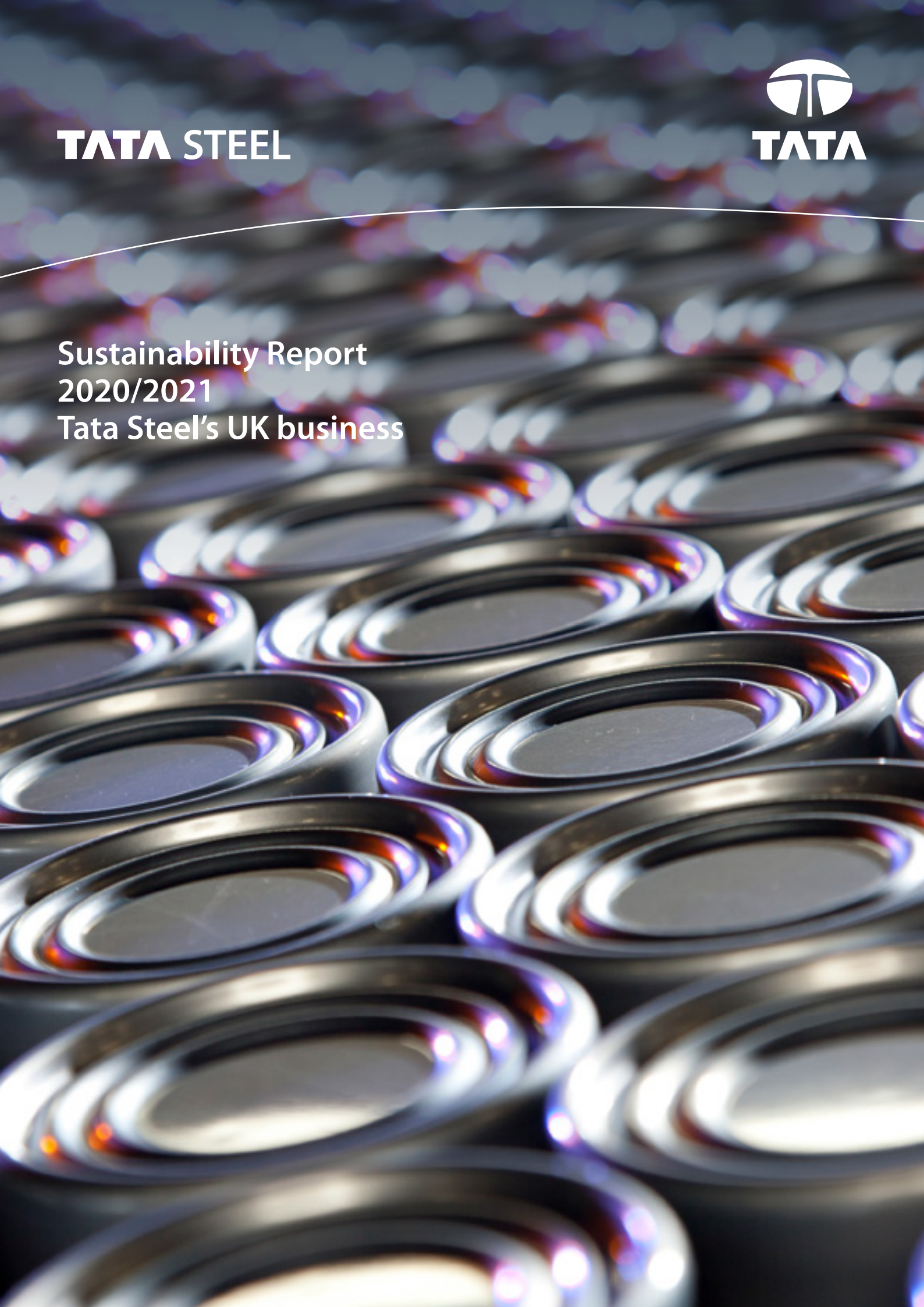


TATA STEEL



**Sustainability Report
2020/2021
Tata Steel's UK business**



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FOREWORD

Tata Steel is at the heart of life in the UK. Our business supports industry and manufacturing, jobs and families, and innovation and technology. We also play a part in a sustainable future for everyone.

This report shows how we are working, along with our customers, to make our processes and products more sustainable. We are making our products lighter and more durable. We are helping to design cars, buildings and machinery that use less energy and fewer resources and which at the end of their life, can be reused effectively. Steel is already, of course, the world's most recycled material.

The world, especially the net zero world we are working towards, needs steel. Not only will steel be needed to build and power the electric vehicles of tomorrow, it will also be integral to cities of the future, creating efficient, durable and flexible buildings. The infrastructure needed to generate renewable electricity and to enable the decarbonisation of other sectors of industry, such as large-scale hydrogen production and distribution, and carbon capture, usage & storage, will all require large amounts of steel.

Whilst there is no doubt that steel will be an important part of the solution to climate change, its production also results in substantial emissions of CO₂. We therefore feel a profound sense of responsibility to reduce the CO₂ emissions from our activities. We have committed to achieving carbon neutral steelmaking by 2050 and to reduce our emissions by 30% by 2030. This report addresses some of the challenges we face on our journey to net zero. We are in continuous discussions with the UK Government – whose support we need in order to become both sustainable and competitive in the global steel market – about our options for transitioning to a decarbonised steelmaking business of the future.

We face challenges, but also opportunities. We take our responsibilities seriously: to our employees, whom we pledge to keep safe and well; to the communities surrounding our sites; to our suppliers and customers; and to our planet.

Sandip Biswas, Executive Director of Tata Steel Europe



Sandip Biswas, Executive Director of Tata Steel Europe in charge of the UK value chain and Chairman of the board of Tata Steel UK.

Scope

This report covers the activities of Tata Steel's UK business for the year from April 2020 to March 2021. This is the first year of sustainability reporting for Tata Steel in the UK and Tata Steel Netherlands as separate entities. This report can be read in conjunction with the annual financial report and accounts which can be found on the [tatasteeleurope.com](https://www.tatasteeleurope.com) website.

On the cover: Steel food cans made from tinplate produced at our Trostre site. Sales of canned food rose 6% in the first wave of the pandemic, as consumers saw the benefits of buying food with a long shelf-life that does not require refrigeration, as well as being convenient, nutritious and affordable.

WHAT IS TATA STEEL'S UK BUSINESS?

Tata Steel is the UK's largest steelmaker



Every year at our site in Port Talbot, Wales, we produce around 3.4 million tonnes of liquid steel.¹ This is then processed, both there and at our other UK sites, into strip steel which, depending on its final destination, undergoes further processing such as galvanising and tinplating to be turned into products and components that feature in all aspects of everyday life, from a can of baked beans to a modern office building. With a diversity of use that ranges from coins to cars, radiators to stadiums, earthmovers to new hospitals, our steel is strong, versatile and essential. It's true to say that if it is not made from steel, it is made using steel.

In the downstream steel markets we serve in the UK, we meet over half of the total steel demand. We supply household names such as Jaguar Land Rover, JCB, Nissan, IKEA and Heinz. We also supply building contractors and processors who deliver thousands of tonnes of steel into major construction and infrastructure projects across the UK and overseas and the small technology and engineering companies that are fundamental to the UK economy. To all of them, we are a technology and innovation partner as well as a steel supplier, helping them to find solutions to make their products and their businesses more productive, efficient and sustainable.

More than two-thirds of the steel we make in the UK stays in the UK, saving a quarter of a million tonnes of CO₂ per year, compared to importing steel from other countries.



Our stakeholders

As a business at the heart of the UK economy, we have many stakeholders. It is estimated that there are 750,000 people in the UK whose jobs rely on the supply of steel. These include our 8,000 employees, our 2,500 direct contractors and an additional 20,000 people in the supply chain. Tata Steel is the foundation of local economies in Wales, where we are the largest private sector employer, as well as in the Midlands and England's North East. We have over 3,000 suppliers and altogether we spend £1 billion every year across our supply chain. In all areas where our 2,000 customers are located, we play a vital role in encouraging and supporting technology clusters. It is estimated that our contribution to the Welsh economy alone is £3.2 billion (source: Cardiff Business School). With an annual R&D spend of £7 million, the largest in the UK steel sector, we have formed strong partnerships with world-class universities across the UK including Warwick, Swansea, Cambridge, Sheffield, Cardiff and Imperial College London and engage with UKRI, the Government's innovation body.

Leadership and governance

Founded by Jamsetji Tata in 1868, the Tata group is a global enterprise, headquartered in India. The Tata group has adopted a mission 'to improve the quality of life of the communities we serve globally, through long-term stakeholder value creation based on leadership with trust' and encourages individual companies to address climate change through the Tata Business Excellence Model (TBEM). The Tata group also requires all of its companies and employees to abide by the Tata Code of Conduct, which provides a framework for achieving the highest ethical standards in all business activities.

Tata Steel UK Limited (TSUK) is the principal operating company of Tata Steel's UK business, and an indirect material subsidiary of Tata Steel Europe Limited (TSE). The ultimate parent of TSUK is Tata Steel Limited (TSL), a company registered in India with shares listed on the BSE and NSE stock exchanges of India. Oversight of TSUK is carried out by the TSUK board which is responsible for setting strategic priorities and supporting stakeholder engagement. Two of its directors are also directors on the TSL board.

In line with the ethos of our ultimate parent, we are committed to incorporating sustainability into all facets of our business, from governance to strategy formulation to execution. The TSUK board has adopted a group policy framework comprising a series of foundation and behavioural policies setting out our commitments to our people, customers, communities and the environment. We review our progress in meeting our sustainability aspirations through a regular cycle of performance review, both within the senior leadership of the UK business and at TSUK board level. The TSL board has established a safety, health & environment committee and a CSR & sustainability committee which provide additional oversight and scrutiny. TSUK is directly represented at these committees and is required to submit regular reports describing its performance, improvement initiatives and other material developments.

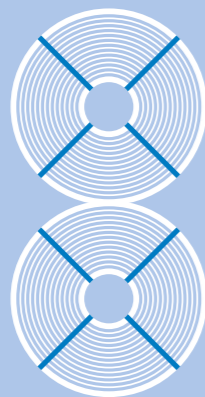
We operate a rolling programme of compliance training for all senior managers and nominated individuals and operate a well-publicised confidential reporting line.

More information on TSE and TSUK's governance arrangements can be found in the TSE and TSUK annual reports & accounts, available on the [TSE website](#).

