H20 Innovation explains why mining is thirsty for water

May 27, 2016 — Frédéric Dugré, President and CEO of H20 Innovation Inc (TSXV: HEO | OTCQX: HEOFF) presented at the recent 5th Annual Cleantech & Technology Metals Summit in Toronto. H2O Innovation is known for its state of the art water and wastewater treatment systems. Through the years, the company has developed a strong knowledge of membrane filtration and a solid understanding of the water industry. It offers complete engineering services, in-house manufacturing and thorough after-sales service.

The company has provided water advice and management to many mining companies, including the Escondida copper mine in Chile, located 3,000 metres above sea level and supplied by a 180km pipeline and which system has the capacity to supply 220,000 cubic metres a day

Mr Dugré spelled out the critical role that water plays in mining, including

- Its role in every step of extraction and refining including remediation, tailings management, worker facilities and dust management.
- How membrane filtration technical makes it possible to recycle 90% of water from mining operations.
- The importance of mining companies tackling the water question in early planning — and not late in the development timetable.

Argentina Unshackled

Observers from outside Argentina have gone on a frenzied romp of self-congratulation hailing the change in the Argentine Presidency in last week’s elections as something akin to a Revolution. Once again though we find that simplistic formulas are being used and the nuances of what has happened being ignored. The situation still has the potential to be a wild ride for investors.

For a start the victory of Mauricio Macri is being hailed as a “right-wing” victory. To put that in context, firstly he leads a Rainbow Coalition that stretches from the Left across to the Right and the party he beat, the Frente Para la Victoria, is in fact the old Peronist Party, which was a fascist/corporatist construct in its original roots. So to claim that a wealthy businessman (in fact I would venture one of the five wealthiest in the country) that leads a Coalition including the Left is a “Right-wing” victory is stretching it a bit.

Secondly we would note that the victory was surprisingly narrow. While the first votes in showed a 9% lead for Macri, as the night wore on the margin slipped and it ended up being 51.4% for Macri and 48.6% for his Kirchnerite opponent, Daniel Scioli. It should also be noted that the first round of elections last month delivered stinging losses to the Kirchnerites but they just barely hung onto control of the Senate meaning that, if they stay cohesive, they still have potential to block reforms. That said, with their patroness gone, the rats tend to disperse into the woodwork to regroup. We may end up seeing the phenomenon apparent under the De La

Rua government in the late 1990s of Bribes for Votes when a hostile majority in the Senate had to be paid off, literally.

The New Lay of the Land

As we have repeated endlessly mining is controlled in Argentina by the provinces, in much the same way as it is in Canada or Australia. The national government in Argentina has NO approval or denial power over mining projects. So everything you have heard of “Cristina Kirchner blocked our project” is a load of codswallop. In all cases blockages occurred because of ornery provincial governments.

It is interesting therefore to look at the map of the electoral results. The blue areas are provinces that voted for the Kirchnerite candidate. The yellow are those that voted for the winning Macri-led ticket. Oops, for those who know the only province with mining of note (Silver Standrad’s Pirquitas mine) that voted for Macri was Jujuy. La Rioja has been an on-again, off-again mining favorable area and La Pampa and Mendoza have been graveyards for miners.

The provinces where mining is currently active are Catamarca, Santa Cruz (the Kirchnerite province par excellence now run by the outgoing president’s daughter), Salta and San Juan.

If there is anything to be read from this map it is that the marginalized distant provinces with the smallest populations (excepting Buenos Aires which was only won marginally by Scioli and that was because of the sprawling urban slums voting for him) supported the Kirchnerite program which gave them a greater share of the goodies. The provinces that trended for Macri where those with the largest populations (and strong agricultural export economies) that were actively persecuted and discriminated against for the last 12 years.

Implications for Mining

Having said that mine approvals are in provincial hands, some matters are still in the Federal purview. Amongst these that have relevance are foreign exchange allocations. Miners have been griping for years now that they could not bring in the capex items they wanted in an unrestricted way due to import restrictions and could not remit profits or dividends as and when they wished. These restrictions were part of the increasingly draconian and bizarre forex rules that the Kirchnerite regime was imposing as Argentines tried to head for the exits and buy dollars to protect themselves against the rapidly deflating peso.

