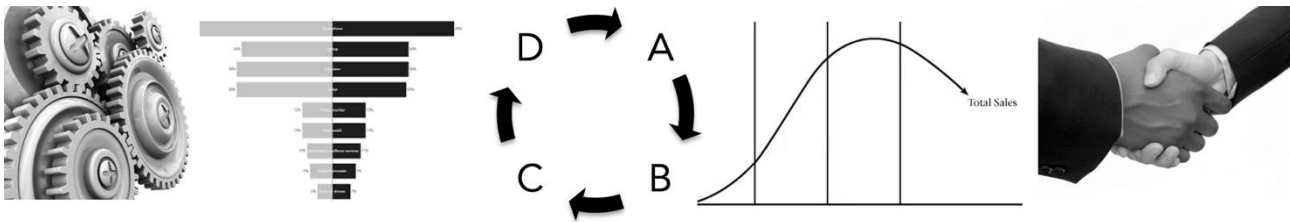


Critical minerals strategy: ending western governments' ultra-liberal industrial policy to develop a rare earth sector

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Since the 1980s governments in western countries have scaled back industrial interventionism, as the new liberal order was calling for smaller government and the triumph of market forces. Gone were the days when political leaders would make decisions beyond the next election term, which at the time led to accomplishments such as the French civil nuclear power program or Europe's Airbus air & space giant.

The global financial crisis of 2008 brought back the need for government intervention and highlighted the limits of deregulation. Taxpayers were called in to bail out private business deemed "too big to fail", in some cases bringing a profit to government coffers (GM, Chrysler, AIG...).

With the necessary energy transition the world is embarking on, the required supply of "critical minerals" is unlikely to materialise in time without government intervention. The dominance of Chinese industry in their processing (~90% for rare earths, ~95% for graphite, ~70% for lithium...) highlights the added need to create an independent supply chain, not just for geo-political reasons, but also to ensure reliability and sustainability. The current shortage of semiconductors in the world is a reminder that purely cost-driven supply strategies are excessively risky.

As a consequence of this new strategic environment, governments of the US, EU and Australia are contemplating a more hands-on approach, where they can shape the industry in critical minerals. This is a significant cultural change that many in government are uncomfortable with.

Australia is blessed with many natural resources and in particular rare earth deposits, which are used in

magnets that transmit energy from batteries or fuel cells to vehicle wheels, as well as in wind turbines. Rare earths ore (mostly monazite) is extracted and beneficiated at the mine sites into *concentrate*, which then undergoes two processing steps that could take place in Australia:

1. A relatively straightforward cracking & leaching (C&L) operation that leads to rare earths oxide *compounds*, then
2. A more technically complex separation into individual *oxides*, generally through solvent extraction (S-X).

After that, the production of rare earth *metals*, the alloying and finishing into *magnets* completes the industrial process, which mostly happens in China now and is expected in the future to also include North America, Europe, Japan and Korea.

Through the Modern Manufacturing Initiative, the Australian government intends to spend A\$1.3bn to support the critical minerals sector. It has the possibility to grant loans (via EFA and NAIF in particular) to companies that present an attractive project and may not be able to fund it all through usual financing sources (bank loans, equity injections, bond emissions). However, granting such government loans amounts to "picking the winners", which is hard to justify from a government perspective, and also presents a high risk and low return on the use of taxpayer funds; there is no control over the way the business is managed once the loans are approved and no possibility of recovering funds if the venture fails. Besides, to be effective in its support to the industry the government would need to offer loans to a number of players in the industry while only a few would likely have positive outcomes. This entails a poor return on investment and a low probability of success.

There is another way, which consists in the government investing in a new C&L facility capable of processing different concentrates and that would be available on a tolling basis to all Australian rare earths producers. This would have multiple advantages:

- Reducing the capital necessary for each project to initiate production (by a few hundred \$m each)
- Leaving the technically risky S-X to these private businesses while C&L fits better current Australian know-how
- Not being accused of picking the winner

- Increasing the possibility that among all the rare earth project companies at least a few will be successful, as they will be more focused on mining and developing their S-X technology.

After a few years, the government could exit, most likely at a profit.

This requires a profound change in the view we have on the role of government. Different times and different needs should lead to different practices. The debate must take place now.