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HALLGARTEN & COMPANY

Portfolio Strategy

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Metal Price Preview:

Dusting Off the Crystal Ball

February 2022

Metal Price Preview

Dusting Off the Crystal Ball

- **Most metals/minerals appear to be in some sort of supply pipeline crisis**
- **Peak Green may have been reached, which will be a relief to many in the mining space who find the self-flagellation tiring and frankly painful**
- **A few large M&A transactions are starting to surface, stirring the waters and prompting investors to ask "Who next?"**
- **Gold and silver perked up with inflation fears being the main motor of upward movement**
- **Tin continued to flirt with the $40K per tonne price level as supplies remain extremely tight**
- **Oil maintains a strong and strengthening position despite the Zeitgeist**
- ✘ **Inflation is the old "new kid on the block". Most observers can't remember what it was like the last time around in the early 1970s thru to the late 1980s**
- ✘ **The link between shipping rates and bulk commodities has long been a moot issue but is now responsible for a portion of the price uplift these have seen**

Happy Days are Here Again

The year gone by was an excellent year coming on top of a good one in 2020 (excepting the Pandemic downsurge in February/March of 2020). Otherwise it's been largely two years of happy days are here again. The only naysayers in the room are the hardcore gold/silver bugs who have seen their 2020 pipedreams of gold at $5,000 and silver at $50 meet with reality. At least in the case of gold the year gone by must rate as one of the best ever in terms of average gold price. But then, as we well know the precious metal bugs are never satisfied. Give them $2,000 and they want $4,000 as if by some birthright.

Base metals had a good year (though copper mavens always pining for it to go ever higher) while specialty metals largely performed fantastically and the partly overlapping battery metals space shone luminously. Even the benighted Uranium price shows stirrings in its loins.

Essentially the only thing to complain of in 2021 was that one's favorite metal didn't perform as well as someone else's favorite. If gold and silver went down they were only giving back part of 2021's ebullience as the pandemic proved not (at first glance) to be as devastating as originally feared. The eventual bill has not been tendered and even less paid for so it is too soon to count the chickens. In fact the inflationary fervour gripping markets may be the first inklings of the damage that the plague has wrought, not in economic recession (as originally feared) but in overheated economies fed by decadently loose monetary policies, compounded by distortions inserted into the mix by shipping and logistics debacles precipitated by the virus crisis.

With inflation romping free, liberated from the Pandora's box in which it slept for 30 years, the only solution is higher interest rates and as we have oft signalled these must be massively higher. The collateral damage must be the property sector but, as we have also signalled, we won't be shedding any tears for that massively inflated balloon that has long needed pricking.

The propensity of the average propertied middle class consumer in the West (particularly the over 50s) to spend embedded gains on life's niceties (cruises, latest model autos, kitchen refurbs etc) might well be cinched by higher mortgage rates, though it is only in the US that this group remain mortgaged to the eyeballs. However, it will be the perception that their beloved store of value (their house, or second house or rental properties) have gapped down in value that will cramp their marginal propensity to spend. This will also close down the lending window at the Bank of Mom & Dad that led their children get onto the overinflated property ladder that their parents had created. Sigh....

On a grander scale there is the toppling jelly otherwise known as the Chinese property sector. A House of Cards if ever there was one. Evergrande and its imitators are becoming EverMasChico. Once again our tear ducts fail to well up. The difference here is that Evergrande (and its ilk) are big steel users as part of the massive Ponzi scheme of uplifting the Chinese masses, whereas redoing a kitchen in suburban Cincinnati uses virtually no steel.

We are feeling the centrality of China to metals easing, if not slipping away. Its dominant grasp as the largest consumer of many metals is loosening while certain metals it once could claim exclusive purchase over (e.g. Antimony) is being superseded. From being dominant miner in many categories it then became dominant processor and now it just becomes one of several producers/processors (something that is happening in Tungsten and Rare Earths).

