

‘What you don’t see is what you get’: The real risks and reasonable terms of infrastructure investment

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Most of the infrastructure funds which have come to the market over the past few years have advertised the advantageous characteristics of infrastructure assets for investors’ portfolios, such as low risk, moderate volatility, stable and predictable revenue streams, with little correlation to industry/business cycles and other asset classes. However, given the target returns most funds have marketed, it is questionable how supposedly conservative, low-risk assets can possibly meet these targets. Is there a free lunch after all? Put differently, in order to be able to meet high-target returns, which are indeed achievable in infrastructure sectors, fund managers will need to invest in/reach out to infrastructure assets which, from the outside, look like conservative assets. But a closer look ‘inside the asset’ might reveal that in order for these assets to provide the potential for higher returns, they are more volatile, less predictable, and less stable than initially propagated. Hence, not it is ‘what you see is what you get’ but ‘what you don’t see is what you get’, because ultimately, it is the contract struc-

ture underlying every individual asset, which determines its risk-return profile and as such, prove the stated characteristics of infrastructure to be correct or not.

While most investors see the enormous potential of the growing infrastructure market, they neither have the overview of the market nor the capability in house to ‘look inside’ these assets and examine the different risk-return profiles and fund/investment opportunities offered to them. Not surprisingly, they find it even more difficult to judge the appropriateness of the terms and conditions asked by various infrastructure fund managers who offer their services.

The aim of this chapter is therefore to focus the attention of the reader on the differences between assets within the infrastructure asset class and the implications for fund terms and structures. Only when the main project-related drivers of different risk-return profiles are understood can the appropriateness of

Table 1: Indicative risk/return of infrastructure sub-sectors

Asset class	Risk	Cash yield (%)	IRR (%)	Capital gain
Energy generation	High	4–12	12–25	Yes
Energy distribution	Mid	4–10	10–20	Yes
Toll roads	Low–mid	4–9	8–12	Limited
PFI/PPPs	Low–mid	6–12	9–14	Limited
Regulated assets	Low–mid	6–10	10–15	Limited
Rail	Mid	8–12	14–18	Yes
Airports	Mid	5–10	15–18	Yes
New toll roads	Mid–high	3–5	12–16	Yes
Communication networks	Mid–high	8–10	15–20	Yes

Source: JP Morgan Asset Management, slightly modified.

terms asked by infrastructure fund managers be discussed in a meaningful way. It will be seen that terms which fit one type of infrastructure investment strategy are not always appropriate for others.