Moreover to say the forex regime was complex was an understatement. Here is the table of exchange rates for today for a leading Buenos Aires newspaper, La Nacion:

So on the left we have the official rate, on the far right is the so-called Dolar Blue which is the back-alley rate. In the middle are various official rates administered by the Central Bank for different purposes. Dolar Ahorro is a savings rate, Dolar Tarjeta/Turista is the rate that locals can use credit cards for (when travelling abroad) and that bona fide tourists within the country can use to change money. The Dolar Soja is the very prohibitive rate forced upon farmers selling their crops (effectively a 30% tax on the official rate and a 150% tax on the unofficial rate). Finally the Dolar Bolsa is a conversion rate for transactions in the Stock Exchange.

Byzantine is obviously not too strong a word to describe this bizarre system. Miners will be hoping that this system loosens up, though the new government will be wary of letting this go too soon or there will be a dollar buying spree that will decimate Central Bank reserves. One suspects that Dolar Turista and Dolar Soja will be the first to go. The government will then aim to draw the Dolar Blue and the official rate together somewhere in the middle. Who knows? Maybe the wonderful Convertibility regime of the 1990s might be revived.. Certainly Argentina had never experienced such good times since the 1920s as under that arrangement.

Despite the mining provinces largely being of the Kirchnerite ilk, they are the provinces that have shown themselves to be most pro-mining. With less subsidies coming from the Federal government more of the provinces will have to look to mining to keep their local economies buoyant.

If one wants to muse with some names in Argentine mining those to consider are:

- Patagonia Gold Plc (AIM: PGD)
- Hochschild Mining (LON: HOC)
- McEwen Mining Inc. (NYSE: MUX | TSX: MUX)
- U3O8 Corp. (TSX: UWE | OTCQX: UWEFF)
- Pan American Silver Corp. (NASDAQ: PAAS | TSX: PAA)
- Silver Standard Resources Inc. (TSE: SSO)
- Yamana Gold Inc. (TSX: YRI | NYSE: AUY)
- Argentex Mining Corporation (TSXV: ATX | OTCQB: AGXMF)
- Orocobre Limited (ASX: ORE | TSX: ORL)
- Western Lithium USA Corporation (TSX: WLC | OTCQX: WLCDF)
- Galaxy Resources Limited (ASX: GXY)

One might also see those who have downplayed their Argentine prospects dusting them off or racing back to restake them.

What Next

After exchange rates there are a vast swathes of regulations constraining all aspects of economic life that could be cast into the dustbin of history. Some of these measures being rescinded should help miners. One that might not though is the bizarre fuel subsidies. These were introduced after the collapse of 2000/1 and the spike in inflation. To “protect the poor” massive subsidies were introduced which have bled the Treasury dry. They have been reduced and some have been made to pay world parity prices for oil but many have not. This could be the big budget winner but also a tough policy to bite on first.

One could see a strong inflow of FDI though and this might actually reverse the exchange rate so delays in freeing remittances might actually work out better for miners when they are eventually freed.

The whole construct of Kirchnerism was so bizarre and distortive that untangling it is akin to unraveling the Gordian Knot. Like Alexander the Great, sometimes it’s better to just draw one’s sword and chop the knot in one fell swoop than spend years testing one’s Boy Scout skills trying to untie it..

Conclusion

After 12 years of Kirchnerite “policies” (more like populist bootstrapping) the Argentine economy is emerging from a long dark tunnel into the glare of daylight. Frankly it’s better out of the tunnel rather than being in it and foreign miners for better or worse face a brave new world. We can say with confidence that the rules will NOT be more onerous and the forex regime WILL be more flexible. Growth should kick up and frankly Argentina looks like a better bet than the deeply troubled Brazil these days.

As a New Yorker would say “What’s not to like?”