The company year, 2022, may also prove to be the year in which the Chinese grip on battery metals and the EV revolution is also broken. China will ultimately play a high price for bullying and over reaching. y

Gold

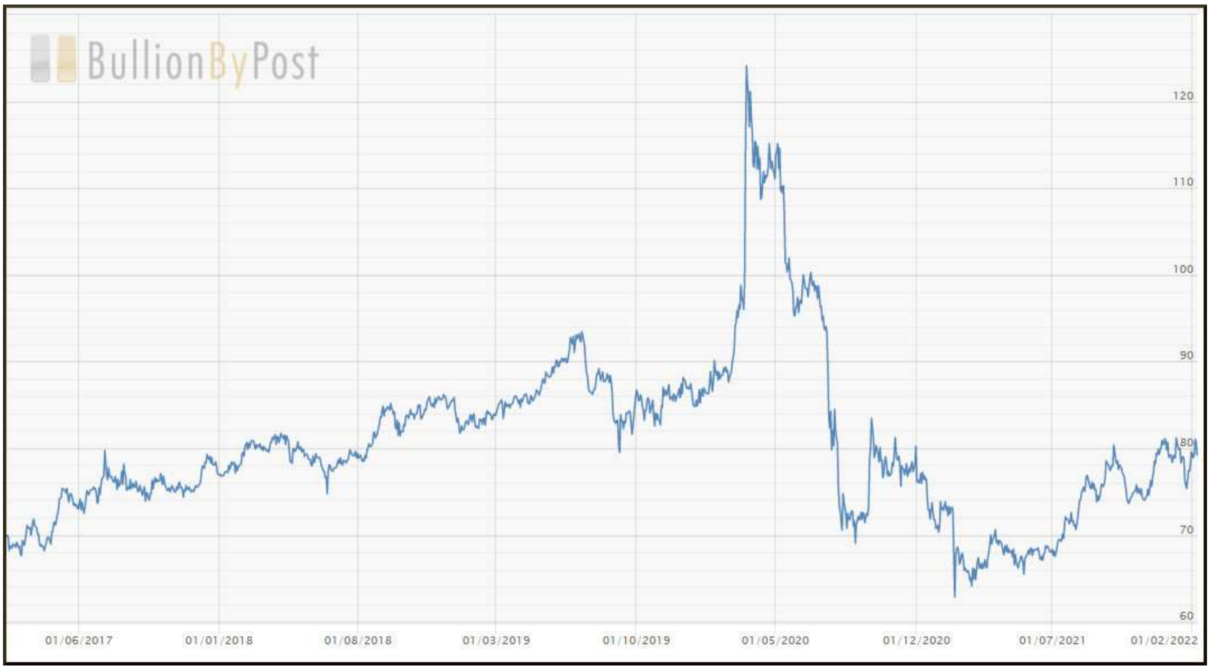
The past year has seen the most serious outbreak of inflation since the 1970s. While inflation was high in the early 1980s, that was the tail-end of the inflationary bout that had started in the early 1970s. We have been quite surprised at central bankers and finance ministers tiptoeing past the graveyard of those times and projecting inexplicable confidence that they can keep the current outburst under control when their predecessors in the 1970s failed. Moreover, history shows that it was only Volcker and his interest rate sledgehammer and money supply control measures that brought the beast to heel. In our day and age, these are exactly the two remedies that are being renounced as too extreme. Even worse they are deemed unnecessary because "we have this under control".

The gold price has been collateral damage of this Phoney War. The second top asset class in 2021 was energy (and we are not talking wind turbines or solar panels but good old carbon-producing energy). This was due to the price surge of this asset class' outputs of oil and gas. And yet gold was second from the bottom in performance with a negative outcome for the year. We live in interesting times when yields can rise and stocks also rise. Something has got to give. We are not inclined to see energy fall and we are hanging onto our oil & gas predictions with gusto as the Green Revolution starts to show that it is a Potemkin Village blown away by the icy blast of reality.

