

People first: mining across the globe

Stephen McIntosh has worked around the world on numerous projects, and now oversees growth and innovation at Rio Tinto from exploration through to closure. He firmly believes that all mining success comes back to a focus on people

Nicole Madigan

From the highlands of Papua New Guinea to the heart of Europe, Rio Tinto's Stephen McIntosh has worked in almost 50 countries throughout his 31-year tenure with the group.

'I've been privileged to work in so many countries during my 31 years with Rio Tinto and have seen many geographic settings.

'The experience of dealing with different people, cultures, languages and societies has really shaped my worldview.'

McIntosh's extensive overseas experience has allowed him to appreciate the unique advantages Australia has to offer, while also recognising where the local industry can learn from global trends.

'Our industry here has so many unique advantages, so without understanding how good things are here, the advantages often get lost.'

One example of Australia's unique competitive advantage is its extensive iron ore deposits. Western Australia alone produces 33 per cent of the world's iron ore, and the state has 145 iron ore mine sites supported by world-class infrastructure.

Alongside Australia's rich natural endowment of iron ore, the country benefits from its geographical proximity to China. China remains the largest importer of Australian iron ore, taking 83 per cent of exports in 2016-17.

It is an enviable set of circumstances, backed up with a history of national professional excellence, that has helped keep Australia as a world-leader in mining, not only in iron ore but across a variety of commodities.

But McIntosh knows that such good fortune should not be taken for granted.

'We need to ensure that we do not ignore societal and regulatory trends, otherwise we will wake up one day and find that those business advantages have been seriously weakened.'

An early passion for geology

While McIntosh now holds one of mining's most enviable positions, providing him with a unique perspective viewed through the lens of vast experience, it's been a long and varied journey that has led him here.

'I actually started out enrolled in engineering in the early 1980s,' says McIntosh.

'I was raised on a farm so I was always interested in land and landforms and found myself very attracted to geology.

'So, much to my mother's dismay I changed courses and studied geology.'

It was a decision that ultimately led to McIntosh becoming Rio Tinto's Global Head of Exploration from 2011-2016, and his passion for the discipline – and its people – is clear.

In an article for *The AusIMM Bulletin* in 2016, McIntosh wrote of Australia's rich exploration heritage and the people who made it possible.

'In Australia many of our assets largely came into being through exploration; exploration is very much in our DNA.

'It's astonishing to think of the contribution [that] two great provinces – Cape York and the Pilbara – have delivered to Australia and the world; they are built from the energy and imagination of a team of committed explorers.'

McIntosh also studied maths, physics and computer sciences throughout his undergraduate degree, followed by geology and physics for his master's.

'I called myself a geophysicist during the start of my career,' he recalls.

His multidisciplinary approach no doubt contributed to McIntosh's eventual appointment as Group Executive, Growth and Innovation at Rio Tinto, where he is responsible for teams with diverse skill sets.



Stephen McIntosh and Bold Baatar visit Rio Tinto's Jadar project in Serbia.

This outlook has led to success for McIntosh and Rio Tinto.

'I've been very fortunate on several occasions to see discoveries ultimately become mines.'

McIntosh's focus on effective leadership is clear, and the significance he places on the ability to lead well stems from the inspirational leaders

he has worked with throughout his career.

'Certainly a leader who had a major impression on me was Geoff Ballantyne, who was leading the Papua New Guinea exploration program in the mid-80s.

'Geoff hired me and then sent me to the bush to get my "apprenticeship" in people.

'That was after having done my master's degree, and Geoff made it very clear that I had to do all the menial jobs and work my way through the entire exploration and evaluation process.

'After a few years I do recall him saying I was now suitably trained and ready to be usefully deployed so I managed to tick that box.'

McIntosh says Ballantyne made it clear that technical excellence wasn't necessarily a prerequisite for career progression.

'Focusing on self-development was a really key message from him.'

In fact, McIntosh says those first six or so years in Papua New Guinea, and the experiences gained during that period, set him up for life.

'It's a tough place and we had to do everything,' he says.

'We went from the tropical islands of Papua New Guinea to the peaks of the highlands, and saw some amazing country as well as meeting incredible people.

'I went from there to working in Europe and then Africa. I was soon working across up to a dozen countries or more a year in pretty amazing locations. I was pinching myself that I was actually getting paid to do this.'

