

# Seismic shift

**MINING COMPANIES' BUSINESSES DEPEND ON HOW THEY HANDLE TIGHTENING ENVIRONMENTAL PROBLEMS, WRITES STEVAN GREEN, CEO OF THE CRC FOR SUSTAINABLE RESOURCE PROCESSING.**

**N**OTWITHSTANDING the current turmoil in the global economy, the worldwide demand for mineral-based products will continue to increase exponentially in the medium and longer terms, due mainly to the ongoing modernisation of developing countries.

This is good news for metal and mineral resource-based businesses and for major mineral exporting countries such as Australia. Meeting this demand will be good for the global economy and will improve social equity by providing material goods to an increasing proportion of the world's peoples.

However, there are serious constraints to meeting this demand. Ore grades continue to decline while demand continues to rise. Production and utilisation efficiencies continue to improve. But even if this improvement continues as forecast there are concerns. We will find production will be limited by access to energy, to water, to allowable greenhouse emissions and to land for waste disposal well before 2050. In other words, desirable business growth in the current paradigm will not be sustainable.

For example, let's assume demand that mineral-based products increases at an average 3% per annum (well within most predictions), that ore grade continues to decline at 1% per annum (in line with historic trends) and greenhouse gas intensity as measured by tonnes of CO<sub>2</sub> equivalent per tonne of production improves by 1% per annum (a target used by some in the minerals industry for the current decade). This means that, even with a halving of greenhouse intensity, by 2050 the Australian minerals and energy sector will produce up to 400 million tonnes CO<sub>2</sub>e. That is one-third higher than the federal government's target of 300Mt CO<sub>2</sub>e for the whole country.

The sustainable scenario would have the minerals industry targeting 50% aggregate emission reductions by 2050, in line with overall targets. A pure innovation approach, one involving no offsets, would require a 90% improvement in greenhouse gas efficiency by 2050. This could be reduced by offsets – but their availability is limited. For example, achieving this with forestry-based offsets would require planting 1.6 million hectares per year, or approximately 3% of Australia's arable land annually. Offsets might form part of the solution – but certainly not all.

It is not only about greenhouse gas reduction, although this is clearly a major issue. In a business-as-usual scenario, water consumption by the mining and metals sector could grow from the current 3% of national water use to about 15% by 2050. A similar situation occurs with other inputs. These will serve to put enormous pressure on industry to justify (and minimise) its demand for water, greenhouse permits and other constrained inputs (such as access to energy, land and labour).

This will put at risk an organisation's enduring licence to operate and, in particular, their licence to expand. I say this on the basis that the community is usually more sensitive to losing current jobs than to the promise of future jobs.

There is also much discussion about the federal government's proposed emissions trading scheme, with many interest groups arguing their own special circumstances. While it is absolutely essential that the scheme does not drive the wrong behaviours, such as closing down relatively clean operations here in favour of higher emitting operations overseas, this should not be used as an excuse for inaction or moving slowly.



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Nor should they take a business-as-usual approach. This might work for a time for those industries or companies able to lobby effectively, but the constraints will eventually hit – and hit hard. The outcomes will probably not be dissimilar to what is facing, for example, the far too slow to move United States car manufacturers. Business needs to be developing ideas to help meet greenhouse targets – not just pointing out the difficulties.

Aspirational sustainable development targets seem almost commonplace; however, how we might go about meeting these targets is far from clear. Industry will need to understand and plan for how it will operate at the forecast substantially increased levels of production with increased costs and decreased access to water, energy, allowable greenhouse emissions, residue disposal and the like.

Sustainability issues need to be built into business decisions and not seen as an add-on cost – in exactly the same way promoting safety became part of doing business. To make sustainability issues an automatic part of the decision making process requires commitment from all levels of business. It also needs a willingness to give employees and consultants the room – read, the time and money – to explore these issues in project development and in operations.

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## SUSustainable Operations

SUSOP is a new concept being developed by the CSRP to incorporate sustainable development (SD) principles into the design and operation of industrial processing plants, much like HAZOP (Hazard and Operability) studies.

Two main features of SUSOP are idea generation and option assessment to produce an SD balance sheet that will ensure decisions are made that properly incorporate an organisation's SD principles. It can be incorporated into any stage of the project/production cycles, but most benefit is obtained if it is applied as early as possible, for example at the conceptual or early planning stages.

The concept is gaining significant traction and case studies are underway (and more are being sought) to further develop SUSOP before its full deployment.