Gold has definitely become decoupled in the minds of the masses from its traditional role as an inflation hedge (or hiding hole). Will it recouple? The coming year, 2022, should prove whether it can regain this status or not. The soft-pedalling of inflation remedies should allow the beast to roam wild across the global landscape so the interest rate tool will have to go from being used as a feather duster to being a sledge hammer. That has all sorts of implications, not least of which is pricking the property bubble of the last 25 years. Downgrading the all-consuming property sector as an asset class would definitely help in letting currently unfashionable (or forgotten) classes have a chance at getting their own day in the sun.

Silver – left at the altar

Always the bridesmaid never the bride but silver in the last year has been more like the poor stooge sweeping up the confetti and rice. The year 2020 saw a dramatic improvement in the gold/silver ratio (in silver's favour) but the second half of 2021 did us silver bulls no favours. As the poor man's gold, we wonder whether it will benefit as much in an inflationary age as the poor man is getting poorer on static wages and inflationary cost of living moves.



Silver has rallied faintly in the new year as precious metals regained their mojo. Our estimate for end of 2022 is $31 so far more aggressive a move than gold's merely because silver has underperformed so badly in 2021. Frankly we see SLV as a better play than any of the physical gold ETFs.

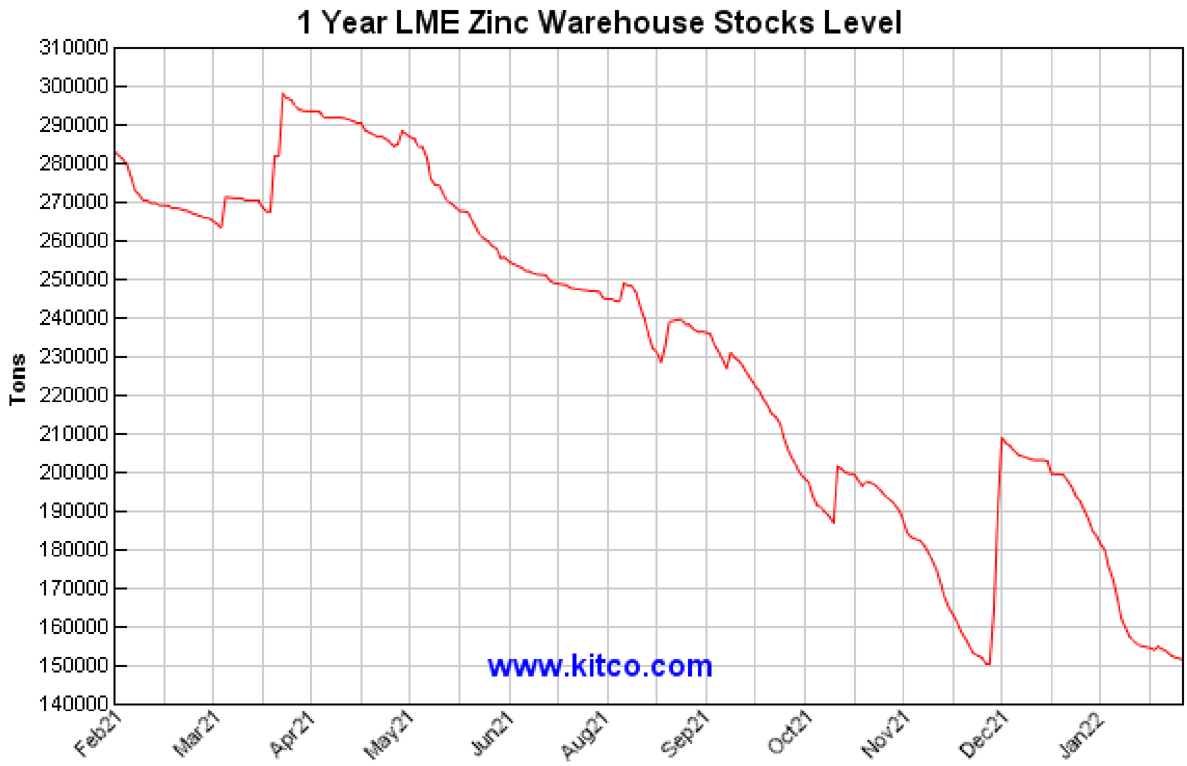
Base Metals

It is curious that there is a strong overlap between the gold bulls and the copper bulls. They tend to be correlated with each other though in reality there is no connection. They were disappointed in 2021 as neither metal lived up to the expectations of 2020. Our Copper forecast was one of our best approximations to the eventual outcome, with us coming in only off by 3%.

