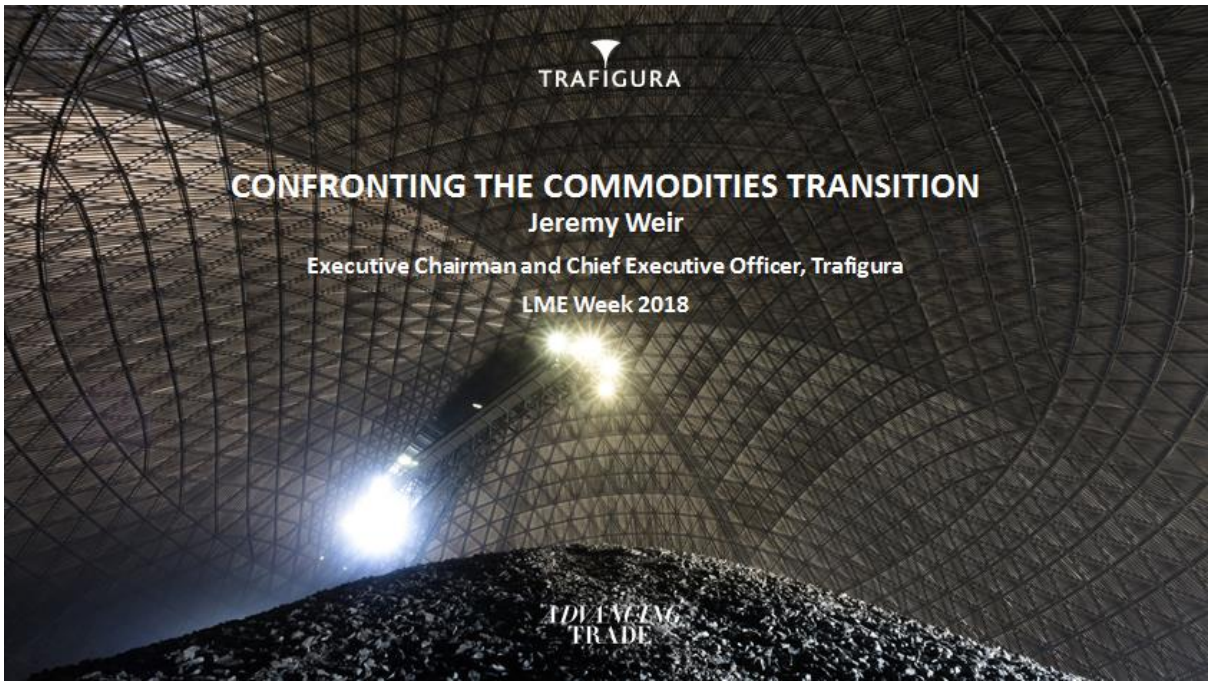
Jeremy Weir, CEO Trafigura - Keynote speech for LME seminar, 8 October 2018

Confronting the Commodities Transition



Good morning everybody. It's a pleasure to be attending yet another LME Week – I think it's my thirtieth. But it's the first occasion I've had the honour to be speaking at this event.

It was a 19th century British politician who aptly said:

"I think we can all agree that we are living in interesting times. I cannot recall a time in which our history was so full of new objects of interest - and new objects for anxiety."

If that was true 120 years ago, it's doubly true today.

We live in a time of rapid and wrenching change, in which big opportunities come with equally big challenges. Today I want to talk about this period of change, and what it means for the commodities markets.

I'll talk about global economic growth – the drivers as well as the emerging headwinds.

And while I will certainly talk about metal markets, I'll also address some of the more fundamental forces that are reshaping our world – forces of technology, of structural change, of politics and policy.

Artificial Intelligence. Unconventional Oil extraction. The global response to Climate Change.

Wherever you look, these and other developments are already transforming and disrupting our markets.

They're affecting the balance between supply and demand of commodities, how commodities are produced and consumed, and the way in which they're traded.

People in the energy sector have grown used to talking about an "Energy Transition", as fossil fuels are replaced over time with renewables.

But I think the transition we face stretches far beyond the energy space and will arguably have an even bigger impact on our metals industry.

