

IMPACT X SUMMIT: Accelerating pathways to net zero

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Keynote Speech: Gretta Stephens, Chief Executive of Climate Change, BlueScope

CHECK AGAINST DELIVERY

Working together to accelerate a zero-emissions steel sector

Introduction

Hello, my name is Gretta Stephens and I am at BlueScope. Tēnā koutou from Aotearoa, New Zealand

I begin by acknowledging the Tangata Whenua from where I am joining you today, Ngaati Te Ata, and pay my respects to their Elders past and present.

Ko Kaiwaka te tangata, ko Puketapu te maunga, ko te Manukanuka o Hoturoa te moana, Ko Ngaati Te Ata te iwi, Ko Tahuna Kai Toto te marae, tihei mauri ora

I am pleased to be with you at such a pivotal time for global action on climate change, as we all closely watch the developments in Glasgow and what they will mean for such a critical issue facing our planet and society.

With that in mind, I have chosen to speak to you today on the importance of collaboration and the critical role the steel sector will play in the transition to net zero. It's pleasing to see so many of the themes I will speak about today already mentioned by previous speakers.

I am also excited to be able to share some new pilot projects that will help us to deliver the insights we need to progress to lower emissions iron and steelmaking.

Overview

First, a very brief overview of BlueScope and the steel sector.

BlueScope is a steel building products company focused on the Asia Pacific region, with 14,000 people across 17 countries manufacturing a wide range of branded steel products.

We make steel in Australia, New Zealand and the US. And while we are a small steelmaker in global terms, making just over 6 Mt of raw steel per annum, we play a very important role in our local communities and their economies. As the largest steel producer in Australia and the only producer in New Zealand, we also play an important role in domestic supply chain security.

So why is action on climate change so important to us?

Looking at the global steel sector - 1.8 Bt of steel were produced in 2020. And global demand for steel is projected to increase by more than a third through to 2050¹.

Action on climate change is one of the things that matters most to our stakeholders. That's why it is integrated into our corporate strategy and capital allocation framework.

We strongly believe that reducing our emissions is the right thing to do and it completely aligns with our BlueScope purpose to strengthen our communities for the future.

And, in fact, we have been working on reducing our emissions for many years, because the inputs to iron and steelmaking such as coal, gas and electricity are expensive. So, using less has always been good business.

But now that economic imperative has been overlaid with an urgent need for climate action.

Goal and targets

In mid-August BlueScope announced our goal of net zero greenhouse gas emissions (for Scope 1 & 2) by 2050 as well as two medium term 2030 targets.

In absolute terms, from 2005 to 2030, these targets represent emissions reductions of 35% across our steelmaking operations and over 45% in our Australian business.

So, why is steel important...

There is no future that doesn't include steel. It's used in every aspect of our lives.

It's the world's most important engineering and construction material.

It's infinitely recyclable. Once we have invested the resources to make it, we have it forever.

And, steel is underpinning the transition to renewable energy – being used to build wind towers, solar farms and transmission infrastructure.

And BlueScope, as well as others across the industry, are developing steel products for their energy efficiency and climate resilience, including cool roof solutions, advanced coating technologies and light gauge steel framing.

So, as we need even more steel, we are an industry that is part of the future.

And it makes sense to produce our steel where we consume it.

The technology gap

There is no escaping, however, that steelmaking is a significant source of GHG emissions – accounting for around 8% globally.

That's because the basic chemistry of the process to separate iron from the oxygen in iron ore in a blast furnace uses coal (or NG) as the reductant, and that releases CO₂. So, we need an alternative process for extracting iron from iron ore.

This means that what we have is a technology gap – between current high emissions processes and future state low or zero emissions processes.

And this is the first area where we need collaboration.

Because bridging this technology gap is bigger than just our company and even our sector – we need to work with others.

¹ IEA "Iron and Steel Technology Roadmap. Towards more sustainable steelmaking".

Let's delve a bit deeper into this technology gap.

And to do that, I think it's helpful if we flip the perspective.

Let's start with what low or zero emissions iron and steelmaking could look like by, let's say by the mid-2040s based on current projected scenarios, and work backwards...

Most forecasters believe hydrogen-based ironmaking processes will play an important role, along with an increasing proportion of secondary steelmaking recycling scrap steel using EAFs. Both will be based on 100% renewable energy.

But, it is important to be aware that neither the iron making technology nor the economics of hydrogen are there yet. Even if the hydrogen-based ironmaking technology were ready now, the cost of input hydrogen is not even close to where it needs to be.

