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WRITTEN BY [Adam Orlando](#)

Metallica Minerals: master of its own destiny

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"The Bowen Basin is to coking coal, what Cape Flattery is to silica sand."

As a society, the world's reliance on sand is staggering. Humans consume up to 50 billion tonnes of sand and gravel each year, equating to some 18 kilograms per person per day.

That's enough to build a wall 27 metres wide and 27 metres high around planet Earth.

By volume, this consumption is second only to water. Yet sand – and in particular silica sand – is not readily recognised for its significance despite its importance.

When *Mining.com.au* sat down with Metallica Minerals (ASX:MLM) to discuss its flagship [Cape Flattery Silica Sand Project](#) in North Queensland, what emerged was an



understanding of the inherent lack of knowledge from the broader investment market regarding this ubiquitous commodity.

Metallica Minerals Executive Chairman Theo Psaros and GM Commercial Sam Fisher explain that the case for the Cape Flattery project is a compelling one – not only for shareholders but also the global silica sand market.

They note that as the Cape Flattery project continues to advance, Metallica Minerals is ready to take centre stage in one of the most significant but often overlooked market segments in mining.

Psaros says: *"We believe we've got an advantage over the other silica sand projects in Australia. Number one, in quality of sand, and number two, in transport costs. We are right on the beach. We don't have a hundred plus kilometre trucking leg to get to the port or significant distances for slurring the sand, so we can outcompete them on cost and eventually margin."*

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"So, we are masters of our own destiny"

There are minimal logistics costs and if all goes according to plan, we'll actually have our own port infrastructure, so we're not in a situation where we're waiting for someone else's ship to get off the berth. As long as we've got the sand there ready, it's in and it's out. So, we are masters of our own destiny."

Following the release of an [updated Definitive Feasibility Study](#) (DFS), the company plans to double the saleable product to 3 million tonnes per annum at its Cape Flattery Silica Sand Project.

One of the reasons Metallica updated the DFS and increased production is that its market intelligence on the future demand for high purity silica sand suggests the increased sales tonnes will be sought after and that significant economies of scale can be derived from the infrastructure required for the original DFS sales tonnage of 1.5mtpa.



Potential silica sand mining sector in Australia



Fisher adds: "The transshipping vessel, the marine infrastructure and the front-end loaders that will be loading product were only utilised roughly 50% of the time. So, there's a lot of spare capacity there.

Basically, we're able to double production without spending additional capital on the marine aspects of the project. That was really what drove it – that and the other economies of scale that we will achieve.

So, a big increase in output with a modest increase in capital and we expect that we can also halve the project, bringing forward that revenue. We have less fixed costs because it's a shorter mine life and our environmental footprint should be smaller because we're there for less time."

Fisher notes that the advantages of having close access to transport and infrastructure cannot be understated. In dry bulk materials, which silica sand is, similar investment rules apply as they do to the other dry bulks, like iron ore, coal and even grain to some extent.



He says minimising the distance travelled and number of times 'you put it down and pick it up' are crucial from not only a cost perspective, but also from a contamination and product degradation perspective.



Sands of time

Metallica's Executive Chairman says with these advantages Cape Flattery is 'absolutely' on track to be a company-making project.

"Metallica, at the moment, we don't have anything in production and the goal of this management team is to bring this asset into production because we believe the market demand is there and we have the right commodity in the right location at the right time."

From a macro perspective, Cape Flattery's DFS update is great timing – the world is facing a global sand crisis.

Human society is entirely built on sand. As a key component of cement, asphalt, and glass, sand is integral to every aspect of people's lives. It is schools, hospitals, and homes. It's the primary substance used in the construction of roads and bridges, and



sand, gravel, and rock crushed together are melted down to make architectural glass used in windows, as well as computer screens, and smartphones.

However, Fisher adds Metallica's main interest is another major use – in solar photovoltaic (PV) glass, which has been one of the major growth industries of the past decade. This is due to the world's transition towards decarbonisation.

Annual deployment of electricity generation capacity has grown more than sevenfold during the past 10 years. Manufacturing capacity expansion has been even faster.

According to the International Energy Agency (IEA) in its Stated Policies Scenario (STEPS), total energy demand will continue to increase through to 2050.

The IEA says: *"In the STEPS (scenario), global solar PV deployment continues to expand from around 220 GW in 2022 to about 500 GW in 2030, but planned manufacturing expansion means that the utilisation rate of solar manufacturing remains below 40% through to 2030."*

While fewer than 40 countries have capacity to produce solar modules, more than 100 countries completed solar PV projects in 2022, which mostly relied on imported solar panels.

Planned increases in solar PV manufacturing capacity have the potential to enable over 800 GW of new solar PV to be deployed in 2030 – in line with the level of deployment reached in the IEA's NZE Scenario in 2030.

Yet, the world is facing a sand shortage meaning such planned increases are at risk.



