

PRIVATE EQUITY

Investing in Africa



Best Practices

Best Practice in
Private Equity Investment
in Africa

Chapter 6

Managing Risk in Infrastructure Projects in Africa

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Introduction

In 2006 a World Bank country memorandum stated that high labour costs and low productivity were central issues in Djibouti's infrastructure sector that exposed the Djibouti-Ethiopia Railway (or Chemin de Fer Djibouti-Ethiopien, CDE) to risks such as overstaffing, high wages and lack of skills that are usual problems faced in all infrastructure sectors in the country.¹³ Ten years later, in 2016, the USD 3.4 billion Addis Ababa-Djibouti railway was inaugurated. This major civil engineering landmark was 70 per cent financed by China's Exim Bank and built by a consortium of Chinese companies, namely China Railway Group and China Civil Engineering Construction. As a condition for financing, Chinese personnel will staff operations as controllers, technicians and station masters for the next five years, after which Ethiopians will be employed.¹⁴

This project serves as an example of how some key risks in the African context are usually addressed, by choosing foreign investors that bring with them financing and operation capabilities. One of the key contributions of a project manager is to turn as much uncertainty as possible into treated risk so that project sponsors can clearly decide on the amount and classes of risks they are willing to accept. Risk management is the processes of identification, assessment and prioritization of risks to minimize the effects of negative risks and maximize the impact of positive risks. Risk differs from uncertainty in that it is measurable and can be quantified using metrics defined by the risk owner.

African countries, despite huge cultural diversity, have historically some common structural characteristics such as low levels of urbanization (but rapid rural-to-urban migration), significant informal sectors, abundant natural resources, low levels of human capital, low per capita income and a systematic gap in basic infrastructure. Given these gaps, African countries can be considered lands of opportunities requiring attention on the most basic sectors of the economy, such as infrastructure, natural resource management, food production and labour force qualification.

Infrastructure projects are particularly prone to failure, delays and cost overruns in African countries, where there is the greatest need for them. The root for this can be traced to the intrinsic complexity of such projects, combined with the high degree of uncertainty, either

¹³ ICA Meeting: Financing Transport for Growth in Africa, December 2007

¹⁴ <http://www.bbc.com/news/world-africa-37562177>

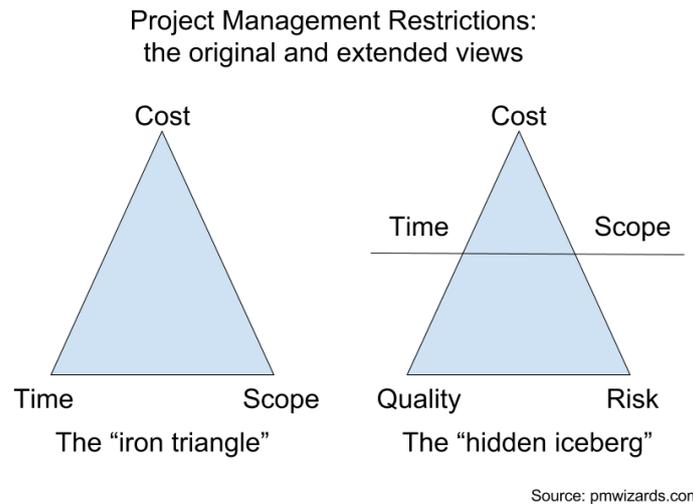
political or economic, in the region. As an example, we can mention the portfolio of coal and natural gas projects in Mozambique that were expected to overhaul the country's social landscape by adding major infrastructure and industrial developments, but today they are facing major economic, social and political challenges. In addition, for highly complex multicultural environments, with high dependency on qualified expatriates to augment the labour force and underdeveloped regulatory frameworks, risk management should focus on the basic elements that can impact returns expected by the investors: delays in project schedule not only usually translate into cost overruns but also mean dividends will come later than expected.

