

Some Thoughts on the Major Causes of Complex Project Cost Overruns and Completion Delays

A SHORT SUMMARY

Recent reports have identified that between 2013 and 2019:

Successful delivery of projects	reduced from 48% to 17%
'Mega-projects' experiencing cost overruns of 30% to 75%	between 80% and 98%
Mega-projects experiencing significant delays	40%
Cost overruns of 50%	common
Cost overruns of greater than 50%	not uncommon
Infrastructure projects such as highways and bridges	cost overruns of 30 to 35% are typical
More complex projects (such as airports, railways and power stations)	cost overruns of at least 40% are typical
Nuclear power stations	cost overruns of 100% not uncommon

But these reports do not reflect the true full cost overruns (which will be significantly more)

There are also reports which list several causes of these cost overruns and delays and these reports reduce these causes into a series of categories. However, in the experience of High Point the significant causes of cost overruns and delays are much more varied, and do not naturally fit into these notional categories.

Ultimately the causes of cost overruns and causes originate in two periods - pre-contract and post-contract. These require quite different solutions:

- 'pre-contract' - requires some fundamental changes in the approach to procurement of, and tendering for projects
- 'post-contract' - there are numerous means by which critical causes of cost overruns and delays can be reduced or negated.

At the centre of the issues listed by High Point is the need for:

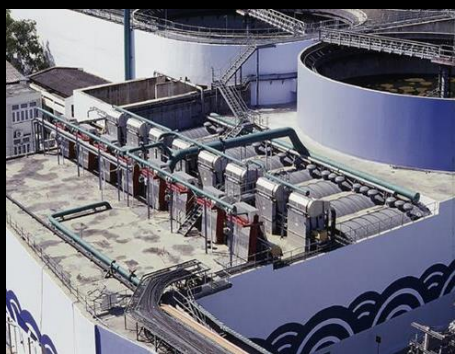
- a much better analysis and understanding of risks than provided by a "risk register"
- consistency of understanding of the risks between owner, contractor and the supply chain
- clarity throughout the contracting chain of the capacity and capability for managing key risks
- the availability of "native" rather than second hand project data
- integrity of contract documentation, information, communication, and forecasting.

Generally Reported View of Project Cost Overruns and Completion Delays

- a recent study identified that between 2013 and 2019 the probability of successful delivery of projects fell from 48% to 17%
- a different study suggested between 80% and 98% of mega-projects experienced cost overruns of 30% to 75% and at least 40% of those projects were late
- a further study stated that cost overruns of 50% are common and more than 50% are not uncommon
- other studies have shown infrastructure projects such as highways and bridges have typical cost overruns of between 20% and 35%
- but more complex undertakings such as railways, airports and power stations can have much higher cost overruns – and nuclear power stations have invariably shown increases many times this



- cost overruns have remained high and constant for the past 70 years.



The financial impact of these overruns is invariably shared by investors, sponsors, lenders, owners (both public and private), contractors, subcontractors, equipment vendors and material suppliers. And the late completion of projects has the additional effect of providing less than the anticipated benefits for taxpayers.

But most importantly:

THE TRUE COST OF THE OVERRUNS IS THE LOSSES SUFFERED BY EVERYONE INVOLVED AND THESE TOTAL LOSSES ARE NOT QUANTIFIED NOR ADDRESSED IN ANY REPORTS.

All studies carried out to date list similar key causes of cost overruns. These causes are all valid but there are others of equal or more importance. Those reports also describe how cost overruns can be prevented or overcome, but again there are other things of equal and more importance which are required.

The Most Common Reasons Cited for Project Cost Overruns and Delays

The following categories are often listed as the most common causes of project cost overruns and delays:

- **technical challenges** [*including scope changes and unforeseen events (such as severe weather)*]
- **labour and material cost inflation** [*especially on lump sum and fixed price contracts*]
- **optimism and underestimating** [*in planning, tendering and risk assessment*]
- **political and organisational pressure** [*and decisions made to ensure strategically important major projects go ahead*].