Meeting the demands of this commodities transition will face all of us - whether we are miners, traders or industrial purchasers of metals – with dramatic challenges to our assumptions and the way we do business.

It will also create tremendous opportunities for those who correctly analyse what's going on and draw the right conclusions.

****

But before talking about the future, let me briefly address the present.

Let's face it: the economic backdrop to this LME week is mixed. Strong growth on the one hand, with the major economies all still growing more or less in sync. On the other hand, headlines dominated by fears and worries about threats to growth.

The tensions arising from tariffs and sanctions on trade. The drumbeat of rising interest rates. Concerns about the future of the rules-based order that has under-pinned global commerce for the last 50 years.

These are all legitimate concerns, but they also need to be put into perspective. For our industry, what matters above all is growth in demand. And when you look around the world, you have to conclude that demand looks robust. Right now, we're in pretty good shape.

Let's look first at the concerns over trade. Clearly, the tensions between the US and China present a problem – and it won't disappear any time soon. Tariffs on imports are disrupting and diverting trade flows, and could soon affect all goods traded between the two countries. At the margin they will add to inflationary forces and dampen growth, including demand for commodities.

We also need to pay attention to the rapidly changing world of economic sanctions, which have had dramatic effects in oil and some metals markets this year.

Nevertheless, as a trader I would class these as manageable concerns. Meeting customer demand in rapidly changing market conditions is our core competency. It will not be beyond the wit of our industry to cope with the logistics of increased tariffs.

Now consider the economic cycle. In **that** context, the current news headlines don't seem so shocking after all.

Let's not forget that the world economy has been growing without interruption for nearly a decade. Equity markets seem stretched and are probably ripe for a correction. Trade tensions may add to the strain. Rising oil prices and interest rates will be significant drags on growth.

But even if we do experience a slowdown or a recession in the next two years, it won't be the end of the world.

For those of us in the resources business, I would say the bigger news is how robust the underlying drivers of growth are turning out to be. Population growth, industrialisation, urbanisation, infrastructure development, electrification – all are gathering pace and propelling demand for industrial commodities across the globe.

This applies to metals but equally to Trafigura's other business line, oil. On my travels I'm regularly struck by the intensity of activity in our industry on many fronts.

Last month I was in the US and again caught the incredible buzz around growing shale oil production from the Permian Basin in Texas, the need for infrastructure to support it, and the rapidly evolving industry response.

Then I spent time meeting banks in Asia. They continue to report robust deal flow regardless of concerns about potentially over-inflated equity valuations and US dollar strength.

Like I say, the foundations for growth remain intact. In China, the market is changing as the authorities balance economic growth with environmental

responsibilities. But the game there is far from over. China still provides a very broad and solid base for consumption of many categories of commodities.

And the Chinese market can create opportunities with extraordinary speed. As part of its effort to clean up the energy mix, China doubled imports of LNG in the last two years. It's expected to overtake Japan as the largest LNG importer in five years or less.

With economic and structural reform, other emerging markets such as India are rapidly opening up. And the **developed** world also continues to surprise. Who would have predicted a while back, for example, that the US would now be one of the world's largest exporters of crude oil? The Government banned crude exports for four decades. But in December 2015 the ban was lifted and the US now exports more crude per day than most OPEC countries **produce.**

****

So for me, the big issues facing our industry are not about growth in the next few quarters. They are about more fundamental categories of change. I would single out three: technology, sustainability and cyclicality.

Technology is a constant game-changer, but it can have unintended consequences. It can disrupt investment in a way that affects our industry's

ability to meet demand. That in turn leads to more pronounced cyclicality and price volatility.