But despite his illustrious career, the adventures and experiences along the way, there are some things McIntosh would do differently if he had his time again – which mostly boil down to training.

'Today I oversee the entire technical value chain of Rio Tinto, from exploration through to studies, construction, optimisation, automation and then closure.

'I also look over our IT and data science teams globally. I'm extraordinarily proud to work with and lead such a dedicated group of people.'

Another key aspect of McIntosh's people-first philosophy is his involvement with his professional community. He became a member of the AusIMM in 1991, after attending a conference held in Papua New Guinea, and says being part of such a highly regarded community has provided immense benefit to him both personally and professionally.

'Unfortunately travel remains a large part of my routine and this limits my ability to do more, but I see myself as a member of a high-quality technical community, whether at home or on many of my international postings.

'And this is a really important part of the AusIMM offerings: to feel that you are a part of something bigger.'

Learning to lead

McIntosh says it's difficult to pinpoint a moment to nominate as a career highlight.

Instead, he says his proudest moments come back to helping create an environment where he could deliver inspiration and business success.

'I think it should always come back to a focus on people. It's about teams coming together to do extraordinary things.

McIntosh strongly believes in the power of teamwork. In his 2016 *Bulletin* article, he noted 'in science the lone discovery is rare. It is typically built on previous knowledge, collaboration, commitment and partnerships.'

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'Like many people, I completed some formal financial training later in my career, but it would definitely have been useful to have been more financially literate earlier in my career.

'We do need to understand what actually drives value in our business and I think that was something missing in the early days.

'Apart from that, I think it was leadership training that was missing at the time. Jumping from country to country meant that I was having to largely make it up as I went. Things didn't always go according to plan, and I certainly learnt a lot the hard way.'

These days Rio Tinto prides itself on the professional development it offers to employees, including a two-year graduate program designed to accelerate personal and professional growth.

But as the world continues to change at a rapid rate – both culturally and technologically – so too does the mining industry, resulting in a new set of required skills for success.

'The softer skills, as I often say, are the hardest,' says McIntosh.

In the modern industry, even a technical discipline like geoscience requires skills beyond what is traditionally taught in the lab or on field trips.

'Our explorers, for example, make first contact with communities and that sets the foundation for the entire future operation at times. We need a combination of diplomacy, cultural awareness, respect and language skills to enable our "partner to operate" strategy.'

McIntosh's extensive experience as an explorer and executive means he has a good mix of technical and people-based skills to impart to those now coming up the ranks.

Preparing for the next chapter

Today's resources companies understand that their businesses rely on people with skills from a vast array of disciplines.

'As we look ahead, technology is changing so rapidly, and so to succeed, we'll need to have high levels of digital literacy as well. Automation, artificial intelligence, data science – they're all having a profound impact on how we run our operations,' says McIntosh.

'Understanding these technologies and how to apply them will be critical.'

The final piece of the puzzle, says McIntosh, is the ability to look forward and innovate.

'New technologies will drive demand. As an example, we can see the rise of battery metals and minerals. We won't have much existing knowledge to tackle these, so we'll need to bring all of our capabilities and creativity to unlock those minerals and metals of the future.'

Encouraging the next generation

For those considering a future career in the mining industry, McIntosh has this advice.

'Firstly, I'd say just to go for it – it's a fascinating, challenging and rewarding industry. It may be perceived as more traditional, but the tools of the trade have evolved dramatically.

'At Rio Tinto, we've been on our automation journey for more than decade, and the technology emerging today is enabling some extraordinarily exciting work.

'We're using digital twin technology to plan for our first intelligent mine. We expect that to be fully integrated with technology automation and machine learning.

'If you like technology and being innovative, and want to be inspired and stimulated every day, in all corners of the world, then mining really is a great career choice.'

An exciting future

So, what's next for the man who considers his role to be the greatest in the organisation?

'I'd like to continue to be part of leading this organisation through the next couple of years.

'We've got a lot of exciting things that we want to deliver. Part of it is about transforming the company with an eye on the future – changes that will be driven by digital technology.

'We want to make the organisation more productive, but also a really interesting place to work; a place where we are innovative and making a real impact.

'By unleashing the capabilities of our technical people within the organisation, I think at its heart, we want to recapture the mantle as the world's best mining company.' 