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Innovation in infrastructure delivery

How government and institutional investors can lead an infrastructure renaissance



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The Cornell Program in Infrastructure Policy (CPIP) is focused on improving the delivery, maintenance, and operation of physical infrastructure. ... CPIP

coordinates scholars across multiple disciplines both inside and outside of Cornell University who share an interest in public policies impacting infrastructure.



About i3 and Institutional Real Estate, Inc.



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Talk with, not at: Understanding and managing priorities to provide infrastructure for communities

by Chase McWhorter

For years we've been inundated with infrastructure plans. Trump plans, Congressional plans, private sector plans, think tank plans and numerous other opinions on how to improve infrastructure. We hear P3s and asset recycling can solve the problem, that a \$1 trillion infrastructure plan will solve the problem, or that P3s are a failure and private capital should stay on the sidelines.

In this report is more than two years of planning, research, debates and discussions to present a *starting point* to solve the U.S. infrastructure problem. This report is not a quick-fix for municipalities or states, but instead it aims to simplify extensive research and provide varying perspectives for public officials and private investors to begin dialoguing at a different — and hopefully more advanced — level. While there are some universal principles at play, every city is different. There is no one-size-fits-all plan. Sometimes municipal debt is best. Sometimes partnering with private capital is best. Every city has different needs. New York City is not Baton Rouge when it comes to infrastructure needs.

Taking a step back, the genesis of this report is the U.S. Conference of Mayors meeting in September 2018. Mayor Stephen Benjamin from Columbia, S.C., invited me to participate in their annual meeting as infrastructure was one component of his three-part platform as President of the U.S. Conference. During the infrastructure part of the meeting, two infrastructure fund managers were invited to present their capabilities. As an observer, I was struck by a lack of Q&A/collaboration between these managers and the mayors. Maybe it occurred after the meeting in private, but I did not sense that either side really had the time/patience/flexibility/resources to work together.

Fast forward to the Editorial Advisory Board meeting of *Institutional Investing in Infrastructure* (i3) in November 2019 where we invited Mayor Benjamin and Professor Rick Geddes from Cornell's Program on Infrastructure Policy. Our hope was to create a more active

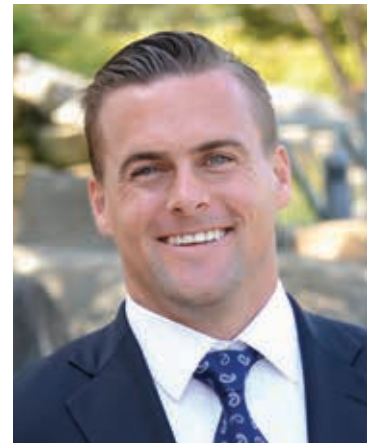
dialogue about how public officials can utilize private capital for infrastructure. That dialogue led to the commissioning of this report. What follows is experience and insight for public officials, investment managers and companies involved in infrastructure in the United States.

A goal of this report is doing away with the myth that P3s are the only option. Through numerous discussions with both public and private parties, the reality is sometimes private capital can be used and sometimes it can't. This report is simply meant to be a primer on best practices and a way to address uncomfortable realities head on to help encourage discussion and collaboration.

From our vantage point, one of the stumbling blocks between these two groups has been a lack of understanding of each other's priorities and needs. Too often, private investors believe access to capital should drive government to turn over control of projects and assets to them and discussion of the role a project plays in the municipal government's larger vision is secondary or not considered at all. This has led to canceled transactions with high pursuit costs for private investment managers, communities that lack the services they need and growing distrust between all. Public officials are not without fault either — too often reluctant to hand over control to private partners or worse drag out a long/costly approval process only to cancel at the last minute due to political differences.

The benefits of private investment in infrastructure using P3s and other innovative finance models are known by public officials, but the steps needed to support this activity in the United States have yet to be fully embraced.

Hopefully what follows is a start. ♦



Chase McWhorter is managing director of *Institutional Investing in Infrastructure*



Innovative finance review

How greenfield and brownfield projects can help governments better deliver services and help investors to deliver returns

by Rick Geddes

Public-private partnerships, or P3s, are an important method of delivering infrastructure in the United States. Although P3 has become a term of art, it does have a precise meaning. A P3 is one type of contractual arrangement between a public-sector project sponsor and a private partner to deliver heavy civil or social infrastructure. The private partner is typically a consortium of firms that come together to deliver the particular project in question.

Three conditions define infrastructure delivery under the P3 model. First, the contract must bundle together several dimensions of project delivery into one larger contract. These include the five major delivery

services — design, construction, operation, maintenance and financing. Those elements can be bundled in various ways depending on the public partner's particular needs.

Second, a true P3 shifts some of the formidable risks inherent in project delivery from the citizens that own an infrastructure facility onto the private partner. The private partner will not bear the risk free of charge but will instead price risk into the contract. Market pricing of project risk remains an under-appreciated benefit of the P3 approach.

Third, a P3 implies a long-term relationship between public and private partners. P3s thus stand in contrast to many spot transactions, in that they typically require partners interact with

one another over a long time horizon. That implies both parties must be flexible, as new contingencies inevitably arise.

THE TWO MAIN TYPES OF P3S — GREENFIELD AND BROWNFIELD

P3s introduce new terms into the infrastructure-delivery lexicon. One of the most important is the distinction between greenfield and brownfield projects. Those two broad types imply different roles for the private partner and are important to appreciate. Moreover, the term “brownfield” in a P3 context stands in contrast to its standard use in environmental law, which relates to a polluted industrial site. The distinction is also important because greenfield and brownfield P3s raise quite different policy issues.

