

**Sam Walsh speech to Asia Society in Sydney**  
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**Re-igniting the Challenges of Sustainability - Should We Be Afraid?**

**Introduction**

Any discussion of sustainability really needs to grapple at its outset with some questions of definition.

What does the word really mean anyway? It's a word that has gained phenomenal currency in the past decade or two and, depending on its context, can take on quite different meanings and overtones.

We hear it uttered routinely by environmentalists, economists, biologists, politicians, lobby groups, bicycle salesmen, wind-farm proponents, purveyors of alternative medicines and even mining company executives.

In the hands of all these different people the word can be put to work almost as a banner or slogan for their particular cause.

The one thing they have in common is they're all in favour of it. I can't recall ever hearing someone attack the idea or imply sustainability is not something for which we should all be striving.

We hear and read that we need sustainable water supplies, food production, economic growth, employment, education systems, logging, energy sources, industries ...

My remarks today will concentrate on another thing that, in my view, must also be sustainable - the mining industry.

When a word like this becomes so loaded with different shades of meaning, it's helpful to go back to basics and contemplate what it used to mean, back when public discourse was a little more simple.

The Oxford dictionary tells us:

- 1 Supportable or bearable;
- 2 Able to be upheld or defended;
- 3 Able to be maintained at a certain rate ... or, concerning activities like agriculture, or mining ...

Not leading to depletion of resources or degradation of the environment.

As always, that's a good starting point.

My company, Rio Tinto Australia, is comprehensively committed to sustainability.

My intention today is to outline this commitment to you, aligning my discussion to the Oxford's sensible definition.

### **Is mining sustainable? Is the human race?**

For a mining company on our scale, one of the most frequently asked questions is 'what happens when the ore runs out'?

Questions like this have been perennials for decades - they just seem to attach themselves to new objects of resource depletion panic every few years - what might be termed 'scarcity scares'.

The 'Oil Shock' in 1973 had clear political causes arising from Middle Eastern geopolitics and US support of Israel in the Yom Kippur War - leading to a damaging crude oil embargo by Arab states.

But you could argue it also sharpened Western consciousness of our economic and industrial vulnerability to the world market for oil.

This anxiety has perhaps re-emerged in recent years under the banner 'peak oil' - signifying the moment when the daily world-wide crude production gets as high as it is ever going to and the subsequent decline inflicts a worsening catastrophe on a fuel-starved industrialised world.

The trouble with these theories is they are repeatedly confounded by human advancement.

Logically we can see that the post-apocalyptic scenes imagined by certain 'peak oil panic merchants' could easily be circumvented by several possible streams of development.

- New reserves may be discovered - not unlikely when billions are spent annually on exploration;
- Known but hitherto inaccessible reserves might be exploited thanks to advances in technology allowing wells to be tapped in once impossible geography and geology;
- Other sources of energy not previously seen alongside oil could go into abundant production - the formidable potential of coal seam gas and LNG comes to mind;

- The natural course of human scientific and technological advancement will inevitably - inevitably - produce better, more efficient and even, eventually, commercially viable, alternative forms of energy generation.

So even as we do reach that eventual peak one day, the damage it can do will likely recede as new technologies and discoveries come online.

Similarly, we were all supposed to die of starvation by now. Back in 1967 American scientist Paul Ehrlich presented a lecture, which became a broadcast, which became a book, a huge best-seller - all of which became, almost, a modern religion.

His work '**The Population Bomb**' opened with this first line:

*"The battle to feed all of humanity is over. In the 1970s hundreds of millions of people will starve to death ..."*

His thesis was that, in the late 1960s, the world was already massively over-populated and food production could never hope to feed the people on earth in the following decade. In a way he was saying - though he didn't yet have the catchphrase for it - that a number of significant things were unsustainable.

They included agriculture, free living space on the planet and the human race.

As outlandish as this idea now seems, it might be important because of the way that general notion seems to have been absorbed into the world view of some elements of the various environmental movements.

