

BLUESCOPE: TRANSITIONING TO A LOW-CARBON, CIRCULAR ECONOMY

FOR MANY YEARS NOW, BLUESCOPE HAS STRONGLY ADVOCATED FOR A FAIR AND EQUITABLE APPROACH TO ADDRESSING CLIMATE CHANGE TO DELIVER REAL REDUCTIONS IN GLOBAL GREENHOUSE GAS (GHG) EMISSIONS. BLUESCOPE SEES A STRONG FUTURE FOR STEEL. STEEL IS A CRITICAL ENABLER OF THE ACHIEVEMENT OF THE UN SUSTAINABLE DEVELOPMENT GOALS AND, SUPPORTED BY CONTINUED DEMAND, PRESENTS A STRONG OPPORTUNITY TO TRANSITION TO A LOW-CARBON, CIRCULAR ECONOMY.

CLIMATE CHALLENGE

In 2020, BlueScope acknowledged the integral role of climate action for the business, incorporating climate change as a key pillar in their revised corporate strategy – a defining signal of their commitment to action and recognition of its contribution to their long-term success.

BlueScope supports the Paris Agreement on climate change, recognising that the global economy must transition to net zero by the middle of this century to limit global increases in temperature to well below two degrees. For the steel sector to contribute, the future of iron and steelmaking will need to be centred around breakthrough technology.

According to BlueScope's Managing Director and CEO, Mark Vassella, "Steel is a critical enabler of sustainable development, underpinning the transition

to a low carbon future. Climate change is prominent in our Corporate Strategy, recognising the opportunities and challenges posed for our business and sector. We continue to investigate appropriate decarbonisation pathways and timeframes for our operations."

"Our recently established Climate Change Council oversees our actions in this area, and is further demonstration of our intent to embed decarbonisation as part of core business for a strong future. Over the coming year we will refresh our climate scenario analysis, which will help form the basis for our long-term emission reduction aspirations," said Vassella.

BlueScope is exploring the various potential decarbonisation technologies to understand the scale of emissions reduction they are likely to deliver, potential costs and timeframes for implementation, and some of the barriers

and enablers to implementation.

In the short term, Bluescope sees global steelmaking emissions reductions driven primarily by energy and resource efficiency, movement toward renewable electricity and technologies that are commercially available today. This approach forms the basis of BlueScope's commitment to a 12 per cent reduction in steelmaking Greenhouse Gas Emission intensity by 2030.

In the longer term, BlueScope believes that the opportunity shifts to technologies that are currently at demonstration and prototype stages such as shifts away from metallurgical coal towards hydrogen and bioenergy and carbon capture utilisation and storage (CCUS). The direct reduction of iron ore to iron via molten oxide electrolysis (MOE) may also become a viable alternative but is in the very early stages of development.



INVESTIGATING BIOCHAR OPPORTUNITIES

BlueScope continues to explore the use of biochar to reduce carbon emissions associated with steelmaking. Biochar is an energy source made from biomass, which could consist of waste timber or unused residues from the agricultural, timber and forestry industries.

The recovered material could replace coal or coke without significant modifications to existing steelmaking processes, with the opportunity to reduce the overall emissions intensity of the process.

The lack of commercially available large-scale pyrolysis technology, under-developed biomass collection and logistics systems, handling of timber treated with copper chrome arsenate, low biomass density and low biochar yields are challenges that need to be overcome before large scale deployment.

Following on from the worldsteel CO₂ Breakthrough Programme, an extensive biochar study conducted from 2006 to 2014 in collaboration with the CSIRO, GFG Alliance's Liberty Steel Group (then OneSteel) and worldsteel, BlueScope is now investigating options for an industrial scale trial of biochar. Investigations into appropriate pyrolysis technology and large-scale biomass sourcing are also underway.