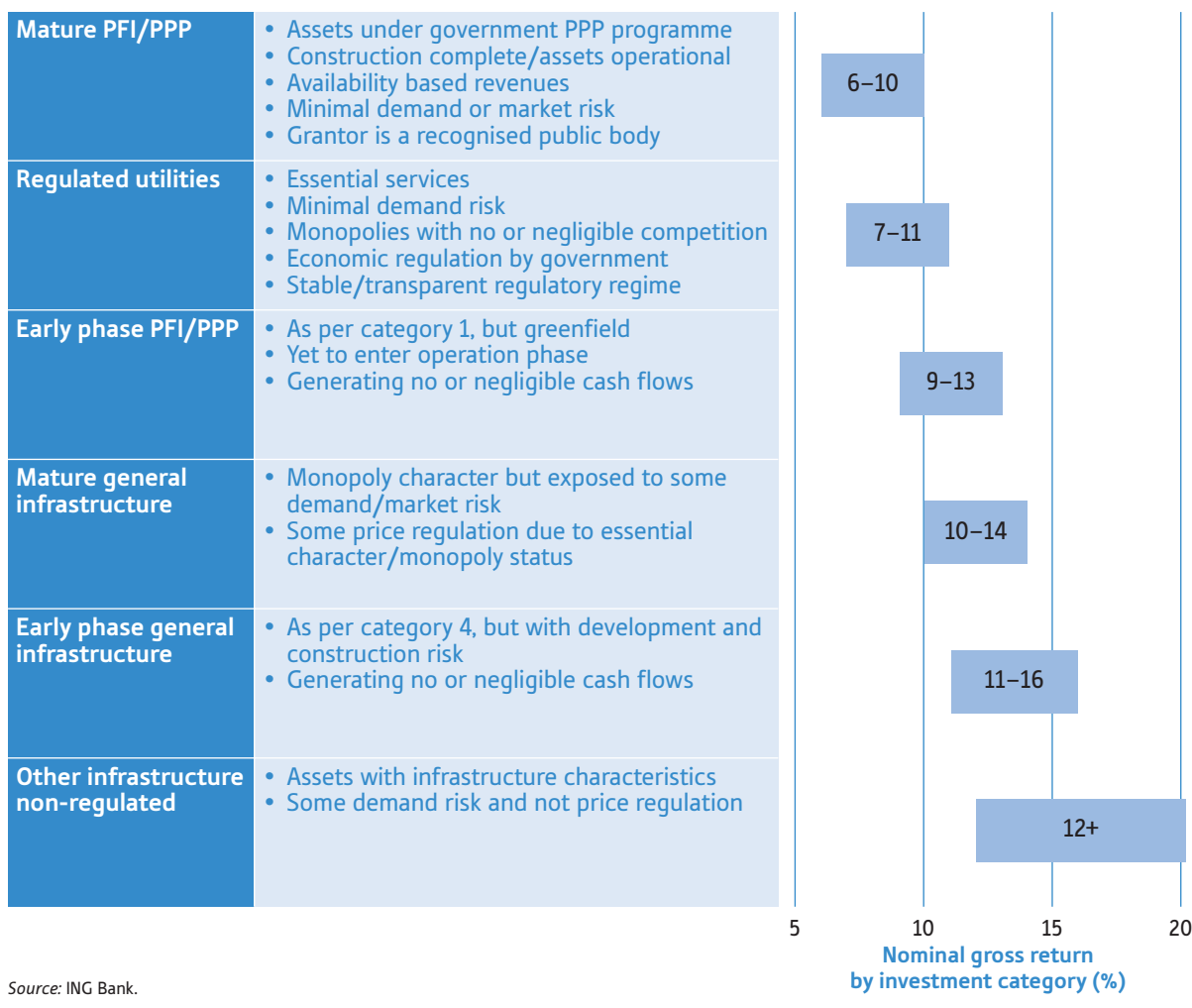
Assessing infrastructure assets

Many research papers – primarily published by investment banks – suggest that the risk-return profile and the yield of an infrastructure asset are principally determined by the respective sub-sector it belongs to, as illustrated in Table 1.

Such illustrations, which focus primarily on the sector, reduce the complexity of infrastructure assets in a fatal manner. Doing this is one of the most severe mistakes commonly made by (inexperienced) investors. Strictly speaking, the sector by itself does not allow any statement about the risk-return profile of an asset. An analysis of the individual asset is always required. It is the respective combination of the above mentioned factors, and most importantly, the contractual structure itself, which ultimately determines the risk-return profile of an investment. It is hence possible that assets which look very similar at first sight turn out to have

Chart 1: Different risk/return profiles – same assets

Decisive is the structure – not the asset



very different risk-return profiles once the underlying structure of the individual asset/transaction has been investigated. This is illustrated in Chart 1.

Chart 1 shows that the same asset – in this case a toll road – can deliver an IRR ranging from around 6 percent to well above 15 percent depending on the stage and the contractual structure in which it is embedded and the risks which the private partners take on. The most conservative case pictured above illustrates a PPP structure for an operational motorway, in which a recognised public body pays the private parties operating the road on an availability basis. As a consequence, the private sector takes minimal demand risk. The asset generates a long, stable, predictable cash flow for the duration of the concession period, which is only reduced if the operator is not able to maintain and operate the road as agreed in the contracts – a rather manageable risk.

A toll road classified as 'mature general infrastructure' above, however, exhibits a riskier profile, as although the asset is operational it is exposed to demand/market risk. In most instances, the market/demand risk is the biggest risk for a private concessioner. Therefore, while these two assets are both operational, that is, brownfield, and look absolutely identical from the outside, their risk-return profiles differ significantly.

Greenfield investments are not always riskier than brownfield

Along the same line of thought, investors tend to assume that the risk of a greenfield investment is always higher than that of a brownfield investment. This is probably a good general assumption to make. However, in specific cases, it can be surprising to find that selective greenfield investments may have a level of risk similar to that of brownfield investments. Brownfield investments in this chapter are defined as operating assets which are post-construction (see Chart 2). Anything beforehand, from pre-development up to and including the construction phase are considered greenfield.

The risks of greenfield projects on the cost side are primarily planning, development, receipt of permits, approval of the public, structuring, financing, technol-

ogy, as well as construction and operation. On the revenue side, the main risk is the uncertainty of demand at a projected price.