The project management “iron triangle”, aka the “triple-constraint”, is one of the first and most useful concepts when managing risks in highly complex environments, since it helps the management team to focus its time and efforts on the main elements that have the potential to derail project implementation. The triple-constraint is that given two of scope, time and cost, the third is given. Any changes to two of them will determine changes in the third: for example, it is not possible to expand the scope (that has delivered more than previously defined) without expanding the project completion time with corresponding impacts to the budget.

When these elements are altered without the proper treatment, an “extended triangle” – also known as the “hidden iceberg” (see Figure 1) – comes into play and two other elements may be affected, namely quality and risks. If the proper budget is not allocated for the extra scope, either quality will suffer or the level of risks will rise as the security margins get thinner and thinner.

Figure 14 presents a simple way to understand how the five factors are interconnected. The original view (left) relates three factors; when their proportions are violated, two other parameters come into play that are more subtle and difficult to account for. This new version (right) is a “hidden iceberg” to allude to deeper restrictions, even if they lie below the water level, out of sight.

Figure 14: The iron triangle in its original and extended versions



These elemental project variables are highly interconnected, such that if you change your scope, for example, there must be an impact on cost and/or time, or by changing the implementation time you will consequently change the cost and/or scope. These three basic elements of project implementation must be under strict control in order to guarantee the investor's expected return.

Junqueira (2016), based on Merrow's (2011) thresholds for failure of industrial megaprojects, has identified that up to 62 per cent of infrastructure construction projects in Brazil fail. This poor performance when building infrastructure contributed to an economic loss of at least US\$161 billion dollars in 2015, representing almost nine per cent of Brazil's GDP. The main reasons found for such a significant failure rate in Brazilian infrastructure construction projects were: (a) failure in cost estimates; (b) lack of proper planning; and (c) lack of proper scope definition and control. The Brazilian case is similar to that observed in African countries where the lack of early risk management in the most basic variables of a project, namely scope, time and cost, leads to technical and financial project chaos.

Lessons learned

The project lifecycle can be classified into three main phases: (1) development, (2) construction and execution, and (3) operation. Junqueira (2016) also identified that poor decisions made by the sponsors or the management team during the development phase are by far the biggest contributors to project failure. In brief, proper management of constraints during the project development phase is the key to a successful outcome, as all the shortcomings will appear during the implementation (or construction) phase of the project, where they are visible to external parties.

Building on our development and implementation experience in sub-Saharan African countries, we have listed the seven most common issues that investors usually face when dealing with complex projects in difficult environments. Identifying these harmful attitudes and creating

competent processes to avoid poor decisions are part of the responsibility of the project management team. This often translates into time invested to educate project sponsors to get better support for project development and execution.

Issue #1. Make-believe schedules

Patience really is a virtue, especially when it comes to scheduling. Scheduling mistakes alone have doomed projects more than any other factor alone.¹⁵

The investor must be realistic during the early planning process and allow things to move at the pace that they need. Experienced professionals know the right pace and the investor must trust them (or hire someone else they can trust). Once the investor starts demanding unrealistic goals for the project team this only causes problems, because they may start lying and cutting a lot of corners to reach the desired schedule. This does not mean, however, that all projects need to have a slow pace. The point is that if you take too many risks when it comes to scheduling by adopting baselines (benchmarks) that are more aggressive than the ones very well known by the market, this will likely just fall apart during the execution phase. There is an appropriate pace for the project to be developed and completed and it should be respected to ensure a successful outcome.

If a project does not fit into the normal and reasonable schedule, the evident conclusion is: it is not feasible and/or bankable and must be abandoned or postponed for the time being (or until better conditions are possible). Taking unnecessary scheduling risks on highly complex environments for project implementation is like Russian roulette, you don't participate if you don't have to.