KEY FACTS

CAPACITY

- UK's largest steelmaker
- The UK's only integrated coated steel strip and tube manufacturer
- 3,400,000 tonnes of liquid steel each year
- >60,000 unique variations of grade and dimensions



PEOPLE

- 8,000 employees
- 57 apprentices, 31 graduates, 35 placements, 55 sponsored engineering doctorates
- 2,500 direct contractors
- 2,000 customers
- 3,100 suppliers



FINANCIAL

- £2.5bn annual turnover
- £7m annual R&D spend
- £130m annual payroll tax contribution
- £700m exports globally



PRODUCT

- 40% of products are differentiated
- Steel destination: 29% construction, 19% automotive, 13% packaging; 38% others



Tata Steel's UK business at a glance

Steelmaking Sites

1. Port Talbot

Product: integrated steelmaking: liquid steel production; hot and cold rolled coil

Applications: downstream processing mills within TSUK and customers UK and worldwide

Capacity: 5 million tonnes per year (5mtpa)



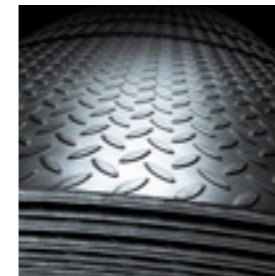
Production sites

2. Corby

Product: hot and cold formed hollow sections and tubes

Applications: construction, lifting and excavating, energy & power, renewable energy

Capacity: 250,000 tonnes per year (250ktpa)



3. Hartlepool

Product: tubes, and hot & cold formed hollow sections

Applications: construction, engineering, energy & power, renewable energy

Capacity: 220ktpa



4. Shotton

Product: galvanising and pre-coated steels, insulated panels, cladding profiles, roofing & decking, Colorsteels, Colorcoat pre-finished steels, steel processing centre.

Applications: Construction, building systems, building envelope, domestic and consumer applications

Capacity: 500ktpa



5. Llanwern

Product: strip steel (pickle line and cold mill) cold rolled coil, galvanised steel (Zodiac line), heavy-gauge decoiling and distribution, construction products. Commercial HQ

Applications: automotive steels, highways, cold forming, building systems (eg Catnic)

Capacity: Approximately 550ktpa



6. Trostre

Product: tin, chromium and polymer coated steels for packaging industry

Applications: 100% recyclable food and beverage cans, aerosol cans.

Capacity: 400ktpa

7. Catnic UK*

Product: profiles and lintels (Building Systems)

Applications: residential construction

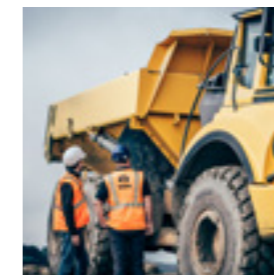
Capacity: 25ktpa

8. Skein, Norway

Building Systems components

9. Surahammars Bruk, Sweden

Non-oriented electrical steels for electric motors and generators



Distribution & sales

10. Lisburn (Northern Ireland)

Slitting, decoiling, blanking & distribution

11. Round Oak

Distribution railhead

12. Wednesfield

Slitting, blanking, tailor-welded blanking, decoiling, profiling and distribution

13. Tiller (Norway)

Building Systems distribution & sales

Other

14. Sheffield

Sustainability and environment, corporate teams

15. Shapfell

Lime and limestone products

Research centres

16. University of Warwick

Warwick Technology Centre

17. Swansea University

Steel and Materials Institute

Worldwide sales

Tata Steel UK has sales offices across the world:

Europe: Spain, Italy, France, Romania, Germany, Nordics, Czech Republic

Americas: USA, Mexico, Brazil

Middle East: Turkey, United Arab Emirates

Asia: India, Thailand, Hong Kong, Singapore, China

Africa: South Africa

*Also Catnic operations at Sinsheim, Germany (manufacturing, distribution & sales) and Rouen, France (sales) and sales offices across the world.

Our challenges and responsibilities

As the world stands at the threshold of a new industrial revolution – the transition to low carbon manufacturing – the steel industry faces challenges, but also opportunities.

The steel industry has the opportunity to provide leadership in developing green technologies that could make a significant impact, whether in mini-mill technology, the development of carbon capture, usage & storage, or hydrogen technology. Through its contribution to innovation and the financing of new technologies and shared infrastructure, the decarbonisation of the steel sector has the potential to help to enable the decarbonisation of other industrial sectors, both in the UK and internationally. Moreover, technology developed here in the UK could be exported to the rest of the world to help decarbonise the projected two billion tonnes of steel production that will be required to satisfy still-growing demand by mid-century.

Steel is a global product and part of a hugely complex supply chain. The movement of steel and finished steel products has an environmental cost. Until 2000, the UK was a net exporter of steel, but now relies on imports for more than half of its requirements. The importation of seven million tonnes of steel into the UK each year equates to approximately 14 million tonnes of CO₂.

What are we doing?

As a responsible company we are intent on making a substantial contribution to sustainable development in the UK to help it achieve carbon neutrality by 2050. We believe the UK needs Tata Steel at the heart of its manufacturing sector in order to meet its sustainability goals.

Our contribution includes:

- investment in future technologies, through our partnerships and collaborative research programmes in applied science, engineering and technology
- developing the skills and resources required to support the clean growth transition
- the industrial symbiosis inherent in the steelmaking process, which has the potential to take in low value residues of other sectors as raw materials, in turn supplying surplus quantities of low-grade waste heat and our own residues to other communities and industries
- a leading position in the establishment of a South Wales Industrial Cluster, helping companies to coordinate their climate change mitigation actions and speak with one voice to UK and Welsh Governments
- our role in enabling innovation in product design and supply chain efficiency optimisation
- our commitment to the knowledge economy, and wider manufacturing economy, through our development of future STEM leaders.



Steel sustainability leader

We are one of six companies recognised by worldsteel (the World Steel Association) as Sustainability Champions. We were a founder participant in worldsteel's Climate Action programme and are an accredited Climate Action member. The Association has recognised our sector-leading expertise in life cycle assessment by awarding us two of its 'Steelie' awards in three years. We are also the first steel company globally to operate its own Environmental Product Declaration (EPD) programme, helping customers to understand the environmental impacts associated with our products.

PEOPLE

Our people are our greatest asset

The health and safety of everyone who works in, and with, Tata Steel is our number one priority. We are committed to our goal of ensuring zero harm to our employees, contractors and the communities in which we operate.



Health and safety

Health and safety: our five guiding commitments

I protect myself and others because I care

I follow current standards and procedures as the best way to work safely

I assess risks whenever there is a change to the workplace

I always lead by example

I challenge (and accept being challenged) or I stop the job



Our ambition is to be the health and safety benchmark in steel. During the year, our key statistics show that we made significant steps towards realising this ambition.

Key statistics FY21

Fatalities	0
Lost time injury frequency	1.97 (-4%) ¹
Recordable frequency	3.99 (+4%)
All-injury frequency	12.10 (-18%)
Sickness absence (%)	3.05 (-22%)

¹ reduction compared to previous year

We are never complacent, however, and carry on with our journey of continuous improvement to make sure every colleague returns home from work safe and well. We use a number of interventions such as zero harm campaigns, time out for safety, 'safety bursts' and town hall discussions to communicate general and specific safety information.

In this year, in the face of challenging conditions imposed by Covid-19, we continued to deploy our standards and code of practice. We increased sharing and learning about safety via webinars, health and safety leadership training and e-learning and also strengthened our business compliance auditing. Throughout the pandemic we have held a series of monthly webinars to increase knowledge and awareness of some of our systems, processes, codes of practice, each with over 100 participants from a range of sites. We also reinvigorated a 'big tick' system of sharing good practice.

Until paused by the pandemic, we continued our programme of face-to-face senior leadership safety tours, which are an effective way of engaging with employees and

demonstrating visible 'felt' leadership. During the pandemic the programme was modified to include virtual tours.

A focus on high severity and high potential events in regular processes and reviews resulted in a 32% increase in the reporting of near-miss and high potential incidents.

World Safety Day in April 2021 provided an opportunity to focus on machinery and workplace equipment safety and we carried out over 140 leadership tours on this topic across our UK sites and offices.

Working in collaboration with universities and experts, we have embraced technical innovation. As well as creating a safety app to increase engagement, we now use drone technology, virtual reality and fatigue testing in critical process safety areas to help reduce risk.

All our sites are working towards ISO 45001, the international standard on occupational health and safety. Good progress is being made and two sites have already achieved the certification.

Healthy Tata Steel

We want every individual who works at Tata Steel to be able to work and interact positively and productively with all colleagues and stakeholders, and to realise their full potential.

Healthy Tata Steel, a programme to embed a positive culture for health and wellbeing, strives to increase awareness, involvement and confidence. A regular focus on health, including mental health, has been integrated into our day-to-day business, aiming to prevent work-related illness, encourage health surveillance, promote health and wellbeing, and support recovery and rehabilitation.

During the year we updated our mental health policy, created new supporting resources, and gave refresher training to our Mental Health First Aiders. We plan to double the number of Mental Health First Aiders in the next 12 months as we continue to strengthen our network of health champions. With many people working from home, we updated our information about ergonomics and sedentary work and ensured our Employee Assistance Programme (EAP) was fully available for all employees.

Covid-19 – a proactive response

Our response to the pandemic was swift and company-wide, protecting our customers, suppliers, employees and local communities. Executives worked with local crisis teams to develop company policy, aligning with government advice. We joined and led external collaborations so we could learn quickly and share our expertise with others. Many of our sites supported their neighbouring communities, for example using 3D printing equipment to produce visors, and offering protective equipment to local health authorities.



We developed standards and guidance for hygiene, ventilation, protective equipment and distancing, and put in place policies for travel, vehicles, and workplace arrangements. We quickly enabled homeworking for those in suitable roles, offering flexibility, support from line managers and a Covid helpline, as well as regular updates on social media to keep people connected. Homeworker groups were formed, and a central group was set up to understand the impact of homeworking, and the prospect of returning to work, on mental health grounds.

As national restrictions lifted, we maintained standards above government requirements based on our own risk assessments.

Global steel recognition

Our Zero Harm Logistics programme received Safety and Health Excellence recognition from the World Steel Association. The programme involved evaluating the safest ways to package, handle, store and move our steel on different modes of transport as it travels round the world. Steel coils contain immense stored energy which could potentially expose many people to danger in the event of strapping being damaged and the coil unwinding itself. Mathematical models for load security, optimal steel product banding and storage were validated by physical testing to international standards. We then developed a detailed code of practice to cover the journey from mill to customer. Training sessions and international webinars reached more than 2,000 operators and truck drivers in Europe and the USA. The programme has resulted in significant improvements to safety, reducing the number of load restraint incidents from 43 a decade ago to 12 in 2020/21. The work continues.



