those to: a) ensure security of supply of metals in the event of another conflict and gather intelligence on critical materials supply; and b) aid the competitiveness of British producers through industrial R&D initiatives.[60] Britain's policy responses after 1916, significantly informed by the Australian government as well, were based on an understanding that not only were metals and minerals supply vital to defence but also long-term economic security. The experience highlights the significant challenges of suddenly upscaling and assuring security of supply in a defence industrial base that though highly industrialized was ill-prepared for this.

28. *Interwar*: The lessons derived from serious shortages in strategically important metals in from the First World War were enshrined in the forming of two bodies that brought together government, business, and universities, as well as commercial laboratories, and the armed services. The two most central bodies were the Imperial Minerals Resources Bureau (IMRB) and the British Metals Corporation (BMC) (both formed in 1918), in which the leading British aluminium company was a central actor. Both played a pivotal role in the interwar period in setting up the infrastructure that ensured that Britain was much more prepared for conflict in 1939. These were also intended to ensure metals supply for national economic competitiveness. Both bodies collated intelligence on the minerals supply chain and worked with government to ensure security of supply for the UK

[60] Hew Strachan, *The First World War. To Arms, Vol.1* (Oxford University Press, 2001); Simon Ball, "The German Octopus: The British Metal Corporation and the Next War, 1914 – 1939", *Enterprise & Society*, 5 (3) (2004): 451-489; Perchard, *Aluminiumville*; Perchard et al, ' "British Empire in Metals": Non-State Actors and the Political Economy of Imperial Minerals, 1913-39'.

in the event of war. The IMRB lasted until 1925 when it was absorbed into the Imperial Institute's Advisory Council on Minerals (both are predecessors of the British Geological Survey and CMIC). BMC (after 1929, the Amalgamated Metal Corporation (AMC) – a holding company subscribed to by a number of British companies who had been pivotal the British war effort and served within the Ministry of Munitions and Reconstruction, including the British Aluminium Company who constructed the original Lochaber smelter – lasts to this day and ensured supplies of minerals were available to be accessed in the run up to and after the declaration of war in 1939. These bodies were also complemented in the 1930s by the Industrial Intelligence Centre, which gathered industrial intelligence on Nazi Germany, fascist Italy, and imperial Japan.[61] The IMRB and BMC were also supported by vital R&D networks, such as the British Non-Ferrous Metals Research Association (BNFRMA), which supported research partnerships between government, industry and universities and led to vital innovations both for commercial and defence uses, which aided the competitiveness of domestic producers and military preparedness.[62] The BMC/ AMC, IMRB, and BNFMRA provided the various basis in the interwar years in which Britain was able to ensure security of supply and during WWII quickly formed the basis of metals knowledge in key government ministries vital to the war effort. The metals industry globally also demonstrated some highly successful collaborations, which supported it through the global depression. A particularly enduring example being the Alliance Aluminium Company (1931-1938), which though deemed a cartel also brought together global aluminium majors to cooperate on marketing, R&D and transportation. This highly successful body through harmonious cooperation managed to sustain innovation and growth and successfully promote aluminium into many new markets during a period in which most other metals producers, notably steel, were languishing in the global economic depression is a glowing example of the potential for cooperation.[63]

29. *Second World War*: Whilst this did not mean that security of supply issues were entirely eradicated during the first years of the war, as shortages in aluminium supplies indicated during the Battle of Britain and from early Bomber Command losses, but there were far fewer and less significant supply issues for metals than

[61] R. J. Young, 'Spokesmen for Economic Warfare: The Industrial Intelligence Centre in the 1930s', *European Studies Review*, 6 (1976), 473 – 489; G. Bennett, *Churchill's Man of Mystery: Desmond Morton and the World of Intelligence* (London: Routledge, 2006).
[62] Ball, "German Octopus"; Perchard et al, "British Empire in Metals".
[63] Marco Bertilorenzi, *The International Aluminium Cartel: The Business and Politics of a Cooperative Industrial Institution (1886-1978)* (Routledge, 2015).

in 1914-18. These structures also were quickly mobilized and able to form the core of supply chains and to advise the Ministry of Aircraft Production and Ministry of Supply, as well as within the Admiralty and government laboratories. They also relied on supply and price controls operated by these ministries. They were underpinned by a highly effective partnership between government, business and universities providing vital resources and capabilities to ensure the ability to respond. They were also predicated on the understanding within government that domestic metals production was vital to defence, the economy and infrastructure, and that therefore it required conditions and support to aid its competitiveness and resilience.[64] These measures ultimately were also crucial to Britain's postwar reconstruction and in meeting the UK's dollar exchange obligations.

