



May 29, 2024

THE LONG PULL: Tin Market Update

This *Long Pull Report* is about the tin market, one of the most asymmetric commodity opportunities. I've talked a lot about tin in these *Long Pull Reports*, and still, nobody seems to care outside you and a few of my Twitter followers (read: Tin Barons).

If you're new to the *Collective*, I suggest you read my Tin Industry Primer [here](#) and then come back. It gives you an 80/20 breakdown of the tin market, supply/demand dynamics, and my estimates of future supply/demand imbalances.

Here's the TL;DR on why we love tin (emphasis added):

*Tin has it all ... **Bombed-out sentiment, a capital-starved industry, marginal production costs higher than the current spot price, and severe supply concentration risk** mean that even the slightest supply disruption or demand increase could substantially increase prices.*

***All the easy tin has already been mined.** What's left is lower grade, higher-risk, more complex, and more expensive to extract. This makes it almost impossible to bring new supply online when most of the industry's largest producers are reducing output.*

Here's what we cover this week:

- Alphamin's \$AFM.V Mpama South ramp-up
- Update from Shanghai Metals Market
- Indonesia banning offshore tin mining
- China demand updates (solar, EVs, and chips)
- Global Tin Project Overview

Let's get after it.

Alphamin Officially Ramps Mpama South

Alphamin's \$AFM.V Mpama South mine is officially running, according to the company's press release Monday:

"The Mpama South processing facility has produced tin concentrate to sales specification since May 14. The tin grade of the feed ore was increased on May

17, following which the focus has been on achieving consistent throughput and producing targeted processing recoveries.

The processing facility has produced 159 tonnes of contained tin from May 17. The facility now operates at targeted processing recoveries and continues producing high-grade concentrate to sales specification.”

Mpama South is the inflection point for AFM’s earnings and cash flow. We wrote about it in [December 2023](#) (emphasis added):

*Contained tin sales will be lower this quarter than expected. That’s fine. It doesn’t matter what this quarter’s sales or next quarter’s sales are. **What matters is Mpama South and AFM’s ability to ramp future production**, which they explained:*

“The delay in the arrival of the last batch of containers required for the completion of the Mpama South plant is estimated to defer the project’s completion by a further month with commissioning now expected from late February 2024 and ore processing from the end of March 2024.

*The Mpama South underground mine is operational and has commenced with the stockpiling of ore on surface in preparation for a rapid ramp-up during plant commissioning.” In other words, Mpama South is running, stockpiling ore, and waiting for the road to open so they can sell it. **This is a big deal. AFM is bringing Mpama South online at what could be an inflection point in tin prices.***

By the end of this year, AFM will go from producing ~10-12,000t/year to 20,000t/year. Meanwhile, AISCs have only increased by ~2% YoY to \$14,858/t.

Mpama South is a big deal because it more than doubles AFM’s pre-tax profits (see below).

