

# Overcoming cost and time overruns in construction and engineering projects

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## FORESIGHT

A global infrastructure perspective



Increased costs and stretched timelines are a fact of life for many major construction and engineering projects. This is not exactly news, but how or why it happens is often misunderstood. Transparency and public scrutiny on the cost and delivery of major infrastructure has never been greater as projects are far more visible in the age of 24-hour news and insatiable social media. Avoiding unnecessary costs and delays is important; managing and communicating necessary deviations even more so.

There are many reasons why projects go over budget and take longer. Some of them are positive. Projects that incur additional cost may claim to have some additional utility. Perhaps the design has been enhanced or the sponsors changed materials to improve the overall quality and reduce long-term maintenance issues. While these changes may affect the return on investment, there is usually a benefit to be had in exchange.

Other delays are avoidable and consequently can have a significant negative impact on the investment return. Time overruns, especially those not associated with project enhancement, are one of the biggest risks to the success of a

major construction effort – both in terms of financial investment and public perception.

These are scalable risks that we can appreciate at local and global levels in our personal or professional lives. As homeowners, we can all feel the pain if our home extension project is delayed. This problem is only exasperated in a mega-project – so much so that it is not uncommon for project sponsors to safeguard against these risks with costly contingency plans. For instance, a liquefied natural gas (LNG) producer might protect itself against construction delays by buying options to source LNG from somewhere else in case its own plant is not online in time to make the first contracted deliveries. This is the equivalent of a homeowner renting a second house beyond the planned construction phase of a home extension to mitigate the risk of it being delayed. The idea doesn't say much about a sponsor's confidence – yet professionally it's considered good practice even if personally it sounds excessive.

The concept of liquidated damages (LDs) is there to protect a client against these delivery risks. However, wouldn't every client

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prefer to have some confidence over the completion date so that the need to rely on the LDs was only a remote possibility rather than a frequent occurrence?

Most post-contract quantity surveyors and project managers will have some experience levying LDs. We resort to these contractual protections because addressing the underlying problem is far too difficult – or at least that is what it appears our industry has accepted. Such concession is ironic given that engineering solutions to complex problems and pushing the boundaries of possibilities is at the core of what the construction industry stands for. Solving problems is the nature of the industry, and to suggest that being able to accurately determine where a project is at any given time and predicting accurately when it will be completed is too difficult, is absurd.

Construction should not be subject to the uncertainty principle that physicists have to contend with. We are not dealing at the quantum level, far from it. Throughout history, humans have proven capable of planning, building and executing great things. From the Seven Wonders of the ancient world to NASA's New Horizons space probe travelling 10 years and 4.67 billion miles to help mankind explore Pluto.

Unfortunately, the biggest difficulty we have as an industry is recognizing that a problem exists. For so long now, time and cost overruns have become the norm. We have all got used to it. Railways, roads, power stations – nothing is immune.

So how can we reverse this cycle? Do we actually want to? This latter question is difficult to answer. As construction professionals of course we say we do, but in reality we all have our own invested interest in projects. In some countries, it is clear that extending a project extends the opportunity for employment. This in turn can influence apathy towards delays, which coupled with a cultural complacency for projects being late makes it harder for the construction industry to acknowledge it even has a problem.

Clients acknowledge the problem by instinctively providing for contingencies, both with additional sums and with other plans (like options on future LNG supplies). But wouldn't they prefer to just be confident in what they are buying? Clients need to have more confidence. We as investors and public stakeholders should too. We should not just prefer it, we should demand it.

So how do we reduce the uncertainty in a construction project? How can we identify those that need some management intervention or instigate damage control measures from those that do not?

The most certain way is transparency – to ensure that the information being reported on by the project is accurate and intended for the purpose of the business. This requires training and a complete re-write of how current projects are being reported. This will cause considerable disruption to the workplace, but eventually will succeed in driving out unnecessary delays.

An interim measure is to 'test' the project information that is being currently reported. The corporate internal auditor tasked with compliance is often powerless to know which projects would benefit from an audit and what information is accurate or indeed fit for the purpose the business needs. Much of an internal audit can be automated with carefully planned data analytics that proactively identify projects that fall outside the business's risk profile parameters. This puts more control back into the third line of defence – making it the essential backstop it was intended.

Reinforcing the third line of defence may seem illogical as normally these resources would be sent to the front line. However, the front line is not currently in a position to acknowledge – let alone address – the problem. Long term, wide spread reform is needed. If acknowledging the problem is one small step, dealing with it would be one giant leap. Only then will over-time and over-budget construction projects truly be news.

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