In a greenfield P3, a private entity is engaged through a contractual agreement to deliver a new infrastructure facility. The new facility may be priced or unpriced, tolled or untolled. In a brownfield P3, the agreement allows a private firm to manage, operate and renovate an existing — usually tolled — facility. When properly executed, both types generate substantial benefits for customers, investors and citizen-owners.

One important distinction between a greenfield and a brownfield P3 is the degree of risk inherent in the project. There is broad agreement that one of the most important risks for any project is associated with market demand. It is referred to as demand risk, market risk, commercial risk, or revenue risk, but it has a common economic underpinning.

Traffic or revenue risk is particularly important for greenfield P3s because expected traffic flows can only be inferred using statistical modeling, while traffic flows on brownfield P3s are usually known.

The Camino Colombia Toll Road (CCTR) around Laredo, Texas, illustrates the importance of greenfield traffic risk and, thus, the value of transferring that risk from taxpayers to investors. The CCTR is a 22-mile-long connection between I-35 in Texas and the principal highway to Monterrey, Mexico. It cost approximately \$90 million to construct and was opened to traffic in October 2000. The original plan was to charge cars \$3.00 and trucks \$16.00 to use the road. Traffic forecasts predicted 300 cars and 1,500 trucks per day, which would have generated \$9 million in annual revenue. Although the number of cars was underpredicted, the expected number of trucks never materialized. Actual truck traffic

was 75 per day, with annual revenue of only \$500,000. Truckers continued using Bridge 4 in Laredo, which also linked to I-35. The CCTR was sold at a foreclosure auction in 2004 for \$12 million and was later acquired by the Texas Department of Transportation for \$20 million. In the end, citizens gained ownership of a virtually new facility at a highly discounted price.

To recap, a brownfield P3 refers to the leasing of an existing infrastructure facility — usually tolled or priced — to a consortium of private firms. Although the lease typically allows the private partner to collect toll revenue in exchange for the duty to operate, renovate, maintain and expand the facility, it is possible for a brownfield to be based on “shadow tolls,” or, availability payments, which are effectively various types of performance payments.

THE BROWNFIELD CONCESSION

The distinction between brownfield and greenfield P3s may seem stark at first. Further reflection suggests, however, there are actually some grey areas. In a brownfield, for example, the concessioned facility will eventually require renovation and may need complete rebuilding, especially if it is old or if the lease is long. Indeed, the private partner will likely have to renovate the facility much sooner than under a greenfield P3 that delivers a new facility.

The brownfield concessionaire, therefore, must contend with uncertain design and construction costs similar to those faced by the initial partner in a greenfield case. It is also likely to confront similar labor and environmental issues, particularly if the facility is to be expanded substantially as well as renovated.

Moreover, if a greenfield facility is completed but predicted traffic volume fails to materialize, or other financial problems are encountered, the private partner may go bankrupt, with the facility reverting to public operation. The government is then faced with the choice of operating and maintaining the facility itself or refranchising those operations to a new partner.

If it decides to accept new bids, the refranchise contract effectively becomes a brownfield P3. These are longer-term projects, and flexibility is needed in anticipation of such contingencies.

Infrastructure commentators occasionally point to traffic or revenue risk as an important



distinction between the two types of P3s. They stress that traffic flows are established on an existing facility, while they must be forecast for a new facility. Even that distinction becomes blurred with the passage of time, however, as traffic flows can change dramatically during the lease term. Economic fluctuations, expansions and contractions of nearby population centers, and the construction of competing facilities, among many other forces, may affect traffic flows. Such events are difficult to predict ex ante, being based more on forecasts rather than actual results. Moreover, concessionaires bidding for the lease of an existing facility will take reduced traffic risk into account. All else equal, they will bid more to operate a facility that faces a lower risk of significant traffic declines. That bidding effectively transfers, through the concession payment, the market value of the lower risk to the citizens who own the facility.

Two U.S. brownfield concessions, the Chicago Skyway and the Indiana Toll Road, are good examples of this concept. Those brownfields are credited with igniting renewed interest in P3s in the United States, at least partly because they revealed the enormous latent value in U.S. transportation assets.

In each case, public officials announced a preset concession length, determined the desired details of service quality and the nature of toll regulation, and then solicited bids based on the size of the concession fee. They ensured accountability, service quality, and transparency through the concession agreement by specifying in detail how the facility was to be maintained, operated, and expanded, as well as the penalties for noncompliance.

Because they rely on a stream of revenue, brownfield leases are most appropriate for existing toll roads, most of which are in the eastern United States. They are, therefore, likely to play a secondary role to greenfield P3s as more new facilities are built, high-occupancy or toll (HOT) lanes are added, and so on, using the P3 approach. Nevertheless, it is important that brownfield concessions be properly understood, because perceptions of them may affect both policy toward, and public acceptance of, P3s generally. Indeed, many important benefits of brownfield P3s have been underappreciated or overlooked entirely in the current policy debate.

THE GREENFIELD CONCESSION

The benefits of greenfield P3 concessions are straightforward. The public-sector project sponsor benefits from the private partner's

knowledge of recent technologies, project delivery expertise, access to global capital, and willingness to bear risk. Indeed, many greenfield projects would not be built without such private participation.

There are many examples of successful greenfield P3 projects. Indeed, there are compelling examples from sectors other than transportation. Higher education has used innovative greenfield P3s; for example, the design and construction of the campus of University of California, Merced was done under a greenfield P3 arrangement.

The Merced 2020 project is to deliver an entirely new campus for the University of California system. The budget for the design and construction of the Merced campus is about \$1.3 billion. The amount budgeted for the campus includes its life-cycle maintenance costs, as well as the costs of design and construction.