Issue #2. "We will take care of the deal later"

In order to be successful, the project and the business deal can be developed together, but the deal governs and comes first. The deal, or the business case, is the strategy behind the project that will be reflected in a contractual arrangement for investing. This is necessary, because during the deal phase, the boundaries are clearly established and the project functionalities are defined, which will directly affect the scope of the project with subsequent implications for both cost (budget) and time (schedule) plans.

The investor should not be so optimistic as to believe that "the deal is something that can be worked out later", because this will ultimately set her up for failure when, later, the scope will be forcibly changed to adapt to changes in the updated business case.

When developing Porto Caio, a new deep-sea port in Angola, the approach was to initially focus on the port business case and leave the business case of the surrounding areas—industrial, commercial and residential zones—for a later stage. When talking to Oil and Gas companies that will occupy the industrial zone, the project team realized that a port located onshore, as

¹⁵ <https://www.pmi.org/learning/library/common-scheduling-mistakes-avoid-7221>

originally envisioned, will not be possible, since O&G infrastructures would interfere with the port's operation. The solution, in order to support the deal, was to change the port design—relocating it 10km offshore. This completely changed the project scope, time and cost assumptions, but it is still on time since the project was still under development and not under construction when the change was made.

External advisors are brought in as consultants for their knowledge, but they may have incentives to push for a quick conclusion of the deal to collect their commission. They may relegate the fine details to lawyers that know little about the peculiarities of the deal. As an example, a deal to invest in a juice factory requires the acquisition of new equipment to produce larger quantities. A consultant is brought in to define the best equipment, but no-one takes into account the limitations on arable land around the processing facilities. The investor may realize a significant loss after the new equipment is installed, and the consultants are paid and gone, but not enough raw material is available to take full advantage of the facility.

Issue #3. Cutting upfront costs and time

Frequently, seed or venture capital for early stage project development has not even been included in the investor's development budget in African countries. This restricts the investor's capacity for early definition of key project characteristics that will have huge impacts on the business cases. A project at this early stage of development needs access to the riskier capital that the investor could deploy. Considering an infrastructure project development, let's be clear: it is a sizeable amount of capital to spend. Summarizing, there is a lot of time and money at risk during the early phase of the project development, and for this reason, it is very tempting for the management to skimp on these project front-end costs. But that is a very costly mistake for the project owner, and this situation is very well known by any project professional. It is definitely a lot of time and money to invest upfront when dealing with sizeable projects, but not investing the proper front-end costs during the development phase will result in poor scope development that will turn into higher costs and delays during the execution phase.

If the investor is not prepared to put the proper upfront, business discovery costs at risk, it is clear that she should not invest in this sector. For this type of investor, with a low appetite for risk, it is better to focus only on mature projects in later stages of development, which will plausibly bring lower returns to their portfolios due to the lower risks involved.

Issue #4. The "cost reduction task force"

It can be very risky to the project, not to mention counterproductive, when investors constantly keep asking managers to cut costs, without any changes to scope and time for project completion.

It can be common for financially focused minds to pursue cost-cutting exercises, but this is counterproductive unless some major functional requirements are also changing. The project team in this situation will do one of these two things: they will either change assumptions underlying the market estimates, or they will actually cut scope, knowing that it could come as a need later. Either way, the project is headed for a big overrun.

Issue #5. The Risk of Transferring Risk

In theory, risk transfer to third parties (e.g. contractors or insurance companies) is a valid way to reduce the impact of negative risks on a project. One of the biggest illusions in the investor's mind is that contractors will carry all the implementation risks of their projects as soon as an impeccable contract is signed.

Experience, especially in frontier markets, gives us a very different perspective. Contractors can even agree to carry "all" the risks for the investors but at the moment that the contract is not feasible for them anymore, they simply abandon execution halfway, leaving investors with unfinished projects (and undervalued assets), praying for the client's understanding and going to court to recoup their investment in order to restart the hiring process. When this happens, investors need to pay some huge premiums to second or third contractors to complete the unfinished business started by the first defaulting contractor, causing unforeseen damages to their business plans.