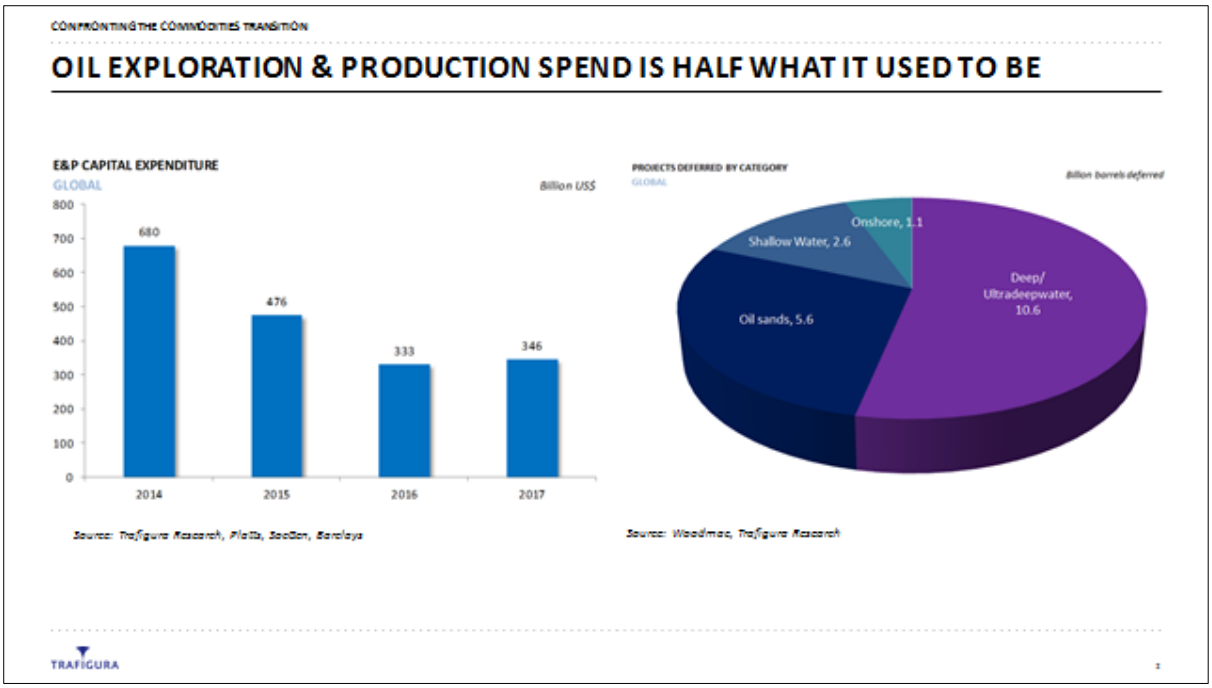
To illustrate, let's take another look at a business ten times bigger than the industry represented here – oil and gas.

Oil is never out of the news, whether the headlines concern price swings, sanctions, political conflict or presidential tweets….or all of the above.

What's less well known is that the biggest game-changer in oil is technology. I mean the fracking techniques that have enabled the amazing surge in production of Unconventional Oil and Gas from shale fields in the US and elsewhere.

This is a development that has up-ended the dynamics of the entire industry. US shale oil production drove oil prices below $30 a barrel in early 2016. That fall caused a dramatic problem for producers of conventional oil, who curtailed investment in new production projects.

With massive resources, the ability to bring on new production quickly and competitively, and technology that is rapidly boosting yields and reducing production costs, shale oil is formidable and dynamic. Higher-cost conventional basins, in deep ocean waters for example, struggle to compete.



You can see from this slide how global E&P spending halved between 2014 and 2016. The global oil industry has deferred or cancelled USD1 trillion of capital projects over the last three years.

Yet investment in conventional oil is still needed to meet rising demand and to replace production from exhausted reserves. With Iranian barrels blocked by sanctions, the market is now starting to worry about tightness in supply.

No wonder prices have risen above $80 a barrel and are predicted to be back in triple digits by Q1 of next year. It's all traceable to the unruly force of shale technology.

I think this tale has useful lessons for our industry. Technology is a universal disruptor.

That's certainly true of the business where I work, trading. It's no secret that technology is helping to compress margins in our industry, and we have to use technology to adapt and become more efficient.

That's why at Trafigura we're devoting a lot of effort to understanding how the massive increase in data generation and advances in artificial intelligence, algorithms, data storage and processing can help us compete. I have no doubt these innovations that people lump together as "Advanced Analytics" will create a radically different trading platform in the next two to three years.

****

Now let's bring the argument closer to home. How is technological disruption playing out in our metals industry? I think it's every bit as relevant here.