'Human beings are the problem. The fewer the better.'

When Ehrlich postulated this frightening idea, world population was around 3.5 billion. It added a little less than another billion in each of the subsequent three decades. The UN estimates that the world's 7 billionth person was born this year.

What's interesting is that the same UN projections predict the 8th billion to take significantly longer than the 7th; and the 9th much longer again - possibly not until 2050. On some projections a population of 10 billion will never be reached.

And the reason is obvious when you think about it.

It is economic development.

As people get wealthier, they are better nourished, better educated, better housed. They get better medical care, including modern contraception, less punishing forms of work, improved hygiene and, in general, infinitely better lives.

When this happens fertility rates plummet. Always.

We can see it starkly in African, Asian and Latin American population growth in recent decades. As they share in the modernity we in the West enjoy, the number of children per family goes into free-fall. It mirrors the experience in Western societies over the past century.

Meanwhile, since the doomsday prophecies of the late 60s, food production has exploded. This is hardly surprising since every other area of scientific, technological and industrial knowledge also went ahead in leaps and bounds in the same period.

When you think about it, this is true of every period, but in our life times, the rate is accelerating as our world grows. Think of the computers that existed when Ehrlich wrote his best-seller on a typewriter.

This should be a cause for celebration.

With advances in farming techniques, genetics, pesticides, plant disease control, agricultural machinery - in short, the science of food production - the world multiplied its food supply many times over during the decades of predicted famine, easily out-stripping the burgeoning population.

To summarise, I suggest we might usefully and justifiably be a little more willing to trust in human ingenuity, industry and problem solving - and a little more cautious about embracing the latest 'scarcity scare' or population panic.

### **Mining's contribution to global prosperity**

If food sustains our physical metabolisms and our lives, and energy sustains our machines and homes, much of everything else in the built environment of our cities and towns - the very material of the modern world - has its origin in a mine.

Similar fears to those I have already mentioned are held for mining. There can only be so much of a given mineral or metal in the earth's crust. One day it must run out. But how much is there?

If there is 10 years' worth of iron ore left the world economy has a serious problem. Humans would very quickly have to invent a construction material to replace steel. It's hard to imagine.

Both internally and externally we have looked hard at inter-material substitution. The long and short of it is that in terms of functional efficiency and price, steel has no substitutes other than more modern versions of itself - thinner, lighter, stronger steels.

Nonetheless, history shows that kind of response is the norm. Science evolves the previously unimaginable in direct response to necessity.

In other cases technology just overtakes a shortage and leaves it in its wake. In recent years there has been much discussion of a copper shortage. It's certainly possible it could happen.

What we are also seeing however, is the wholesale rollout of optic fibre for modern data transfer and telephony, replacing potentially millions of kilometres of the copper cabling that served us so well for the first hundred years of modern telecommunications.

The impact on copper supply, and demand, remains to be seen, but logic tells us it's a potential scarcity that might be altered from critical to manageable, simply by virtue of advances in cabling technology.

Fortunately for our copper business there are also new applications of copper being regularly invented.

Going back to the question of whether there is, in any case, more than 10 years' worth of iron left, let me highlight the Rio Tinto iron ore story.

Our largest presence in iron ore is in the Pilbara region in Western Australia. This has been our mainstay for nearly 50 years, from the time when a five million tonne production profile for a single mine at Tom Price was considered grand.

We now have 14 operating mines in the Pilbara feeding three port terminals, linked by more than 1,500 kilometres of rail.

It's a fully integrated system which runs like clockwork, 24 hours a day, 365 days a year.

Our Pilbara nameplate capacity is 230 mt/a, expanding to 283 mt/a by 2013. We plan a further expansion to 353 mt/a by the first half of 2015.

Our mine plan presently extends to 2069, complemented by a sales and marketing plan to 2050. These are important 'signposts' for a quality business, which Rio prides itself on being. We are intently focused on Tier 1 assets: large scale, high quality, low-cost and long-life.