This situation often happens because these contractors are mainly reliant on the project cash stream and simply do not have the proper liquidity to cover losses that often happen when large and complex projects fail. Investors must avoid the "getting too greedy" attitude before closing any service agreements, and must balance properly the risks inside these agreements to avoid paying for them twice.

Table 2 shows data from the World Bank regarding time required to enforce a contract in some countries. It is interesting to observe that in frontier markets, as most of the African countries are, the time required to enforce a contract doubles or triples when compared to more mature markets.

A nice way to proceed is to ask yourself, "are my contractors, or my service providers, able to make a fair return on this deal?" In the negative case, the investor may be working against his/her best interests when one considers the uncertainty (and long delays) experienced in African courts.

Issue #6. Fair allocation of the project's value

Project stakeholders, being internal or external to the investor's team, are the ones who will define whether a project will be successfully implemented or not. Individual stakeholders can be powerful enough to define the project's future. This could be the project sponsor or a political authority, or a collective such as local communities or unions, or an Engineering, Procurement, and Construction (EPC) contractor. Stakeholder management is an ongoing exercise of balancing costs against rewards for each stakeholder or group of stakeholders involved. Complex capital-intensive projects, due to their large land usage, tend to have complex stakeholder arrangements. The key attitude to adopt in order to have a strategic alignment, is to understand and deliver a fair amount of the project's value to the stakeholders involved.

Table 2: Time required to enforce a contract (in days)

Country	2006	2012	2016
Frontier Markets			
Algeria	630	630	630
Angola	1011	1296	1296
Botswana	987	625	625
Cameroon	800	800	800
Guinea-Bissau	880	1096	1071
Kenya	465	465	465
Nigeria	457	457	510
Madagascar	871	871	871
Mozambique	1010	950	950
BRICS			
Brazil	731	731	731
Russian Federation	281	270	337
India	1420	1420	1420
China	406	406	453
South Africa	600	600	600
Developed Economies			
United States	300	370	420
United Kingdom	404	437	437
Australia	395	395	395
Singapore	120	164	164
Japan	360	360	360

Source: World Bank (2017)

Local communities, who will have their day-to-day lives affected by the project, consistently want to see that the investor's team is concerned about hiring local people to develop, build and operate the asset. They also want to know if their land will get more valuable after the project's implementation, or even whether the investor will take measures to reduce the excessive dust caused by the sharp increase in traffic, or take care of the road conditions, which might deteriorate rapidly due to the project's execution. Each stakeholder, individually or collectively, expects to receive part of the project's value—either directly or indirectly—and ignoring these needs is flirting with disaster.

EPC contractors expect to make money out of their contracts and remunerate their employees fairly. Local labour unions want their people employed with a genuine concern about their training, health and safety conditions. The investor's team expects to have a good working environment and conditions to beat the challenges that they will face. Asking questions about what motivates each stakeholder, internally or externally, and allocating and communicating

the value that is delivered to them, is crucial for project implementation success in African countries.

As an example, during the development and implementation of 280,000 hectares of a forest management project in Angola, the investor understood that engaging the several local communities in the project will foster the local support needed in order for the project to succeed. Illegal logging and fire hazards are among the greatest risks that the investor had to manage. Engaging the local community in these tasks, by giving them part of the project's value through jobs and future social development perspectives, was the key to the project's success.

Issue #7. Killing the messenger

In Plutarch's Life of Lucullus,¹⁶ king Tigranes made a dangerous decision: "Since the first messenger who told Tigranes that Lucullus was coming had his head cut off for his pains, no one else would tell him anything, and so he sat in ignorance while the fires of war were already blazing around him, giving ear only to those who flattered him". Needless to say, Tigranes lost the battle.

It is unheard of that a project manager or project director could wake up asking how he could fail his project. It is as common as unhelpful for investors to criticize the project management team without a clear grasp of the context. Being "too busy" is not an excuse for any investor that will ultimately have to answer to shareholders and clients.