Plenary Properties Merced is the private project developer. The Plenary team will design, construct, operate and maintain major campus buildings. The whole project is delivered under a comprehensive project agreement.

There are several sources for the large upfront payment needed to design and construct the campus — \$600 million will come from University of California financing sources, such as bonds; Plenary Properties will invest \$590.35 million of its own funds in the project; and campus funds will account for \$148.13 million. It is unlikely the project would have proceeded without that innovative financing structure.

Equally compelling is the availability payments compensation model used in this concession. During the construction phase, the university makes predetermined payments to the developer based on its progress. Once campus buildings become available for use, the university will make further performance-based payments that cover remaining capital costs, as well as the operations and maintenance of major building systems. The agreement's duration is 39 years from beginning to end.

THE BENEFITS OF GREENFIELD AND BROWNFIELD P3S

Many of the social benefits of greenfield P3s also apply to brownfield leases. Importantly, none of the benefits summarized below depend on how concession payment proceeds are used or, indeed, on the existence of any concession payment at all. Stated simply, the advantages derived from private participation once a

greenfield facility is complete are also generated by a brownfield concession. Those benefits include the following:

- **Injection of competition into facility operation and maintenance.** Currently, managers of existing facilities in the United States face little competition from other management teams — that is, they have a de facto monopoly over the provision of infrastructure-management services. They consequently need not fear replacement for subpar managerial performance. A brownfield P3 also introduces the benefits of competition for the right to serve the market.

- **Improved life-cycle facility management and life-cycle costing.** The brownfield concessionaire is not subject to government budget cycles that may result in deferred maintenance. Private providers have incentives to avoid costly future repairs by maintaining the asset today. They are also contractually required to do so.

- **Risk transfer to private partners.** As in a greenfield P3, brownfield concessionaires face important risks even though the facility is built. Some of those risks may be better managed by private partners. Transferring risk to private partners lowers the overall cost of risk bearing.

- **Incentives to maximize traffic throughput.** Because they are affected financially, brownfield concessionaires have incentives to complete repairs quickly and with minimal disruption to traffic. Techniques to increase traffic flow, such as congestion pricing, can be adopted as allowed by the contract. Flow maximization includes incentives to keep the roadway clear of snow and ice and well drained that also enhances safety. The effect of all such actions is to use existing road capacity most efficiently. Safety on the Indiana Toll Road, for example, was enhanced after operations were taken over by the Indiana Toll Road Concession Co., which quickly worked to prevent motorists from making illegal U-turns using emergency vehicle crossovers.

- **The introduction of fresh risk capital.** As with constructing a new project, the availability of capital is critical for the maintenance and renovation of an existing facility. By including equity investors, brownfields make additional capital available.

- **The creation of new investment opportunities.** Brownfield P3s offer distinct risk-reward profiles relative to stocks and bonds and to other investments. This creates new investment opportunities for institutional investors and their beneficiaries, such as retired

police, firemen and teachers, among others, through public and private pension funds.

- **The development of a “thicker” toll-operating industry.** Additional brownfield P3s facilitate the development of the toll-operating industry, which increases the competitiveness of future P3s. It is perhaps unsurprising toll operators often come from countries with the most P3 use.

- **Improvements in governance, transparency, and accounting standards.** Private participation introduces a host of mechanisms that give firm owners better control. This is a key aspect of firm governance. Private firms are also subject to rigorous accounting and reporting requirements, which improve both governance and transparency.

- **Incentives to adopt new technologies.** This is consistent with experience on brownfields. The Indiana Toll Road Concession Co., for example, moved quickly to install and promote electronic toll collection in the form of its i-Zoom program.

To elaborate on the first point, bidding for brownfield leases has typically taken place on the basis of concession fee size, given fixed caps on toll increases and other dimensions of service as determined by the public sponsor. Under this approach, higher anticipated excess profits — that is, the profits above those a firm would earn in a competitive market — lead bidders to offer larger concession fees. All excess profits are transferred from the concessionaire to citizens through the fee. Stated differently, the auction created by the bidding process allows citizens to realize much of a facility’s latent value.

The well-recognized benefits of competition, which include incentives to innovate, provide least-cost service provision and adopt a customer-service orientation, are realized through brownfield as well as greenfield P3s. Popular literature sometimes suggests receiving an upfront concession fee or “asset monetization” is the only motivation for private participation through a brownfield concession. As this discussion makes clear, however, a range of social benefits stems from private participation in maintaining, expanding, operating, and refurbishing existing facilities that are unrelated to the payment of a concession fee. The ability to realize hidden value from an existing infrastructure facility is a socially valuable aspect of the P3 approach. ❖

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Setting up public-private partnerships for success

with Mayor Steve Benjamin and Marlon Smith



Mayor Steve Benjamin



Marlon Smith, managing director, JLC Infrastructure

Declining municipal revenues were an issue in many U.S. cities before the COVID-19 pandemic. This trend is now accelerating and causing a budget crisis within communities across the country. According to an August report from the National League of Cities, nearly 90 percent of the 485 cities surveyed reported they will be less able in fiscal year 2021 than in 2020 to meet the financial needs of their communities due to revenue shortfalls. The NLC also found earlier in the year, 700 U.S. cities were planning to halt plans to improve roadways, make new equipment purchases, and complete upgrades to water systems and other critical infrastructure. Together, U.S. cities face a \$1 trillion shortfall that continues to grow.

Innovative project delivery and finance models, including public-private partnerships (P3), are tools that can, under the right circumstances, help governments provide infrastructure and needed jobs for communities, while also helping to keep budgets under control.

