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Sharing knowledge, experiences, and innovations in public-private partnerships in infrastructure

# Are brownfield concessions poised for a comeback?

## New signs of life after a decade in decline

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**Once expected to be the signature contract of private participation in infrastructure and for a time its fastest growing form, the brownfield concession was hit hard by the Asian crisis and has never recovered. Because these contracts involve existing, usually dilapidated government assets, brownfield concessions tackled the toughest infrastructure problems in the developing world. But the Asian crisis exposed the fragility of this mechanism, and its sudden unpopularity almost single-handedly crashed the developing world market for private participation in infrastructure. Why was so much expected of brownfield concessions, and what happened to them? Why have they performed so poorly? And what market signals suggest that a recovery in their use is now possible?**

In 1990 brownfield infrastructure concessions suddenly captured the attention of development professionals with a sevenfold increase in number over the previous year. For public service providers as well as private operators and financiers brownfield concessions were an attractive option, embodying almost all the most beneficial qualities associated with public-private partnerships in infrastructure. Perhaps most important, they were seen as a solution to one of the most difficult infrastructure problems facing the developing world—what to do with badly dilapidated infrastructure service systems, such as water delivery facilities and roads, that could not be shut down or sold off.

The concept was simple: private companies would take over badly maintained government-owned infrastructure service systems, improve efficiency, make needed investments, and recover all their costs—plus make reasonable profits—over the long term (20–30 years) of the contracts. Best of all, because of greater operational efficiency, carefully targeted and managed investments, and more realistic pricing, these operators would deliver better services while still recovering costs. Thus the new arrangements would be largely self-supporting, in dramatic contrast to the huge budget deficits that had resulted from public subsidies for inefficient service provision.

But the track record of brownfield concessions is one of boom and bust (figure 1). Indeed, the sudden unpopularity of the brownfield concession almost single-handedly accounted for what is normally thought of as a sharp decline in private participation in infrastructure (PPI) following the Asian crisis. Data from the PPI Project Database show that if brownfield concessions are excluded, the PPI market, buoyed by privatizations and greenfield projects, demonstrated few of the "crash" characteristics commonly associated with the aftermath of the Asian crisis. Other forms of PPI barely registered the effects of the crisis, and all have long ago surpassed their precrisis investment highs.

Only brownfield concessions have never recovered. A 2006 surge in popularity pushed investment through brownfield concessions to about 40 percent of its 1997 peak. The surge (probably followed by another in 2007) suggests that some kinds of brownfield concessions may finally be poised for recovery.

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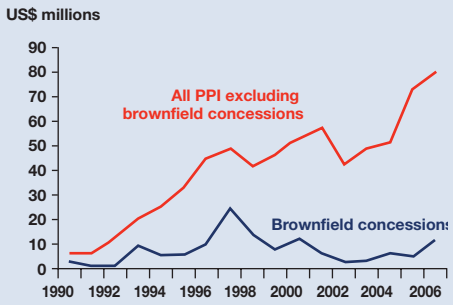
**FIGURE 1**

**Only brownfield concessions failed to recover from the Asian crisis**

Investment in government-owned facilities in developing countries through private participation in infrastructure arrangements, 1990–2006




*Source:* World Bank and PPIAF, PPI Project Database.
*Note:* The investment data refer to commitments and include private and public contributions.

## What happened to brownfield concessions?

**Cash flow and profitability problems were clearly among the most important**

No single factor accounts for the rise or decline in the use of a PPI mechanism in all situations. In Latin America, for example, many of the most attractive opportunities for brownfield concessions were taken up in the early 1990s. After the Asian crisis public opposition to privatization may have combined with the eventual financial recovery of some governments to diminish the attractions of turning infrastructure service provision over to private operators.

