

Leader

The spend on mining and logistics infrastructure can represent a large percentage of overall project capital expenditure, particularly for bulk commodity or remote projects. For metals and concentrate producing operations, the percentage may be smaller and be more focused on specific elements such as power but will still be crucial to project success.

Some of the key issues in this regard relate to transport corridors, shared infrastructure, and consideration of logistics and utility supply strategies. Projects requiring extensive transport corridors and access to deep water have associated investments ranging into the billions of dollars. Where production rates and geography allow, less capital-intensive options are proposed but sometimes at the expense of increased operating costs.

What all projects have in common is a requirement for early gathering of site-specific data, especially where challenging geotechnical or construction conditions are envisaged. Surveys are time consuming and perceived as challenging where capital is constrained as funding must also cover technical assessments and general project costs. However, compared to likely capex requirements, these costs are low relative to the risk of overruns, construction delays or costly rectification works resulting from inaccurate data. A good scoping study and initial surveys help identify issues and allow proper distribution of funds.

Logistics studies are important for access, construction and product export. A narrow focus on the physical infrastructure to meet study-accuracy levels means the logistics concept sometimes falls behind. A detailed baseline is imperative to determine not only adequacy of the physical route but also current usage and, importantly, to inform impact and risk assessments. Often, these areas fall outside the physical and legal responsibility of the developer and involve public or shared infrastructure.

An appropriately detailed logistical study considering the entire system is required to determine system capacity, address bottlenecks, optimise routes and assess impacts. Sometimes, it is preferable to engage in-country multimodal logistics providers to provide expertise and clarity on costs. Mining companies aren't always good logistics companies. Without a proven track record, that in itself is a risk.

The debate concerning power centres around access to the grid and the resulting cost of power against the benefits and cost of a stand-alone grid system. In general, a grid connection delivers a lower cost of power, although there are exceptions, and there may be concerns over grid capacity and stability. The economics of stand-alone grid systems are driven by project life, fuel cost and supply security. Technological developments in solar-power supply and battery storage provide alternatives, however, these are usually focused on ancillary power or cost optimisation rather than substitutes for high-demand production equipment.

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Another risk is the assumption of future grid-infrastructure connection reliant on the national utility. This can reduce project capital cost but introduce schedule risk. It can result in a 'chicken-egg' scenario, with both project sponsors requiring commitment of funds before the other can advance. In these instances, participants need to understand how far advanced the discussions are with the stakeholders.

Shared infrastructure and sustainability are also an area of increased focus. Parallel development and shared access can be necessary to broaden access to funding and limit the burden on single project development. Greater consideration is now being given to using linear infrastructure alignments for other functions such as power and water distribution.

The more outwardly strategic and progressive participants look to advance multi-user concepts to benefit the regional economy, while ensuring capacity for exports. More recently, and largely due

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to funding limitations, there is an increasing trend for third-party infrastructure developers to fund and construct dedicated infrastructure for bulk commodity export, particularly in Africa.

These focus on the parallel development opportunities where the length of development and associated costs are prohibitive for a single project scenario. The resulting agreements incorporate initial capital recoupment and associated return through tariff arrangements. These can be hard to estimate at the preliminary stage and contractual arrangements between governments and funders have a big impact on mining developers.

In the current investment climate, there is limited access to capital to commit to studies. There is continued pressure on companies to reduce costs of study development, capital expenditures, and decrease operating costs. In responding to such pressures, under-investment can lead to inadequate development of studies and infrastructure.

There is also a need for a more integrated approach between governments and sometimes companies with potentially competing interests to facilitate shared infrastructure projects to assist in unlocking resource potential and the wider sustainable economic development of a region.

