

# Lifton on the global race for lithium ion battery materials



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## Cleantech & Technology Metals Summit

**Invest** in Sustainability

What are the *fundamental* business type start-ups the creation of which point to a permanent increase in demand for a natural resource? For technology metals the business type that small investors must pay attention to is “recycling”. In particular the investor must note the time between an increased demand for a natural material and the creation of or increased

commercial recycling of the end use products containing that material in order to recover the material for re-use. Lithium today is already widely recycled from electric vehicle, computer, and small consumer product batteries in China. This fact has been overlooked by non-Chinese “lithium” entrepreneurs.

It took the Chinese battery industry, the world’s largest, very little time to institute recycling once it was clear that lithium ion battery production was a stable and growing business. China has large domestic hard rock and clay lithium resources and these today produce about 25% of the world’s

total. Lately China has purchased control of or outright ownership of enough overseas' lithium production resources, so that Chinese companies (ie, China) control(s) more than half of the world's productive lithium capacity. Even so lithium ion battery recycling continues to expand within China. I met in China two weeks ago with BRT New Materials in Shenzhen. BRT today produces all of the fine (finished) chemicals that go into making lithium ion battery cells. It buys newly produced raw material precursors and it also recovers such materials from recycling for re-refining and finishing. BRT supplies both Panasonic and Samsung, for example, with 1000 tons a month of engineered graphite for lithium ion battery anodes. What does that indicate?

Three things: First of all that it is the considered opinion of those companies in the world's largest national lithium market that the demand for lithium will grow steadily and will soon outpace the supply;

Second, that the concomitant demand for battery grade cobalt and engineered graphite will also grow and, in fact, has probably already outpaced the supply of cobalt.

Third, and perhaps most important of all, the demand for technology metals and materials for lithium ion battery production is limited as much, if not more, by the existing capacity to produce downstream fine and engineered chemicals and materials than it is by lack of natural resources of these metals and materials.

So, investors should be least interested in junior ventures that are designed only to produce mineral concentrates

More interesting are those ventures that intend to produce and refine the metals and materials downstream to end user ready products from which to manufacture components (cells) of Li ion battery cells.

Most interesting are those projects that are designed to

produce finished battery components such as anodes or cathodes.

The more integrated a battery materials producer is the more likely it will be successful.

Globalization will not collapse with a bang, it will recede slowly as the world's national "great powers" decline, recover, or emerge, and, in all cases, re-align. China is forging ahead to cement itself as the regional power in Southeast Asia, currently, collectively, the site of more than half of global GDP. The USA, still the world's greatest military and economic power will now retreat but still leads a North American regional hegemony. Europe is at a turning point; it could fracture into its historical mix or re-align as two military Great Britain and France, and three economic powers with the addition of Germany.

The EU and Great Britain are already pursuing natural resource and energy self-sufficiency and the EU has identified multiple domestic (continental European) sources of lithium, the rare earths, and graphite, which were ignored until this year, for immediate developmental focus so that the EU can convert to vehicle electrification and stationary storage as rapidly as possible. Recycling projects for lithium, cobalt, the rare earths, and graphite are already in operation and many more are in process.

North America has no lack of energy storage materials as natural resources; it has up until now lacked the will to capitalize both security of supply and green production systems. This is changing rapidly.

"Global" competition for natural resources for energy storage is well underway, and China is far ahead of all of the competitors. Recycling won't achieve domestic self-sufficiency anywhere but without it there can never be either security of supply or national self-sufficiency anywhere. The battle is

joined.