One of our products, the Pilbara Blend - is the largest single product sold globally. At expected 2015 rates, Pilbara Blend can be supported for at least the next 30 years, supported by a very large 48 billion tonnes of mineralization and Australia's largest drilling programme.

And remember, this is only what we know now and just in the Pilbara. At current estimates, we have options to expand to a global annual capacity approaching 450 million tonnes by 2016, when Canada and our new project in Guinea are added in.

I stress, this snapshot is our current view. The plan we produce in 10 or 20 years from now - as we certainly will - will obviously see much further. We don't see an imminent 'depletion' of the resources we extract from the earth.

We don't look to the future and see a steel-starved world.

We see growth.

### **Sustainability in all its forms**

But that's our operational face. Clearly, there are important other aspects to a discussion like this.

A base level of prosperity is critical to what comprises a good society and a strong, healthy nation. This includes food security, clean water, adequate housing, good health and medical services.

All these have a cost, so the immediate need is for economic activity, growth and especially employment. The creation and circulation of wealth is the fundamental platform for everything else we see as desirable.

For these reasons Rio prides itself on the tens of thousands of well-paid jobs we sustain in Australia. Wages in the pockets of the men and women in our businesses feed back into the rest of the economy and other businesses throughout the nation.

When wages are added to taxes and royalties, Rio Tinto Australia's direct contribution to the nation in 2011 alone was more than \$9 billion.

In the old days Rio Tinto was a 'mining company'. Now we contribute as a technology company, a marketing business, a recruitment organisation, a procurement company and a member of many communities.

In other words, our business is now much more diversified, modern, adaptable, broader in expertise, socially conscious - which is to say, it is much more sustainable.

As our export volumes have tracked sharply upwards in the past decade, there has been a parallel boom in support industries: engineering, contract mining, heavy equipment supply and maintenance, aviation, construction activity in ports, railways and mines themselves.

In the Pilbara we are looking to hire thousands of people over the next two years - taking our workforce there to more than 15,000.

What changes do we need to make to ensure that supply meets demand?

It is not as simple as getting more people, although that in itself is a challenge. The people we need have to be educated and skilled. An efficient and flexible skilled migration program must be a part of any comprehensive solution.

More broadly, we need to ensure we are an attractive proposition for job-seekers. This means providing a workplace that is safe and inclusive; ensuring gender and ethnic diversity is top of our agenda; and ensuring our remuneration packages are competitive.

A particular area of achievement we are proud of is in indigenous employment. Rio is by far the biggest private sector employer of indigenous Australians. We have more than 2,200 indigenous workers on our payroll – and approaching 1,200 in my iron ore business alone.

Putting wages into the pockets of such large numbers of people who have never had access to these opportunities can change the outlook of individuals and lift whole communities.

Beyond direct employment, we have committed more than \$1 billion to indigenous contracting just in our iron ore business.

Those contractors - businesses owned and operated by indigenous Australians - are learning not only how to engage with and profit from resources industries, but how to run businesses apart from mining; and after mining has been and gone.

It is one of the most important things we do. Whether direct employment or capacity building, it makes good business sense and is the right thing to do. It is building sustainable communities and local economies where they are really needed.

This is part of our broader commitment to the communities in which we operate, where we look for unique ways to invest in and contribute to health, education, cultural, environmental and economic outcomes.

Often this means a direct involvement that, on the surface, has little to do with mining. For example, we strongly support the arts, an area in which I have chosen to invest my time.

The blood that courses through the veins of mining companies is the same type that sustains many arts organisations: creativity, innovation, a desire to contribute meaningfully to society and to leave a legacy.

We feel a natural affiliation so we are very happy to support them. As examples, we partner with the Black Swan State Theatre Company, the Perth International Arts Festival and the Museum of Contemporary Art in Sydney.

Recently we sponsored a three year project to recover from Sydney's Mitchell Library archives every record of the languages and vocabularies spoken in eastern Australia before European settlement. The diaries, letters and other papers go right back to 1788. The result will be an online treasure trove for linguists the world over.