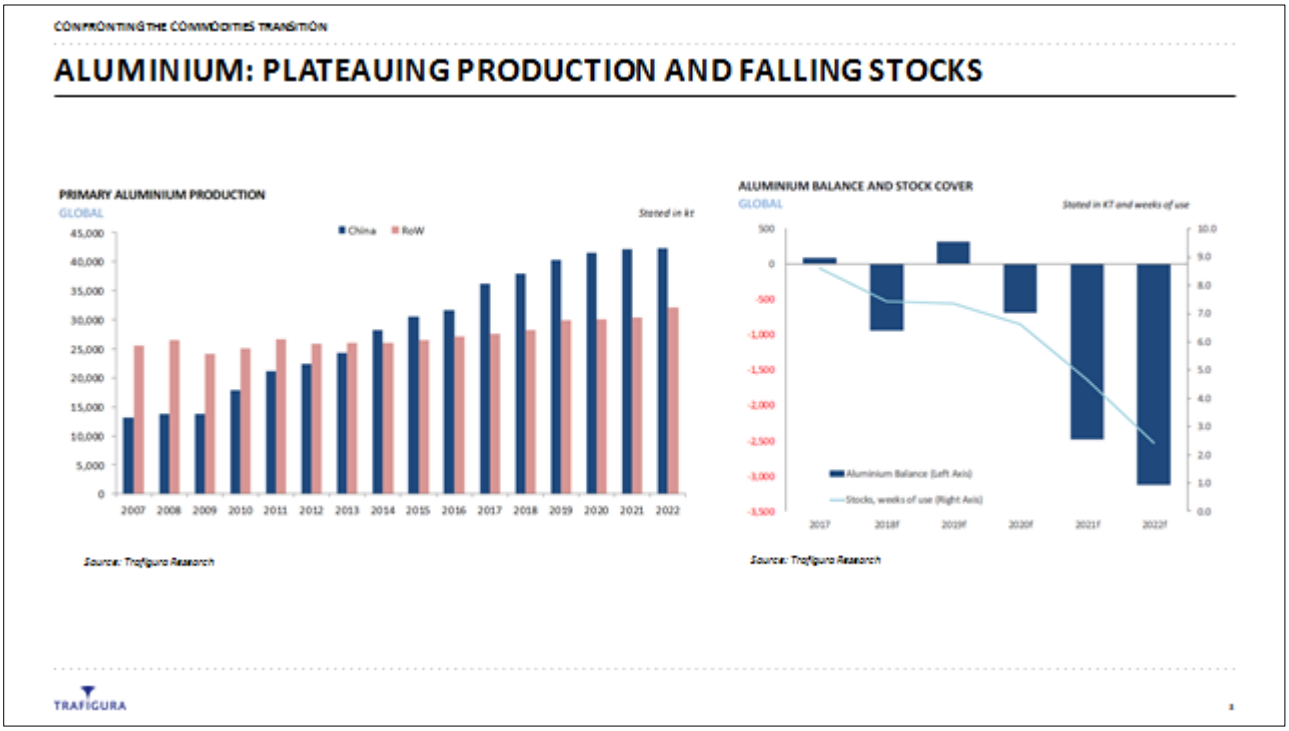
I referred at the start to a commodities transition. Let me explain what I mean.

The world is moving towards a lower-carbon economy. Technology is a key enabler of that shift, and is radically changing patterns of demand for non-ferrous metals.

We will need more aluminium to make light-weight transportation vehicles, more copper to create power distribution systems and infrastructure for electric vehicles, and more cobalt and nickel to make electric batteries to go into those vehicles.

But in metals, as in oil, there are questions about how we meet future demand. Our industry, like the oil business, has arguably under-invested in productive capacity in recent years. New projects face long lead-times and regulatory hurdles. In some metals, there are additional concerns about sustainability in the supply chain.

The result is likely to be greater cyclicality and price volatility. In fact I would argue we're already seeing it.