But Latin America is also the source of some of the most compelling empirical evidence on other key reasons for the steep decline in the use of brownfield concessions in the late 1990s. A recent study of concession contract renegotiations in Latin America suggests that cash flow problems and low profitability were common in these arrangements (Guasch 2004). Using a definition of concession that includes some greenfield projects and divestitures, the study shows that concessions in Latin America had a high incidence of renegotiation—about 42 percent, with renegotiation happening on average after only 2.2 years of operation. The results tended to favor operators, mostly through improvements to cash flow and profitability.

A second study looked at the profitability of infrastructure concessions in Latin America during the late 1990s, again using a broad definition of concession (Sirtaine and others 2004). The study suggests that, on average, projects became profitable only after about 10 years. Until then concession shareholders earned negative returns, even when such things as management fees, estimated accumulated capital gains, and potential investment markups were included. But this same study found that 40 percent of the concessions in the sample—and 50 percent of those in energy and transport—did not appear to have the potential to ever become profitable.

Problems with cash flows and long-term profitability were clearly among the most important reasons that brownfield concessions became so unpopular so quickly. These projects must be able to weather years of negative cash flows and constant uncertainty about long-term profitability. That so many contracts were renegotiated after only a few years, long before they could confirm their profitability, suggests that cash flow problems were probably critical in precipitating many renegotiations. Even if estimates of long-term profitability are positive, a project that early on generates cash flows too small to service debt is not viable without cash inflows from other sources or contract renegotiation to adjust existing flows.

## Why so susceptible to problems?

The PPI Project Database confirms that brownfield concessions were far more likely to experience these kinds of contractual distress than other forms of long-term PPI. In 1990–98 the share of brownfield concessions that were canceled or became distressed was 41 percent higher than that for greenfield projects.

Why would brownfield concessions be more prone to problems with cash flows and profitability? The answer is simple: as business transactions, many brownfield concessions turned out to be far less profitable than expected. The assets were often in much poorer condition than expected and required more basic rehabilitation and investment before they could start generating higher revenue. Concessionaires and governments often wanted to start the investment programs as soon as possible, to show early, dramatic results, but such investments often were not optimally targeted or timed because the operators lacked experience with the

systems. And many of the real problems involved sector and policy issues (tariffs, labor productivity, corruption) rather than day-to-day operations.

Many operators of retail operations faced severe currency mismatch problems, with revenues in local currency and debt service payments in hard currency. In addition, many governments required brownfield concessions to pay debt service for outstanding loans used in initially developing the facilities. The need to pay off the initial investment on top of the new investment put more, and often unsustainable, pressure on cash flows.

On the other side of the ledger, revenues were often less than expected, particularly for retail service operations that were supposed to recover full costs. Raising tariffs to cover the full costs of operation turned out to be impossible, or at least wholly impractical, in many situations, particularly in poor areas. Indeed, full cost recovery for essential infrastructure services such as water supply and sanitation is rarely attempted even in developed economies.

## Why weren't the problems better anticipated?

The potential for cash flow and profitability problems should have been apparent during project appraisal and design. Why did so many contracts reach financial closure before these weaknesses were noticed? The quality of preparation often seems to have been very poor, for several reasons.

First, governments, as well as donors and development agencies, often were unwilling to spend time or money preparing brownfield concessions—doing feasibility studies, examining the true cost of the services, assessing contracting options, and the like. For many of the contracts signed in the early 1990s all this work was assumed to be the responsibility of potential private partners—part of their normal due diligence—because if the project failed, it would be at their sole cost.

We now know that for existing, poorly maintained facilities, governments need independent, comprehensive assessments of the condition of the infrastructure so that they can identify the objectives and the investments needed in brownfield concessions and can evaluate bids on the basis of consistent operating and investment projections. Leaving such assessments to bidders who put different amounts of time and resources into feasibility studies and asset reviews, led to bids that were often difficult to compare or based on incomplete or inaccurate views of investment needs. Perhaps the first notable example of the problem of low-cost preparation was the Buenos Aires water concession—one of the first large brownfield concessions—signed in December 1992. A defining feature of the tender process was poor information.