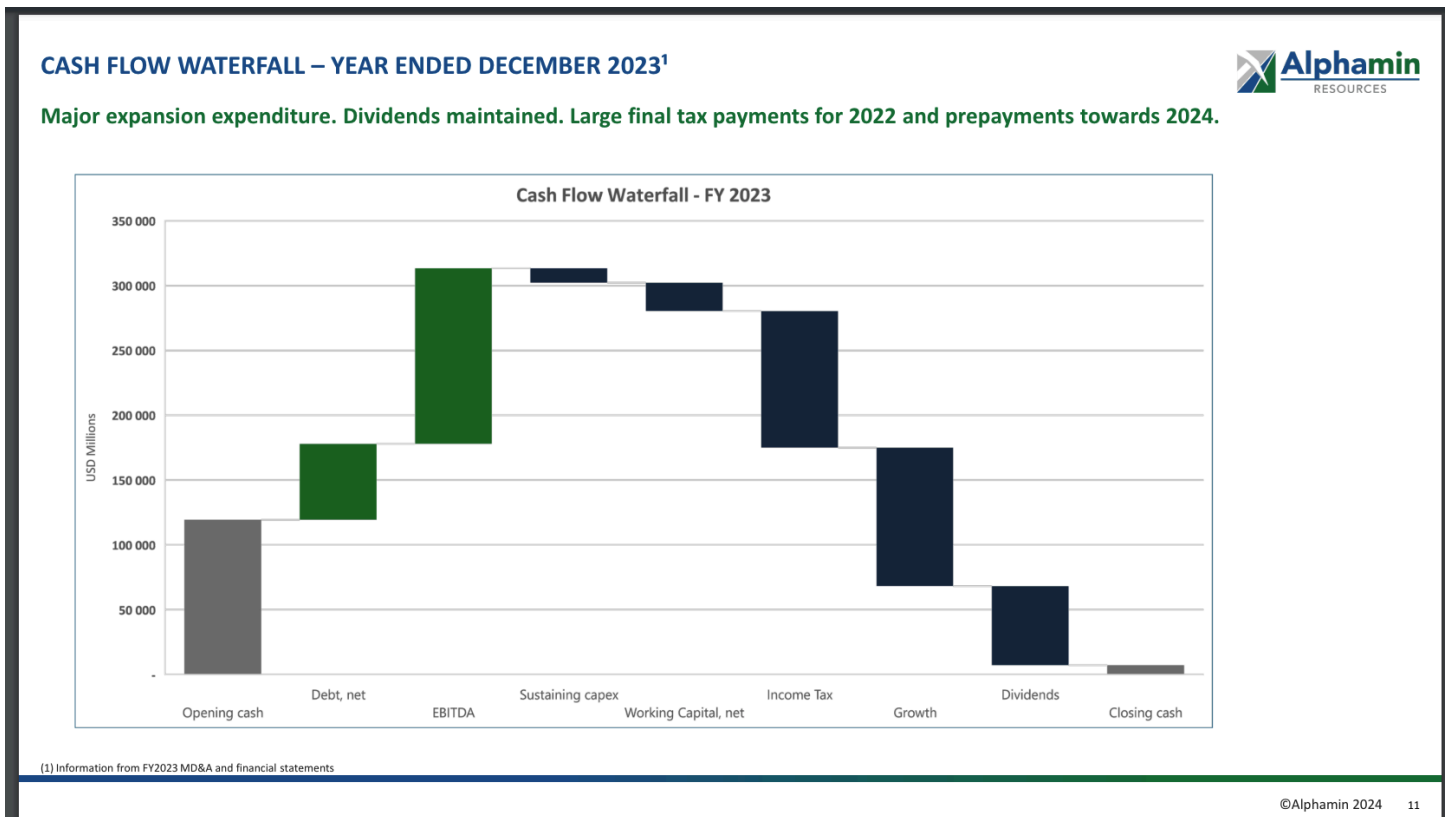
Volumes	Tin Price	AISC	Pre-tax Profit	Increase
12,000	\$30,000	\$14,858	\$181,704,000	
20,000	\$34,000	\$14,858	\$382,840,000	110.69%

At a \$1B market cap, AFM trades at ~2.5x cash flow.

But it gets better.

Remember, AFM has already spent the money to build/ramp Mpama South and paid their final 2022 tax payment plus prepayments for 2024. So you have lower capex/tax requirements and a 100% inflection in earnings power going forward.

Historical capex requirements are in their latest investor presentation (see below).



In other words, they can use ~ \$200M this year (or 20% of the current market cap) for dividends/buybacks.

Blue Sky Scenario: 25,000t/year at \$40,000+ Tin

AFM will use some cash flow to drill and expand its tin resources. Their combined plant capacity is currently 25,000t/year, and I think they'll eventually reach that.

There's also a chance that \$34,000/t is a floor, not a ceiling, on tin prices. As we'll see later, tin supply is susceptible to adverse shocks, mainly from Myanmar and Indonesia.

It's not unreasonable to think that tin could trade at \$40,000- \$ 50,000/t at some point in the next few years.

AFM would generate **\$600M+ in EBIT (~1.6x multiple) for a ~60% yield in that scenario.**

Shanghai Metals Market Update: Wa State Critically Low on Tin

On Tuesday (05/28), the Shanghai Metals Market [released a tin update](#) that said, “China isn’t importing as much tin because they can’t get as much from Russia and the Wa State.”

You can read the official statement below.

Supply Side

Imports: In April, China's tin ore imports were 10,200 mt, down 55.44% MoM and 44.86% YoY. The metal content stood at about 4,778 mt, a decrease of 1,419 mt MoM. The imports in January-April totalled 70,600 mt, down 4.7% YoY. The sharp drop in April imports was mainly due to a significant reduction from Myanmar and Russia. Although imports from other countries continued to grow steadily, they could not fully compensate for this gap. The Wa State authorities in Myanmar have not yet indicated when local tin mines will resume production, continuously lowering market expectations for the resumption of work and production in Wa State. It is also understood that the inventory in Wa State is critically low, making it unlikely to increase tin ore exports to China in the future. Tin ore imports from countries other than Myanmar increased, driven by significant growth in imports from Laos and Nigeria, while imports from other countries mostly remained stable, with a slight increase expected in the future.

Domestic: Last week, Yunnan province underwent environmental inspections, causing some refined tin smelters to shut down for maintenance, with an unclear time for production resumption. These factors combined led to tighter supply expectations in the tin market.