Toronto Venture Exchange

nears an ‘Event Horizon’

As the risk of perturbing the astrophysicists amongst InvestorIntel’s followers, it has struck me in recent times that the benighted Toronto Venture Exchange is nearing the event horizon of a black hole of its own creation, with potential effects for mining market participants that border on the unearthly.

The definition of the “event horizon” in astrophysics is useful as a starting point: “In general relativity, an event horizon is a boundary in space-time beyond which events cannot affect an outside observer. In layman’s terms, it is defined as “the point of no return”, i.e., the point at which the gravitational pull becomes so great as to make escape impossible. An event horizon is most commonly associated with black holes. Light emitted from beyond the event horizon can never reach the outside observer. Likewise, any object approaching the horizon from the observer’s side appears to slow down and never quite pass through the horizon”.

The implosion of a once-stellar entity sounds like a great euphemism for the Canadian mining equities market since 2008.

Ringing the Alarm Bells

Several months back I received an email from Tony Simon of Seguro Consulting which included an interesting study of the dilemmas facing the TSXV and its denizens. The spur for his study was that close to 600 companies were non-compliant with Continuous Listing Requirements of the TSXV (Policy 2.5, Heading 2.1). It is not a pretty picture with Mr. Simon claiming that there are:

- 600 non-compliant companies
- over $2 billion in negative working capital
- over $5 billion in questionable exploration assets

This pretty much tallies with the educated guess of many market observers and investors. Maybe our calculator is broken but that signifies negative working capital of $3.33mn on average for each of those 600 companies. This I suspect is an exaggeration. It is more likely that the vast bulk of these companies have less than $500,000 in negative working capital and that might leave a few score larger entities with above the average but frankly it is harder for a larger entity to fly on an empty tank than a smaller one.

To further use an aeronautical analogy the vast bulk of the stricken companies are gliders circling the airfield perpetually waiting for a landing slot while the bigger players are B52s that tend to drop like a stone when the fuel tank is empty. As for questionable exploration assets the truism might be that if the company is bust then basically its assets are probably not realizable either. Most mining companies have several assets all of which would have a stated value on the balance sheet even if they have been found to not have any economic value and are merely window dressing.

That means that companies even in the rudest of health may have overstated NAVs. It is not exactly surprising that the biggest write-offs in recent times have been of producing assets on the balance sheets of cashflowing majors rather than patches of moose pasture embedded in the darkest recesses of Tin Pot Mines. As juniors tend to expire with little more than a puff of smoke to show where they have been and it is rare that extended asset liquidation processes are undertaken, the assets tend to be dropped when renewals come up and there is no recoverable value to them. The perennially struggling junior may not have invested too much in the properties it holds but the average of $8.33mn per miner on the distressed list seems a tad high.

The Incentive to maintain a Holding Pattern

At the control tower of TMX it reputation as an international airport is sustained by the number of successful landings. A history of too many crashes scares away the travelers…

The airport though is happy to see empty planes landing and taking off if it can collect a fee irrespective of whether the airlines are making a buck. With annual fees of between $5,000 and $20,000 per annum collectable (in theory) from the 600 companies in the danger zone the amount of lost revenue is at least $3mn but probably much higher. Beyond that there is the loss of financing fees, which is the real shakedown as these companies pay a disproportionate amount on whatever "widow's mite" they may be able to scavenge up. Sometimes on a $100K financing as much as 5% can go to the TSXV's kitty.

Then consideration must be given to the other parties with their hands out, including auditors, lawyers and the registry companies like Compushare. The latter group gets to charge quite amazing fees on transfers and then annually charge a "tax" on downloading the shareholder base for circularization for AGMs. Each of the 600 "zombie" companies has a plethora of other officially sanctioned "mouths to feed". Nowhere in this cosmos of the TSXV and its satellites does the hard-pressed shareholder get any consideration. He or she (or it) is the one that ultimately pays the price when the light is snuffed out on their investment. One wonders if companies are keep in the land of the living to give this group some hope or merely to fleece them yet one last time as reporting and annual meeting (and paying) season comes along again.