Each of these partnerships, we feel, enriches the life blood and bolsters the sustainability of our society.

### **A sustainable natural environment**

Miners don't enjoy pin-up status among sections of the 'environment movement'. As with a number of the pet issues among some people in these groups, it's an antipathy based much more in myth and mischief than objective consideration.

For an industry of our scale measured in sheer production, employment, export income, taxes contributed and share of national wealth creation, our physical footprint on the Australian environment is miniscule.

Rio Tinto Australia is at the forefront of research and investment in a whole range of initiatives to reduce it ever further.

In this regard, I could talk about many commitments - our long-term mine rehabilitation plans, dust and noise reduction measures and water management.

But let me concentrate on a couple of others, particularly the continuous drive to ensure efficiency and optimisation in our business through innovation and technology.

Relatively, we are a tiny spot on the global carbon footprint, especially compared to our steel-making customers.

Yes, we are working to reduce our emissions. We are also working with our customers to develop low emission pathways for our products, including options for ore beneficiation, improved agglomeration and increased pre-processing.

Rather than wave goodbye to the ore ships bound for booming Asia as though that's the end of our involvement, we are seeking to engage our customers and join them on a journey into a sustainable future.

Hence our investments in Chinese manufactured ore cars for our rail system and Chinese designed and made housing for our workforce in the Pilbara. It is two-way traffic and co-operation, not an endless river of ore northwards.

Together we are determined to be part of solutions, not part of the problem.

Our 'Mine of the Future' program is proving to be the step change - indeed a quantum leap - between how mining has been conducted for the last 100 years and how it will unfold over the next 100.

Through advanced robotics, we are leading the world in the scale and potential of driverless trucks, remotely operated drill and blast activities, automated train systems and remote train loading functions.

We have signed with Komatsu for a fleet of 150 autonomous 320- tonne trucks - sufficient for half of our mining. Artificial intelligence in the equipment learns the layout of the mine, where to load and dump, how to recognise and avoid other vehicles and obstacles.

We have recently approved \$520 million to fully automate trains, the first time automation will have been used in a heavy haul railway of this scale.

These trains are 2.4 kilometres long: three locomotives and 234 ore cars. Each car carries more than 107 tonnes of iron ore. That's 25,000 tonnes per train and up to 40 trains in transit across our system at any given time.

Controlled by our Operations Centre - 1,500 kilometres away at Perth airport - these automated operations will not only bring efficiency gains through greater scheduling flexibility and removing delays, but also do it with minimum wear and tear and maximum fuel efficiency.

Importantly, Rio Tinto recognises that innovation is often about collaboration. We work extensively not just with private companies but also with leading global universities including the University of Western Australia, Curtin University, the University of Sydney and the University of Queensland.

New wave thinking, large investments and next-generation technology are enabling a true revolution in the way mining is conducted and how we extract more and more value from resources, year upon year.

This both strengthens our sustainability agenda and keeps us ahead of the game.

An example is our \$21 million support to the Australian Centre for Field Robotics at the University of Sydney. In establishing the Rio Tinto Centre for Mine Automation, we aim to realise the vision of a fully autonomous, remotely operated mine.

Automatic mines, trains and ports, advanced robotics ... it may all sound far-fetched. But then, not all that long ago, a world population of 7 billion with food to spare sounded far-fetched too.

Should we be afraid of sustainability? Most certainly we should not. As I have tried to show, Rio Tinto has long embraced the idea and it informs all of our activities.

Can we do more? Not only can we, we must. Our industry must embrace this challenge of sustainability and make it our own.

In all the areas I have outlined and more - others we have not yet considered - we must become world thought-leaders and take a front-line position in creating the world of the future.

For Rio's part, we are building mining operations, environmental management, community development, cultural contributions, economic benefits for the whole nation and - not forgetting core business - balance sheets, which will be thoroughly sustainable for many decades to come.

Thank you.