Given that brownfield projects, by definition, are already beyond the development and construction phases, many risks on the cost side, for example, receipt of licenses, initial financing, technology and construction can be excluded from the start. What remains are operational and regulatory risks as well as market risk if applicable. Yet thanks to their project history, the market demand side can be relatively well analysed.

The above statements illustrate why it can generally be assumed that greenfield projects entail a higher risk than brownfield projects. Turning to the specific case of onshore wind development projects will however demonstrate that a closer look at specific greenfield projects will often tell a different story (see Chart 2).

Greenfield risks

Pre-planning & development

The nucleus of any project consists of receiving all necessary approvals. This usually takes between 12 and 24 months in the onshore wind industry, with the probability of a project obtaining the required permits about one in three. While this may sound like a high risk, relatively speaking, receiving the permission for an onshore wind farm is, for example, easier than receiving the permission for a project which has a (potentially) higher impact on the environment and/or public sentiment, such as in the case of a dam, which might require resettlement. Furthermore, the costs of this initial phase are minor compared with the entire project costs. At the same time, the potential value created during this phase upon receipt of the permits can be up to €50,000 per megawatt (MW).

Post-planning & development

This phase tends to take between three and six months for onshore wind. Analogous to pre-planning, this phase requires minimal capital but instead time intensive searches for the right partners (including the financing banks) followed by lengthy negotiations. The body of contracts is usually structured as a project financing to align interest among the participants

Chart 2: Value creation from greenfield to brownfield – example of onshore wind development

	Greenfield		Brownfield	
	Pre-planning development	Post-planning development	Construction	Operations Ramp-up Growth Maturity
Duration	12–24 months	3–6 months	12–24 months	20+ years
Description	<ul style="list-style-type: none"> • Before permits • High risk • 1 in 3 gets approved • €0.5–1 million invest 	<ul style="list-style-type: none"> • Permits received • Negotiation of all relevant contracts • Pre-financial close 	<ul style="list-style-type: none"> • Post-financial close • Post all contracts • Construction risk relatively low • Pre operations 	<ul style="list-style-type: none"> • Once constructed and connected to the grid, priority of dispatch given with guaranteed take-off agreements for energy generated • Ramp-up and growth phase not applicable
Equity*	€0–5k per MW	€150–200k per MW	€300–400k per MW	€600–800k per MW
Costs	€1–2 million per project		€15–50 million per project	

* Figures for development value increase are a generic, rough European wide onshore wind 'ndex', pre-financial crisis in 2008, not including debt.
Source: Author's image, based on Platina Partners' research.

(including the developer, construction company, banks and public bodies) and mitigate risks by 'structuring the risks away' to those parties who understand them best. The risk of not being able to attract all necessary parties to the table at this stage of development largely depends on connections in the industry, knowledge of how to run such a process, and the macroeconomic situation, which ultimately affects the overall market and finance conditions for the project. Upon termination of this phase, the equity value of the project increases significantly to about €150,000–200,000 per MW. While the exact numbers can vary, the value increase is between three and six fold compared to the previous phase. Hence, relative to the capital invested the upside potential is very high.

Construction

Upon financial close and completion of all contracts, the construction phase, the last phase of the greenfield period, starts. This is the phase when the bulk of the capital is required (see Chart 2). It is therefore crucial that by this point, the risk of failure or losses is reduced to a minimum. The additional value increase of the equity from the post-planning to the construction

phase is about 100 percent with an equity value of €300,000–400,000 per MW.

Depending on the industry sector, the construction is more or less complicated and accordingly, the risk of something 'going wrong' varies. In the case of onshore – as opposed to offshore – wind development, the construction risk may be low compared to say a power plant or a dam. If proven technology is used for the construction, setting up the wind turbines is not all that difficult.

Summing up the greenfield phase, it contains a long list of potential risks which a brownfield project usually does not have (for a complete list and a detailed discussion see *Weber/Alfen 2008*). However, development and construction risks are not necessarily the same for every project. They can vary significantly. In order to be able to judge the actual risk of a project, it is necessary and – depending on the return upside – worthwhile to analyse the individual case.