P3s have been used sparingly in the United States compared with global peers such as Australia, Canada and the United Kingdom. Mayors and public authorities are warming to the idea not only as a means to help meet infrastructure needs, but also to create jobs and free budgets to fund other core services while transferring some risks to private sector partners.

Innovative finance is not a fit for all projects. Municipal leaders should understand the conditions that make a project a match for private capital. A good first step is to take stock of a community's infrastructure by auditing inventory to learn what is owned and the value of these assets. Cities can then prioritize needs, and match assets and projects with private investment.

The process to build community support for and properly structure public-private projects is perhaps the most

arduous but critical step to success. Too often, a lack of communication and understanding creates a disconnect between the two parties, which can undermine projects.

Helping investment managers and developers understand what it takes to be a good partner to public counterparts, and public authorities learning how to give control of community assets to private partners, are two critical pieces to building relationships that can support public-private projects.

i3 senior editor Drew Campbell spoke with Steve Benjamin, mayor of Columbia, S.C., and Marlon Smith, managing director of JLC Infrastructure, about how innovative finance and public-private partnerships can help municipal governments in the United States.

How should investment managers open a dialogue about public-private projects with mayors and other public officials?

Steve Benjamin: One of the first questions investment managers need to ask public officials is, "What are the issues that are keeping you up at night, and how can this project help you address those issues?" These projects don't exist in a vacuum. Public officials' agendas run the gamut from public safety to supporting business to transportation and infrastructure. If an investment manager can approach a mayor understanding that mayor's community and the issues at the top of his or her agenda, and then tailor a public-private project that fits and addresses those other vital needs, they will have that mayor's full attention.

Marlon Smith: We start with seeking to develop a thorough understanding of the municipality or other jurisdiction where we are looking to make an investment. Part of that is to understand the immediate fiscal situation, and also consider and account for the broader vision of the mayor and city.

The holistic question of what are they trying to accomplish beyond infrastructure allows us to frame and then incorporate that vision back into a discussion about roads, bridges, airports and other critical infrastructure.

Benjamin: It is also important for managers to understand the backgrounds of the public officials they are working with. These are people who come from a wide variety of fields, from small business and teaching to engineering to activism. Understanding what motivates, drives and informs their decision-making process can help move the dialogue to discussions about how a project can help further that official's goals for his or her city.

Smith: Understanding the physical and demographic makeup of a community including diverse populations is a critical piece of this process. What is the composition? Is the city's population aging? Older, younger, growing, or a mix of the two? Is it suburban, urban, rural? How old is the community itself — 10 years, 100 years, or more? All of these will factor into how a project should be structured and carried out, and how to build support within the community for the project.

City officials are not engaged in investing in infrastructure the way a private investment manager is — where does their learning curve begin?

Smith: It will benefit a municipality to understand what new infrastructure is needed and audit the existing infrastructure portfolio, including the state of those assets. New-build infrastructure, or greenfield projects, are what we typically think of when talk about infrastructure. It is the existing stock of assets, or brownfield assets, that often needs the investment and may also offer opportunity for a city to generate funds that will support its budgets and capital plans. City officials can learn a lot by simply taking inventory of their infrastructure and putting a value on it.

Benjamin: It's also important to understand the process of taking stock is not only to allocate price tags on infrastructure assets, but also to understand the value they provide the community in the form of services, and also to identify those assets which are underperforming and the original use they were intended for. Those

underperforming assets aren't just financial burdens, they also create service gaps that affect communities and people who would otherwise receive more support. This includes diverse communities within the municipality. All of that adds up, and if you think of just a single underperforming asset and the financial cost and loss of service a community has to bear, and then think of an additional five or 10 of those similar kinds of underperforming assets, you can get a good sense as a mayor how to prioritize infrastructure needs and link projects to services that can extend value beyond paved roads or modern, air-conditioned schools and libraries. The people who use those services are supported, and that tremendously helps create more vibrant and engaged neighborhoods, that in turn, supports greater public safety and health. If a city can get to that place, budgets and resources can be focused on additional forward-looking investment.

How can cities get comfortable with private partners investing in, and in some cases taking over, operations of infrastructure?

Smith: Private sector partners can provide capital, risk sharing, management experience, innovation, and other valuable expertise with the goals of creating value, reducing the public sector's liabilities and lowering costs. In order to accomplish these goals which can provide substantial benefits the public sector, the private sector will likely require some level of management control over the assets. This can often be a sticking point. Maintaining transparency and building trust is extremely important. The private sector will need to understand and embrace policy objectives and other factors that are important to the public sector in the operation of its infrastructure assets.

Benjamin: These kinds of investments can be made using a concession arrangement, where a city leases an existing asset with the proceeds of the transaction available to reinvest in other infrastructure, which could be new-build greenfield projects that can add a lot of jobs, or recycled into refurbishments, which also require a lot of workers. Thinking of projects within a larger strategy can help amplify the value and benefits public-private projects can bring to cities. Lease agreements can also relieve the

financial burden of owning and operating assets, which can free budgets for other goals, such as community healthcare or staffing schools more adequately.

What do successful projects have in common and how can this be reproduced in other projects?

Smith: Successful projects need to have several components — a project that makes sense for the community and investors, the political will, a strong and experienced public-sector team and a private-sector partner that is engaged and willing and able to tailor its approach to the local environment. Each of these is critical, and any one of them can undermine the success of a project. It is also important that the public sector have a team of experienced advisors that is included in every step and can help develop contract terms and structures that properly address issues on both sides.