Conclusion

So any Trekkies amongst our readership are going to recognize the allusion when I say that Toronto Venture Exchange is about to go "Where no man has gone before" and frankly where no man would want to go… into a Black Hole.

While it seems like junior mining companies are the ones being drawn into the orbit of the market's black hole only to disappear into anti-matter on the other side, the TSXV itself may be getting sucked into a black hole of its own creation (stop sniggering in the back row….)..

This creates a vivid image of the Starship Venture loaded with champagne-swilling bureaucrats, lawyers, auditors and registrars paused on their own event horizon – wondering why things have gone so quiet and why the clocks have stop ticking just before they too are sucked to oblivion…. and enter an alternative universe where they have to serve the companies and the investors rather than the other way around.

Rodeo – Round-up of Latin American Mining – Part One

Pre-2000, much of LatAm was off-limits to foreign miners and had been (with the exception of sporadic openings (and closings) since the Second World War. As a result much of the mining sector had languished. Some countries, (notably Chile and Peru) had seen nationalization of substantial foreign interests. With the opening of the economies, the ASX miners were first in but largely deserted the fray early on, with only a few stalwarts persevering (mainly in Chile). The rest of the playing field was left to the TSX-listed players and a tiny crew of AIM-listed players. At one point we heard the statistic that there were 190 TSX-listed miners with interests in Mexico and we could well believe it because every second company we can upon was Mexico focused. From there they swarmed forth to all points south like an army of soldier ants (the *marabunda* as it is known in Brazil) devouring all in their path.

Having reached all accessible (and inaccessible) parts of the continent and been stopped in their tracks by the collapse of mining finance, it seems a good moment to review what has transpired, what has changed and what might happen when financing improves.. This we shall do here on a country by country basis with Part 1 covering Argentina to Colombia. Part 2 covers Ecuador to Venezuela.

Argentina – reality trumps propaganda

Argentina gets so much bad press that it is almost a thankless task trying to talk up the situation, but having lived there for 10 years, I know the place better than most… In recent years the country has been vying with Peru to be the number one gold producer in the continent, this is made even more impressive by the fact that it does not have the innumerable producers that Peru does but only a merely handful of mines. The big base metal play is the Alumbrera mine of Glencore/Yamana. The biggest disappointment is that the nearby Agua Rica project has been stuck in development mode for so long now rather than being moved forward.

Then there is the uranium potential of Argentina. We have written about that here in Investorintel before with a handful of foreign players, including U3O8 and Blue Sky Uranium, hunting in Patagonia (which under the Gondwanaland scenario is merely the "other half" of Namibia). With an indigenous and growing fleet of nuclear plants, the country is the only one serious about the nuclear industry in Latin America. Here there is potential for a "soup to nuts" nuclear supply chain.

The government is deserving of criticism for being unorthodox on so many fronts, but when it comes down to it, a lot more is happening here than in many other mining jurisdictions in the continent.

Brazil – Not Measuring Up to the Promise

Considering its size Brazil has not figured as much on the mining radar as it might. Of course it is known for its iron ore but that tends to be reserved for those with Home Team advantage (i.e. Vale) or those foreign behemoths that care to go head to head with Vale. Though we should not forget the country's overwhelming dominance in Niobium and even its small (and very long-standing) Rare Earth production.

Despite most of the focus being gold amongst foreigners the most progress in production in recent times has been companies like Mirabela in Nickel and Largo Resources in Vanadium. Farther back Eldorado Gold (EGO) used to have one of its prime assets as the São Bento gold mine. The company exited the country when that mine reached the end of its minelife but now is back with, strangely enough, a producing iron ore mine and working on opening up a gold mine.

A flock of junior explorers invaded the ex-garimpeiro territory in the Amazonian states and found fertile territory but few actually got their act together and moved to production because there was a strong "faker" element to their efforts ("the build the resource and some sucker will buy it" philosophy). The only time that worked out was Eldorado's takeover of Brazauro Resources way back in 2010.