We are highly focused in interest rates. These should be moving higher all around the Western world. This should dampen demand and help ease the crisis in many base metals. The crisis is primarily one of supply, but still removing several percentage points of consumption from most base metals will bring the troubled supply situation more into balance.

Higher interest rates should finally prick the global property price bubble, but at the very least should dampen demand for construction metals, whitegoods and automobiles (both conventional and EV formats). This cannot be good for prices of base metals.

The Zinc price has been the surprising star of 2021. It powered on right till the end while many of the other “big” metals floundered in the last quarter of the year. The dire warehouse situation is no different to previous years as supply is not getting better and arguably worse. The warehouse stocks if they are the canary in the coal mine (to mix a metaphor) are one long dead canary!



The worst of the base metals is Lead with has a very gloomy long-term outlook. We are calling for its price to remain under $1 per lb. The demise of the ICE (over time) will release material currently tied up in lead-acid batteries to the broader lead market and reduce the price for mined product. As the linked Zinc and Silver production will continue apace the excess of Lead will continue to grow undermining its price even further. The next couple of years will be the last gasp of Lead.

Battery Metals

We are automatically suspicious of “flavours” in the mining market and if such flavours are being liberally sprinkled on the menu by Vancouver promoters then there is even more reason to be wary. However, battery metals have escaped the clutches of the West Coast promoters and have gone mainstream. While there has been a slight proliferation of names in the Lithium space, there have been few new additions in the Graphite space (and those added tend to be serious and production oriented) while nary a (new) Cobalt promoter dares stick their head above the parapet.

Brines have undoubtedly pulled ahead in the race with Argentina being the epicentre of the action. The soaring Lithium price has inevitably drawn in hard-core carpetbaggers that just cannot resist a run. The investors though are less easily fooled and no-hoper category of Lithium junior is just not being afforded the type of market capitalizations they would have gained in more naïve times in the past. No one has been able to get a “small” lithium project off the starting blocks, which dooms many to shallows and miseries.

Despite Nevada having a strong base of card-carrying fans (which does not include us) deals and the advancement of projects are noticeably lacking. In Canada the ghost of Nemaska stalks the landscape. Does anyone need or want an underground spodumene mine these days?