Fisher adds: *"The seaborne market for high purity silica sand has been pretty steady traditionally. But the growing demand for solar PV capacity and the ensuing demand for solar PV glass, and then that obviously flows through to demand for high-purity silica sand means that the demand is increasing at quite a rapid rate. So, absolutely, there is a need for our Cape Flattery project."*

As Metallica's GM Commercial tells *Mining.com.au* not only is there a need for more sand but more importantly high-quality silica sand.

High-purity silica sand has iron of about 100 to 120 parts per million or less, meaning it contains SiO₂ levels of about 99% and upwards. Metallica's Cape Flattery is poised to be one of the highest purity silica sand projects around, Fisher notes.



"It's a bit subjective, people have different definitions for it but that's about where we would see it in terms of comparing our project to different projects globally. Silica sand, because the price of the commodity is quite low, it doesn't travel long distances well.

So, for example, if you look at it from an iron ore perspective, you don't generally see Australian iron ore being sold into Europe. That's because there's competition from South America and they're a lot closer to the market.

On a landed-cost basis, they're more competitive. The same rule applies to silica sand. We're focused on the Asia-Pacific market and 90% of the world's solar PV glass is currently produced in the region. So, we think that's a good thing that the biggest producers of glass are in our backyard."



'Two to tango'

Solar manufacturing today is indeed highly concentrated – just 5 countries account for the aforementioned 90% of global capacity.

By far, China is the largest with the capacity to produce solar modules with an output of over 500 GW each year – equivalent to 80% of world manufacturing capacity. The others are Vietnam (5% of the global market), India (3%), Malaysia (3%), and Thailand (2%).

The next 5 leading solar manufacturers – the US, Korea, Cambodia, Türkiye, and Chinese Taipei – each account for some 1% of the global total, as does the European Union.



For this reason, Metallica is actively engaging third parties in Asia regarding potential offtake agreements.

Ideally, he adds, rather than putting all of Metallica's eggs in one basket, the strategy will be potentially to split sales and secure offtake agreements in various countries to minimise risk.

In terms of assessing financing options, Metallica has focused heavily on reducing the capital and opex side of Cape Flattery.

The updated initial capital cost of the Cape Flattery Silica Sand Project is estimated to be \$236.7 million with a payback period from commencement of production of 3.2 years. Life of project cash revenue is expected to be \$3.065 billion, returning pre-tax net present value (NPV10 nominal) of \$702.4 million and an internal rate of return (IRR) of 37.2%.

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“We have stated that our goal is to be in the bottom third of the cost curve for silica sand in Asia-Pacific“

Fisher notes: *“We have stated that our goal is to be in the bottom third of the cost curve for silica sand in Asia-Pacific. It's quite difficult to quantify what that is, but that's our goal. That will mean that we can survive likely downturns in the market cycle.*

All projects plan to produce a positive margin in the peak when demand is up and prices are up, but inevitably, when prices and demand come down, that means that we can weather that storm because we have low operating cost.”

The average cash margin from the project increases to \$53.06 per tonne and average EBITDA is \$134.6 million per annum.

Psaros adds that obtaining approvals now becomes crucial for the project to get off the ground. If Australia lags in getting silica sand projects online regions such as Indonesia and Malaysia, which are increasingly producing high-purity silica sand, are at the ready to fill the void.

“To that extent, what we want to do is secure approvals. I also think that the updated DFS right-sizes us. So, we'll make a decision at some point whether we're going to go for the 3 million tonnes or we're going to stay at the roughly 1.5 million. However, you really want to be as low on the cost curve as you can be, and that 3 million tonne product level puts us much lower on the operating cost curve.”



Evolving nature of energy

A major driver of the growth of the silica sand market is the evolving nature of energy and how the world uses it. By the end of the decade, global manufacturing capacity is expected to be more than 1,200 gigawatts (GW) of solar panels per year but it is projected to actually deploy only 500 GW in 2030.

If the world were to reach deployment of 800 GW of new solar PV capacity by the end of the decade, it would lead to a further 20% reduction in coal-fired power generation in China in 2030 compared with a scenario based on today's policy settings.

Electricity generation from coal and natural gas across Latin America, Africa, Southeast Asia and the Middle East would be a quarter lower.

The flagship publication of the International Energy Agency, the *World Energy Outlook 2023*, provides in-depth analysis and strategic insights into every aspect of the global energy system.