The new wave of mineral trend seems to be fertilizer mineral plays with Verde Potash (TSX: NPK) and DuSolo Fertilizers (TSX-V: DSF).

It is our perception (possibly mistaken) that Brazilian entrepreneurs seem to be the most realistic and helpful partners that won't try and eat a foreign mining partner alive, as is the case in many other Latin climes. However, they also have little patience with those foreign explorers of the dithering variety.

Here we have the famous Carmen Miranda dressed up with a fair amount of Brazil's mineral wealth around her neck. Are they chunks of phosphate we espy?

Bolivia – Much Maligned

Ever one to side with the underdog, and in this case junior miners are not the underdogs, we have a sneaking admiration for Evo Morales and his regime that had really knocked the Bolivian economy into shape over the last few years, much to the chagrin of Wall Street analysts with their stock nostrums. As far as mining is concerned the country is still churning out product and has its historical fame as a source of tin, silver and antimony. However there is only so far that one can go (safely) with artisanal mining and that point has been reached. The rest of the riches will stay in the ground if it is left to low-tech artisanals to come up with the solution.

Bolivia's recent bad press relates to Apex Silver which was totally a case of a company shooting itself in the foot and South American Silver where the government bears a lot of the blame for doing an asset grab (presumably at the instigation of the Chinese trying to get their hands on Indium and Gallium), but which was aided and abetted by management at the company being totally torpid on the issue of developing the Malku Khota mine and instead doing the old Vancouver "waiting for a buyer" trick while the locals were waiting for jobs. That blew up in management's face..

Do not be surprised though if Bolivia "matures" as its prosperity rises and selective most favoured status is dished out to those that show themselves to be real job- and income-creators for the economy.

Chile –copper giant but not much else

Using the fallacious idea that Chile is a great jurisdiction for copper mining and thus is should be a happy hunting ground for other metals, Canada has long had a love affair with Chile which has borne very little fruit. The problem here is the TSX obsession with gold which has companies going where mere mortals fear to tread and searching the very heights of the

Andes with an attitude that all problems can be solved with money. This has led them to end up in waterless locations with gargantuan capexes and scarcely a friend in the world. It is not just juniors that have fallen for these fallacies as Barrick's Pascua Lama debacle was the mother of all mishaps. The other lesson that came from that experience was that it was the Chilean side of the border that caused the fatal blow to the project NOT the Argentine side.. Think about it..

Meanwhile Chilean projects above a certain altitude line are proving to be a "contour line too far" and purveyors of such projects should be (and are being) given the scepticism they deserve.

Colombia – promise arrested

This is the country where the myth of El Dorado (the Golden One, a man/god covered in gold) originated. It is good to remember the use of the word "myth" in the sentence. Pre-2010, with our investment banker hat on, we were regularly doing due diligence on Colombian gold projects before any of the bandwagon of juniors rolled into the country. As we didn't like what we saw pre-gold rush we were happy to NOT have anything to do with subsequent "discoveries" there and we have not missed anything as things have turned out to be a morass of environmental squabbles, residual guerilla problems, artisanal mines, locals who can't make up their minds whether they want progress (or not) and oligarchs playing in the mining space. Sounds like a recipe for problems and stagnation. You bet.. That the biggest deal we can remember was a certain Brazilian "genius" doing a takeover (Ventana Gold for CAD$1.5bn), that was ultimately part of his undoing, is not much of an endorsement either.

Ecclestone on Mining M&A – the Mid-Tier as Predators

Mark Twain said: “History does not repeat itself but it rhymes”. It seems particularly apt when commenting on how the mining M&A scene will look on the “next go around”, if this is indeed the next go around that we are currently in. We have sustained that those who hope they can “party like its 1999” or at least like 2008 will be sorely disappointed.

There will be differences from the good old days and its useful to highlight here what they might be… and what the pressures will be in the M&A market over the coming year for those predators prowling around, the potential prey and how investors should position themselves.