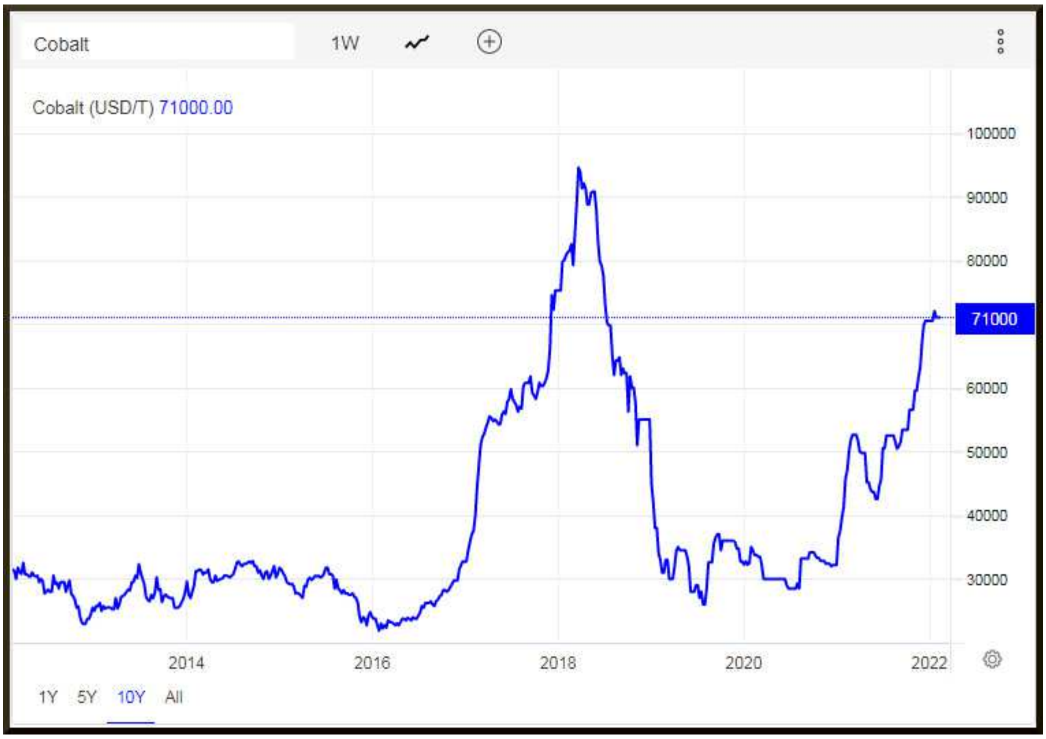
Meanwhile the Lithium price seems destined for a fall. It has all the signs of a classic manoeuvre by the “hidden hand”, probably the same one that undid the Rare Earth Boom in 2011. When the wheels fall off, assets will be cheaper and the hidden hand moves in to bargain hunt. At least that is the theory. Desperado promoters will be only too pleased to sell and move on.

Graphite missed the 2017 revival and has been more steady state than many of the other battery metals. The big issue on the supply-side continues to be the state of Syrah’s Balama mine which is producing well below the run-rate established before its suspension of activities during the pandemic. While several small graphite mines have joined the fray they are far from upsetting the supply applecart.

A trickle of new meaningful production could start a couple of years out from now but for the moment, this remains one of the least perturbed parts of the battery minerals universe.

More intriguing is Cobalt. This indispensable component of so many battery formulations has risen smartly in 2021 but has not reached the levels of 2018, when it was in less actual demand. Some wonder why the metal has not risen even higher due to its over concentration in sourcing in the DRC.

We would note however that the USGS proposes that world mine production of Cobalt was 142,000 tonnes in 2020 and 170,000 tonnes in 2021. This must be one of the metals with the largest increment in total production during the year. Of this 120,000 tonnes were estimated to come from the DRC. Despite wild claims that China controls "all" the Cobalt production from the DRC this is patently untrue.



Source: Trading Economics

It is interesting to note some observations in the USGS's latest data sheet on Cobalt as to replaceability. There is the obvious comments on iron and phosphorous being touted as an alternative in batteries however, more interesting are the replacement alternatives in other Cobalt application amongst these are: barium or strontium ferrites, neodymium-iron-boron alloys, or nickel-iron alloys in magnets; cerium, iron, lead, manganese, or vanadium in paints; cobalt-iron-copper or iron-copper in diamond tools; copper-iron-manganese for curing unsaturated polyester resins; iron, iron-cobalt-nickel, nickel, ceramic-metallic composites (cermets), or ceramics in cutting and wear-resistant materials; nickel-base alloys or ceramics in jet engines; nickel in petroleum catalysts; rhodium in hydroformylation catalysts; and titanium-base alloys in prosthetics. Despite this we feel Cobalt has further to go in 2022 and we posit a year-end price of $38 per lb.

One mineral worth mentioning, as we always do, is Lithium Hexafluorophosphate, which is the oft-overlooked electrolyte in Lithium-ion batteries. This product is indispensable and combines Lithium with fluorspar. The price of this commodity went crazy in 2021 and should continue to be hotly sought going forward. European fluorspar prices increased for a fifth consecutive month through January while supply remained increasingly tight, compounded by rising energy costs and logistical issues.