The cost of hydrogen is a function of its *manufacturing cost* and the cost of *input electricity*. Manufacturing costs are expected to fall rapidly as electrolyser technology matures. Electricity input costs still need to be addressed - and they will be determined by some key choices made over the next decade.

For hydrogen-based steelmaking economics to stack up, there will need to be a hydrogen industry in Australia, producing at less than the current \$2/kg aspirational target and produced close to the point of use, given how expensive it is to store and transport.

And to achieve this we need collaboration - to build out a local hydrogen supply chain which requires multiple companies across multiple sectors who are willing and ready to provide the necessary offtake quantities to underpin the investment required.

All of this points to the need to create a hydrogen hub in the Illawarra, and we are keen to be involved.

As well as the economics of hydrogen, the iron making technology isn't there yet either – on many fronts. In terms of raw materials, for example, we need to explore the types of iron ores that can be used for the production of hydrogen direct reduced iron (or DRI). Based on what we currently know, the DRI process will favour certain types of ores over others, and so this is an important area for further research.

So, I am very pleased to share with you some very exciting pilot projects. Announced just last week, we have joined forces with Rio Tinto to explore options for a pilot of low-emissions steel production at Port Kembla Steelworks in New South Wales.

We will be using Rio Tinto's Pilbara iron ores, with green hydrogen produced from renewable electricity in a direct reduction process, to produce a low emissions iron feed. The direct reduced iron (DRI) from this process will be melted in an electrical furnace also powered with renewable electricity, to produce iron suitable for the steelmaking process.

The collaboration is part of BlueScope's previously announced climate action fund of up to \$150M over the next five years. We are very excited – as this project and others will take us to the cutting edge of current technologies to push us all to the next phase and bridge the technology gap we face.

We are also planning a pilot hydrogen electrolyser at our Port Kembla steelworks. We have already started a concept study. And we are eager to see what this electrolyser can teach us about the production, storage and handling of hydrogen and, importantly, how hydrogen will behave in a blast furnace.

The pilot is designed to be small scale – we are currently planning for 10 MW – in fact we could potentially use up to 300 MW – however the high capital and operating costs of a hydrogen electrolyser at this stage make a small pilot the most feasible option. It will allow us to scale up, once the cost of hydrogen comes down.

Moving onto other areas where we will need collaboration, we need to look at energy.

To move fully to low-emissions steelmaking, we will need a significant increase in firmed and competitively-priced renewable energy. 'Firmed' is crucial. Iron and steelmaking are 24/7 continuous processes that can't be turned on and off, so electricity storage and grid interconnection will be essential to buffer intermittent wind and solar.

And when I say a 'significant' increase in renewable energy, to give an idea of scale, our Port Kembla steelworks would need 15 times our current electricity requirements, taking it to 1.4 GW.

Planning and investing in the infrastructure we need to support an increase in renewables will be crucial. We are getting on with it. We have a 7-year PPA with Finley solar farm, committing to two thirds of the electricity generated which equates to approximately 20% of our Australian Steel Products division purchased electricity.

Finally, and underpinning everything else we do, we will need to collaborate to develop the public policies that will be needed to drive and support the transition to low emissions iron and steelmaking. Policies that incentivise and underpin additional competitively-priced, firmed and well-planned energy supply, that will power an emergent hydrogen supply chain and that will enable the adoption of breakthrough technologies.

The policy framework also needs to ensure a level playing field for more carbon efficient steel. We cannot risk investments in carbon efficiencies being undermined. Where the economics of climate related investments are more challenging for businesses to make alone, it may be appropriate to seek co-funding designed to expedite and accelerate decarbonisation.

Close

In closing, I hope I have shed some light on why collaboration is not just important – it is essential – to help the steel industry transition to net zero.

At BlueScope, collaboration across the steel value chain is already helping us to play a bigger role in the transition than our size may suggest. We are participating in this summit with that firmly in mind.

Our Head of Future Technologies will be joining the panel for the Industry and Manufacturing Working Group tomorrow, and Chris is looking forward to sharing some deep technical insights on this and other projects we have planned or underway.

And a final thought to leave with you... Australia needs a sustainable low emissions steelmaking sector and has competitive advantages to achieving it. I believe that collaboration will unlock that potential.

Thank you. I am looking forward to engaging with you all over the next two days and beyond.

ENDS.