

Infrastructure

Managing infrastructure investments

Capital markets continue to generate low and volatile returns. Therefore, institutional investors look for more opportunities to backfill their investment pipeline generating stable and attractive returns. Traditional regulated asset opportunities are limited and new opportunities need to be identified. On the other hand, strategic investors and the public sector are challenged to find new means of financing. New operating and partnership models to renew and expand public infrastructure need to be established. This is a win-win for both market sides if volatility and project risks are contained and stable financial results are achieved.



Infrastructure investment needs in the OECD are estimated to be in the range of USD 71 TR (3.5% of GDP) until 2030. This offers opportunities for strategic and institutional investors.

- **Strategic investors:** There is opportunity to participate in asset investments. However, these types of investments have exhibited significant risks which have been underestimated. Only to some degree these risks have been addressed in contractual structures.
- **Financial investors:** In the broader investment community, there is still the belief that all infrastructure assets exhibit 'more or less' stable risk profiles. Unfortunately, this is not the case. There are very distinct asset risks as well as fundamental differences in the composition of market vs. political/ regulatory risk depending on the infrastructure asset class.

Some of these risks materialize already in the construction phase.

Cost overruns in infrastructure are substantial

An analysis of more than 1600 infrastructure projects reveals, that cost overruns in the construction phase are substantial.

- **Dams** is the asset class with the most significant cost overruns.
- **Transportation network infrastructure** with rail and BRT shows cost overruns to be at around 40% whereas roads score slightly better with overruns of about 24%.
- **Individual infrastructure projects** finish the construction phase on average with a 30-40% cost overrun.

These figures show that infrastructure projects face a significant NPV impact from the very start. Taking them into a profitability zone during the asset lifecycle is quite challenging. Recent infrastructure projects could be

quoted which finished the construction phase with

cost overruns being multiples of the initially budgeted construction costs.

What are other typical pitfalls which can be observed with infrastructure projects?

Typical pitfalls in infrastructure projects

Reviewing infrastructure projects which are currently in the planning and construction phase surfaces typical pitfalls

- **Governance structure is unclear;** contracts are not transparent and risk ownership is not well defined
- **Project objectives defined are too narrow** e.g. completion is not sufficiently linked to budget requirements; just costs of completion are considered but lifecycle costs are neglected
- **Revenue risks** are not sufficiently considered; focus is on costs only
- **Asset life** is overestimated but is a major driver as it will determine maintenance and replacement needs; different technical options might even allow extended operations at higher total costs but lower annualized costs
- **Regulatory and country risk** are not

- **Organizational hurdles** lead to limited institutionalization of learnings about asset performance which would otherwise contribute to increased profitability and stable financial infrastructure asset performance
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Capturing value in the investment process

The above examples show, infrastructure project value might be impacted by value drivers beyond construction costs. In a traditional investment processes these might not be sufficiently captured. Why is this the case? Infrastructure as an asset class demands some slightly different perspectives. Assets are not as liquid as other type of investments, volatility for a specific investment might not be in line with peer group volatility (as it might exhibit one-off characteristics). Operational aspects might have a more severe impact in an individual investment decision compared to a liquid traded equity investment. Additionally - depending on the respective infrastructure asset class - market risk is complemented by political risk. Some investors avoid this risk type, others explicitly seek regulatory/ political risk exposure.

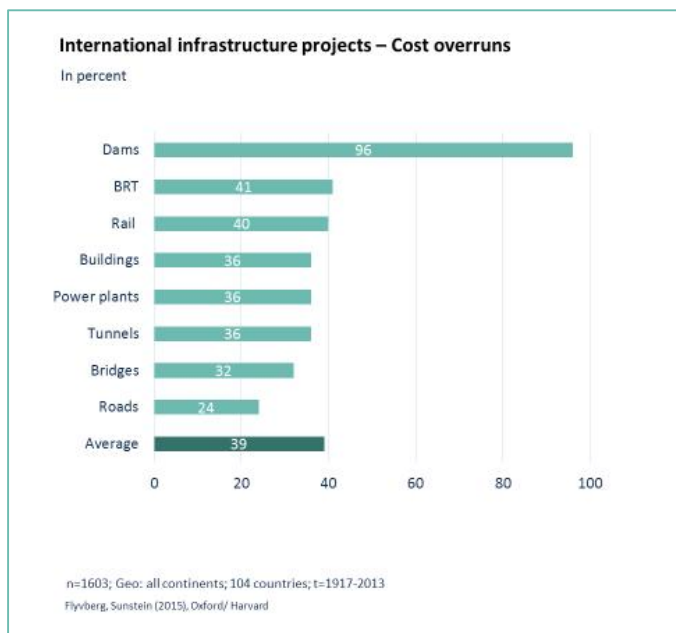
During establishing an asset portfolio structure and scouting assets, it might be worthwhile to establish a view on value drivers which are acceptable for an investment (e.g. one might not be willing to enter certain regulatory or political risks).

In the **pre-investment evaluation,** reviewing lifecycle costs and the revenue structure will shed some light on the stability of the business case. In case potential issues are discovered, technical or contractual mitigation options might exist.