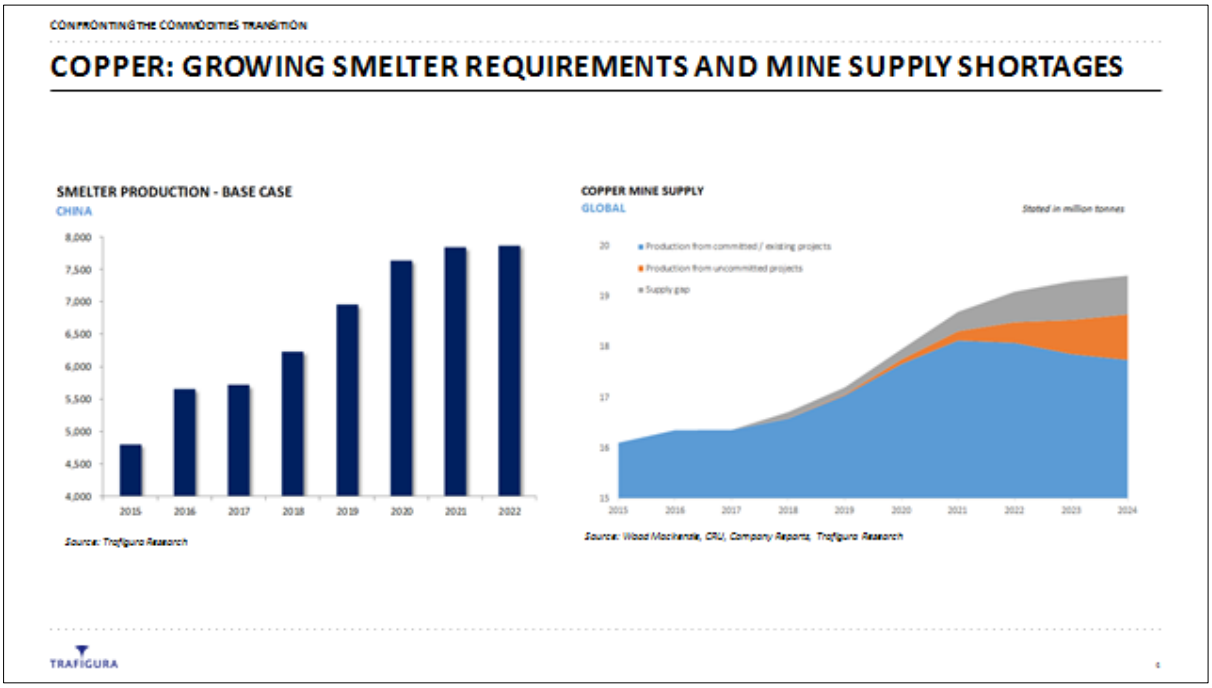


Start with aluminium. For many years it was a market synonymous with surplus. Now we can see the contours of a supply crunch.