Fastmarkets' price assessment for fluorspar, acidspar, 97% CaF_2, wet filtercake, cif Rotterdam was at $500-520 per tonne up by $20-50. With its myriad of applications across the chemical and industrial spaces, Fluorspar is one of the most interesting and strategic minerals these days.

Rare Earths

These days we do not aim to pontificate on prices for the whole suite of Rare Earths. We restrict our punditry to Dysprosium and Erbium. The Rare Earths grouping has had a strong 2021 but if one were to do a weighted price including proportionately Cerium and Lanthanum (and Yttrium) it would have looked a lot more prosaic. Despite what the snake oil merchants might have us believe one still has to extract the first two Lanthanide elements with their massive preponderance before arriving at the "good stuff". The first two make any basket of prices look torpid, as unlike the previous REE upsurge, these elements are quite rightly being left behind as surplus to market needs.

The go-go parts of the Lanthanide series are undoubtedly those linked to the EV "Revolution" (i.e. Neodymium, Praesodymium and Dysprosium) and they have caught the strongest tailwind. With China having squandered its REE resource over the decades to get a fleeting advantage, it now faces the prospect of a whole swarm of Western wannabes engulfing it in alternative production (and processing).

However, when looking at the revived ranks of REE wannabes we can spot at 100 yards (or whatever the distance to Howe Street is) the same class of faking promoters that drove the first REE Boom to its dramatic denouement. Some have urged us to rewrite our *March of the Lemmings* note from those days, but we suspect we said it all then and some of those old observations scarcely need an update.

The most realistic plays today are those like the *putsch* by Energy Fuels/Chemours/Neoperformance in giving value to otherwise troublesome radioactive monazite sands. They have come to the market with a fully thought out mine to (nearly) magnets strategy while so many other arm-wavers are just touting tired old quarrying strategies with no real processing route mapped out. After that combo comes the Ionic Absorption Clays plays (or which there are three we know of) and then those pursuing Xenotime targets.

We see Erbium as the most undervalued and underappreciated of the REEs because of its role in 5G networks and severely restricted supply. Therefore we are estimating a further 33% advance in the Erbium price in 2022. Meanwhile Dysprosium prices should continue to forge higher, as its supply is inelastic and the demand is potentially open-ended to the upside, with an expectation of $520 per kg by year end.

Specialty Metals

The main specialty metals we forecast on are **Tin, Antimony and Tungsten**. All had a great 2021 but Tin and Antimony especially excelled. Tungsten had been late to the metals party, scarcely participating in 2020, but since then has been on a long steady march higher. The fear during the long **Tungsten** slump was that a sudden (and steep) reactivation in the price of APT (Ammonium Paratungstate) would then cause an in rush of wannabes. This slow price build-up has meant the Tungsten recovery has flown under the radar of the easily excitable carpetbaggers in the promotorial space. Scarcely a new name has been added to the ranks. Meanwhile buyers want more certified non-Chinese Tungsten production sources.

Meanwhile **Tin** has been quite patently “off the charts” historically speaking (though not as high as the 1980s squeeze highs if adjusted for the inflation in the intervening period). This prompt has added no new names to the ranks of producers or indeed to developers. Coming up for two years of Tin’s Renaissance and no new pipeline is in sight. This augurs for prices remaining high and risks even higher spikes to the upside.

Antimony at over $13,000 per tonne in Rotterdam has been higher longer than it was during its brief 2010 flirtation with the stratosphere ($17k). We hear the uninformed claiming it will deflate but they fail to realise the Chinese have long been living on borrowed time in their dominance of this metal with a desperate dependence upon artisanal production (particularly from Burma). Most of the other sources of artisanal output (Honduras, Laos, Bolivia etc.) are largely unresponsive to higher prices as the workforce don’t have the capital to ramp up (i.e. pumps and generators) to go deeper. Meanwhile back in China, the long term decline from Twinkling Star undermines all attempts to achieve a net increase in total output from lesser sources.