**Poor-quality preparation failed to bring problems adequately to light**

Second, even where one party or another was willing and able to undertake full feasibility studies, the task often turned out to be far more difficult and expensive than expected. Management information and basic record keeping were often outdated or nonexistent. Historical performance data were sometimes inaccurate or unavailable, and the condition of the infrastructure, such as underground pipes, impossible to evaluate. Even customer records were often incomplete or missing. As a result, there was often no way to tell, for example, how many end users were connected to water systems, much less paying their bills.

Third, the preparation of brownfield concession projects was probably affected by several weaknesses now widely recognized in the project appraisal techniques used to help anticipate and avoid problems with cash flows and profitability. We now know that such techniques were often not used at all because expensive analysis was thought unnecessary in situations where remedial options seemed obvious. When the techniques were used by or on behalf of government partners, they often served to justify rather than independently assess projects. Other preparation techniques, such as economic cost-benefit analysis, seem to have been generally overwhelmed by bad data, complexities, public-private funding options, and "political economy" issues. Quantitative estimates of the financial costs and benefits of these projects were also often wildly inaccurate. In several studies of transport projects Flyvbjerg (2005) found massive underestimation of costs and overestimation of demand.

Fourth, the concessions often lacked settled regulatory or contractual arrangements for increasing tariffs or coping with unexpected changes. Bidders were often prepared to commit to concessions without such arrangements on the basis of government reassurances that such issues would be readily resolved. Often the rhetoric failed to match the reality, and concessionaires faced severe

hurdles in securing, for example, a contractually mandated tariff increase.

## What about risk mitigation?

The emergence of cash flow and profitability problems was supposed to trigger risk mitigation mechanisms agreed to at the outset. The most important risk mitigation instruments, structured as off-take agreements and project guarantees, were to be provided by state-owned enterprises, utilities, or the governments themselves. But the Asian crisis in 1997 forced many governments to recognize that they had an inaccurate understanding of how brownfield concession contracts, as well as other kinds of public-private partnerships, were supposed to work.

The contingent liabilities associated with the risk mitigation instruments had been ignored or misunderstood by the governments. Whether they knew it or not, the public sector retained massive contingent liabilities. But under the intense pressure of the Asian crisis, governments simply repudiated these obligations, forcing many projects into renegotiation or collapse. The PPI Project Database confirms that this happened more often with brownfield concessions than with any other form of PPI contract.

## The future of brownfield concessions

Data for 2006 from the PPI Project Database suggest that some kinds of brownfield concessions are becoming more popular now because governments are more aggressively structuring the arrangements to reduce the risks for private partners. In toll road projects, for example, governments are reducing investment risk by providing capital grants or financing guarantees, and reducing demand risk by using shadow tolls or guaranteeing part of the revenue through minimum traffic assurances. The key challenge in using these contracting arrangements is to find ways of maintaining performance incentives for the private partners.

Some governments are adopting hybrid arrangements to mitigate risks. In high-risk sectors such as retail water distribution in Africa, projects that once would have been implemented through brownfield concessions are being unbundled. Private operators implement management contracts and receive compensation through a flat fee rather than from user fees. Operators issue and collect bills, fix leaks, or manage equipment. Governments and donors supply funding for capital investment and take on the demand risk associated with user payment for services. Under such an arrangement (generally captured by the PPI Project Database as a management contract rather than a concession), the government assumes most of the investment and demand risks.

## Conclusion

The brownfield concession is not an inherently flawed mechanism—its track record in developed countries is reasonably successful. But many of the conditions for success have proved difficult to achieve in developing countries, where preparation is especially time consuming and expensive and the assets are in particularly poor condition. But we now have a much better understanding of the risks and problems in dealing with existing, dilapidated infrastructure assets in developing countries. Brownfield concessions as structured in the early 1990s may be an endangered species, but the needs that drove their initial widespread use still exist, and refinements to the concession mechanism—along with new investment arrangements and hybrid contract forms—are emerging to deal with these problems.

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