Many reports suggest how these overruns and delays might be significantly removed. Perhaps the most common suggestions are:

- **high quality 'project business plans'**
- **use of appropriate procurement models**
- **use of a delivery team with a proven track record**
- **project wide budget accountability**
- **use of new methods and technologies such as Business Information Modelling ('BIM').**



The High Point Experience of the Most Common Causes of Project Cost Overruns and Delays

In High-Point experience the reasons for project cost overruns are much more varied than those listed above and should be categorised differently. Significant financial uncertainty for all participants is invariably the result of a combination of some (or all) of the following:

- **inadequate sponsor/owner budgets and contractor tender prices** [*often deliberately pitched low to secure funding or approval to proceed, or to secure the contract for the project*]
- **unrealistic completion schedules** [*which were never deliverable*]
- **budgets and tenders based upon incomplete, imprecise, or wrong information** [*and this is particularly so where civil engineering and building works is being developed alongside high technology where designs are incomplete and interface requirements and conflicts not fully known or understood*]



- **insufficient definition of requirements** [leading to significant scope creep, variations, and claims]
- **incomplete, inconsistent, and incompatible project documents** [noticeably between contract conditions, specifications, and drawings]
- **lack of real understanding of risk assumption and responsibility for management of fundamental risks** [and this is most noticeable in projects with high technology content, often with poor clarity in contract documents management of design development, and subcontractor and supplier deliverables]
- **lack of understanding of the impacts of the combination of design, engineering, construction, scheduling, contracting and financial risks** [many understand each of those risks individually but very rarely are they considered in combination]
- **insufficient consideration of capacity and capability to carry and manage risks, lack of transparency of who is carrying those risks, and critically how risks cascade through the contracting structure** [and continued use and reliance upon totally inadequate and unfocused 'risk registers', and little use of a 'risk matrix']
- **unexpected circumstances or challenges** [such as major scope changes, exceptional weather, 'force majeure' events, and supply chain failures]
- **the drafting of contracts with programming and scheduling requirements which are beyond the capability of many contractors, subcontractors, and suppliers** [and, therefore, all programmes and schedules lack the necessary quality or reliability]
- **contracts focused on reporting historical progress rather than outturn forecasting** [and this manifests in poor management of physical, schedule and contractual conflicts and interfaces, and often wildly inaccurate completion and 'costs to completion' predictions]
- **inaccurate (and invariably late reported) critical contemporaneous project information** [resulting in executive decision-making being wrong or too late for optimum impact]
- **lack of impartiality of project teams and lack of transparency of the 'project truth' leading to:**
 - *emotional attachment to issues and inability to make objective assessments*
 - *optimism and/or bias in project reporting*
 - *accuracy of reporting becoming secondary to protecting contractual entitlement or denying contractual liability*
 - *progress reports being received too late by those authorised to make critical decisions*
 - *lack of direct access to native information of key players (often major material suppliers or critical equipment vendors)*
 - *no adequate means of independent verification of what is being reported*
 - *updated completion programmes becoming increasingly unrealistic (often manifested in increasingly shorter periods for the most complex and often least understood activities such as commissioning, testing and trial running)*
 - *insufficient senior management/executive engagement or intervention at the most appropriate times*
 - *'mega-projects' still run as "projects" rather than as "businesses".*



This all too often leads to:

- **UNREALISTIC SITE REPORTING**
- **UNCONTROLLED AND UNMANAGEABLE PROJECT COST OVERRUNS AND DELAYS**
- **ONGOING UNCERTAINTY OF PROJECT OUTTURN COST AND COMPLETION DATES**
- **INACCURATE INTERNAL CORPORATE REPORTING**

- SIGNIFICANT UNCERTAINTY REGARDING ENTITLEMENTS AND LIABILITIES AND CLAIMS WHICH CANNOT BE FACTUALLY SUPPORTED
- INAPPROPRIATE OR INCORRECT PROJECT AND BUSINESS DECISIONS
- BALANCE SHEET AND FINANCIAL REPORTING SURPRISES

Requirements for Reducing or Overcoming Cost Overruns and Delays on Projects

In High-Point experience those causes of cost overruns and delays which originate before contract cannot be overcome at site level.