The attitudes 1 to 6 sum up the friendly fire that project managers have to deal with. What often happens is that they will join the team at the end of the development phase and will be the ones to communicate the overruns cunningly mounted in the past. So, killing the messenger won't help the investor recover any of the lost promises due to the upcoming changes in scope, time and cost.

Another great inconsistency during the project development phase for investors is that most of the development job is done by analysts that had some prior contact with the sector, and are good at developing spreadsheet models. The lack of proper knowledge of scope management by the project team may lead to incorrect inputs to the beautiful spreadsheet models, often over-promising and under-delivering. Early presence of capable people with real knowledge of the assets that are being developed is essential for any successful capital deployment.

When micro level skills affect the macro risk picture

After the recovery following the credit crisis in 2008, it seemed to many people that high commodity prices were sustainable. Consequently, many African governments planned for public investments in infrastructure based on their current income from natural resource (mostly energy and metals) exports. Unfortunately, these prices have proven to be less stable than

¹⁶ http://penelope.uchicago.edu/Thayer/e/roman/texts/plutarch/lives/lucullus*.html (paragraph 25)

anticipated, as they were heavily reliant on China's demand. In the case of energy (specifically oil and natural gas), the US-induced increase in global supply forced prices downwards, affecting project financing even further.

Most African governments were faced with growing and more expensive debt to roll over, while their natural resource collaterals to back public loans also lost value. The case for public-private partnerships (PPP) gained traction in this context, as public investment capacity declined with mounting debt and declining commodity prices. An alternative source of financing for private investors is multilateral international financial institutions.

International financial institutions (IFIs) may have an important role to play in bridging the infrastructure investment gap in African countries. They have created instruments to mitigate risks but their use is still below potential. One of the reasons may be the lack of project management skills to operate under risky conditions. According to a recent WEF report,

“[W]hen political risk is assessed by specialist insurers, it is often surmised that the primary focus is on the host country risk. (...) While country risk is obviously a key consideration, it may be surprising that insurers' foremost focus is on the equity sponsors. This fundamental starting point is key, as insurers scrutinize the equity investors' past experience, current financial resources and know-how in managing its way through projects that inevitably do not play out according to plan.”¹⁷

Improving project risk management competence will ultimately affect the long-term financing options available to public and private investors in infrastructure, as the failure rate declines and investors become more confident about the planned schedule and budget for African projects.

Conclusions

In complex environments, such as those found in African countries, the successful risk management techniques are the ones that do not add more complexity to the project or are the ones that even drastically reduce it. In Africa, complexity comes from uncertainty, so that any risk management team's move to reduce uncertainty improves the chances of a positive outcome for the project.

Stakeholder management, as aligned to the seven attitudes presented above, is key to reducing complexity in projects to be developed and implemented. Stakeholders usually respond better to simple and consistent messages, especially if they are outsiders to the company running the project (and thus have less information). Keeping the message simple and consistent for the stakeholders is the best possible alternative for the risk manager.

¹⁷ Risk Mitigation Instruments in Infrastructure Gap Assessment, World Economic Forum, 2016

After discussing the usual mistakes investors make when dealing with projects in African countries, we can summarize seven positive attitudes that will greatly increase the success of the investments. These positive attitudes are the following:

- (1) “I want to allocate the value fairly and stabilize the project”
- (2) “I want a schedule that increases the chances of project success”
- (3) “Business definition will always precede the definition of scope”
- (4) “We will follow the best practices in the initial definition of the project”
- (5) “The only way to reduce cost is to reduce requirements”
- (6) “It's our investment, we accept responsibility for all risks, transferred or not”
- (7) “Accountability and responsibility begin at home”

As a final thought, it may be clear by now that the processes and techniques that work well in advanced markets may have to be adapted to developing economies. It is part of the investor's responsibility to adapt to the country and cultural contexts as a prerequisite for success.

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