Benjamin: There also has to be a fundamental belief within the public sector team that the asset or project is something it cannot manage most effectively on its own, and the project would be best served by bringing in a private-sector team to help manage the project. The other critical piece to success is there has to be broad-based support and buy-in from city officials and

the larger community from the very start. If this is not present, then as the inevitable bumps in the road occur, support could erode, and that leads to a cascade of problems that, if not resolved, can become unmanageable. We covered this earlier but it is a very important takeaway — private investors need to think of these projects as one piece of a community's and mayor's agenda, and understand and communicate the role the project can play in helping that community achieve its broader mission. It's that kind of thinking and acknowledgment that can build the relationships needed to push projects to the finish line successfully.

Smith: Public-private partnerships are not a solution for all of our public infrastructure needs; however, I believe they can be a tool used by government leaders to create value, which in turn frees up capital. Certainly, some public-private partnerships in the U.S. have not gone well. Both public- and private-sector participants must learn from the past and remain flexible and open to different approaches for getting things done. This really isn't a novel approach. The public and private sectors have always worked together to build and manage our nation's critical infrastructure. Public-private partnerships, when executed properly, create positive outcomes for all parties. ❖



The infrastructure payoff

Illinois city boosts its economy by investing in infrastructure to make it attractive to private investment

by Bruce Knight

The City of Champaign, Ill., (population 88,000) where I have worked as the planning and development director for the past 31 years, maintains a 10-year capital improvement plan (CIP) and updates it annually to ensure we are addressing the highest-priority infrastructure projects. This is a process that requires a considerable commitment of staff time, as well as energy and focus from our city council. This is an effort the city is committed to because of the firm belief that investment in maintaining and expanding the city's infrastructure is critical to the city's success as a growing and developing community.

One aspect of this is the importance of making routine investments in our infrastructure to extend its life to the extent

possible. A few years ago, the Government Accounting Standards Bureau began requiring a value to be established for a community's infrastructure. In 2017, the value of the City of Champaign's infrastructure, as reported in the city's comprehensive annual financial report (CAFR), was \$213,221,286. Imagine any local government not doing all it can to protect assets worth more than \$200 million, by adequately planning for the future of those assets.

A second part of why this is so important is the economic impact that results from having quality infrastructure. This is true of all the city's infrastructure systems but, in particular, it is true of the city's transportation network. According to the *Rebuilding America* report issued by the American Planning Association in 2010:

In many ways, transportation infrastructure forms the backbone of the U.S. economy and our quality of life. Economic activity is dependent on an efficient and well-maintained system of roads and highways, bridges, rail lines, sidewalks, paths, and transit. Continued investment in our nation's transportation is essential to keep our economy growing. But the current system is at a crossroads: roads and highways are aging, maintenance needs continue to grow, costs of maintenance and new infrastructure are increasing, and revenue levels have remained generally flat. The challenges are manifested at the national level, where according to the American Society of Civil Engineers (ASCE), transportation infrastructure receives an overall grade of C-minus. In addition, congestion costs have crept past \$85 billion per year, and the estimated cost to repair and upgrade the current system is \$225 billion per year. Local jurisdictions also face challenges, with increasing expenses for pothole repair and other maintenance, while their budgets become tighter. These trends have spurred calls for a substantive change in how we treat transportation infrastructure at all levels.



Boneyard Creek in Champaign, Ill.

Four years ago, the Champaign city council struggled with the reality that, as a result of budget cuts during the years of the Great Recession, the city was underfunding upkeep of its street system, resulting in a steady decline of their condition. In a difficult debate, the council ultimately passed a four-cent-per-gallon local motor-fuel tax to create a revenue stream to rectify the situation, both with the intent to be able to direct-fund needed improvements, as well as to have the funding necessary to meet local match obligations to pursue grant funding. The deciding vote on this difficult decision came from a city councilman who was typically very conservative on decisions to raise taxes, but who, as a local realtor, had heard the reaction of out-of-town clients, looking to buy a house in our community, to the declining condition of our roads.

In the end, he recognized there is a price to pay to maintain quality of life in a community and that consideration outweighed a general public dislike of taxes.

Champaign has clear examples of the result of investing in infrastructure. In the early 2000s, the Campustown area was in a state of decline, with aging infrastructure and declining commercial properties. This was the result of long-term underinvestment in the area's infrastructure.

The Boneyard Creek that flows through the area had a long history of flooding and virtually all of the properties in the district were either in the floodplain or, in some cases, even in the FEMA-designated floodway. Green Street, the major artery that runs through the area, was a four-lane street with narrow sidewalks and poor drainage.

The chancellor of the University of Illinois at Urbana-Champaign came to the city expressing concern over the impact of the declining condition of this commercial area, which adjoins the University of Illinois campus, on student decisions to enroll at the UIUC campus. Starting in 2002, the Champaign city council made a series of decisions leading to a significant investment in the Campustown infrastructure. About \$50 million of investment was made in a series of flood-control projects for the Boneyard Creek, resulting in the area's removal from the FEMA-designated floodplain and floodway.

