



**Materials
Processing
Institute**

A NEW INDUSTRIAL STRATEGY, HOW WE SECURE THE RESOURCES FOR UK SECURITY AND PROSPERITY

A speech given at the Common Wealth Community Union Webinar.
The Future of UK Green Steel.

28 July 2022



The recent announcement from Tata Steel that the Port Talbot steelworks needs a £1.5bn cash injection from government to fund a transition to green steel, or face closure in 12 months, has shone a light on the scale of the challenge facing the UK steel sector. This is though, not a challenge that is unique to the UK alone.

In the week that UK Steel launched a plan that would see the UK industry decarbonise by 2050, the German steel producer Salzgitter announced that it would be investing €733m in hydrogen furnaces and be decarbonised by 2033. Salzgitter isn't even the fastest moving steel business:

- > In 2021 HBIS in China started the world's first hydrogen enriched plant.
- > This year Arvedi in Italy has become Europe's first Green Steel plant, whilst the continent's largest producer, Arcelor-Mittal announced plans for hydrogen furnaces in Spain in 2025, France in 2027 and Belgium in 2030.
- > In Sweden, new start up steel company H2S GreenSteel will be operational in 2024, followed by SSAB a year later.
- > In the same year, ThyssenKrupp Steel in Germany will bring on a hydrogen plant as will Salzgitter in 2026.

The UK is in danger of being left behind, not only in steel, but in other areas too, with a risk that we lose our steelmaking capacity all together.

In this talk I want to show that this issue in the steel sector is actually the symptom of a wider problem, a decades long reluctance to forge a new industrial strategy for the UK and the desperate need to do this now.

Challenges facing the UK

But first I want to outline what we know to be the severe challenges facing the UK. This seminar is primarily focussed on what we need to do to address climate change, but we cannot ignore the other major challenges to our economy.

First is the cost-of-living crisis. Last week, a Joseph Rowntree Foundation¹ report demonstrated a deepening crisis in poverty and destitution. In the North East where I live, 40% of children are now growing up in poverty.

Many are in work yet unable to heat their homes or feed their families. If the energy price cap rises above £3,000 as expected in the Autumn, 80% of families in cities like Liverpool will be in fuel poverty².

With productivity flatlining and growth forecast to be the slowest of the advanced economies, Britain and all Britons are getting poorer.

We are also facing serious threats to our sovereign capability, both the COVID-19 pandemic and the war in Ukraine have revealed the vulnerability of our supply chains, with reliance on potentially hostile and unstable nations and those which deploy child or even slave labour for basic needs, such as energy, food and materials.

What are often dismissively called 'commodity' products are the economic and social building blocks that give us the ability to act as an independent nation, whether that is steel, bricks, bulk chemicals, toilet paper, or the increasingly important critical minerals such as lithium and even copper.

We need urgently to take action to secure the vital resources that we need to run our economy.

The answer to all of these challenges is that we must find a way to generate the clean, sustainable, high productivity growth and exports that will enable us to meet even the basic needs of our population for shelter, food and warmth. We need to invest in our economy to provide new green infrastructure, provide high quality social services, reduce inequality and poverty, improve our security and do all of this whilst paying down the legacy of debt that has accumulated over the last decade.

The only way we can do this is through a national industrial strategy.

What would be in an Industrial Strategy

Energy

An industrial strategy is about choices and priorities and for me the first priority has to be energy and electricity in particular. Just as UK electricity generation more than doubled in the 15 years after 1950, so we need to double generation again in the next 15 years, as we move to electric vehicles, to heat our homes and to green the steel sector, which will, on its own, require a 10% increase in UK electricity output. More than this, we should seek to replace the up to 30% of electricity imported via interconnectors with domestic UK generation, reducing our dependence on others for our most basic commodity.

Steel & Foundation Industries

With an energy strategy in place, our next priority must be steel and the other foundation industries, covering materials such as metals, ceramics, glass, paper, concrete and chemicals. Economists have estimated that in the next 15 years the world's economy will create at least as much infrastructure as we already have. Most of this will need concrete, steel and copper. We will need to invest an estimated £6bn in new green technology for our steel sector to meet to meet this demand, as well as infrastructure for hydrogen generation, where the Germany government is investing a further €8bn. We have seen other countries start to make deals with their steel sector to see co-investment at the level of 50% and we will need to do that in the UK too.

Just Transition

A vital part of this industrial strategy, must be the Just Transition. Taking due account of the impact on workers and communities, in places such as Port Talbot, of the move to new technology. As industry goes green, it will go smart at the same time, leading to a much welcome increase in productivity, but a reduction in many traditional jobs too. On the other side, we will not be able to capitalise on the opportunities of the green economy, if we are unable to rapidly, and continuously, retrain and reskill people to work in these new and growing sectors.

We can expect that if we pursue a similar course of non-intervention as we did with deindustrialisation in recent decades, then regional inequalities will increase, and growth opportunities will be exported.

The need for manufacturing

With energy and the foundation industries accounted for, the next priority for industrial strategy is manufacturing.