The current price is something of a sweet spot. It is not high enough to prompt replacement and the potential looming extra demand from molten salt battery formats adds an upside that is an almost frightening X factor that might start making demands upon a finite supply. For this reason we see Antimony prices staying high during 2022.

Tungsten should continue to creep higher and well may be the stealth performer of 2022. The current price is $340, and we are positing a price of $355 per MTU by year end as some projects, long in the pipeline, finally come into production but without upsetting the apple cart of current low non-Chinese production. Iberia, Brazil, Australia and South Korea should boost the proportion of Tungsten flow from outside China.

Uranium – Back in the Hot Seat?

Of course, solar is nuclear. Repeat this mantra over and over again and Greta Thunberg and her hangers-on will be reduced to blubbering jellies. The logic is inescapable. Solar energy is the ultimate in nuclear reaction but *Not In My Back Yard*. That nuclear should be staging something of a resurgence on the back of all their hard graft at panic-merchanting must stick in the collective craw. However when you shout “Fire!” in a crowded cinema you should make sure you are not standing in the way of the stampede.

The fans of Uranium and nuclear energy could never have imagined a turnaround of sentiment in their favour coming so fast and from such an outlandish source. However they are not complaining.

The Last Uranium Bull Market 2003-2008	The Emerging Uranium Bull Market 2020 - ?????
Primarily demand-driven (China build-out) with price dictated by Western utility pricing cycle	Contracting less important vis-à-vis nation state players; catalysts required to create incentivize pricing for new supply
Commodity was unknown, un-loved and not well-understood capital markets: >700 companies created before bull market ended	Few analysts remain, less than 40 companies active; high knowledge and visibility exist only on the most credible projects. Greenfield exploration could be more important this cycle
Hedge funds primary market players, active management still dominated generally; no pure play ETFs existed	Passive and ETFs dominate; currently 3 sector ETFs exist and are all growing rapidly
Retail very active, especially in latter stages of the cycle. Newsletter writers and influencers (i.e. Sprott) played an important role	Retail is engaged much earlier; today we have new demand factors, including zero-commission trades, Twitter, podcasts and Reddit. Sprott is visibly engaged (....again...)
U price rose from $7/lb to $135/lb.	Bear market low of $22/lb set just prior to COVID.

Source: Laramide Resources

On the preceding page is a very apropos summation of why "this time it will be different", because frankly most times everything is different because as we know history does not repeat itself but it does frequently rhyme.

Conspiracy theorists see a Toronto grandee as the hidden hand behind this sentiment but his efforts, while as always self-motivated, were essentially pushing on an open door. We all knew Uranium would come back some day, however nobody knew quite when and the torpid pace of recovery had made liars of many pundits over the last decade.

Like so much of the current resurgence it is the chickens (of long-term underdevelopment of new projects and the pipeline) coming home to roost rather than a demanded surge driving the first signs of price recovery. This is not to say that increased demand shall not be a major factor going forward. More converts to replacing, rather than shutting down, the European nuclear fleet are being won over every day. Perversely sabre-rattling by the Russians is help driving this process and may ultimately change even German thinking on the matter.

The massive reduction in players/wannabes/fakers is a key starting point for this current recuperation.

As for our projections for 2022 we are plumping for spot prices staying the same (in the low $40s per lb) though they could go anywhere from here to $100 depending on the degree of mania that strikes the market. We are erring on the side of sanity rather than frenzy. Contract prices are the "real" price anyway but those are opaque at even the best of times and tend to be defined by folk rumour.

The Laggard – Vanadium

One of the scarce disappointments on recent years has been Vanadium. Ironically its torpid performance was the price target that we came most close to in our 2021 price estimations. Does this mean that the metal is destined for a more tranquil existence going forward. After all, it has blown itself up three times this century by spiking to impossible levels then plunging. This confounded the lives of those trying to market and manufacturer Vanadium Redox Flow Batteries. The leading playing in that space have long contended that they needed prices of V2O5 that were no higher than $10 per lb to be viable. In recent years they got their wish. However this has come at the price that most new mining projects have remained plastic-wrapped in their boxes.

