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FT Alphaville **Commodities**

Lithium's shale oil moment

Brine it on (sorry)



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Robin Wigglesworth YESTERDAY

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You may have heard, but lithium is kind of a big deal these days. Among [other things](#), it is a crucial component in electric car batteries.

The problem is supply. As mainFT has been reporting, there's a "[global race for lithium](#)" under way, with countries and companies scrambling to secure reliable international sources or [seizing control](#) of domestic ones.

So a Goldman Sachs [report](#) on "direct lithium extraction" certainly caught Alphaville's eyes. The investment bank's analysts argue that DLE — extracting the metal from brine — could do for lithium what fracking did for the oil industry. Our emphasis below:

Direct Lithium Extraction (DLE) has the potential to significantly impact the lithium industry, with implementation on the extraction of lithium brines potentially revolutionary to production/capacity, timing, and environmental impacts/permitting.

Much like shale did for oil, DLE has the potential to significantly increase the supply of lithium from brine projects, nearly doubling lithium production/yield (taking recoveries from 40-60% to 70-90%+) and improving project returns, though with the added bonus of offering sustainability benefits and ESG credentials for its implementors (land usage from lack of ponds declines >20x, water usage and metrics improve on potential brine reinjection), while also widening (rather than steepening) the lithium cost curve.

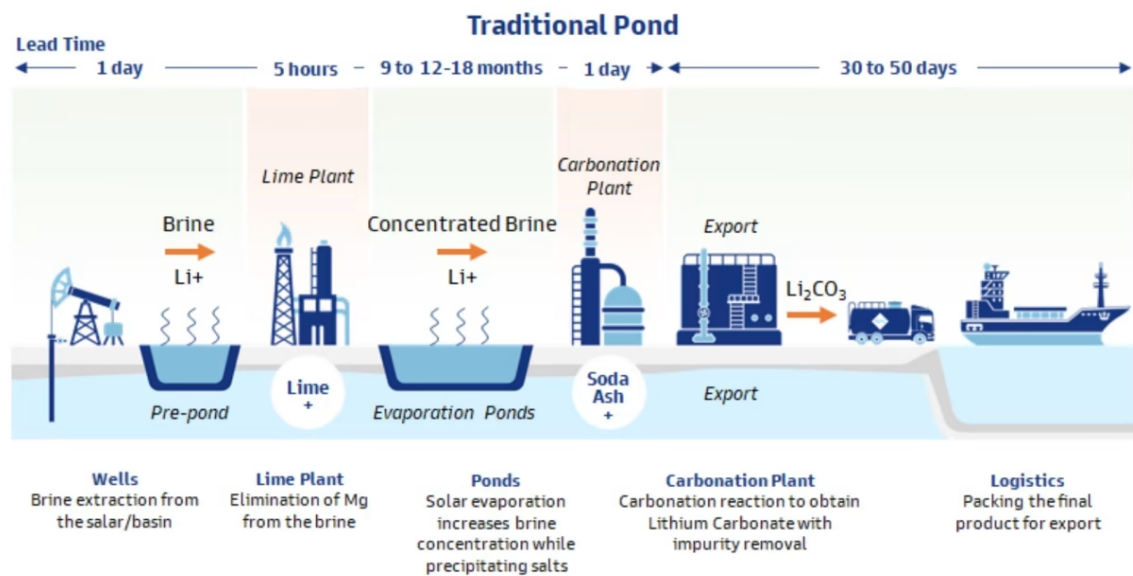
A number of proven DLE technologies are emerging and being tested at scale, with a handful of projects already in commercial scale construction (some China projects in production). Though the application of technologies used in DLE processes may be fairly new to the lithium industry, many are already utilised across other commodities.

While there may still be key challenges around scalability, water consumption, and brine reinjection, with the ongoing efforts, DLE could be implemented between 2025-2030 in both Chile and Argentina, in our view, both as greenfield projects and brownfield expansions, or to enhance recoveries of existing pond operations. Chile's recent National Lithium Policy (NLP) also pushes for new lithium projects to implement DLE for water/environmental concerns, further supporting an accelerating implementation of DLE technologies. This compares with market skepticism around commercial development of DLE by the end of the decade (from discussions with investors).

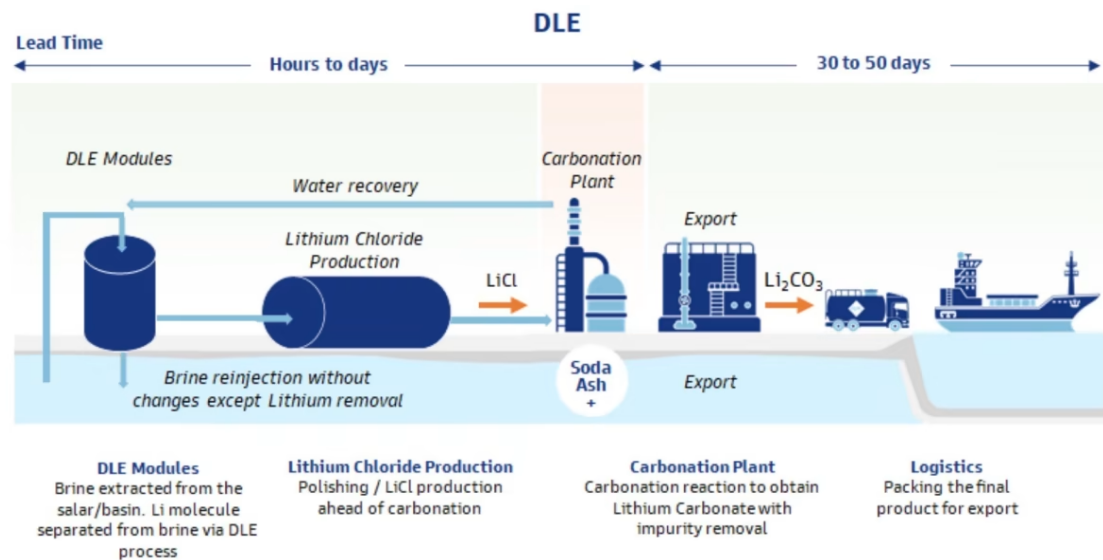
Greater production, higher profits AND better ESG credentials: the holy trinity of capitalism in 2023!

So what does all this actually mean? Alphaville is not going to pretend to understand the science behind it, but here are two GS schematics kinda explaining the differences.

The traditional way:



And DLE:



Indicative timings; pond based on Olaroz flowsheet

OK, OK that may not actually help much. But if you want more, then we've uploaded the full Goldman Sachs report here (albeit redacted in parts take out more compliance-sensitive stock recommendations).

How truly ESG-y it is is also uncertain, given the [intensity of the water usage](#) DLE entails. But at the very least it's an interesting idea, with even US energy Secretary Jennifer Granholm recently calling it a “[game-changer](#)”. And Goldman seems to agree.

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