There are two critical points from the above update:

- 1) *“The Wa State authorities in Myanmar have not yet indicated when local tin mines will resume production, continuously lowering market expectations for resumption of work and production.”*
- 2) *“It is also understood that the inventory in Wa State is critically low, making it unlikely to increase tin ore exports to China in the future.”*

Myanmar/Wa State represents ~7% of global tin production. And they’re saying, “Sorry, China, we’re closed, and we don’t have extra tin in reserve to give you in the meantime.”

This is a huge deal.

Tin production in the country is [already down 30% to 28,000t from 2022-2023](#). The Wa State accounts for 70% of Myanmar's global production.

What could 2024 production look like? 15,000-20,000 tons?

But Myanmar isn't the only country curbing production.

Indonesia: Tin Mining Bad, Tourism Good

This week, the Indonesian Marine and Fisheries Service (DKP) [designated Belitung Island](#) and the waters around it a no-tin **mining zone**.

Apparently, offshore tin mining isn't "tourist-friendly," and it "looks bad against the beautiful backdrop of the water, coral reefs, and diverse marine life."

I don't know ... you're telling me you wouldn't snorkel next to this??



This is a problem because all the easy onshore tin has already been mined, so miners resort to dredging offshore.

But if they can't dredge offshore – and who knows for how long – I guess they try and mine the expensive onshore tin? This would further steepen the cost curve and provide upward pressure on tin prices (both good things for AFM as the low-cost producer).

Last year, Indonesia accounted for 20% of the global tin supply at [~52,000 tons](#).

I doubt they will reach 50,000 tons in 2024. Exports [were down 99% in January](#) and [19.49% in March](#).

The good news is that we don't need specific supply numbers. What matters is that two of the three most significant tin producers are either a) halting production or b) making it more challenging to get tin to market.

Next, let's discuss China.

China: Demand From 2024-2025 Conservation Plan + Chip Investments

China is the world's leading tin consumer. From January - October 2022, the country imported 199,000 tons of tin.

The CCP recently announced two programs that should increase tin demand over time:

- 2024-2025 Energy Conservation & Carbon Reduction Plan
- IC Big Investment Fund

Let's start with the [energy conservation and carbon reduction plan](#). Think of it like the US's *Net Zero Emission* plan. China's plan has six broad initiatives:

- Accelerate the phase-out of old vehicles.
- Raise the energy consumption threshold standards for commercial vehicles.
- Gradually lift restrictions on the purchase of new energy vehicles across various regions.
- Implement policies that facilitate the use of NEVs.
- Promote the electrification of public sector vehicles and the orderly introduction of new energy medium—and heavy-duty trucks to develop zero-emission freight fleets.
- Advance the scrapping and renewal of outdated transport vessels and initiate pilot projects for the electrification of coastal and inland river vessels.

There are also some carbon emission targets (from the release, emphasis added):

*“Both in 2024 and 2025, energy conservation and carbon reduction transformations in critical sectors and industries are expected to result in a reduction of around **50 million tonnes of standard coal and a decrease in carbon dioxide emissions by around 130 million tonnes.**”*

*China has committed to a "dual carbon" goal of reaching the peak of carbon emissions by 2030 and **attaining carbon neutrality by 2060.**”*

That means solar panels.

Every 100GW of installed solar panel capacity requires 7,400 tons of tin. In 2023, Bloomberg NEF estimated that China produced ~500GW of solar panel capacity. **That's 25,000+ tons of tin ... or another Alphamin Resources worth.**

By 2030, the estimated capacity of solar panels would require **55,000 tons of tin** or **~16% of the total current supply.**

TIN MARKET – THE FORGOTTEN CRITICAL TECHNOLOGY METAL



Demand landscape – Solar

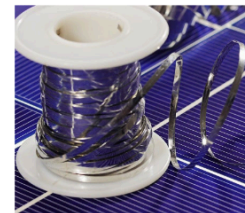
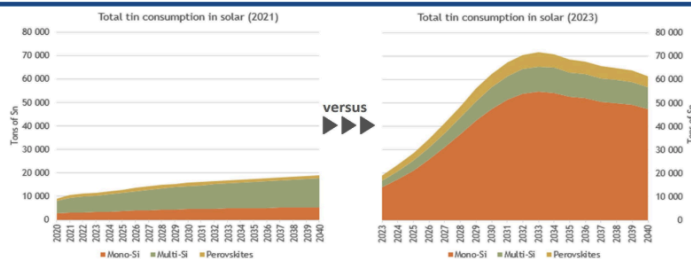
Traditional uses for Tin taking a back seat – A new age for tin in solar, EV's, AI and IoT