Our reluctance to embed industrial strategy in our national thinking, comes from a misconception, uniquely held in the UK, that economic progress turns from manufacturing, to services, to financial services, whilst every other nation in the world realises that wealth is built on a foundation of industry that also builds community cohesion. Political theorists and decision-makers both talk of post-industrialisation and service-centred economies, as if this were a good thing, and deindustrialisation as if it were an inevitability, when in fact it is a choice.

Only last week, the Resolution Foundation published a report 'Stagnation Nation', which concluded that service-based economies are inherently more unequal, and that the UK, with its relatively large service sector, is the most unequal country in Europe. The report rightly points out that Britain is the second largest services exporter in the World, after the USA, and thus labels the UK a 'services superpower'.

But this is a strange conclusion given the facts. Whilst services do account for a good chunk of our income earned abroad, it is manufacturing which accounts for more than 50% of the value of our exports despite the sector making up less than 20% of the British economy.

Surely then, it is manufacturing, not services, that is doing the heavy lifting on Britain's balance of trade: manufacturing, not services, which is the true 'export superpower'.

More than this, manufacturing and industry accounts for 70% of UK business R&D spend, has higher productivity, pays on average £19,000 per year higher wages and in places like Teesside where my Institute has been based for over 75 years, pay for high-skilled, high-waged industrial jobs is 45% higher than regional averages in the service sector.

The report clearly identifies a manufacturing shaped hole in our economy - but lacks the ambition to fill it.

In this high technology, green industrial revolution, as in all previous technology revolutions, those nations and people that will secure and prosper, will be those that have a strong manufacturing base, supported by not driven by sophisticated services and financial services.

Rethinking Policy

In the last 15 years we have seen a global financial crisis, Brexit, COVID, war in Europe, and now an energy crisis and food crisis. This requires a major rethink in our approach to policy, with resilience having a much greater emphasis in our national thinking.

In this context, there should be little disagreement that steel and a domestic steel industry is fundamental to our nation and yet it remains the case that the business environment for steel in the UK is uniquely disadvantageous, as compared with our near neighbour competitors. To identify an industry as important and yet not to address the fundamental aspects holding it back, does seem to me to be a deep contradiction in policy and one that needs to be urgently addressed.

UK industrial strategy should be set by the needs of our long-term political, economic and national security priorities. Now is the time to make decisions that are genuinely in the national interest and prioritise industrial strategy and a resurgence in manufacturing as essential to a more fair and equal society in a green economy.

¹ 'Stagnation Nation: Navigating a Route to a Fairer and More Prosperous Britain', Resolution Foundation, July 2022

² 'Forging the Future: The Path to Greener UK Steel', Green Alliance, July 2022

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Chris McDonald is the Chief Executive Officer of the Materials Processing Institute. The Institute carries out industrial research and innovation in advanced materials, low carbon energy, digital technologies and the circular economy supporting the materials, processing and energy sectors for over 75 years. Chris led the divestment and return to independent, not-for-profit ownership of the Institute in 2014.

Chris's background is in industrial research and manufacturing, where he has worked internationally. A graduate of Cambridge University, Chris is a Fellow the Institute of Chemical Engineers and of the Institute of Materials, Minerals and Mining. He sits on industrial advisory boards at a number of universities, including Oxford and Sheffield.

Chris has an interest in innovation management and industry dynamics and in addition to leading the Institute, he provides expert opinion and consultancy support to companies, institutes, Governments and public bodies in innovation and technology strategy and management. He also advises on the technical due diligence aspects of mergers and acquisitions.

Chris is prominent in the development of public policy, around innovation, steel, SMEs, where he works to support growth and inward investment. Chris is the policy chair for Innovation and Enterprise for the Federation of Small Businesses, a member of the CBI Regional Council and Shadow Monetary Policy Committee for the North East, the Chair of the UK Metals Council and a member of the Steel Advisory Board for UK Steel (EEF).

Chris is often called to commentate in the media on innovation leadership and the steel industry.

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Chris McDonald
Chief Executive Officer
Materials Processing Institute

Materials Processing Institute

The Materials Processing Institute is an independent, open access and not-for-profit technology and innovation centre working with industry, government and academia worldwide. Support ranges from small scale, site based investigations, through to long term collaborative research programmes.

The Materials Processing Institute is expert in advanced materials, low carbon energy and the circular economy, specialising in challenging processes, particularly those involving high specification materials, high temperatures and difficult operating conditions.

The Institute has over 75 years' experience as a leading UK technology provider. Extensive materials processing knowledge is supported by state-of-the-art facilities with a broad range of equipment, from laboratories through to demonstration, scale-up and production plant.

Scientists and engineers work with industry and apply their expertise to develop and implement robust solutions to research and development and improvements for products and processes.

Expertise is spread across a wide range of disciplines, including:

- > Materials Characterisation, Research and Development
- > Simulation and Design
- > Monitoring, Measurement and Control in Hostile Environments
- > Process Development and Upscaling
- > Specialist Melting and Steel / Alloy Production
- > Engineering / Asset Management
- > Materials Handling
- > Minerals and Ores

Research and project management teams deliver support across a wide range of industrial and manufacturing sectors including:

- > Metals and Metals Manufacture
- > Chemicals and Process
- > Nuclear
- > Oil & Gas
- > Energy
- > Aerospace and Defence
- > Mining and Quarrying





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