

BREAKING FREE OF THE NEW MINE DEVELOPMENT CATCH-22

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ABSTRACT

Developing a new mine is one of the toughest endeavours out there, yet our renewable future requires a lot of minerals, from new mines sympathetic to the sustainability cause (low-impact, efficient, safe). Overlay the industry's historically low success rate and the rising cost of capital, and you have an extremely challenging environment for developing new mines. Consequently, many projects get stuck in the "Study Phase Catch-22" (can't advance beyond scoping phase without investment, can't get investment without advancing beyond scoping phase). Decisions informed by directed experience and system's thinking is one of the keys to breaking out of this cycle, however for many proponents this is their first mine development project therefore creating another catch-22.

To formulate an assistance tool, we started by imagining being able to see the components of a proposed value chain laid out visually to show the key linkages, and then being able to flex elements of the system as a function of time to immediately see the financial and process implications of doing so. Inspired by AusIMM's Technical Economic Analysis (TEA) guidelines, we then built a bespoke dynamic driver model (DDM) based tool to support decision makers.

Hosted on the Akumen platform, the DDM approach to TEA elevates the process from the flaky and opaque world of spreadsheets, offering transparency, rigour as well as the power of artificial intelligence (AI). This tool not only facilitates the evaluation of alternate processing futures, it also enables the go-forward option to be shared with potential investors interactively so they can undertake genuine due diligence. Moreover, having assisted projects break out their scoping study catch-22, the DDM remains a project team asset that can grow with the project, informing and supporting decisions as it passes through the rest of study phase and then on into production.

To illustrate these points, this paper focusses on a common scoping stage decision around the inclusion of ore sorting, which is frequently hailed as a game-changer especially for struggling projects. By working through this decision, the paper both validates the importance of TEA, as flagged by the AusIMM's, and demonstrates the benefits of realising it in the form of a DDM.

Keywords: Study phase, Techno Economic Analysis, TEA, Dynamic Driver Model, DDM, Akumen, Ore Sorting