The main feature of what we feel might happen is that the first wave of transactions will be driven by mid- and bottom-tier companies. Such is the trauma the big companies have faced with digestion of bad deals (not to mention image erosion) from the last M&A splurge that they are going to be treading very carefully. It was at the start of September that Barrick Gold announced it was disbanding its corporate development team, a sure sign of the times.

The rationale for big players being sidelined is that the biggest bargains are at the very bottom of the market (in terms of market cap) and you just never see the likes of Goldcorp or Newmont buying a $10mn market cap stock, no matter how great its attractions. Therefore mid-tiers will do the buying. Usually they will be companies with a mine or two functioning already and then they will augment this with a stalled junior’s project thus fleshing out a pipeline which can then be funded into production via cashflow and using the existing management skillset.

In turn the mid-tiers will then merge with each other, bulking up and, in the process, making themselves potential fodder for the majors to buy or to merge with. The best example of how this can play out is New Gold (NGD.to) which started out as a merger of three smaller miners and has gradually bulked up doing progressively bigger add-ons.

The Denuded Mid-Tier

The early part of the mining boom in the last decade saw a drastic thinning of the mid-tier, in Canada in particular. Newly empowered majors swallowed them up, with the natural order of the acquisitions food-chain being disturbed. Majors would only buy juniors when they had gotten big enough to no longer be juniors. The most perverse example of the this was the now infamous Underworld Resources purchase by Kinross where a stock that should have been much lower valued (for where it was on the exploration continuum) was snapped up for a price that suggested that there was much more to it than met the eye. There wasn't!

It was only juniors who scrambled up the greasy pole of development (usually to the construction phase or at least having a BFS in their back pocket) and briefly entered the mid-tier that were picked off. Juniors that did not much more than perpetual drilling or acquisition (and dropping) of moose pasture were ignored and still will be..

Thin Pickings

More recently the long lean years of feeble financing have thinned down the field of potential targets. While it seemed like 2010 and 2011 were somewhat like the period pre-2008 and gold was exceptionally healthy price-wise it was really just a case that stories that had been stopped in their tracks with the 2008 Crash were only able to restock their treasuries during a rather tight window of opportunity before the shutters came down again and financing was choked off. This meant that the projects and mines we see now available for acquisition are not projects from 2010/11 but ones from 2008 and before. The brief recovery in markets then did not provide much in the way of fresh meat.

Spooking around in the background also is the new predatory vehicle of Mick Davis (late of Xstrata) which is all cashed up and on the prowl for properties to rebuild his empire. The recent decision of BHP Billiton to spin out its “less desirable” projects as a separate listed entity, probably signals that the fire sale of second tier projects by majors like BHP and RTZ is now at its end. This implies Davis will have to hunt amongst base metal juniors to get what he wants. It would take a very large spending spree to build a diversified mining group out of the odds and sods lying around unloved in the TSX and ASX. The interesting thing is whether this vehicle will pursue whole companies or just try and acquire projects.

Vacuuming up some of the bigger base metals projects that have been sitting around awaiting financing will also enhance the pipeline of buildable projects.

More Elbowing?

We have debated with ourselves whether Agnico Eagle (TSX:AEM)(NYSE:AEM) counts as a major or just a big second-tier company. Either way its bid for Cayden Resources (which we would classify as large third tier) provides further proof that advanced projects are very much vulnerable to interlopers. We might remind investors that companies like Agnico are desperately seeking deals to fill up their pipelines (and maybe escape predators themselves). In mid-April, Agnico Eagle and Yamana Gold (TSX:YRI)(NYSE:AUY) teamed up for the CAD$3.9 billion acquisition of Osisko Mining to get their hands on its flagship Canadian Malartic mine in Quebec. This was a tussle which Goldcorp lost as it could not be seen (as we mentioned earlier) to be paying too much.

In its latest deal Agnico has agreed to purchase Cayden Resources for CAD$205 million, or CAD$3.79 per share. The deal brings into Agnico's orbit Cayden's wholly-owned El Barqueno property in Jalisco state, Mexico as well as Cayden's Morelos Sur property, which includes three properties – La Magnetita, Tenantla and Las Calles. However, as Cayden's property cramps Goldcorp's potential of its own neighbouring pit, speculation has already surfaced of a Goldcorp counter bid.