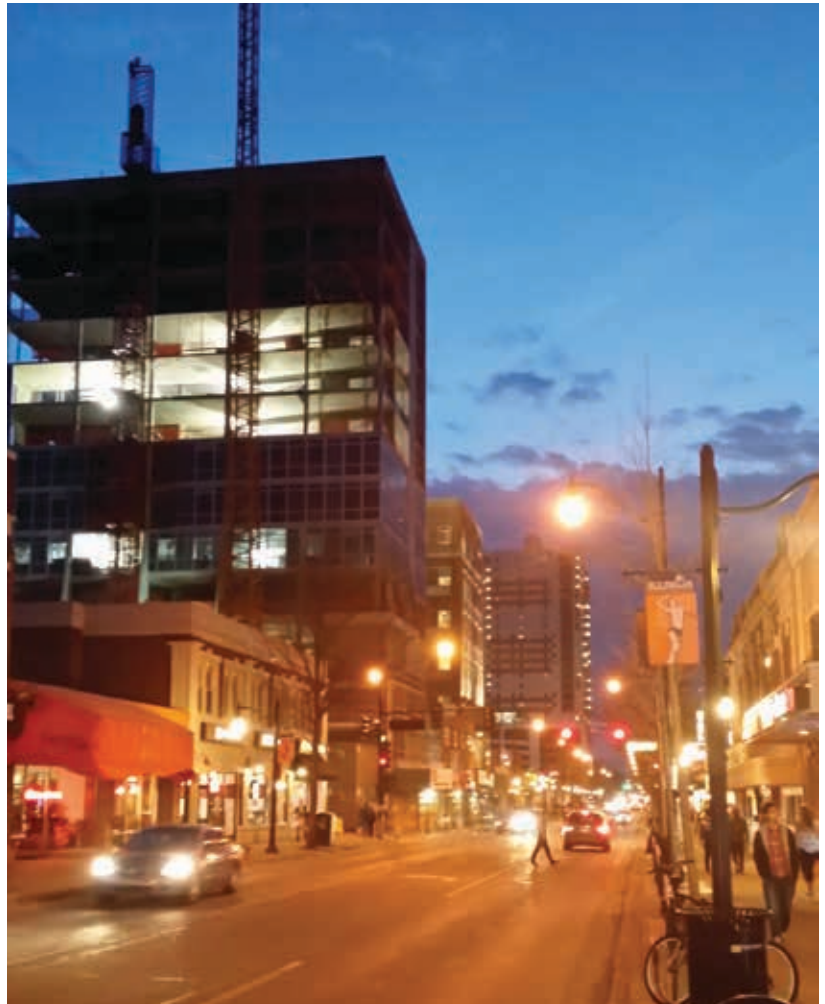
Approximately \$30 million (\$15 million of which came from a federal TIGER grant) was invested in rebuilding Green Street as a three-lane and two-lane street, which

prioritized the pedestrian environment and included attractive streetscape amenities. In the years since Champaign began this process, private reinvestment in the Green Street corridor has been valued at more than \$600 million. None of this investment would have occurred without the city first investing in the area's infrastructure, making it an attractive target for private investment.

This is only one of several examples of why investing in the city's infrastructure is so important to Champaign. I believe it is a key reason that Champaign is one of the only communities in Illinois that continues to grow. This conscious investment in our infrastructure is a key strategy in the city's efforts to promote economic development and private investment in our community. This includes having a transportation system that allows today's employees to get around our community via multiple modes of transportation — car, bus, bike or as a pedestrian — which we know is an important factor in creating a livable community. Businesses make locational decisions based on where their employees want to live, and the quality of life they will experience there, and a city's infrastructure plays a key role in that quality of life.

In my 40-plus years working as a city planner, I have had the good fortune of working for communities that valued planning for their future and saw positive outcomes as a result. During my term as president of the American Planning Association, I had the opportunity to travel the country and the world talking about the positive impacts of planning on the quality of life and economic development of communities large and small. The Rebuilding America and Sustaining Places projects were two initiatives I had the chance to work on, both of which spoke to the value created by investing in planning and quality infrastructure to create places of lasting value. During my tenure as president, the organization also implemented the Great Places in America program. As APA states on its website, "APA's Great Places in America program recognizes the streets, neighborhoods, and public spaces in the United States demonstrating exceptional character, quality, and planning — attributes that enrich communities, facilitate economic growth, and inspire others around the country Since launching the Great

Places in America program in 2007, APA has recognized 303 neighborhoods, streets, and public spaces located in all 50 states and the District of Columbia. Designees are selected annually and represent the gold standard for a true sense of place, cultural and historical interest, community involvement, and a vision for the future."



Green Street in Champaign, Ill.

As is evident from the categories, much of what makes these places great revolves around the quality of the infrastructure that was built to support the vision of those communities. In the end, having a strong vision for your community, and a commitment to investing in the infrastructure that supports that vision, is what sets some communities apart from others and makes them great places in which to live, work and play. ❖

Bruce Knight is planning and development director for Champaign, Ill.



Harnessing private-sector capital and expertise to move projects forward during recessions

by D.J. Gribbin and Michael Sargent

As state and local governments face unprecedented challenges in the face of COVID-19 and its accompanying recession, they also have an opportunity to utilize recession dynamics to address existing infrastructure challenges. One potential silver lining is the once-in-a-generation opportunity to improve the quality of the nation's infrastructure by

taking advantage of the dip in infrastructure costs, higher workforce quality, and the potential for economic returns brought about by the current economic climate. As demand slackens, declines in the cost of construction, operations and maintenance, and borrowing — already evident during this recession — can be significant. We conservatively estimate that projects advanced to time the downturn

can reap savings of 18 percent on a net present-value basis.

Governments face significant fiscal constraints, however, as the major downturn curtails revenues, limiting public funding available to finance large capital projects. Yet there are a number of strategies governments can deploy to prevent undue disruption in their plans to deliver better infrastructure. Indeed, with a thoughtful approach to procurement frameworks, governments can bypass fiscal constraints to realize the benefits that accrue to projects developed during a recession, by strategically utilizing private capital to finance the early development stage of projects to avoid disruptions in the delivery of essential infrastructure. In addition to creative thinking about the utilization of private capital, governmental owners of infrastructure should advocate for long-term changes in the way projects are delivered. Now is the time to remove or simplify needless constraints on our nation's ability to build for the future, including unduly cumbersome processes for project planning and permitting, unhelpful regulatory requirements, and antiquated constraints on infrastructure financing tools.