A regular focus on health, including mental health, has been integrated into our day-to-day business

Working at Tata Steel

We are a major UK employer, employing about 8,000 people in a strategically important industry. Our human resources policy is based on core principles of development, fairness, mutual trust and teamwork.

Covid continuity

Around 75% of the workforce continued to work throughout the pandemic, either on site or at home. For those people who were furloughed, we utilised job rotation and flexible furlough to minimise the impact to the individual and ensure continuity. We also accommodated flexible hours and locations, and employees' responsibilities such as childcare.

Diversity and inclusion

We believe that having a diverse workforce can bring many benefits, and we continue to seek ways to improve the diversity of our organisation, raising awareness and monitoring our progress. For example, during the year, our social media activities were targeted to attract candidates who may not have previously considered working for us.

Opportunities to progress, develop and contribute are equally available to all employees. This is supported through our diversity and inclusion roadmap and will continue to be a key forward area of focus as we seek to make further improvements.

Opportunities to progress, develop and contribute are equally available to all employees.

Gender

Approximately 89% of our workforce identify as being male, and 11% as female. Over half of our female employees work in professional, managerial or technical roles, compared with just over a third of our male employees, and 8.7% are employed in senior manager positions compared to 5.7% of the male population. The higher proportion of women in managerial roles is reflected in our gender pay report which showed that the average hourly rate of pay was greater for women than it was for men.

Our aim is to have 25% women employed across the business. This is supported by many passionate people in our teams, for example our Steel Women's Network, who promote the industry through events and activities. A series of podcasts celebrating women in steel has been downloaded over 1,300 times.



Susan Jones, Senior Quality Systems Specialist, is a member of the Welsh Government board for Equality in STEM, and Chair of its industry sub-committee.

We are keen to address the gender balance and encourage more women into our industry by building more awareness of STEM choices and the opportunities available. In conjunction with Engineering Construction Industry Training Board, we held a two-day 'Aspire to be steel' event, attended by 40 girls in Year 8 (pre-GCSE) who took part in a range of activities and a Port Talbot site tour. This received warm feedback and positive press coverage.



Recruitment, talent, and widening access

We're continuously seeking new talent and investing in the future skills of our communities. We have a strong track record of recruiting apprentices, higher apprentices and graduates, and of sponsoring students through their studies. Tata Steel is a Top 100 Apprenticeship Employer and in 2020 we were named Wales STEM Company of the Year, as well as being a finalist in the School Leaver Awards.

In the year to March 2021, we recruited 57 apprentices (including 18 sponsored apprentices and higher apprentices). We recruited 31 graduates and offered 35 three and 12-month graduate placements.

We work with local schools and colleges to provide careers and interview advice. During this year, we converted our usual programme of onsite events and tours, as well as our recruitment activities, into virtual experiences. We held online presentations with 12 schools in South Wales, as well as running interactive virtual apprentice and graduate open evenings for all our UK sites, which were viewed by over 1,000 people. We introduced new digital recruitment marketing techniques, including making a series of films featuring our recent graduates for social media to encourage high-quality applications.

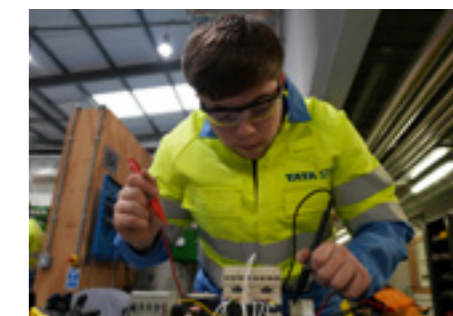
With an increase in applicants, as well as in social media followers, we also saw a rise

in positive reviews on Glassdoor and Rate My Placement, from 82 and 33 to 97 and 41 respectively. Our score as a Guardian Top 300 employer of choice fell slightly from #197 to #200.

We continue with initiatives to break down barriers to entry, for example by ensuring all our external vacancies are accessible to those in unemployment, and ring-fencing jobs for those receiving government benefits Kick Start scheme. As a signatory to the Armed Forces Covenant, we uphold principles which recognise the value of serving and ex-service personnel. We also work with Nacro, the National Association for the Care and Resettlement of Offenders, to ensure we do not discriminate against individuals with criminal convictions.

Impact of the pandemic

During this year we saw a rise in the quality of applicants for engineering and manufacturing roles, following pandemic-related redundancies in the South Wales labour market. In partnership with employment agency Randstad, we recruited 42 temporary workers at two weeks' notice to support the onsite Covid testing programme at Port Talbot. The programme was extended to our other sites in the UK and has been hailed as best practice by other companies.



Recruitment April 2020-March 2021

	Roles filled	External applications received
Apprentices	57	745
Graduates and placements	66	2616
Experienced hires	272	10,372 (+504 internal)

Training and opportunities

Learning and development is essential to maintain the core skills for our business and ensure a healthy pipeline of talent. With a total training budget of £1.5 million, we also utilise government funding schemes to further support the development our workforce and trainees.



The pandemic meant that we had to be agile in our approach. Using e-learning, virtual training and socially distanced in-person sessions following full risk assessment and Covid testing, we delivered over 24,000 hours of learning activity during the year.

Our Port Talbot based training academy, which delivers engineering skills to apprentices and graduates and provides training facilities for all employees, continued to operate following staff furlough, as did our day release programme with higher and further educational centres, where 147 employees received over 39,000 hours of training.

We work with our trade union partners to improve capability and offer support for basic

skills development. All new manufacturing trainees gain a recognised qualification by taking a Performing Manufacturing Operations NVQ. We also support our employees to be members of the professional institutions such as IET, IMechE, CIPD, CIPS, IChemE, CIMA. Looking ahead, our strong relationships with Regional Skills Councils will help us address the sustainability and technical skills we will need in future.

In the year to March 2021, 581 people in total were taking part in our apprenticeship schemes across the UK, including both apprentices (296) and employees (205). Of these, 501 were based in Wales and 56 (9.6%) were women.

While we consistently outperform (by around 20%) the national rates for apprenticeship completion and retention, this year saw a drop in completion rates, mainly due to 93 apprentices and 33 higher apprentices being furloughed for a large part of the year. We continued to recruit, taking on 57 apprentices in the year to March 2021 (along with 31 graduates).

In November 2020, Tata Steel was Highly Commended at the inaugural Wales STEM Awards 2020, and in March 2021 two of our apprentices, Joel Farrant and Luke Ball, won gold and silver respectively at the Laboratory Technician Works Skills Wales competition.

Our communities

We strive to enrich our local communities and contribute to their future economic and social wellbeing. Our Future Generations programme of proactive community partnerships embraces three aspects: health and wellbeing, environment, and education and learning.



Our long-running Tata Kids of Steel triathlon programme has given thousands of children the opportunity to try swimming, cycling and running through annual events held near our sites at Corby, Shotton and Port Talbot. Many employees volunteer to help run the events, which were cancelled in 2020 due to the pandemic. Nevertheless, one example of a long-term legacy has been the formation of a junior triathlon club at Port Talbot. We also sponsor the annual Richard Burton 10k and kids' mini-miler running event near Port Talbot – now approaching its 40th year – which in 2021 had 1,800 participants and raised £30,000 for local charities and good causes.

We sponsor two activity-based programmes for primary school children in South Wales: the Aberavon Wizards' League, a competition to develop rugby and netball skills in Neath Port Talbot, and the Newport Dragons community outreach programme which offers sports, holiday skills camps and sessions on lifestyle, diet and teamwork for children in over 60 primary schools in Gwent.

The annual Richard Burton 10k and kids' mini-miler running event in 2021 had 1,800 participants and raised £30,000 for local charities and good causes

Support and communication

At every site, we support and encourage our many employees who want to make an active contribution to the local community with their own charity events and fundraisers.

At Corby, for example, employees contributed over £75,000 to local hospices, homeless charities and the air ambulance through the Employees Benevolent Scheme. Along with donations to local youth sporting clubs, they have supported the families of bereaved colleagues with fundraising and memorial benches.

In Port Talbot, SteelMatters, a quarterly community newspaper, informs local people about our investments, environmental improvements, and community support. An outreach programme has brought Tata Steel to leisure centres, shopping centres and MP surgeries to show how we are investing to improve the local environment and create employment opportunities to young people.

One indication of the impact of this activity is the growth of our UK social media, where engagement grew and followers increased by around 60% and 20% on Facebook and Twitter respectively.



Steelworks Santa: Every year, Tax Advisor Allan Evans raises funds by playing Santa at local facilities. He was voted Alzheimer's fundraiser of the year in 2020.

Community challenge

Each year we challenge participants in our graduate programme to complete a community project.

Working in groups, graduates choose and develop an activity to support the elements of our Future Generations programme. Projects have included fundraising drives for local charities through auctions and events; providing on-site foodbanks for charities such as the Trussell Trust and Flintshire Foodbank; offering virtual site tours for local schools and

universities, and local beach and river clean-ups. After careful consideration, and with guidelines in place, these activities continued throughout the pandemic, continuing to offer our graduates opportunities to develop their influencing and leadership skills while developing a closer relationship with and understanding of local communities.

Shapfell path

A circular permissive path around the Shapfell site, created by colleagues in memory of their late colleague Tim Forman, allows public access around an area where wildlife habitats have been created (see biodiversity section). In 2021, a memorial walk around the new path raised over £750 for Sarcoma UK.



Education and learning

All our UK sites offer site visits or online education so local young people can find out more about our manufacturing activities and steel's contribution to society.



Shotton nature reserve

Ten years ago, with the help of volunteer employees, we created a new nature reserve and educational trail with bird hides and an indoor classroom on land at our Shotton site in North Wales. Every year the site hosts many school and educational visits, helping children to get closer to nature. Shotton is also supporting the Dee Park regeneration scheme to rejuvenate 25 acres of former recreational land and create a valuable facility for the local community.



Every week a team from the packaging steel business runs educational roadshows, conducting interactive and curriculum-rich visits to schools, colleges and adult groups throughout the UK. In over 1,000 engagement sessions, we have helped them to understand the importance of recycling behaviour and to learn about the steel packaging lifecycle. In 2020 we developed an online creative activity for children, who were challenged to see if they could make their own food packaging that could surpass the steel can for recyclability, durability and shelf appeal.

STEEL IN A SUSTAINABLE SOCIETY

Contributing to the low carbon economy

Decarbonisation is, quite rightly, high on the agenda currently. Thoughts about the world we are leaving for future generations, warnings of more severe weather, and targets set globally by governments, mean we all have to do something – and do it soon.