Brownfield risks

Before examining the specific risks of brownfield projects, it important to note one of the key financial char-

acteristics of brownfield versus greenfield; it is only in the operational phase that a project/firm generates cash which is distributed to investors in the form of interests or dividends. Until then, it only generates costs and hence, potential investors receive no return on their invested capital. For some investors, a running cash yield from day one after investment is a minor issue. They primarily focus on value creation in their respective investments – usually resulting in high IRRs – which tends to be higher during the greenfield stages of an asset than during operations. For others, cash generation is among the most important investment criteria. The latter usually need to receive an immediate cash yield on their investments. Understanding this point is crucial when aiming to understand investors' preferences and choices, and to assess appropriate terms for certain kinds of fund investment strategies.

The following risks are equally prevalent in brownfield and greenfield assets. It is in the operational phase – according to the definition used in this article – that a project can be considered brownfield.

Operations

At this stage, the majority of the capital allocated for the respective project has been invested and the equity value is highest (see Chart 2). The operational phase entails several risks: most importantly the market risk (demand and price). The operational risks, such as legal, political and regulatory risks, can also be significant but in the interest of brevity, this chapter will focus on arguably the main risk of this phase, that is, market risk. It essentially is in the realm of this risk that the demand for a certain product or service at a certain price is fewer than projected. In the case of a new motorway, it is the risk that less people will use the motorway than projected and/or are willing to pay a lesser price than projected.

Staying with the example of the motorway, if the revenues received by the operator are directly connected to the number of cars using the motorway and paying a certain price, the market risk of the operator not reaching its targets is high. This is because it is directly connected to the end users' driving preferences, price sensitivity and frequency of travelling by car (user generated revenue model). Such user preferences are very

difficult to predict. As a result, the business case of the operator often does not materialise as anticipated. If the operator cannot convince the creditors that he or she will be able to turn the project around during an accepted timeline, he will go insolvent. Hence, if a project takes on full market risk, this almost always signals a high project risk (accompanied by potentially high return) which a conservative infrastructure investor should not accept.

However, if a motorway's (or any project's) revenues are paid by the public body according to availability and not usage (public resources model), the market risk is essentially mitigated and construction risk becomes the primary risk to be mitigated assuming that the public body will not change its laws and regulations *ex post* and will not go into default itself.

In the case of onshore wind development, in many countries developers are in the comfortable situation of not being confronted by real market/demand risk. For example, in certain countries the state gives priority of dispatch to renewable projects, with a guaranteed take-off agreement at an *ex ante* specified price and over a certain time period for all energy generated once the asset is constructed and connected to the grid. In many countries, Germany being one of the first, this kind of regulation has been introduced in order to stimulate investments in renewable energy. Hence, the only market risk left is the risk of the wind forecasting being within reasonable boundaries.

Needless to say, the case made for onshore wind development and availability-based motorways can equally be made for all or some projects of other sectors including solar development, waste management, energy distribution, water distribution, as well as many social infrastructure sectors such as hospitals and schools for which the construction risk is reasonably low and the market risk can be mitigated entirely or to a large extent.

In summary when assessing an infrastructure asset 'what you don't see is what you get':

- Greenfield investments need not be riskier than brownfield; it is the underlying contract structure

which defines the risk-return profile of an asset, not the physical asset itself

- Whereas greenfield projects will take several years to deliver a return as the operational phase is reached, brownfield projects will tend to deliver yield from day one
- An in depth analysis of each individual asset is therefore always required to determine the risk and return potential and fit with the overall investment strategy

The question however remains: how can these different risks be compared in order to judge the overall risk of any specific project? For example, it is difficult to differentiate whether the operational risk of a certain brownfield project which takes full market risk is higher than the post-development, construction and operational risk of a greenfield project in which the market risk is covered by state guarantees. Such a comparison will always be subjective and is hence, very difficult. Without the benefit of large-scale resources, it will in most instances be a rough estimate based on experience rather than detailed calculations quantifying the 'exact' risks of each project. Notwithstanding the above, the most systematic and rigid way to do so is to develop essentially a risk matrix in which every type of risk is allocated a probability of occurrence and a cost.

Implications for infrastructure fund terms

Differences between infrastructure assets have major consequences for the terms which are acceptable to investors. Obviously, the terms and conditions which are appropriate for a manager who invests in greenfield assets cannot be the same as the ones for a brownfield manager.