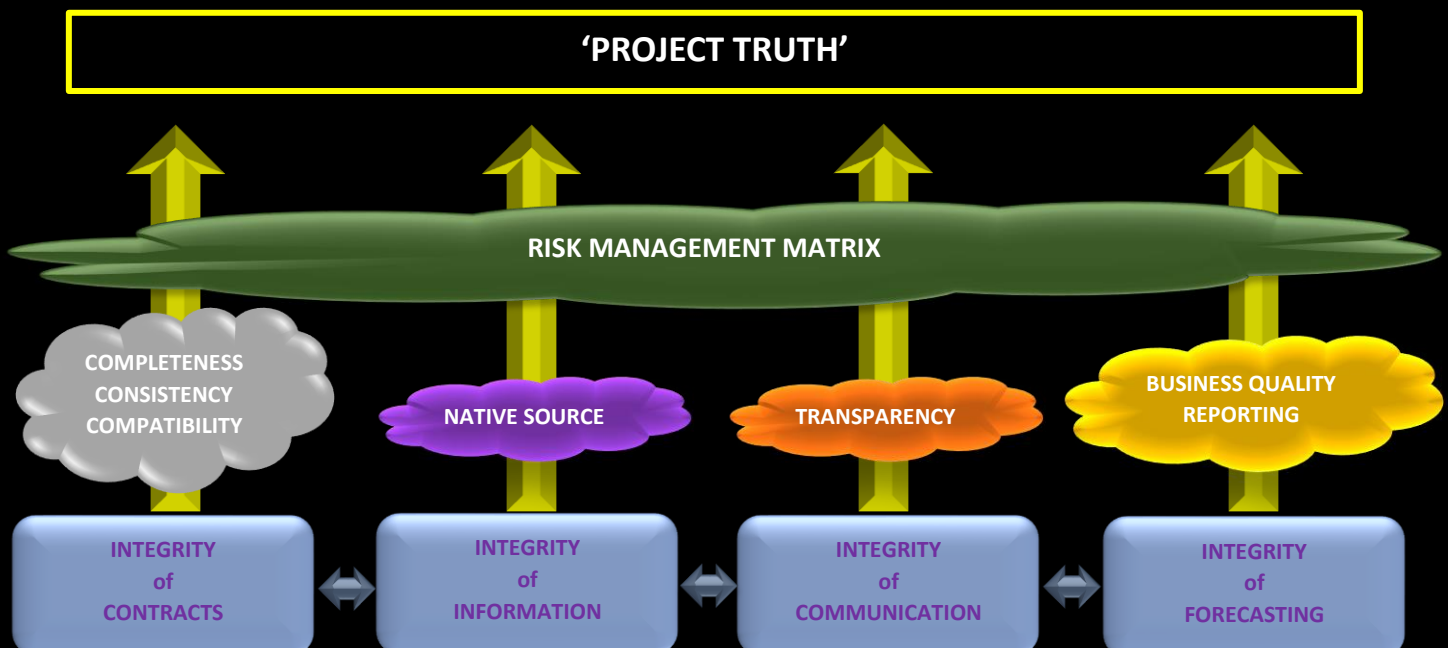
Clearly the strategic misrepresentation of predicted costs [*budget decisions driven by political and organisational pressures to ensure funding or the low pricing of tenders*] is reckless and perpetuates a disregard for the damage and losses to all involved in the construction industry.

The actions which High-Point believes can be made post contract, and which can significantly reduce or negate losses and delays are:

- full commitment of executives from the outset to transparency and open discussion
- early all-party workshops to ensure clarity in, and complete understanding of:
 - responsibilities and liabilities/accountability
 - where 'balance sheet threatening' risks are to be carried, how they are to be managed, and the cascading effect of risk through the contracting structure
 - financial and management capacity and capability to carry risks
- access to first-hand site progress and resourcing data to enable the true facts to be understood and to facilitate optimum and timely decisions
- focused reporting on outturn forecasts rather than historical progress
- significant improvements in the form, content, and quality of project financial reporting
- objective executive engagement and/or intervention when required or necessary.



THE MOST FUNDAMENTAL REQUIREMENT IN EVERYTHING IS ACCURATE, CONSISTENT AND TRANSPARENT DOCUMENTATION AND COMMUNICATIONS WHICH WE DESCRIBE AS THE 'PROJECT TRUTH'



There is nothing more important than the quality of contemporary site records for managing risk and for determining entitlements and liabilities.



The High-Point Experience

POWER GENERATION

350+

POWER GENERATION PROJECTS



Combined-Cycle
Hydroelectric
Nuclear
Renewable
Thermal

TRANSPORTATION

250+

TRANSPORTATION PROJECTS



Airports
Bridges
Highways
Maritime Facilities
Rail Systems
Tunnels

OIL, GAS AND INDUSTRIAL

450+

OIL, GAS AND INDUSTRIAL PROJECTS



Manufacturing
Mining
Oil & Gas Processing
Pipelines
Utilities

COMMERCIAL AND PUBLIC BUILDINGS

300+

BUILDING PROJECTS



Hotels & Resorts
Institutional Facilities
Offices & Retail
Sports & Leisure

PROCUREMENT TYPE

PPP, PFI, IPP, IWPP and PROJECT PARTNERING, EPC, EPCM, DESIGN AND BUILD, DESIGN, BUILD and OPERATE, EARLY CONTRACTOR INVOLVEMENT and many HYBRID FORMS

TYPICAL CLIENTS

INSTITUTIONAL and PRIVATE FUNDERS, GOVERNMENT AGENCIES, PRIVATE SPONSORS, INVESTORS and DEVELOPERS, INSURERS, MAJOR INTERNATIONAL CONTRACTORS, EQUIPMENT VENDORS/SUPPLIERS and OPERATORS

If you require any further discussion or explanation of the matters described above, then please let us know.

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