Steel is a fundamental material for a low-carbon economy. Almost every aspect of the UK Government's decarbonisation plan is steel intensive. Steel will be needed for renewable energy, low-CO₂ transportation, and infrastructure schemes for large-scale hydrogen production and distribution, and carbon capture, usage & storage. It will be needed to build and power the electric vehicles of tomorrow, as well as creating sustainable buildings and delivering major infrastructure projects which will help the nation achieve its net zero goals. In this section we give more details of the positive role that our steel can play in decarbonising society, along with some case studies of where we are working with customers to innovate in low emissions solutions.

Whilst steel's role in the net zero world of the future is clear, we also recognise that the steelmaking process itself creates substantial CO₂ emissions. We feel a strong sense of responsibility, therefore, not only to continue to innovate in the products and services of tomorrow, but also to reduce our own emissions. We have set out a commitment to achieving carbon neutral steelmaking by 2050 and to achieve a 30% reduction in CO₂ emissions by 2030 compared to 2018. Achieving decarbonisation, however, is complex, and depends on a number of levers, including the availability of infrastructure, deployable technology, policy support, and demand for near or net zero steel (see also Roadmap to 2050). Nevertheless, we have been working hard for a number of years to assess the feasibility of possible options which could help decarbonise our operations.

We understand the importance of innovation and collaboration in addressing climate change. Tata Steel has been one of the leaders in global initiatives for decarbonisation of the sector and is at the forefront of two worldwide collaborations. The Mission Possible Partnership's Net Zero Steel Initiative aims to inspire an accelerated transition to net zero for the steel sector, including essential innovation, investments, policy, and procurement decisions by the broader industry value chain. The Net Zero Steel Pathway Methodology Project has laid out the foundations for the development of robust guidelines for steelmakers who wish to make a realistic and credible commitment to near or net zero target setting.

Helping our customers to be sustainable

We have always supported our customers to use steel in the most efficient way, assisting them with material choices and with ways of optimising their production processes.



Increasingly, we are working closely with customers in all market sectors on all aspects of sustainability. Our knowledge and transparency about the performance of our products allows them to understand the sustainability of steel applications, enabling them in turn to develop their approach to material usage and meet their environmental goals.

Life cycle assessment

Life cycle assessment (LCA) is a powerful tool for identifying opportunities to reduce the environmental impact of a product – whether that is a building, a vehicle, a piece of machinery or packaging – throughout its life cycle.

Tata Steel is widely recognised for its expertise in LCA. Taking a supply chain perspective allows us to demonstrate how improvements in material utilisation and right-first-time manufacturing can reduce emissions during the production phase. Our LCA models allow us to consider the complete value chain, for instance, the impact of the carbon intensity of regional grid electricity (gCO₂ / kWh) on the carbon footprint of a vehicle or building.

In the automotive sector, lightweighting remains a key lever for reducing the CO₂ emissions of vehicles in their use-phase. LCA can be used to demonstrate how embodied CO₂ derived from the manufacture of advanced and ultra-high strength steel can be offset by downgauging parts to make them lighter. Savings in mass means CO₂ savings: less material is required to manufacture the vehicle and a lighter vehicle produces fewer emissions in use.

In construction, we have been supplying life cycle data on our building envelope products for 15 years, publishing environmental declarations for our UK supply chain partners' cladding systems that use our Colorcoat HPS200 Ultra® or Colorcoat Prisma® prefinished steel. Our work in this area has been recognised with four World Steel Association awards for Excellence in LCA.

EPDs in construction

During the year we produced the 50th Environmental Product Declaration (EPD) for our construction sector customers – a milestone in environmental impact transparency and reporting. An EPD is a recognised method of describing a product's whole life impact, backed by international standards. Tata Steel was the world's first steel manufacturer to operate an EPD programme. We can produce product-specific EPDs that comply with EN 15804 and ISO 14025 standards and which are third-party validated.

An EPD contains a description of the manufacturing route and a technical description of the product. Along with quantified environmental information, it covers specific aspects of the product life cycle, from raw material extraction, manufacture, and fabrication through to use and end-of-life.

Being able to supply product-specific EPDs, along with BES 6001 responsible sourcing certification, enables our customers to accrue points under building certification schemes such as LEED and BREEAM on their building projects. This level of transparency and reporting allows them to make optimum decisions about resources – and demonstrates the sustainability of steel and our steel building products.

Tata Steel was the world's first steel manufacturer to operate an Environmental Product Declaration programme

The Forge, Southwark, London

The Forge office development set out to be the UK's first net zero carbon commercial building and is pioneering a ground-breaking construction technique: a platform approach to design for manufacture and assembly known as P-DfMA, which could become a catalyst for change in the construction sector. The technique involves using standardised components to create a repeatable format that allows buildings to be completed faster while reducing materials and lowering the carbon footprint. The building contains Tata Steel's ComFlor® beam, which was specifically designed for P-DfMA projects, offering a faster and more efficient flooring solution through the use of automated construction techniques and digital technologies.



Working with the automotive sector

We work with automotive customers such as Renault Nissan, VW and PSA, as well as their 'tier' suppliers, and have won quality awards from Volvo, Toyota and BMW.

Sustainability has noticeably risen up the automotive agenda, and whereas two years ago our requests to discuss sustainability resulted in 3-4 meetings a year with their sustainability experts, customers are now actively approaching us and involving their wider cross functional teams – from material experts, press shop, sustainability and purchasing. Between March and December 2020, we held 100 working sessions with our automotive OEM and tier customers and have been able to develop jointly-agreed roadmaps for decarbonisation, circularity and responsible sourcing.

Electric vehicles

Electrification is happening fast. Most automotive manufacturers have announced plans to move towards fully electrified vehicles (EVs) in the next decade. Sales of electric vehicles, both battery and plug-in hybrids, grew by 19%, from 1.78m to 2.12m cars between October 2020 and September 2021. We are working with a number of stampers and motor manufacturers on future EV launches and are involved in a collaborative UK government-funded (Innovate UK) project, which is looking at the use of electrical steels in EV motors. The CompETe project aims to deliver electric drive units with class-leading efficiency for increased vehicle range, coupled with high power and torque density, all within a lightweight and compact envelope.

Lighter packaging steel

We continue to invest in downgauging our packaging steel as a way of saving CO₂. Working with one of our European customers, we have helped make their tinplate aerosol cans lighter by decreasing the thickness of the rolled steel, achieving weight reductions of 18% on tinplate cans for hair styling products, and enabling carbon reductions of >15%.

Sustainable engineering steels

We supply many of the world's leading brands and our steels are trusted in a huge range of engineering applications: renewable energy, yellow goods, trucks and trailers, radiators and boilers, industrial racking and shelving, data centres, domestic appliances, industrial packaging and many more. We continuously work to make them smarter, more durable, lighter, stronger and more sustainable throughout the life cycle, from their production right through to end of life.



Coretinium

Coretinium® is composite sheet material solution, designed to be strong, lightweight and recyclable. In recent years we have been working with major UK trailer manufacturer Tiger Trailers, helping them use this modern composite to replace traditional glass

reinforced plastic-skinned plywood side walls. Efficient at all stages of its product life cycle, including minimising raw materials in its creation, Coretinium saves weight and maximises payload space to help reduce fuel and CO₂ emissions. It has been chosen by companies such as express parcel specialist DPD for its latest logistics fleet.

Contributing to the food supply chain

The food and agricultural industries are under pressure both to become more efficient and to cut emissions, as they play their vital role in feeding a growing population.

Our steel products (including branded products such as Colorcoat® pre-finished steel, Durbar® floorplate and Celsius® structural hollow sections) form the major component in most agricultural buildings and moving equipment. We work closely

with agricultural equipment manufacturers, applying advance engineering techniques with our in-house engineers and world-leading Computer Aided Engineering (CAE) software to make their products lighter, stronger and more efficient, recently redesigning a trailer with a 10% weight reduction and a 17% improvement in production time.

The tinplate we make in Trostre is an important packaging material for the food industry.

Canned food is affordable and retains nutrients extremely well. It can be stored for a long shelf-life without using energy-consuming refrigeration. These benefits were recognised by consumers during the pandemic, when canned food sales rose by around six per cent in volume. As part of a key sector at a time of restrictions and uncertainty, we not only maintained operations but met the increased demand.



Role of steel in renewable and alternative energy

Steel is a vital component in the transition from traditional fossil fuel energy to renewable and alternative sources. In the UK, Tata Steel's materials are being used in some of the country's largest low-carbon energy projects. These are very demanding applications where quality is highly valued.

As well as providing the necessary infrastructure our products are used in buildings and homes which can generate their own renewable energy, thereby helping to reduce carbon emissions and fuel poverty.

We are a partner in Swansea University's SPECIFIC Innovation and Knowledge Centre, which has a full-scale demonstration programme to prove innovative technologies that generate, store and release solar energy.

Projects and applications	Steel components
Hinckley Point C, the first in a new generation of nuclear power stations that will provide zero-carbon electricity for around six million homes.	Celsius® structural hollow sections ComFlor® RoofDek
Offshore wind farms around the world, including the world's largest windfarm at Dogger Bank.	Celsius® hollow sections widely used in structural steelwork.
Solar power and heating including buildings that generate their own energy.	MagiZinc® for solar panel frames, offering superior corrosion protection and extended life. Colorcoat Renew SC® for active solar air heating of buildings.



Decarbonising our own operations

The Roadmap to 2050 section describes some of the options we are assessing that will enable us to make a step-change reduction in CO2 emissions consistent with our commitment to carbon neutral steelmaking in 2050 and the UK Government's net zero target by the same year.

In parallel with our assessment of future approaches, we remain focused on optimising our existing assets during their remaining lives. Most of our CO2 emissions associated with the manufacture of our steel products occur at our integrated steelworks at Port Talbot, where iron ore and coal are brought together in the blast furnace process.

Tata Steel was a worldsteel (World Steel Association) Climate Action data provider for 2021, a designation that recognises those steel producers that have fulfilled their commitment to participate in the worldsteel CO2 emissions data collection programme. Participation in this programme enables us to benchmark our performance. For the year under review, Port Talbot was ranked well above the average performance of other Climate Action data providers. More information can be found at www.worldsteel.org/steel-by-topic/environment-climate-change/climate-action/climate-action-data-collection.html.

Whilst our operations are already very efficient, and opportunities for further improvements are becoming progressively smaller, we remain committed to making marginal gains wherever the opportunity arises to do so.