Value levers in **operations** should tie in with the business case established in the pre-investment stage. This allows to manage asset operations in line with the investment rationale.

At the end of the asset lifecycle, major overhauls or replacements are required. It is important which ones should be conducted and how this links to the **re-investment** rationale or whether this extends the asset life.

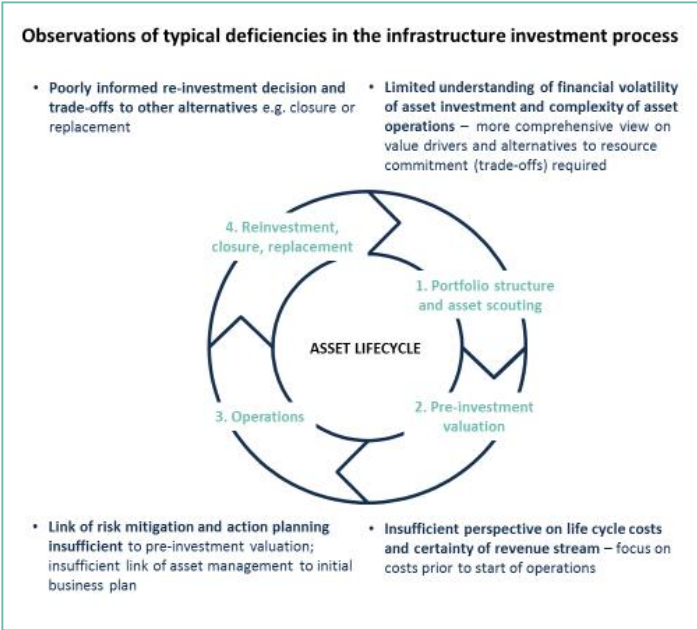
Example **'Portfolio structure and asset scouting'**: In the absence of tangible infrastructure investment opportunities, an asset manager considered opportunities to invest into clean tech. The questions raised was whether these opportunities would exhibit infrastructure like cash flow characteristics. In case they would deviate from infrastructure characteristics could a premium be monetized to compensate for a higher risk exposure?



sufficiently understood impacting the exposure to 'market' vs. 'regulatory/political risk'

Example ‘Pre-investment evaluation’: A strategic

Therefore, it is important to establish a perspective how project value might be impacted prior to committing to an investment project.



A value perspective should be forward looking and hence apply predictive perspectives and methodology. Just extrapolating historic findings will not suffice.

Benefits of a volatility based financial perspective

The interconnectedness of global markets has increased. Hence, linear planning is less relevant in today’s environment. A volatility based financial perspective is necessary to gain insights into sensitivities and

1. **Portfolio structure and asset scouting:** sound overall financial perspective, scouting action plan and investment priorities
2. **Pre-investment valuation:** comparison of individual assets against investment concept, value decisions across time enabled, baseline for (future) performance management
3. **Operations:** business case linked to operations, mitigation planning is enabled, prioritization of maintenance activities
4. **Re-investment, closure and replacement:** holistic asset management view allows better (re-investment decision), feedback of historic operations data into finance function for better (future) asset operations

Applying a concise and stringent volatility based financial management rationale across the asset lifecycle will lead to better asset performance. It will also allow to identify investment opportunities which might be not as obvious as others. In a constrained opportunity space this is an important strategic advantage.

investor considered to repower a fossil power plant in the UK. The intention was to burn biomass and pocket Renewable Obligation Certificates (ROCs). At that time, there was a political debate to change the ROC allocation mechanism. Additionally, as the ROCs are traded, analysis conveyed that a change in the allocation scheme would significantly impact the certificate market price. Thus, the investor decided to postpone the investment decision.

Example ‘Operations’: An investor reviewed the key value drivers of a major highway project. The total traffic expected was in line with expectations. However, the mix of truck traffic vs. car traffic was off. Truck traffic was much more substantial than car traffic. The good news was that this led to higher revenues than expected. However, maintenance costs were much higher than expected and the forecasted lifetime of the asset was reduced significantly. The investor initiated several initiatives to bring profitability back in line with expectations.

Example ‘Reinvestment, closure, replacement’: A strategic investor considered to renew its fleet of power plants. Therefore, the investment budget had to be defined. Renewals, capacity additions and re-powerments had to be timed. Analysing investment needs and run time expectations conveyed that in some instances, moderate investments would be sufficient to modestly extend the asset life. For other assets, the risk that main components would break during an extended asset life were so significant that an asset life extending investment would not be justified.

dependencies on key value drivers. Does this provide protection from value leakages in the future? No – future market developments are still uncertain. But a sound understanding allows to manage assets for superior performance across the asset lifecycle. It also allows to better integrate a value view with an operations perspective.

Are perspectives of strategic and financial investor different? Yes, they are – strategic investors focus more on strategic and operational questions; financial investors focus more on financial asset characteristics. However, going forward both perspectives require to be integrated further. If policy makers contribute their part to contain risk, more capital will flow into the sector opening new investment opportunities.

What are the benefits across the asset lifecycle?