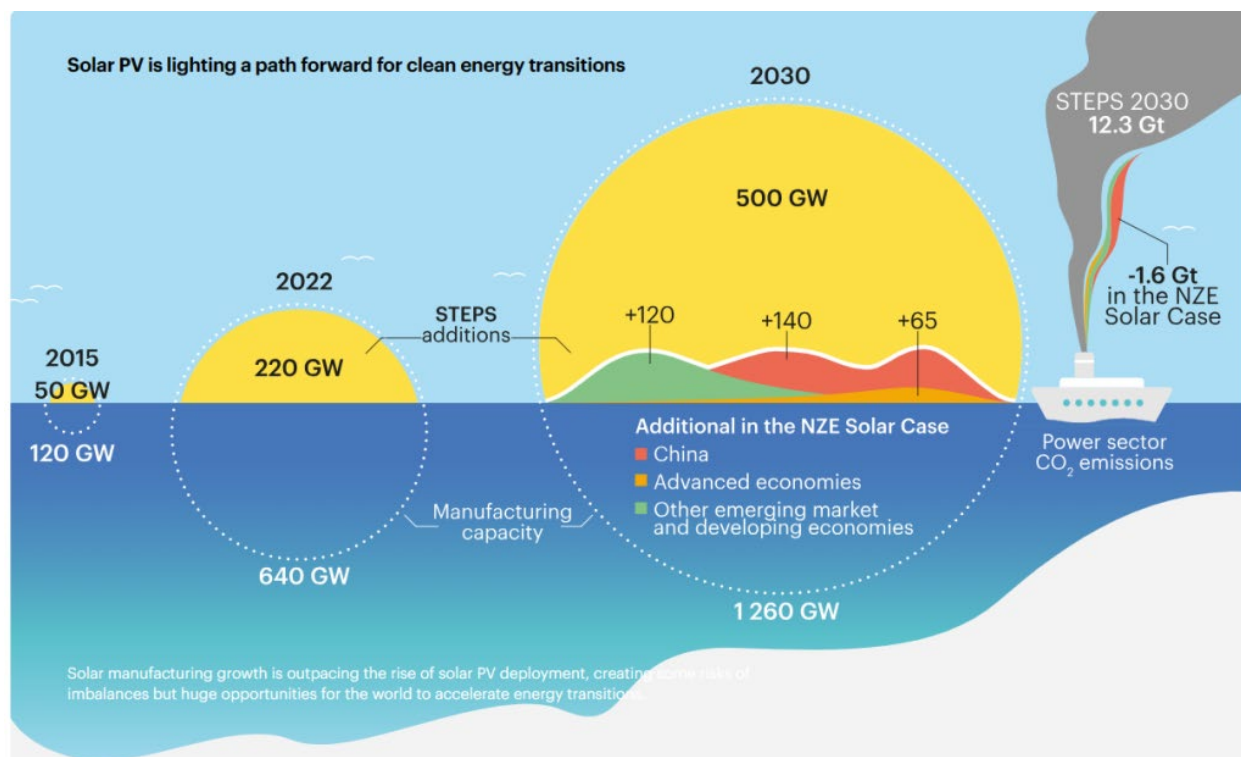
Against a backdrop of geopolitical tensions and fragile energy markets, this year's report explores how structural shifts in economies and in energy use are shifting the way that the world meets rising demand for energy.



This *Outlook* assesses the evolving nature of energy security 50 years after the foundation of the IEA. It also examines what needs to happen at the COP28 climate conference in Dubai to keep the door open for the 1.5C goal.

And, as it does every year, the *Outlook* examines the implications of today's energy trends in key areas including investment, trade flows, electrification, and energy access.

A record 220 gigawatts (GW) of solar capacity was added in 2022, and deployment levels are projected to more than double, while heat pumps more than double their share of heating equipment sales in the IEA's Stated Policies Scenario (STEPS) by 2030.



In October 2023, IEA Executive Director Fatih Birol said governments, companies, and investors around the world need to get behind clean energy transitions rather than hinder them.

"The transition to clean energy is happening worldwide and it's unstoppable. It's not a question of 'if', it's just a matter of 'how soon' – and the sooner the better for all of us."

Birol added that there are immense benefits on offer, including new industrial opportunities and jobs, greater energy security, cleaner air, universal energy access and a safer climate for everyone.

'New economy' sectors have been growing strongly, including high-tech manufacturing in clean energy areas such as PV and EVs. Revenue in the past year for listed solar PV



manufacturers and automobile manufacturers amounted to US\$166 billion and US\$135 billion respectively, the IEA says.

Amid this backdrop, Metallica believes that as long as silica sand demand continues to soar so too will the company's growth prospects.

Longer term, Psaros says once its Cape Flattery Silica Sand Project is in production Metallica will assess a range of growth options.

"From a mining company perspective, I think it's always good to have your irons in a couple of different fires and diversify even if you have a project in a different area. Whether or not that's supplying the same material, you've got to find a market that you think is attractive.

So yes, I think once we get this up and running, we will be looking for something else. We have a very supportive shareholder base so I think if we found something that was compelling, we would probably try and act on that."

Write to [Adam Orlando](#) at [Mining.com.au](#)

Images: Metallica, IEA, & [Mining.com.au](#)