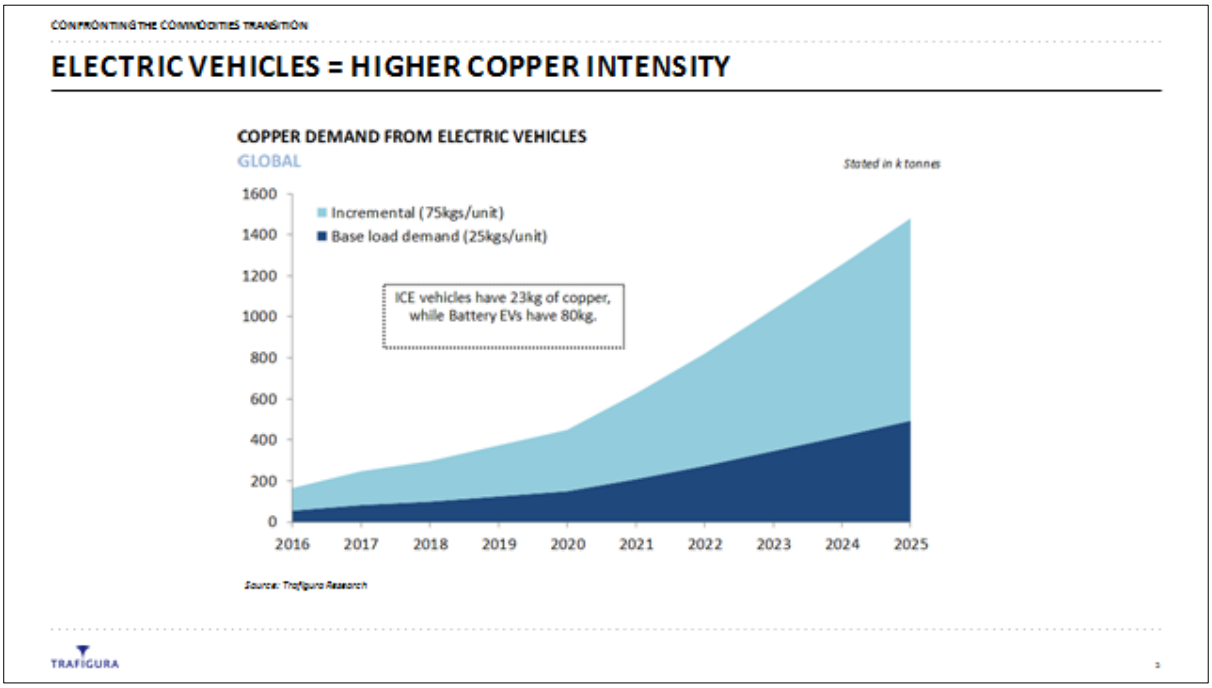
Global demand for aluminium is expected to grow at an annual rate of about 4 percent in the next few years. But as you can see on this slide, production growth is set to plateau from 2020, and stocks are being drawn down at an unsustainable pace.

Environmental regulations mean it's getting harder to build new aluminium smelters, in China as elsewhere. It's our belief that prices will need to rise to incentivise the creation of new capacity.

The story is at least as striking in copper – an indispensable building block for expected electrification, be it in the urban environment or for building a vehicle charging infrastructure.



As we can see from this slide, smelter production continues to rise relentlessly, to meet metal demand and feed urbanisation in China and elsewhere. Yet mine supply is failing to keep pace. We can already see a deficit in concentrates supply emerging from next year as a result of fading production from older mines and a dearth of new projects.