30. Against markedly changed geopolitical conditions and market disruption, these historic examples offer vital lessons for government and industry alike in mechanisms for supporting security of supply and innovation and growth in the wider economy.

Section C: Key Priorities and oversight body and planning

31. The reaction to the threats to UK steel in the last decade demonstrates that the UK is desperately in need of a more strategic and long-term view of the vitally important domestic metals industry, with significant changes to conditions and oversight if the UK's resilience in vital metals are to support the country's defence and Net Zero requirements and its underpinning of growth and innovation. The UK government's ambitious commitments to Gen AI (to grow by 20 times by 2030), despite significant questions over optimistic projections of its real economic, social and technological contributions and massive capital and energy demands (as well as environmental impact) highlight further the neglect of UK metals relative to its competitors, a sector with a long proven and demonstrable track record of supporting UK economic, infrastructure and defence requirements. It is imperative that this changes urgently; failure to invest in UK metals production will have profound implications for the UK's ability to address climate and defence commitments, on its core infrastructure, and cluster industries, regions and society, as *Vision 2035* acknowledges. As well as setting out here what we consider to be the ***key conditions*** necessary to ensure the resilience of UK metals and propose a ***body*** to oversee such arrangements.

[64] Ball, "German Octopus"; Perchard, *Aluminiumville*.

32. **Energy supply and pricing:** For such an energy and capital intensive, and vital sector, the UK's markedly higher industrial energy prices place domestic producers at a profound competitive disadvantage to their competitors. They also deter new investment in the sector in the UK. Ensuring locked-in long-term internationally competitive energy prices is crucial to ensuring industry support and the commitment to further investment. The advantages of supporting British metals production will have advantages for meeting many key government priorities, including defence, Net Zero and Great British Energy. The British Industry Supercharger scheme and subsequent uplift are welcome but a mechanism for an enduring solution may lie in the inducement to offer favourable long-term contracts for energy-intensive industries, as is much more often the case in other European countries. This will become a pre-requisite to shield metals companies from the likely rise in energy prices as added strain is placed on the grid by demands from AI data centres. The UK also needs to invest in its connectivity and grid infrastructure, important for the metals sector and underlining again the vital strategic importance of metals to undertaking that grid infrastructure upgrade. There also needs to be careful scenario planning and coordination between government, NSEO, Ofgem and energy-intensive customers to ensure that critical and strategic sectors like metals are not crowded out.

33. **Trade Policy:** As with energy pricing, the UK's approach leaves British producers exposed and at a disadvantage in an unfair trading environment. Underlying tariff policy is more open than international competitors. The UK needs to create a mechanism which actually delivers protection from unfair trade before further significant damage to UK businesses occurs. The rules of anti-dumping protection are written in such a way as to leave British industry exposed and vulnerable. The UK's approach to trade defence and anti-dumping has been overly cautious, reactive and has afforded less protection than international competitors. It is also unresponsive to the changing context. These could be considered and overhauled under the review of trade remedies regulations. Ensuring fair and rigorous trade defence rules in line with competitors is essential to ensuring the long-term resilience of this vital sector.

34. **UK energy and climate taxation and pricing.** The plethora of different climate related taxes and levies including carbon pricing combine to provide a significant cost and administrative burden on businesses in the UK metals sector and their downstream customers (many of whom are SMEs) which undermines their competitiveness internationally and against competing materials, at no

demonstrable in terms of carbon reduction or climate change. In recognition of this, partial efforts have been made to grant limited relief from energy taxation, although often implemented in an unequal way across and within metals sectors. We observe that the Carbon Border Adjustment Mechanisms (CBAM), under implementation in the EU and UK, though well intentioned, are unlikely to provide real protection against carbon leakage and will impose a significant administrative and cost burden on UK metals producers and their downstream customers.[65] The inclusion of steel and aluminium, while glass and plastics are excluded, both underlines the inconsistency and lack of parity in the policy. CBAM will distort the current competitive dynamics between materials and detract from metals' advantages due to their recyclability. The effect will be to deter production and purchase of in-scope products in favour of importation of more finished goods at the first out-of-scope level of supply chains. As a result, we believe CBAMs will catalyse carbon leakage, in direct contradiction of their original intention. As the World Bank notes for aluminium, the challenge is that while the metal plays a vital role in decarbonisation, a complicated suite of carbon taxation can incentivise cheaper imports from producers heavily reliant on hydro.[66] The International Aluminium Institute note that in Western and Central Europe, including the UK, the various carbon taxation regimes have contributed to a significant decline in primary aluminium smelting industry in the region since.[67] We suggest a reset and systematic review of this suite of taxes and levies, including an exemption for metals producers, to ensure competitiveness.