The private sector can be a valuable partner in delivering infrastructure in normal economic times, allowing for governments to take advantage of innovative project delivery, up-front financing, and life-cycle cost optimization. Furthermore, analysis from the Congressional Budget Office shows that the cost of private capital, when adjusted for project delivery risks, is essentially the same as the cost of government capital.

The value proposition of private participation becomes even greater during recessions when government budgets are tight. This is because governments can shift early development costs to private partners to alleviate the immediate liquidity issues facing state and local governments advancing a critical infrastructure project. This strategy allows the public sector to use private partners to bear the up-front cost of moving projects ahead — getting them “shovel ready” — so the project is ready to proceed once budgetary trends become more certain or funding is acquired.

LEVERAGING PRE-DEVELOPMENT AGREEMENTS TO EXPEDITE PROJECTS

A key tool for governments wishing to take advantage of the private sector's willingness to carry early-stage project costs is the predevelopment agreement (PDA). PDAs can be a powerful tool to allow for the progressive development of certain projects that exhibit high levels of uncertainty around potential scope and commercial structure, and the need for optimization of scope, design and capital costs. PDAs allow for the project to be developed in an ongoing, collaborative environment, as opposed to a typical, often adversarial fixed-price P3, in which the government solicits proposals that lock in aspects of design and a fixed cost. These different approaches are detailed in the figure on page 16.

The high level of collaboration between the public and private partners under a PDA enables the optimization of design as the project progresses, faster project development, and the opportunity to better understand and optimize risk transfer and the associated commercial structure. Because risk inherently drives

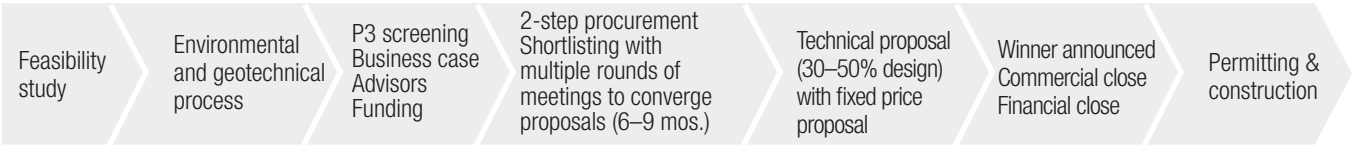
“In general, the overall cost of private financing is similar to that of public financing when interest rate subsidies, the cost of risk, and transaction costs are accounted for Even though the interest rates on tax-exempt municipal bonds are relatively low, ultimately, the cost of the private financing itself is roughly equal to the cost of public financing”

CBO Report on Public-Private Partnerships for Transportation and Water Infrastructure – Jan. 2020

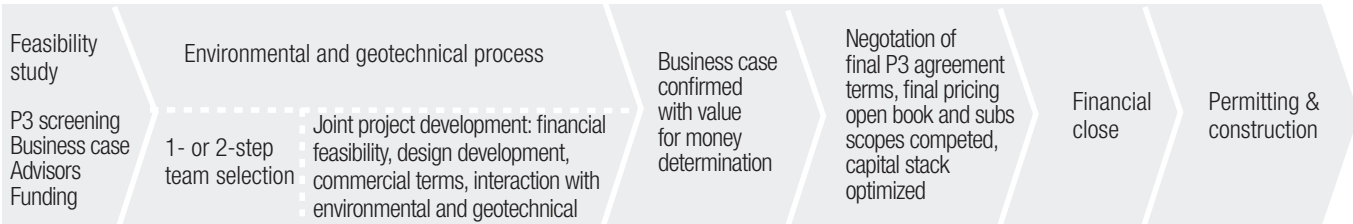
the cost of capital and the cost of the project, the goal during the PDA should be to collaboratively eliminate risk through the skill sets and resources of both the private and public partners prior to finalizing contract and financing terms, rather than simply accepting or transferring risk, which often is the outcome in a traditional fixed-price procurement. While the advantages to developing a project under a PDA are substantial, an element that is especially advantageous during a recession is the allocation of early-stage costs to the private sector, which also

Procurement options

FIXED-PRICE PROCUREMENT (PRICE-BASED)



PROGRESSIVE P3 PROCUREMENT (QUALIFICATIONS-BASED)



Source: Association for the Improvement of American Infrastructure

expedites the project timeline. As the U.S. Department of Transportation describes, “in some cases developers are willing to perform the preliminary engineering at a partially deferred cost, at risk, and with full payment at financial close. At the end of the planning process, the project is more likely to be bankable, obtain debt financing, and reach close of finance. By working collaboratively, both parties can obtain a better understanding of the project’s risk profile and have the opportunity to develop more effective risk mitigation strategies.” While the government maintains the right to terminate the agreement as the developer carries out predevelopment activities, it will be responsible for reimbursing the private partner for third-party predevelopment expenses, such as design, geotechnical and environmental due diligence, and permitting activities.

As a result, a PDA allows the project to move ahead with early development stages at little to no initial cost for the public partner — a key advantage in periods of budgetary constraints. One case study of the benefits of this approach is the construction of the Travis County Courthouse in Austin. The project was progressively developed via a PDA, under which the developer funded the \$7 million of predevelopment costs through financial close. Delivering the project via a PDA reduced the overall project costs by roughly 15 percent and delivery by 18 months compared with

traditional delivery methods. Regarding the delivery method, the private partner summarized: “The beauty of this progressive design-build delivery is that the parties were able to advance the critical path of the project at the developer’s risk, without issuing debt or financially committing the county to the project until it was completely satisfied that it had achieved its design, cost and schedule objectives.”

Thus, utilizing PDAs to foster the rapid completion of the early project stages will not only allow governments to realize countercyclical benefits, but also create projects that are “shovel ready” when funding becomes subsequently available.