Global solar roll-out on a steep growth path

- Every 100GW installed requires ~7,400t tin³
- 2022(actual): 268GW⁴ installed required ~20,000t tin/year
- 2023(actual): ~500GW solar PV modules produced in China alone using >25,000t of tin⁴ (equivalent to several new tin mines)
- Global solar capacity surpassed 1TW in 2022 – yet still only 3,6% of global power consumption
- Solar boom in China with installed capacity surpassing that of Hydro power
- A steep solar roll-out curve to 2030 is a needle mover in demand for tin – forecasts for the potential of **55,000t tin in annual solar installations by 2030**^{1 3}



Step-change in BNEF 2023 solar forecasts vs 2021: Driving significant tin consumption growth^{2 4}



We'd need the equivalent of another Myanmar to reach the 2030 solar panel target.

And then there are EVs and electronics, which account for 17% of the total demand in 2023. This means increased demand for semiconductor chips as cars and electronics require more computing power.

That's why [China is investing ~\\$48B in a "national chip fund"](#) to spur domestic chip production (see below).

China Big Fund kicks off 3rd phase capital support for local chip industry

Staff reporter, Taipei; Rodney Chan, DIGITIMES Asia

| Wednesday 29 May 2024 |



AI runs on semiconductor chips. And tin is the glue that holds those chips together.

I won't be surprised if the demand for AI/electronics increases from ~17% to 20-25% over the next few years.

Let's step back and review what we have so far.

On the supply side ... two of the world's largest tin producers are reducing production through mine closures and banning offshore drilling.

On the demand side ... China is the largest importer of tin and has two clear plans to increase tin demand through clean energy/carbon reduction and AI/semiconductor chip investment.

This begs the question ... does supply have any chance of meeting demand in the next 1-2 years?

The short answer: **No.**













Here's why.

Future Tin Projects: Nothing Coming Online Anytime Soon

There's this software called *Prospector*, which lets you search every mining project globally to see how many are producing, developing/drilling, or permitting.

So I went back as far as I could to find all available tin projects ... which was 97.

Then, of these 97 projects, I filtered for ones actively producing ... which was four (see below).

<input type="checkbox"/>	Bisie (Mpama North) Tin Mine, NK	Production 
	<input type="button" value="INF"/> <input type="button" value="IND"/> <input type="button" value="MEA"/> <input type="button" value="PROB"/> <input type="button" value="PROV"/>	
<input type="checkbox"/>	Espigao (BMC) Manganese-Gold Project, RO	Production 
	<input type="button" value="INF"/> <input type="button" value="IND"/> <input type="button" value="MEA"/> <input type="button" value="PROB"/> <input type="button" value="PROV"/>	  
<input type="checkbox"/>	Renison Tin Project	Production 
	<input type="button" value="INF"/> <input type="button" value="IND"/> <input type="button" value="MEA"/> <input type="button" value="PROB"/> <input type="button" value="PROV"/>	
<input type="checkbox"/>	Uis Lithium Mine	Production 
	<input type="button" value="INF"/> <input type="button" value="IND"/> <input type="button" value="MEA"/> <input type="button" value="PROB"/> <input type="button" value="PROV"/>	  

Only two of those projects mined tin as the primary metal (Renison and Mpama North).

Then I searched for tin projects in the construction phase ... or the step *just before* production.

Zero results!

Minerals

Tin x | x | v | All Mineral Estimate Levels | v

Last Update on Project

1M



3M

1Y

5Y

ALL

Project Stage

 Grassroots	 Target Drilling	 Discovery Delineation
 PEA	 Prefeasibility	 Permitting & Feasibility
 Construction	 Production	 Suspended

Clear Filters

Show 0 projects

It's way worse than that.

Of the 97 global tin projects, 40 are in the “Grassroots” stage. Meaning there’s a guy with a geology degree saying, *“I think there’s tin here ... maybe.”*

21 of the 97 projects are at the drilling stage, which is the first step in determining whether there is tin in the ground.

What does this mean?

There is zero chance that tin supply can meet the expected demand increases over the next five to seven years—yes, five to seven years!

We could see **20-40% supply deficits** if the current demand picture plays out.

Hence, I believe that we could see \$40,000 - \$50,000/t tin prices.

Conclusion

This report turned out longer than expected, so I'll end it here.

Supply looks abysmal over the next 5-7 years. The world's two largest producers are reducing output, and the remaining tin is becoming more expensive to produce.

Meanwhile, demand is only increasing as the largest importer ramps up investments in critical mineral-intensive industries like solar, EVs, and semiconductor chips.

To top it off, our favorite way to play tin, AFM, trades at ~2.5x our estimate of nameplate capacity pre-tax profits.

How's that for an asymmetric setup?

Until next week,

Brandon