35. **R&D investment and partnership:** Continued collaboration and support for the alliances between government, industry, universities and scholarly societies over R&D builds on a long-term story of success and promises to aid the delivery of principal policy priorities. This has been an area of great strength historically in the UK, with the alliances between business, government and universities vital, but

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[65] Sanna Markkanen, Jorge Viñuales, Hector Pollitt, Hosuk Lee-Makiyama, Bence Kiss-Dobronyi, Arushi Vaishnav, Kevin Le Merle, Lauren Gomez Cullen, 'On the Borderline: the EU CBAM and its place in the world of trade'. Cambridge, UK: Cambridge Institute for Sustainability Leadership, University of Cambridge, 2021; Xinlu Sun, Zhufu Mi, Lu Cheng, D'Maris Coffman, and Yu Liu, 'The carbon border adjustment mechanism is inefficient in addressing carbon leakage and results in unfair welfare losses', *Fundamental Research*, 40 (3) (2025): 660-670; Marco Amendola. "Winners and losers of the EU carbon adjustment mechanism. An intra-EU issues?". *Energy Economics*, 142 (2025): https://doi.org/10.1016/j.eneco.2024.108139.

[66] World Bank. "Cost Competitive, Low-Carbon Aluminum" (2023) : https://blogs.worldbank.org/en/energy/cost-competitive-low-carbon-aluminum-key-energy-transition

[67] International Aluminium Institute, *Primary Aluminium Production*: https://international-aluminium.org/statistics/primary-aluminium-production

insufficient care has been taken to protect those innovations, and UK universities are facing a major crisis.[68]

36. **Quota mechanisms:** A system of quota mechanisms with firms, administrated through the governance of an oversight body (see below) in collaboration with constituent firms, central government departments and agencies, and UK CMIC should be established so that in the event of any significant national emergency, requisite stocks of metal could be diverted to state requirements.

37. **A coordination body and considered scenario planning and supply chain contingencies:** Overseeing this long-term strategy will require a coordinating body that would bring together government, metals producers, energy suppliers, CMIC and other key stakeholders. This body would need to collate and interpret supply chain and market data, act as the secretariat for this national forum, and produce considered scenario planning and develop supply chain contingencies, amongst other tasks. The BMC and IMRB, as do other historical industry cooperative initiatives, provide historical examples of how this might be achieved as a public-private undertaking, with involvement from key stakeholders bringing their expertise and support to bear. There are various potential existing platforms – the UK Metals Council and the UK Aluminium Alliance, for example – but all would need consideration, adaptation, and resourcing. The composition of that body and its organisation and resourcing are crucial to its effective functioning.

Section D: Making the Case for UK Metals: Policy and Public Information

38. The critical importance of metals to everyday life is not readily understood at large. The resilience of UK metals production, in part, is reliant on its ability to communicate its long-term critical and strategic importance to the UK. The Back British Metals Campaign – representing ALFED, the Cast Metals Federation, the Cobalt Institute, the International Wrought Copper Council, and Connect for Net Zero – and ALFED's campaign, 'The Element of Choice', are two active campaigns but the sector requires greater coordination to amplify the message, alongside the work of Make UK.[69]

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[68] David Edgerton. *Warfare State: Britain, 1920 - 1970.* (Cambridge: Cambridge University Press, 2006); David Edgerton and Sally Horrocks. "British Industrial Research and Devlopment before 1945". *Economic History Review*, 47 (2) (2008): 213 – 238; Gerben Bakker. "Money for nothing: How firms have financed R&D projects since the Industrial Revolution". *Research Policy*, 42 (2013): 1793-1814.

[69] Back British Metals: https://backbritishmetals.org/who-we-are/
ALFED, *The Element of Choice*: https://alfed.org.uk/aluminium-the-element-of-choice-for-a-resilient-and-sustainable-britain/

Section E: Further research required

39. Whilst Back British Metals and ALFED have been proactive in highlighting the importance of metals to the UK economy, national security, and decarbonisation, commissioning research and formulating strategy (see ALFED's GVA reports and energy surveys, and Net Zero strategy) and liaison with government, a commitment to building a resilient future for UK metals will require careful deliberation, coordination and planning, notably around: energy supply and pricing; trade policy; taxation; and the contribution of metals . It will also, as this paper highlights, require a proactive, effective and representative body to oversee any measures and foster collaboration and innovation, collating data and providing expert advice. Any such body could fulfil research, as well as secretariat and planning functions. That would require coordination across non-ferrous metals and government, and resourcing to support any industry frameworks.