We have used a process optimisation tool called the energy efficiency 'wave' approach which systematically targets energy efficiency opportunities at our main operations. We have also developed MONICA, a state-of-the-art monitoring and benchmarking tool for energy and CO2 emissions from our processes. We are part of the UK's Energy Saving Opportunities

Scheme (ESOS) and have fulfilled our obligations under this regime by delivering a rolling programme of audit and assessment. We have instituted a robust governance process to identify new opportunities and to drive project execution.

One of our biggest energy efficiency opportunities concerns the power plant at Port Talbot, where process gases from the steelworks are combusted to produce heat and power to send back to the processes. We commissioned a new 30MWe steam turbine in autumn 2021, which is providing an estimated 13MWe increase in the average amount of electricity generated from the site through increased capacity and efficiency. The additional electricity generated reduces the amount of electricity taken from the national grid, equivalent to a saving of 50,000 tonnes of CO2 per annum.

We are currently commissioning an innovative system in the reheating furnaces at the Port Talbot hot rolling mill which uses lasers to measure the efficiency of fuel combustion, with a view to substantially optimising fuel rates and therefore emissions.

Where opportunities arise to do so, we are implementing electrification schemes to

reduce our direct emissions. One such example has been the installation of electric ovens to replace natural gas burners for heating refractory nozzles at our Port Talbot site.

Detailed studies on a number of other large schemes for waste heat recovery, fuel switching and higher recycling rates at our plants were conducted in FY2020/21. A number of these projects come at a very high cost. We are seeking to access UK and Welsh Government support funds for projects linked to energy efficiency, carbon reduction and circular economy, for example, the UK Government's Industrial Energy Transformation Fund, to be able to realise these opportunities and ensure a sustainable business.

We are also engaged in development of novel technologies. Within the I-THERM project, we are working with technology providers and academics to overcome some of the existing barriers to cost effective waste heat recovery. We have recently conducted a demonstration trial at our site in Port Talbot.

We are engaging with renewable energy providers to explore opportunities for renewable electricity at our UK sites.



Steel in the circular economy

A circular economy aims to reduce waste by moving away from a linear take-make-dispose system to one where a product maintains its value when it reaches the end of its useful life. Steel is ideal within a circular economy because it is not only 100% recyclable, but also durable and flexible, providing many opportunities for reuse and extending product life.

Recycling

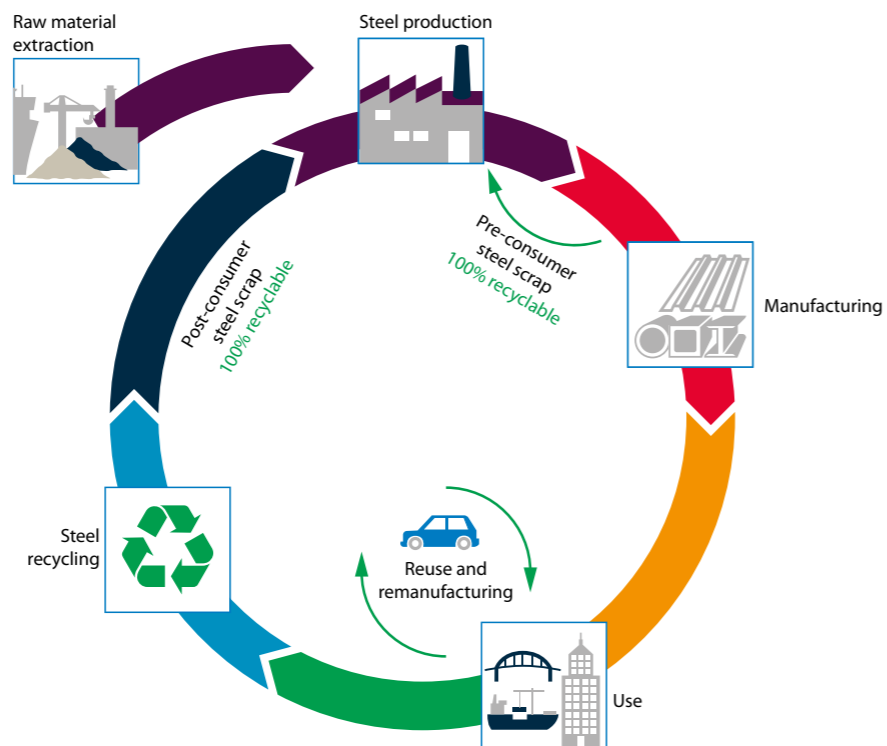
Steel can be recycled over and over again within a closed material loop. The magnetic property of steel means that it can be recovered from almost any waste stream, and its high scrap value makes recycling economically viable, which is why steel is the most recycled material in the world. Recycling rates are frequently over 90% in sectors such as automotive, engineering and construction. In the packaging sector, the recycling rate for steel packaging has increased year-on-year and has now reached 78% in the UK.

Despite its high recycling rates, the demand for steel is greater than the availability of steel scrap globally. This means that for the foreseeable future the world will still need to produce new steel to satisfy the needs of society, and not all steel products are able to be produced with a high recycled content. We optimise scrap usage within our processes and support initiatives to further increase the recycling rates of steel.

Recycling infrastructure

Every steel plant is a recycling plant, and all steel is 100% recyclable. Tata Steel has been instrumental in setting up the national infrastructure to create an end market in the UK for steel packaging at the end of its life. All local authorities now collect steel packaging at the kerbside, contributing to the UK's high recycling rates for packaging steel and demonstrating that steel is a sustainable packaging material as well as providing valuable feedstock for our furnaces.

Steel is the only truly cradle-to-cradle recycled material



EPR, or extended producer responsibility, is a widely-adopted policy around the world that requires producers to make more sustainability decisions at the product design stage, including making it easier to reuse or recycle a product at the end of its life. New EPR targets set by the UK Government which will require 92% of steel packaging to be recycled each year by 2030 will require a re-examination of the way scrap production and recycling data are recorded as some packaging steel scrap is thought currently to 'leak' into other grades of scrap and, as such, not be counted as packaging.

Driving up recycling rates

Through programmes such as Metal Matters, we are collaborating with the UK government and partners in the metal packaging sector such as local authorities and waste management contractors to educate consumers and encourage householders to participate in household collection schemes and drive up the recycling rates for metal packaging. So far, we have helped create 114 local authority campaigns, reached 7.2 million households and seen a 10-15% average increase in metal packaging recycling, all at a cost of 28p per household. (see Communities section for more about our work with schools.)

Reuse

Steel's durability makes it highly suitable for applications involving reuse. In the transition to a circular economy, designing-in reuse will become increasingly important, and this is already beginning to happen.

In construction, a built-in plan to reuse or recycle components avoids waste and delivers a lower environmental impact. We are enabling our durable steel products to be more easily reused at the end of a building's useful life by providing accompanying data so that all details of a component's provenance can be traced, giving future users information about the grade of the material, its chemical composition and other aspects that make identification more efficient and economic.

Our products also allow 'active' buildings, which use steel to help generate power as well as heating and cooling solutions with zero emissions.

Tata Steel is a consortium member of Seismic II, a UK Research and Innovation (UKRI)-funded project to streamline the construction of public sector buildings such as schools and health facilities, meeting the Government's industrial strategy of reducing costs by a third, delivering buildings in half the time and with a 50% reduction in carbon emissions from the sector. With the aim of creating a standardised process for construction, the project uses data to enable a whole-life carbon assessment of the construction platform, and has a focus on how components such as floors, roofing and entire steel frames can be dismantled and reused. A demonstrator building at the BRE in Watford is due to be complete in March 2022.

Reduce

Reducing consumption is another key pillar of the circular economy and we can do this by improving the efficiency of our material. In the automotive industry, precision-pressed tailor-welded blanks can join together steels with different chemistry, grade or coating prior to being press-formed into the final part. This technique reduces the number of parts to be tooled, saving energy. It also enhances yield and reduces waste from splitting, as well as allowing thinner gauge, lighter-weight materials to be used where possible.

ReclaMet

We are playing a substantial role in the multi-partner project ReclaMet, which is evaluating techniques to upgrade and recover valuable resources such as zinc from industrial process materials. Reducing wastes and improving resource efficiency will advance steel product circularity.

Recovery and reuse in industrial packaging

Industrial steel drums are reused multiple times before being recycled at the end of life and processed into new steel products. We continue to explore opportunities for designing in ways of extending the circularity of these products, and are working with ReTraCE, a collaborative European research project, to develop methods to assess the environmental benefits of reuse and recycling.



New product development

Providing sustainable solutions is at the heart of our new product development. In the past five years we have launched 85 new products for the automotive, engineering and construction sectors, many of them with specific sustainable properties to make them lighter and longer-lasting.

Sustainability profiler

Our industry-leading sustainability assessment profiler helps us evaluate our new product development portfolio by considering environmental, social, and economic issues over the complete product life cycle. The profiler guides our teams at each stage of product development, alerting them to key sustainability issues and trends, tracking progress, and identifying value-creating sustainable product attributes. In FY2020/21 it helped us launch 12 new products with significant sustainability benefits. The profiler has been recognised by the World Steel Association and in 2021, it won a Tata global Innovista award for innovation.

Virtual factory

We are currently working on ways of speeding up our development of sustainable solutions. In conjunction with Swansea University and Warwick University, we are working on a five-year programme to develop a 'virtual factory' that will enable product engineers to test concepts using existing data rather than physically committing steel for trials – saving costs and considerably speeding up sustainable product development.



Responsible supply chains

Our customers increasingly want to understand more about the sustainability of the supply chain behind the steel they buy. Governments, NGOs, financial institutions, the media and ultimately consumers are demanding increased supply chain transparency.

As part of a worldwide project led by our parent company, TSL in India, we have been working to achieve this. Using OECD reporting on risk identification, assessment and mitigation, we are engaging with iron ore and coal suppliers. As well as assessing quality, business integrity and health and safety, we are working with them to understand how their activities impact on conflict and indigenous peoples and how they are managing environmental aspects such as tailings (mining residues) management, biodiversity and protected forests.

Conflict minerals

Tin, an important raw material for our packaging steels, is identified as a conflict mineral. Our policy is to deploy due diligence and ensure full compliance with regulations in order to identify and mitigate the risk of conflict financing and human rights abuse. We never knowingly purchase tin from the Democratic Republic of Congo. We support the International Tin Research Institute's Tin Supply Chain Initiative and are a member of the Responsible Minerals Initiative. This offers an independent, third-party verification of suppliers' systems to ensure they are in line with global standards.