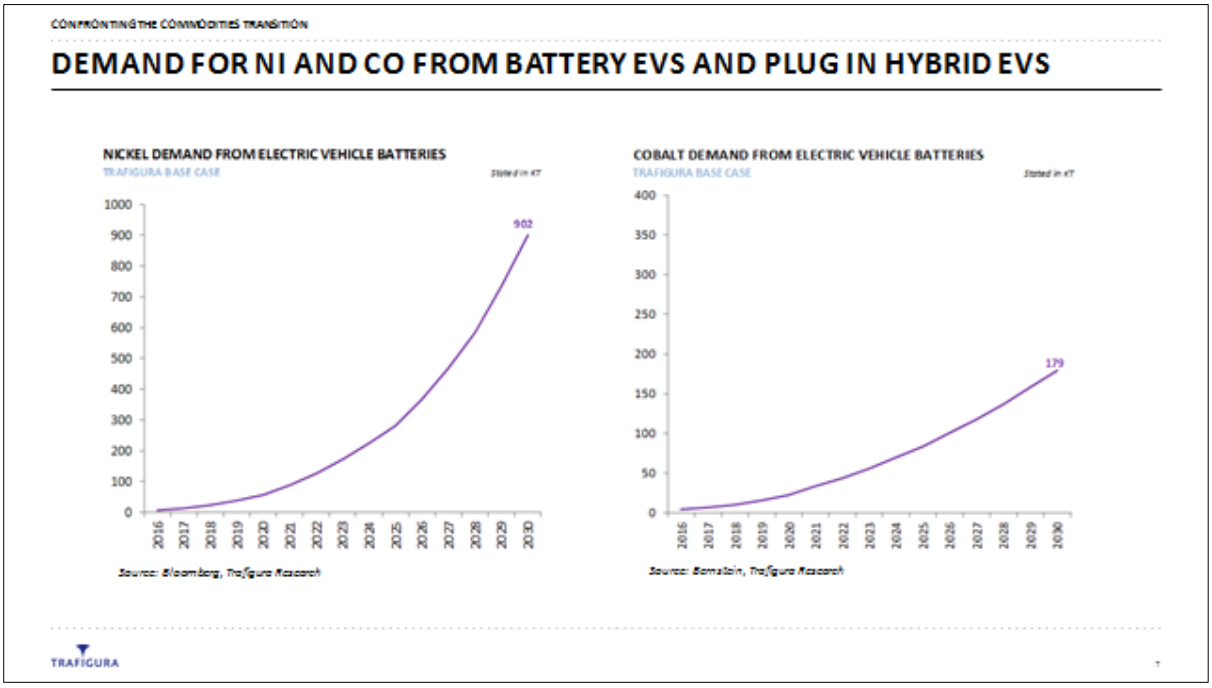


And that's before we factor in the increased demands on the system from the growth of E-Vehicles, which are far more copper-intensive than combustion engine vehicles. As a rule of thumb, EVs require four times as much copper as internal combustion vehicles – up to five times if you include the charging infrastructure.

There is little doubt that EVs have become the technology of choice for governments to achieve the transition to lower carbon emissions.

Manufacturers are stepping up investments and production costs are set to fall steeply. So as you can see here, global sales of 30 million EVs by 2030 has become a plausible estimate – compared with the meagre figure of 3 million this year.

Thirty million sales would be a quarter of total expected vehicle sales in 2030 – but would still represent less than 2 percent of the total projected vehicle fleet in 2030. That just underlines the potential for further upside to these numbers.



Now look at what this might mean for nickel and cobalt. This chart implies a potential deficit of the class-1 nickel needed for EVs from 2023, requiring investment in new production capacity. And it points to a potentially serious issue in cobalt, a vital cooling component for lithium-ion batteries.

Each new EV requires between 5 and 10 kilograms of this metal. We expect battery-related demand for cobalt to at least treble by 2025, exceeding total global production of cobalt for all uses in 2018. And that's without considering cobalt use in iPhones and other applications.

Manufacturers are understandably looking for alternatives. But right now, nickel-cobalt batteries appear to be the only commercially viable technology with the energy density and safety properties suitable for EVs. Alternatives like solid-state batteries are believed to be years away from commercialisation.

So while signs are emerging of a short-term glut in cobalt, within a few years the metal is likely to confront us with an acute sustainability issue – not least with regard to the supply chain.

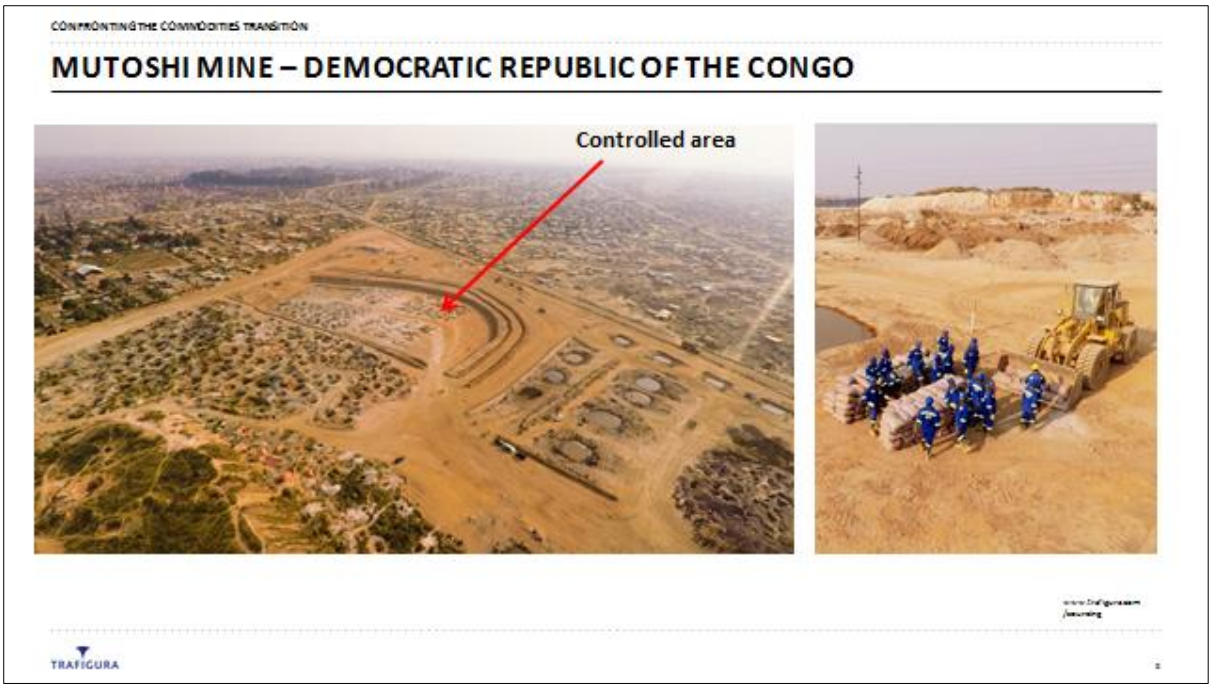
Two thirds of the world's cobalt reserves are located in the Democratic Republic of the Congo. And as we are reminded daily, mining in the DRC is fraught with problems. One of these challenges relates to the role of artisanal, small-scale mining, commonly referred to as ASM.