A Key Difference

The thing one needs to keep in mind with this current trend is that majors can offer cash, while generally mid-tier acquirers or third-tier "merger of equals" deals offer, at bes,t a modicum of cash but in most cases all stock, and sometimes with not much of premium. This means that if a major does wander into a battle for control it almost instantly has an advantage in being able to offer almost the same price in cash as an all-stock offeror and walk off with the prize because cash is still best in vending shareholders' eyes.

The biggest attraction for the general marketplace of offers from majors is that it spills cash from their coffers back into the hands of investors who (hopefully) will then go into the market to reinvest their takeover gains in another name. This does not happen with all-stock offers.

Conclusion

The stop-start nature of the mining finance market has not been conducive to creating fresh meat for the carnivores of the gold mining space (and even less so in the base metals and specialty mining areas). Bidding wars will become more common… mergers of equals will be the response to provide some sort of defensive posture.

Even for those investors not positioned in the "victim" stocks the trickledown effect of higher valuations, reratings of juniors, and investors from stories that are taken out redeploying funds will give a fillip to the whole universe of listed miners.

The rare earth 'basket price' business model fantasy

Jack Lifton sent me this piece early today with what appears to be 3 title candidates: 1) Breaking the Laws of Economics and Thermodynamics 2) Why have so many rare earth junior ventures failed? and 3) What does the future hold for the rare earths?

Jack Lifton: They have failed because they were based on a triple fantasy:

1. That there is an infinitely growing demand for all of the rare earths, which was incorporated into business models that said that if we just dig out the rare earth bearing ore and beneficiate it to a "mixed concentrate" then "they" will buy it, because
2. The separation and purification of the individual rare earths by "traditional" methods is easy and, in any case, everyone producing PLS concentrates would be faced with the same costs of downstream separation and purification so the playing field would be level, and
3. Producers of high-tech products such as rare earth permanent magnets, alloys, lasers, and catalysts would race to non-Chinese producers of their raw materials and invest billions to be assured of a reliable non-Chinese supply.

That the above premises were widely believed was obviously from the very beginning of the recent rare earth run-up. In addition I noticed that the same ventures that were based on internal predictions of a dramatic and continuing growth of demand also predicted that prices would rise at the same time. I then, as now, refer to this fantasy as the “breakdown for rare earth juniors of the law of supply and demand.”

I also noted that none of the REE juniors seem to understand that the rare earths were technology-enabling-metals, which had to be separated, purified, and sometimes blended to achieve usefulness. In the overwhelming inability of the managers of junior REE ventures to understand basic chemical thermodynamics; they did not comprehend or contemplate that the extraction of the rare earths as a mixture from their minerals gave a product that was NOT the same value as the separated and purified rare earth metals, alloys, and chemical compounds. They completely failed to take in account (or, most likely, understand) the costs and processes needed to transform mixed concentrates of the rare earths and other metallic elements, which were mixed with them in nature, into individual purified rare earth commercial products with the highest value. This led to the adoption of a set of terms commonly used in mining, which were only meaningful when applied to the extraction of the mixed rare earths from their ores and inappropriate in the context of refining the rare earths, and which masked ignorance. I am speaking of the common term,” metallurgy” which should be only used to mean the extraction of the desired element(s) from ore concentrate at economical levels, and the absurd term, “basket price,” which assumes that the mixed concentrate can be priced as if it is already separated and purified into individual rare earths in commercially (customer specified) forms and formats (blends) each and every one of which can be marketed into the infinite demand space in which the marketing plans were located.

It’s very easy to blame the “Chinese” for the failure of a non-Chinese rare earth production sector to gain the traction necessary for investors to fund it to actual production of individual rare earths in customer specified commercial forms . But, in fact, the failure to begin producing the suite of rare earths outside of China that are currently deemed to be critical is due to the fact that doing so would require accepting the consequences of the breaking of laws; those of economics and those of nature.

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