Likewise, terms must reflect the preferences of the investors. To some investors infrastructure appeals for its potentially high IRRs similar to private equity. They are prepared to accept the relatively high risk coming with it and usually focus on IRR, not yield. The majority however aim to invest in infrastructure for the purpose of achieving stable, long-term running yields, which match their long-term liabilities and which can have a relatively low risk profile (similar to a bond or

real estate profile). Otherwise, they might well invest in private equity to start with. The terms for a conservative, yield maximising fund manager cannot be the same as the terms for an IRR-maximising manager. While the chosen investment strategy has consequences for various aspects of the terms and conditions of any fund investment proposition, it probably has the biggest consequences for the actual duration of the fund, and the structure and amount of fees charged. In the interest of brevity, the implications of this cannot be detailed in this chapter, but one example illustrates the point well (for further discussions, see *Weber/Alfen 2008*).

Conservative, yield-maximising investors tend to have an interest in investing at least the core of their infrastructure allocation in high-yielding assets, which they intend to hold for the long term in order to match their long-term liabilities. In most cases, this implies a relatively conservative investment approach and a focus on high yields rather than IRRs.

The implications of such a strategy for the terms and conditions of a potential fund investment are listed as follows.

- (i) A focus on operating assets, that is, no greenfield or only very little towards the end of the investment period.
- (ii) Terms which are able to cover the lifetime of the longest underlying asset, that is, the typical structure of ten or 12 years plus an additional two will need to be exchanged for a more flexible solution, which does not lock in the investor for long-term periods (for example, 25 years) if the manager performs badly, but which enables the manager to keep the assets unlisted for the duration of the term if desired. Although funds can be structured to achieve this, these structures rarely exist (possibly because it requires alignment of interest among the LPs).
- (iii) With target returns of 10–12 percent and fund sizes of €500 million to €1 billion-plus, an annual management fee of 2 percent on committed capital and 2 percent on invested capital after termination of the commitment period, as is common in private equity, is not appropriate. Not only do target

returns not allow for or justify a total amount of 2 percent, the idea to move from committed to invested is rooted in an investment strategy in which the assets are sold after three to five years. As a consequence, the invested minus divested capital decreases over time, lowering the fee burden for the investor. In the case of a buy-and-hold strategy indicated above, however, if the investor remains invested in all assets for the entire duration of the the fund, the fee hardly ever decreases. This cannot be justified. At the same time, and notwithstanding the above, an infrastructure investment may require (not necessarily so) a significant amount of work and expertise by the fund manager, comparable in scope to a private equity asset. It is hence reasonable on the part of the fund manager to ask for a management fee which is significantly higher than that of a public equity investor.

- (iv) Performance fees in private equity usually have three components – a hurdle rate, a percentage fee and a catch-up – that are measured using the IRR as a point of reference. Again, if the target IRR is 10–12 percent rather than 20 percent, a hurdle rate of 8 percent sounds high and 6–7 percent might be more appropriate. With a 100 percent catch-up, the fund manager might still agree to 8 percent. A success share of 20 percent after reaching the hurdle rate, typical for private equity, might well be justified. The real question though is not whether a hurdle of 6 percent or 8 percent is appropriate, but whether it makes sense for a yield-driven investor to pay a performance fee on IRR. The answer is probably negative. In most instances, a fund manager maximises his IRR by having short holding periods and selling the assets after a short period of time. Selling however is not in the interest of the long-term, yield-maximising investor who wants to hold

attractively yielding assets to match his liabilities (although of course it is these kinds of assets which are likely to be easily sellable for the fund manager). In order to solve this conflict, it makes sense for the performance fee to be restructured in such a way that it reflects the interest in yield maximisation. This can best be done by tying the performance fee to the yield rather than the IRR, or possibly a combination of both. Obviously, the hurdle and the catch-up have to be restructured accordingly.

- (v) Last but not least, while the investor needs to have the opportunity to lengthen the term of the fund to match its assets (see (ii) above), the fund manager must receive a performance fee before the fund terminates, in the event the term goes beyond a certain time horizon, for example ten or 12 years. Otherwise, the alignment of interest does not work out. It is impossible to move the fund manager's carried interest beyond 25 years from the initial investment.

This is only one example and these are only some of the most important aspects to be considered when analysing and negotiating the terms with an infrastructure fund manager. The main message to be taken away is that there is no such thing as the most appropriate or correct terms and conditions for an infrastructure fund manager, as is the case in private equity. Negotiating terms can only be done once an investment strategy has been set, be it buy & hold, IRR-driven or yield-driven. It is possible, however, to decide on appropriate terms for certain kinds of infrastructure investment strategies. Yet the bad news looms: most infrastructure fund managers do not focus on just one or the other investment strategy but try to 'capture it all'. It is hence ultimately up to investors to judge the situation for themselves. ■

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