VRFB makers should be careful of what they wish for though. Lithium has risen massively and it (and Antimony molten salt formulations) are the alternatives to Vanadium. It cannot be that the Lithium alternative can have become so much more expensive and yet Redox Flow formats still need a price below $10 to "compete". This is now surely wrong. Indeed it may be that "$20 is the new $10" for this economic equation. In which case, a lot more V projects become viable. If the mass storage battery makers want inputs they shall need to start paying more for them and moreover, signaling that they will pay more rather than repeating an outdated mantra.

We are looking for Vanadium to play catchup in 2022 and break through the $10 ceiling.

Conclusion

The last two years have been one of the best set of consecutive years of bull runs in this century. The first Supercycle was undoubtedly driven by Chinese demand, while the West was still in low-growth mode in the wake of the Tech bubble bursting in 2000 and the 9/11 events (and subsequent wars/invasions). This time though we perceive it as being the long-mooted arrival of the supply crunch from decades of underinvestment combined with the brutal side-effects of ESG fetishism and Green slavishness. These have added immeasurably the cost and timeline of the few projects that have survived and advanced during the brutal cycle of boom/bust, capital starvation and political roundabouts post-2008.

A swathe of industrial metals are now seeing the consequence of the paucity of investment and the lack of progress with Nickel, Zinc and Copper being obvious crisis hotspots but across the gamut of other metals supply issues are rearing their head. The false start in the battery metals space in 2009-10, then 2013 (graphite) then again in 2017 has set the stage for today's panic scenario.

The outlook for 2022 would be all clear sailing if it was not for the outbreak of serious inflation across the Western economies. This prompting (belated) action on interest rates and this (to quote Alan Greenspan) will take away the punchbowl for the mining party. That said, though, the overarching narrative is the sheer shortage of metals and the diabolically dry pipeline. Will interest rates trump shortage? We suspect that in base metals the inflation/interest rate surge will prove to be a dampener, in battery metals it shall not be a factor and in many specialty categories the shortage of product and Peak China as a producer/supplier will see the likes of Tin/Antimony/Tungsten continue to hold their (high) ground.

All in all though, the outlook for 2022 looks very good for almost all metals (in our universe). We make no claims to punditry in the likes or iron ore, thermal coal or bauxite. Inflation (and interest rate rises) are the ghosts at this feast. If inflation carries on (due to lukewarm official action) then inflation might continue in metals' prices as well. It may become a race to the top…. or the bottom. Enjoy!

Hallgarten & Company - Metals Estimates

	Unit	End 2021 Estimate	End 2021 Actual	Undershoot/ Overshoot	End 2022
Lead	lb	$0.93	$1.05	12.9%	$0.95
	tonne	$2,050	$2,314	12.9%	$2,094
Zinc	lb	$1.45	$1.63	12.4%	$1.62
	tonne	$3,196	$3,593	12.4%	$3,570
Copper	lb	$4.30	$4.43	3.0%	$4.55
	tonne	$9,477	$9,764	3.0%	$10,028
Gold	oz	$1,950	$1,803	-7.5%	$2,250
Silver	oz	$29.00	$22.80	-21.4%	$31.00
Uranium (spot)	lb	$32.00	$42.70	33.4%	$42.00
Antimony	tonne	$10,200	$13,070	28.1%	$13,500
Tungsten APT	MTU	$290	$323	11.2%	$355
Tin	tonne	$28,500	$39,615	39.0%	$38,750
Cobalt	lb	$17.40	$32.79	88.4%	$38.00
Vanadium	lb	$8.80	$8.70	-1.1%	$10.50
Nickel	lb	$8.50	$9.45	11.2%	$9.20
	tonne	$18,734	$20,828	11.2%	$20,277
Molybdenum	lb	$9.90	$18.61	88.0%	$15.30
Dysprosium	kg	$345.00	$462.00	33.9%	$520.00
Erbium	kg	$45.00	$63.00	40.0%	$80.00

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