ResponsibleSteel™

In order to strengthen our sustainability programme and to secure third-party validation of our progress, through our parent company, TSL, we became a member of ResponsibleSteel™ in 2020. This is the first globally-present sustainability standard development and certification scheme for the steel industry. We are currently ensuring that we meet all of the requirements of the standard before making a final decision on when to pursue certification.

Product sustainability standard

BES6001 is a product sustainability standard comprising a series of requirements for products and the organisations making them. These requirements cover themes such as CO2 emissions, environmental protection, energy use, community engagement, business ethics, employment and skills. It also requires that the constituents in certified products can be traced back to their source of extraction, and that high levels of responsibility are evident within the supply chain. Certification is particularly important in construction sector public procurement. We hold BES6001 certification for all products manufactured in the UK, covering 14 different product groups produced at seven manufacturing locations across the country.

Reducing supply chain emissions

A zero carbon framework for logistics has led to a 5% reduction in CO2 emissions – winning Tata Steel a Steelie Award from the World Steel Association.

We deliver approximately 11 million tonnes of steel a year from our steelmaking operations across Europe to our customers worldwide. Our outbound logistics team developed an analysis tool that could identify opportunities to improve sustainability by finding an alternative route or means of transport, for example sending material from the Netherlands to Finland via ship instead of truck. In the UK we have used longer trains, requiring fewer locomotives, with the added benefits of reducing transport costs and lessening pressure on the rail network.



In February 2021, the UK's first locomotive powered by 100% vegetable oil pulled a 2,500-tonne load of steel coil from Llanwern to our Roundoak railhead in the West Midlands. The hydro-treated vegetable oil reduces carbon dioxide and nitrogen oxide emissions by 90% and this trial is opening the way for greater use of this fossil-free fuel alternative on the UK rail network.

Environmental management

A foundation policy on environment sets out our commitment to environmental compliance and continuous improvement. This is delivered through an environmental management framework that all of our operational sites and supporting functions must follow.



Port Talbot

One requirement of this framework is that all manufacturing sites be independently certified as meeting the international environmental management system standard, ISO 14001:2015. During 2020, we secured a full recertification against the standard for our operations at Port Talbot, Llanwern, Shapfell and Hartlepool.

Environmental policy and performance

We are committed to minimising the environmental impact of our operations through the adoption of sustainable practices and continuous improvement in environmental performance. Key environmental data are presented in the performance tables at the end of this report.

During 2020/21, representatives of the local community around our Port Talbot steelworks raised concerns about the impact of the steelworks on local environmental conditions. We received over 450 complaints from members of the public related to concerns

about odour, noise and dust. Against this background, we responded by improving our complaint management process, intensifying our dialogue with the community and strengthening our focus on addressing the most immediate concerns as part of an overall improvement plan for the years ahead. We always have and always will deeply value the wellbeing and prosperity of everyone who forms a part of the communities in which we operate and our commitment to reducing the environmental impact of our operations remains resolute. We continue to sponsor and host community projects, with many planned for financial year 2021/22 with a strong environmental focus.

We pursue targeted investment in environmental control technology to achieve reductions in our impact. In June 2021, we 'hot commissioned' a new emissions control unit at our Port Talbot sinter plant after an investment of more than £20 million in new filtration systems. These are now delivering a substantially reduced level of particulate emissions.

We are using a wide range of measures to ensure that we don't have an adverse impact on local air quality in Port Talbot. These are set out in an air quality management plan (AQMP) which we updated during the year. We have improved our ability to assess the risk of our operations impacting air quality in Port Talbot using modelling software and measured data from a monitoring network around our site which we extended during the year. Automated alerts notifying of an increased risk of adverse air quality conditions have been implemented and a range of protocols have been developed for responding to such conditions, including ceasing certain operations and deployment of additional mitigation.

We have invested £250,000 in our water treatment at Port Talbot, using the latest automation and digitisation techniques to ensure clean, safe water free from contaminants and harmful bacteria such as Legionella, with improved environmental outcomes through precise recording and chemical dosage.

Resource efficiency

The importance of resource efficiency has never been more apparent. The world needs to move to a more circular model of consumption and reduce its reliance on finite raw material.

We can play a part in the transition to a circular economy through the products we make (see previous section) but we also need to ensure that we use resources responsibly within our own processes. This helps to reduce the strain on ecological systems but also makes sound business sense. We have made substantial strides over recent years towards zero landfill and optimised resource utilisation at our sites as the case studies below demonstrate.

At our coil coating site at Shotton, we invested approximately £1 million to install a technology known as electromagnetic strip stabilisation on a steel strip galvanising (zinc coating) line. This has achieved greater stability of the coated strip as it passes through air knives which are designed to remove excess zinc. This has led to improved control of the amount of zinc – or coating weight – we apply to our steel and reduced zinc usage by approximately 20 tonnes per month.

Our Llanwern site has become a zero landfill operation after we found a new recovery solution for chloride-containing filter cake, a residue from one of our wastewater treatment processes. Previously this cake could only be sent to landfill, but a new technique,



Llanwern

developed by waste management company MSS to reduce the level of chloride, means the filter cake can now be used in our sinter plant at Port Talbot, which produces an essential iron-bearing raw material for our blast furnaces.

At our packaging steels site at Trostre, over 7,500 tonnes a year of waste materials that would previously go to landfill or be disposed of externally are now being diverted for use as raw materials in our coke and ironmaking. Trostre works has now nearly achieved its goal of zero waste to landfill, by focusing on two high-volume waste substances. Iron rich sludges, which are removed from process wastewaters, are being reused as an iron substitute in the Port Talbot sinter plant, while reclaimed waste oil is being purified and recovered as a substitute for primary raw materials in Port Talbot's coke ovens.

Landfill mining

We have environmental permits for the operation of three landfill sites in the UK, two of which are at Port Talbot. Whilst we have been reducing steadily the amount of material we dispose of in our landfills over many years, we still use them when no reuse or recycling options are available for a particular waste arising. As new technologies have been developed to

Corby – water reduction

At our tube production site at Corby, in order to better understand our water usage, a number of water meters were installed in 2018/19 at key locations. Following a period of monitoring, the areas of high water usage were identified and from this a number of underground leaks were found. During 2019/20 and 2020/21, work was carried out to replace these sections of leaking pipework and to optimise the operations of cooling water systems on site. This led to a 30% reduction in water usage in 2020/21 compared to 2018/19.

recover value from material that was once regarded as waste, an opportunity has arisen to extract previously disposed material from one of our landfills. During 2020/21, we carried out a 'landfill mining' exercise and recovered over 1,000 tonnes of steel and iron ore which has subsequently been used to make new steel. At the same time, we have increased the capacity of the landfill to take non recoverable wastes, negating the need to construct a new landfill cell.



Trostre

Biodiversity

Tata Steel is guardian to large areas of natural habitat including several Sites of Special Scientific Interest (SSSI)s. In addition to meeting our responsibilities for protected sites, where opportunities arise to do so, we also look for opportunities to encourage biodiversity on other landholdings and thereby contribute to protecting the natural heritage of the UK's landscape.



Tern colony, Shotton

Former blast furnace cooling lagoons at our Shotton site are now a haven for wildlife. Since attracting 12 nesting pairs of Common Tern in 1970 with the creation of a small raft on the lagoon, the area has become home to one of the UK's largest colonies of this vulnerable bird species and has seen more than 20,000 chicks successfully fledge. The site has been a nature reserve for 50 years and a designated SSSI since 1990.

In spring 2021, a project team of apprentices, volunteers and supply partners refurbished the colony by creating new tern islands on the lagoon, connected by a new steel walkway. The project, assisted by a Welsh government grant, involved the donation of steel for a base and moving 130 tonnes of shingle from the shore onto the nesting islands by helicopter to refurbish the islands, creating a nesting site that the migratory birds will return to for years to come.



Lagoons, Shapfell

At Shapfell in Cumbria, where we produce limestone and lime, we have created two hibernacula for amphibians and reptiles. Created from logs, pallets, rubble and limestone on the edges of the upper lagoons, they form habitats that frogs, toads, newts, lizards and snakes can use to protect themselves throughout the winter. We have also planted water plants and hundreds of shrubs as part of this restoration project.



Margam Moors, Port Talbot

Margam Moors, an area south of the Port Talbot steelworks, is an SSSI comprising 250 acres of fen grassland criss-crossed with manmade ditches which are an important habitat for numerous fresh water invertebrates. A recent survey identified 293 species and more than 2,700 individuals. The grasslands are also a key site for the shrill carder bee, which is on the verge of

extinction in the UK. Working with Natural Resources Wales (NRW), we have introduced small herds of cattle to improve the habitat for this endangered species which seeks grazed grasslands for its ideal nesting conditions.

We manage the Port Talbot Eglwys Nunydd reservoir, also an SSSI, and a coastal dune habitat. On our main site we have set aside areas for nature, translocating Kidney Vetch to encourage the near-threatened Small Blue Butterfly.