\$20 MILLION RENEWABLES MANUFACTURING ZONE

BlueScope is investing \$20 million in a new BlueScope Renewable Manufacturing Zone (BRMZ) at Port Kembla in the Illawarra – the foundation of a new sustainable manufacturing base for New South Wales (NSW).

The BRMZ will support the NSW Government's recently announced, *NSW Electricity Infrastructure Roadmap*, a 20 year plan for the local manufacture of dispatchable and firmed renewable energy and electricity transmission infrastructure to replace coal-fired energy. The BRMZ also aligns with the Federal Government's recently announced Manufacturing Strategy, which is focused on building Australia's sovereign capability.

Mark Vassella said, "Half of the \$20 million incentive program will be on offer to companies who want to build manufacturing capability in NSW, especially in the fast-growing renewable energy sector. The other half would be invested by BlueScope directly at the Steelworks, to tool up our facilities in preparation for this exciting growth opportunity."

"BlueScope believes the Illawarra can rise to the challenge of climate change and we have great confidence in the potential of the NSW Government's proposed new local content procurement policy to spur

new innovation, attract investment and create new jobs. We will invest directly in our own plant, but also partner with innovators and entrepreneurs to develop new technology solutions in key industries like renewables, infrastructure, defence, manufacturing and sustainable buildings".

"We are proud of steel's role as an enabler to sustainable development and the transition to a clean energy future."

"This initiative is a great example of Our Purpose in action – to create and inspire smart solutions in steel, to strengthen communities for the future," Vassella said. "BlueScope will incentivise companies who have a vision for smart, clean, green industrial solutions. We want to encourage a new supply chain that creates regional jobs and vital economic development across the Illawarra."

"There are a range of incentives BlueScope would be willing to consider including; co-investment in start-ups, joint R&D pilot programs, office rental accommodation, leases for manufacturing sites, warehousing and logistics facilities, and access to professional technical expertise from within BlueScope and, we expect, external organisations such as the University of Wollongong and other Universities across NSW."

"An immediate focus will be supporting

BLUESCOPE APPOINTS CHIEF EXECUTIVE OF CLIMATE CHANGE

BlueScope recently announced the establishment of a new Executive Leadership Team position, appointing Gretta Stephens as Chief Executive Climate Change.

Mark Vassella said, "In recent years we have built climate change into our corporate strategy, recognising that addressing climate change is essential to our long-term success and have publicly stated our commitment to taking action on carbon emissions. We are now formalising that approach. Gretta will lead our new Climate Change function. With her technical background in engineering and materials science, and her track record of working with government and wider industry to solve macro problems, Gretta is ideally placed to lead this new global function."

"Gretta will now drive the work already underway, including our decarbonisation pathway and our

long-term carbon reduction aspirations. Gretta's new team will explore a range of technologies to understand the scale of emissions reduction they might deliver, potential costs and timeframes, and the barriers and enablers to implementation."

"We recognise that the future of iron and steelmaking will need to be centred around breakthrough technologies – once proven and scalable. Exciting work is being undertaken around the globe to explore breakthrough 'green steel' ironmaking technologies – including using hydrogen and electrolysis. These technologies are currently in early stages of technology readiness with significant advances expected to occur over the next decade."

"For success, such initiatives will need international collaboration across the industry value chain, supportive public policy, and affordable, renewable and reliable energy."

"In the shorter term, the steel sector will need to rely on technology performance improvements within conventional routes, increased use of renewable energy and other abatement measures."

"We are currently considering a diverse portfolio of projects including optimising raw material mixes, capturing and reusing a greater proportion of waste heat and gases, and potentially replacing a proportion of the coal currently used in the process with alternative reductants such as biomass or hydrogen-containing gas such as coke oven gas. Increased rates of scrap usage, and greater use of renewable energy to cut Scope 2 emissions, are also being considered."

"BlueScope expects to make further announcements about these plans during this calendar year – together with updated climate scenario analysis and a long-term carbon emission reduction plan," said Vassella.