Now I’m completely clear about the risks and other problems involved in ASM. It would obviously be preferable if we could secure all the needed supplies through industrial mining operations. But the fact is that we’re not in that happy position.

The reality is that there are hundreds of thousands of people in the DRC who earn a living through work in the ASM sector. It’s illegal in many cases; it’s unregulated and can be very dangerous. But it can’t be wished away.

At Trafigura we think the answer is not to shun ASM or exclude it from the supply chain. We want to find a better way - to see if ASM-produced cobalt can be sourced in a responsible manner.

Together with a local DRC mining company and supported by the internationally recognised NGO Pact, we’re investing in a pilot project on the Mutoshi concession to make radical improvements in the conditions under which ASM takes place.



The picture on the left here shows how a designated area has been fenced in, and the over-burden within the perimeter removed. Miners are organised into a licensed co-operative, trained and provided with protective equipment. Supplies from Mutoshi are segregated, and we are transparent with our customers about their origin.

Pact officials work side by side with mining company operatives to oversee the operation on a continuous basis. Miners are required to undergo ID checks as well as drug and alcohol tests before entering the site. They are allowed to excavate only under close supervision and in approved micro-pits. Formalised processes exist for washing and weighing the mineral extracted and for ensuring that miners are paid appropriately for their output. The whole exercise is regularly assessed by a specialist consulting firm.

It's not perfect, but it's a big step towards regularising this industry. And I'm glad to say this project is fully aligned with other international efforts to ameliorate conditions in ASM, including the OECD's very helpful Due Diligence Guidance for Responsible Supply Chains. In the same spirit, we were delighted to see the LME coming out with its own Responsible Sourcing paper on Friday.

We're working with other industry participants through the Global Battery Alliance, founded under the auspices of the World Economic Forum, to establish this approach as a standard that can be applied in other ASM projects in the DRC or elsewhere.

******

So as my time is nearly up, let me try to summarise the argument.

The good news for our industry is that the fundamental drivers of growth are intact and robust. The challenge facing us is to manage unprecedented upheavals resulting from structural and technological change.

In particular, the transition to a lower-carbon economy is accelerating demand growth for certain key metals. This is fuelling questions about the future sustainability of supply, and suggests that the next few years will see enhanced cyclicality and volatility in these markets.

You could say it's a position that is, literally, unsustainable. It will certainly require the industry both to invest and to focus with new intensity on social and human rights issues along our supply chain.

But I prefer to conclude on a positive note. Because in reality what we face is a high-class problem. It concerns how we position ourselves to take advantage of the expanding opportunities we will face in the next decade and beyond.

A whole lot hangs on the quality of our response. If we fail to meet the challenge, we risk being seen as an obstacle on the road to a lower-carbon future.

But if we get it right, our industry will reap tremendous benefits as the world makes this momentous shift. Thank you very much for listening.