ROADMAP TO 2050 AND OUR FUTURE OPTIONS

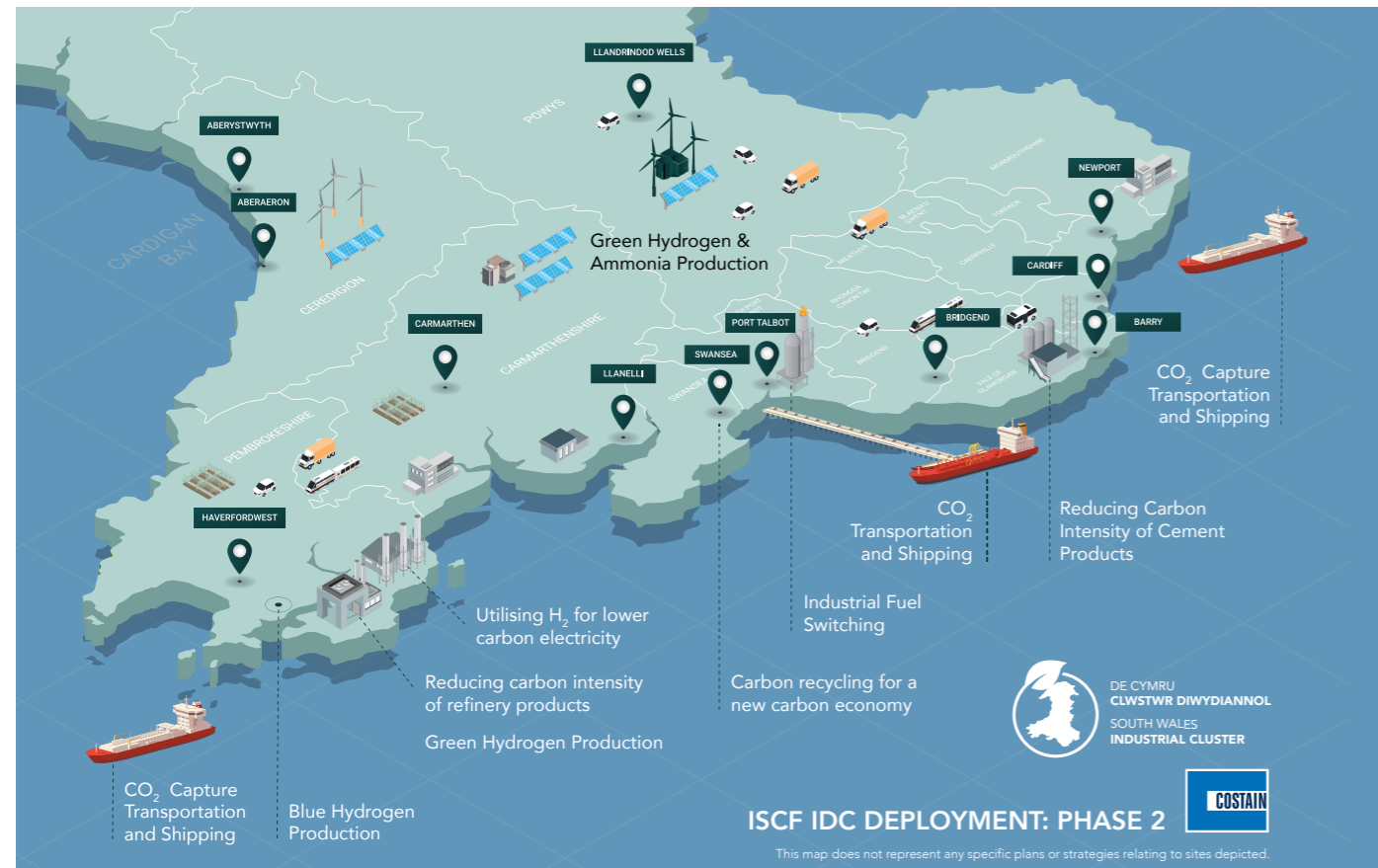
We have committed to achieving carbon neutrality of our steelmaking by 2050

In pursuit of this crucial goal, we have been active for several years in exploring a number of possible options which could be used to decarbonise our operations whilst meeting the needs of our customers who, whilst increasingly requiring zero-CO₂ steel supply, cannot sacrifice quality or integrity as they make and supply the very products which are needed to create the net zero future.

A number of technology options are being evaluated (see 'alternative technologies').

We're now at the stage where we are beginning detailed feasibility work on some of these step-change technology options. A final decision on the approach is not just about selecting suitable technology: we will only know our exact path when we have more

confidence that we can access the right energy supplies and infrastructure at a competitive price, agree the appropriate support from the UK Government and have a competitive regulatory environment. To this end we have been involved in detailed engagement with the UK and Welsh Governments on these complex themes.



The graphic was developed by the SWIC partners to show how decarbonisation could be achieved at a regional scale.

We were instrumental in the formation of the South Wales Industrial Cluster (SWIC). This region accounts for the equivalent of 16 million tonnes of CO₂ emissions per year. The collaboration allows multiple industries to come together, to share knowledge and expertise with a common goal of reaching net zero. The focus of the group is to identify the best pathway to net zero, develop technology solutions and create the necessary future skilled workforce. Government and industry have contributed co-funding of nearly £40 million in order to achieve this aim.

We are working with academic partners to address a number of sustainability challenges:

- We have been engaged in a collaboration with The University of South Wales on the carbon utilisation project COACE, from an initial concept and PhD, right through to industrial

demonstration and securing funding of over £2.5 million. The process uses biological fermentation to generate acetates, a high value chemical, from waste carbon sources.

- Project MESH is led by Swansea University and is focused on the thermochemical storage of heat. Researchers are investigating the feasibility of storing surplus process heat from the South Wales steelmaking operations.

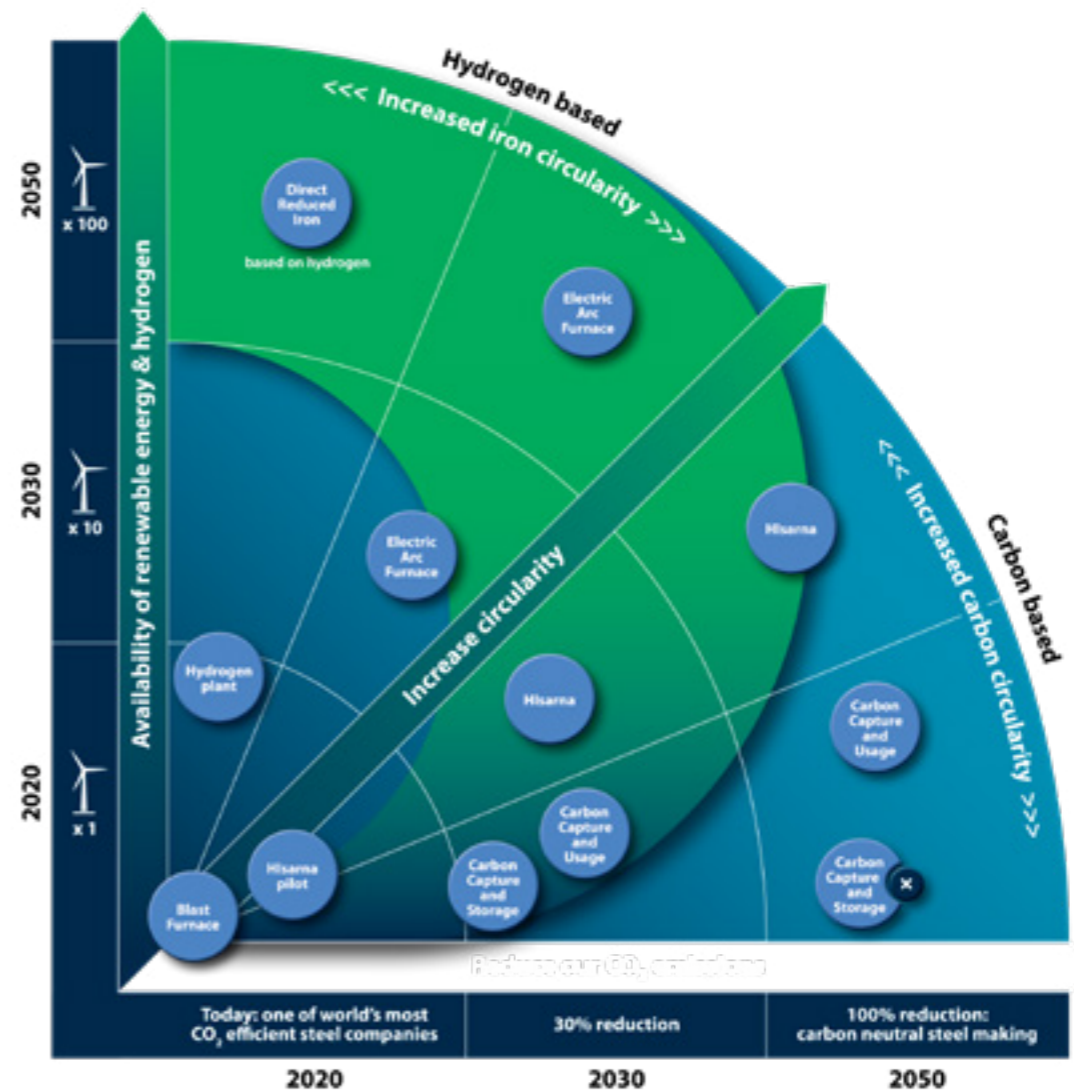
- We are supporting researchers at Swansea, Sheffield and Warwick Universities with the project SUSTAIN. This £35 million research programme aims to support the steel industry, developing environmentally sustainable solutions to ensure the future of manufacturing in the UK.

- Project COZMOS is a collaboration across multiple industries to recognise the value in

carbon utilisation in which we are leading on life cycle assessment methodologies and techno-economic analysis.

In parallel with our assessment of future approaches to achieve a step-change reduction in our emissions, we remain focused on optimising our existing assets during their remaining lives and future-proofing our investments.

Decarbonisation will be vital for our future in the UK and the thousands of people we employ, as well as the customers we supply. The challenge of meeting ever-more demanding customer expectations while committing to a path towards net zero carbon steelmaking is huge. Our company has a long history of meeting such challenges, whilst retaining its values and believing passionately in the industry's vital role in society's future.



A visualisation of the options for our decarbonisation pathway.

Imports, offshoring CO2 and government support

Without a decarbonised domestic steel industry, the UK manufacturing sector will be forced to import steel from distant producers with higher levels of emissions. Offshoring CO2 by importing the steel the UK needs will not help reduce global emissions.

Across the developed world there is a growing recognition that steelmakers need government support to decarbonise. Steelmakers and governments in a number of countries are working together to develop their decarbonisation plans. To remain sustainable and competitive, Tata Steel in the UK will need

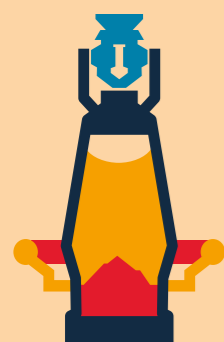
government support. We are all in a race to net zero emissions, but with expensive assets that last for decades and require connection to outside infrastructure, we need answers to important questions about energy, infrastructure and future policy before we can commit to a particular technological option for decarbonising our steelmaking.

Alternative technologies

Steelmakers around the world are considering four main technologies to decarbonise.

RETROFIT EXISTING PROCESSES

Blast furnace & carbon capture, usage & storage (CCUS)



Focus: Capturing process gases such as blast furnace gas and safely storing them or using them to make other products.

Key points: CCUS is established in other sectors but not yet applied at scale in steel industry. Continued reliance on coal may become unacceptable.

DEVELOP NEW IRONMAKING PROCESSES

Hlsarna & Carbon capture, usage & storage (CCUS)



Focus: Replacing coke making and sintering/pelletising with a single smelting process.

Key points: Pilot facility in operation at Tata Steel site in IJmuiden, Netherlands. Allows high levels of biomass & scrap usage. Elimination of raw material processing reduces emissions. Coupled with CCUS, it enables further CO2 reduction. Technology not proven at scale.

REPLACE CARBON IN IRONMAKING

Direct reduced iron (DRI) & electric arc furnaces (EAF)

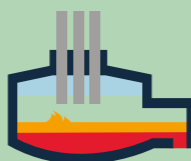


Focus: Reduction of iron ore with hydrogen to make solid DRI which is then melted in an EAF

Key points: Current DRI technology uses natural gas. Hydrogen-based directly reduced iron is still in development. Hydrogen can be produced from coal, natural gas or electricity. Hydrogen made from water with renewable electricity in DRI production offers route to CO2-free ironmaking.

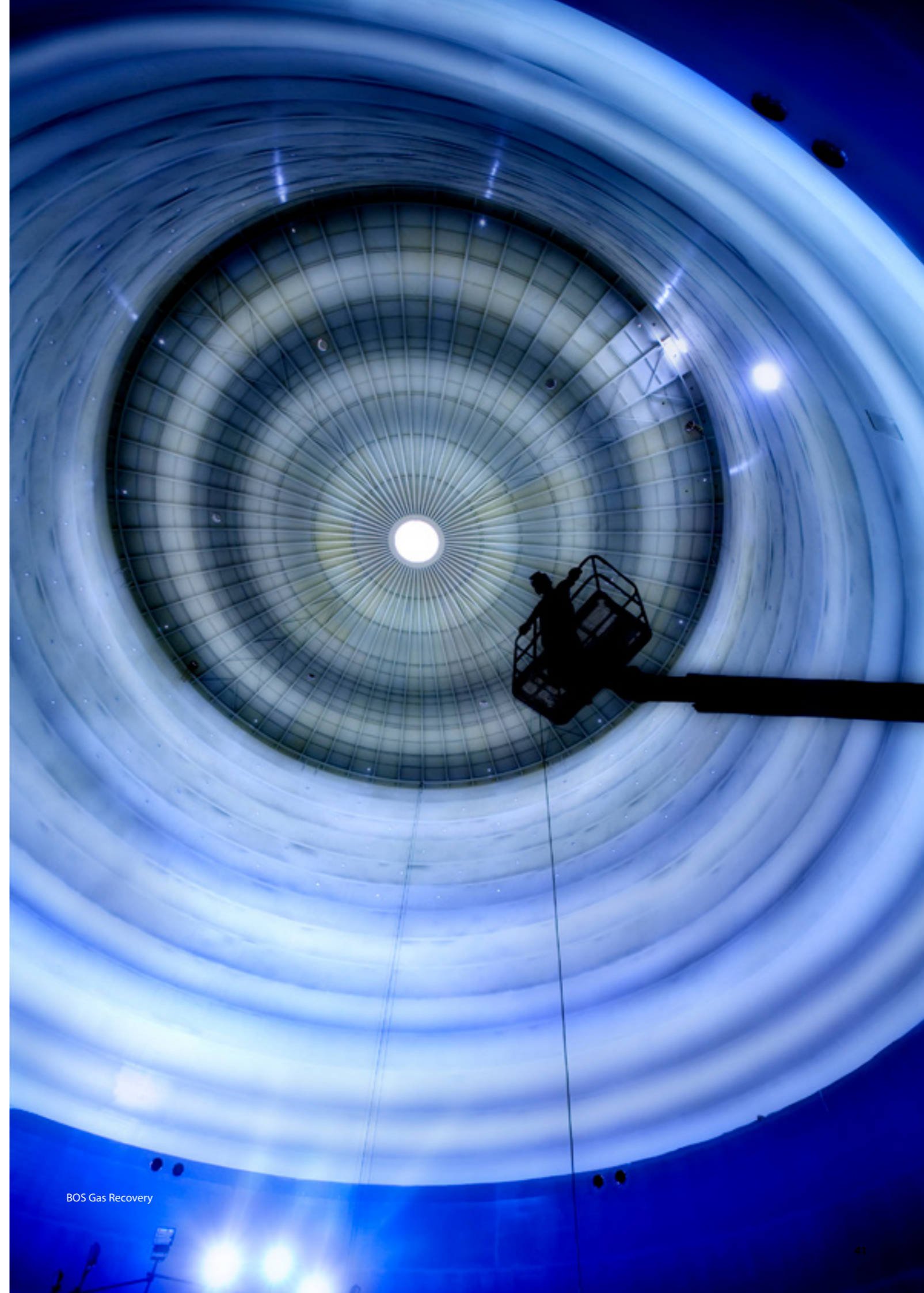
FOCUS ON STEEL RECYCLING

Electric Arc Furnaces (EAF)



Focus: Recycling of steel scrap to make new steel using EAF. Scrap can be supplemented with DRI.

Key points: UK has a large surplus of scrap (approx. seven million tonnes per year is exported). Access to competitively priced electricity is crucial. Ultra-low emissions achievable if electricity comes from renewables. Use of DRI with scrap increases the types of products that can be made.



BOS Gas Recovery

KEY PERFORMANCE DATA

Tata Steel's UK business

Key Performance Indicator	Units	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Performance						
Crude steel production	million tonnes	3.51	3.51	3.13	3.38	3.27
Liquid steel production	million tonnes	3.62	3.61	3.22	3.48	3.35
Calendar year		2016	2017	2018	2019	2020
Crude steel production	million tonnes	3.47	3.57	3.09	3.39	3.25
Liquid steel production	million tonnes	3.58	3.68	3.17	3.49	3.33
Health and safety						
Fatalities	—	0	0	0	2	0
Lost-time injury rate – total	per million hours worked	1.49	1.46	1.24	2.06	1.97
Lost-time injury rate – employee	per million hours worked	1.29	1.47	1.13	2.25	1.93
Lost-time injury rate – contractor	per million hours worked	2.19	1.42	1.61	1.43	2.10
Recordables (total)	—	120	83	84	80	79
Recordables (employees)	—	89	59	60	62	57
Recordables (contractors)	—	31	24	24	18	22
Sickness Absence Rate	%	3.4	4.0	4.1	4.4	3.5
Climate change¹						
Steel recycled – Total	1,000 tonnes	496	559	531	497	554
External steel recycled	1,000 tonnes	243	167	133	117	167
Internal steel recycled ²	1,000 tonnes	253	391	399	379	387
CO ₂ saved from external steel recycled ²	1,000 tonnes	406	279	222	195	278
Energy intensity per tonne crude steel (tcs)	GJ/tcs	22.9	23.6	24.2	23.8	22.8
CO ₂ eq. emission – (audited EU ETS emissions) ³	million tonnes	6.56	6.55	5.81	6.43	6.07
CO ₂ eq. emissions – Total (ws scope 1+2+3) ⁴	million tonnes	7.43	7.63	6.92	7.51	6.99
Carbon intensity in tonnes of CO ₂ per tonne of crude steel	t/tcs	2.12	2.18	2.21	2.22	2.14
Resources, emissions and waste¹						
Dust (PM) ⁵	tonnes	1,650	2,046	1,961	1,936	2,231
	kg/tcs	0.48	0.57	0.64	0.57	0.69
NOx (oxides of nitrogen)	tonnes	4,646	4,967	3,842	4,834	5,140
	kg/tcs	1.34	1.39	1.24	1.43	1.58
SO ₂ (sulphur dioxide)	tonnes	6,145	7,194	7,065	7,090	6,614
	kg/tcs	1.77	2.02	2.29	2.10	2.04
Mass emissions to water, hydrocarbons	tonnes	52	39	66	66	51
Mass emissions to water, suspended solids	tonnes	782	759	1,528	1,530	487
Material re-used through our process (excluding scrap steel)	1,000 tonnes	369	380	233	300	557
Volume of by-products sold (excluding granulated blast furnace slag (GBS))	1,000 tonnes	827	850	641	561	606

Key Performance Indicator	Units	FY 16/17	FY 17/18	FY 18/19	FY 19/20	FY 20/21
Resources, emissions and waste¹continued						
Slag to cement industry (i.e. GBS sales)	1,000 tonnes	681	700	686	818	781
Waste generated	1,000 tonnes	136	179	320	240	363
Waste – material reused, recycled by third parties	1,000 tonnes	125	161	297	223	356
Waste – material disposed to landfill	1,000 tonnes	11	18	30	17	7
Fresh water consumption	m ³ /tcs	6.07	4.48	6.03	6.53	5.00
	million m ³	21.1	16.0	18.6	22.1	19.3
Environmental complaints ⁶	—	261	292	779	1,274	481
People⁷						
Number of employees	—	10,005	8,469	8,620	8,113	7,496
Number of new hires	—	487	871	826	354	302
Number of new hires by gender	#M/#F	426/61	776/95	731/95	288/66	276/26
Number of retirements	—	505	195	221	294	203
Average age	—	44	44	43	43	44
Employees over the age of 50	—	3,440	2,836	2,877	2,817	3,208
Total turnover rate	%	13.1	28.3	7.5	10.2	5.5
Percentage of female employees	%	10.0	10.7	10.7	11.0	10.8
Percentage managers that are female	%	15.9	18.1	19.1	20.0	18.6
Number of hours training per employee	hrs/employee	24.0	26.0	21.6	15.4	N/A ⁸
% of staff development appraisal	%	40.0	56.2	71.0	N/A	84.7
Community						
Number of applications for financial or in-kind support received	—	81	186	184	101	64
Number of applications for financial or in-kind support approved	—	75	59	56	54	41
Number of youngsters attending Tata Kids of Steel events:	—	5,387	2,265	2,700	2,800	0
Number of Tata Kids of Steel events	—	6	2	3	3	0 ⁹

NOTES:

- These data relate only to the primary steelmaking operations at Port Talbot except where stated otherwise. Note that emissions data relate to calendar years (i.e. the figure in the column 2020/21 is for calendar year 2020 etc.) to retain consistency with data reported to public authorities.
- Internal scrap equates to "home scrap" according to the worldsteel definition. The CO₂ saved from the recycling of external steel scrap (i.e. steel products recovered at their end-of-life) is based on a calculation of the avoided emissions related to the making of an equivalent amount of iron from virgin ore via the blast furnace route.
- Direct emissions scope 1: formal and audited emissions according ETS. These figures relate to calendar years (i.e. the figure in column FY2020/21 is for calendar year 2020 etc.).
- Total (scope 1+2+3): based on methodology of worldsteel, excluding credits for slag delivery to cement industry.
- Emission figures are estimates based on spot measurements and emission factors.
- Complaints for all activities in Tata Steel's UK business.
- These data relate to UK-based staff employed by Tata Steel's UK business, who collectively account for over 97% of the total employees of Tata Steel's UK business.
- No data available as Covid restrictions severely hampered training opportunities during FY2020/21.
- As a result of Covid restrictions it was not possible to run Tata Kids of Steel events during FY2020/21.

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