ACHIEVING OPTIMAL COMPETITION

Another advantage of utilizing a progressive P3 under a PDA is the ability to optimize competition for various components of the project. One of the challenges of fixed-price P3 contracts is that developers and contractors need to lock in prices before they have complete clarity of the final scope and project risks. As a result, contractors at different tiers have to add meaningful contingencies in their pricing to accommodate any potential changes and risk.

Under a PDA procurement, governments can utilize competition on developer, design and construction fees as a percentage of cost as a component of the award, which ensures market pricing of fees prior to award.

As outlined in the figure below, pricing is finalized later in the PDA process, when the design has been further developed and risk has been reduced or eliminated, thereby meaningfully reducing uncertainty and contingencies, resulting in better pricing for the owner. The benefit of transparent pricing of the work later in the process is especially relevant for social infrastructure projects, in which as much as 90 percent of the work is subcontracted to trade contractor firms. In addition, this delay in pricing subcontract work could also be beneficial to a project's affordability as costs decline.

While the benefits of PDA procurements provide significant advantages, there are some potential downsides to this approach that governments should contemplate. It's important to note, the PDA model is fundamentally built on trust, which may not be uniformly present across all developers participating in commercial transactions. Developers, for example, can have a built-in incentive to upsell the government once awarded the project. While data are limited, a study detailing 14 Australian infrastructure projects procured through Alliance Contracting — Australia's PDA equivalent — suggests such projects may be at higher risk for cost overruns than more traditionally procured projects, with overruns averaging 50 percent across the 14 projects. However, there are ways

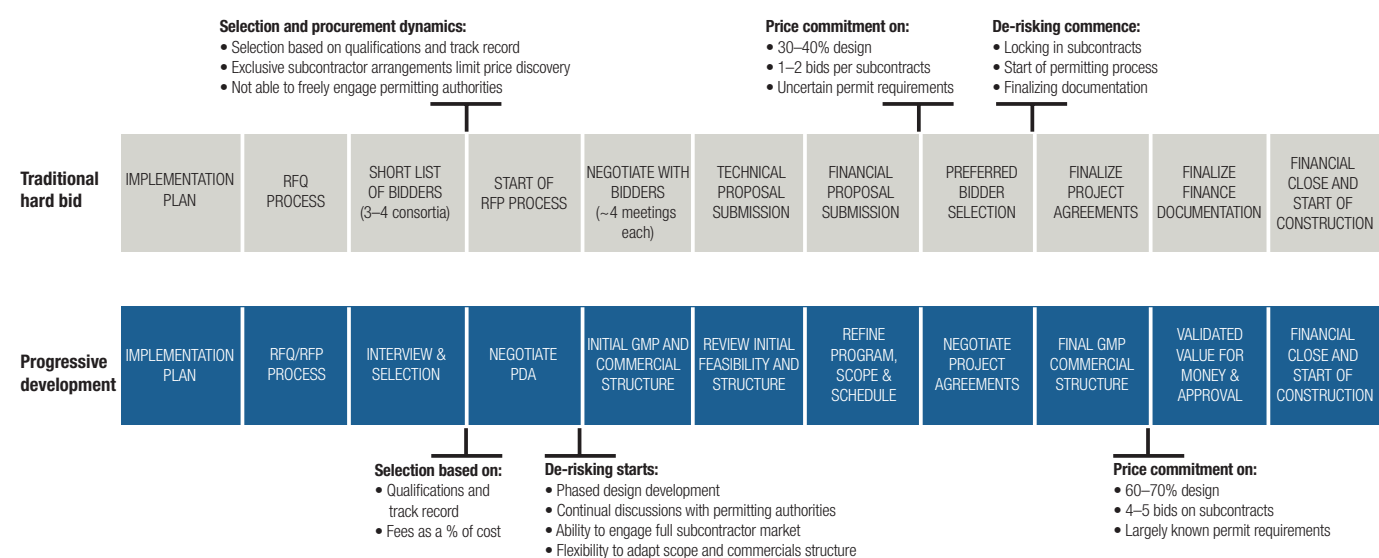
to introduce incentives to negate this problem. One method that has been utilized to limit this downside in Australia is the imposition of “gainshare/painshare” regimes, whereby non-owner partners share in a proportion of cost overruns or underruns (with the painshare capped at the size of the partner's fee). Such an arrangement, as well as strengthened project governance and the imposition of a hard budget affordability cap in the PDA, are effective to ameliorate potential downsides to these transactions.

Overall, PDAs should be viewed as an advantageous delivery mechanism for governments during a recession. They allow governments to bypass fiscal constraints by shifting initial cost and schedule risks onto the private sector, progress project development, and optimize competition and risk transfer to drive down costs — all of which allow the governments to realize the full benefits countercyclical infrastructure development can offer.

REVIEW AND STREAMLINE PROCESSES FOR DELIVERING INFRASTRUCTURE

Despite significant advances in technology and innovative delivery methods, the time it takes to deliver state and local public infrastructure projects has increased over the past decade. The figure on page 18 shows that the time it took to deliver state and local infrastructure projects more than

Procurement process for progressive development vs. hard bid



Source: Association for the Improvement of American Infrastructure

Project completion times				
State/local project type (\$10MM+)	Average completion time (months)		Increase/decrease	
	2007– 2008	2017– 2018	Months	Percent
All projects	25.6	28.0	2.4	9.4%
Office	28.1	24.8	–3.3	–11.7%
Educational	23.2	24.2	1.0	4.3%
Transportation	27.1	28.5	1.4	5.2%
Highway and street	29.4	32.2	2.8	9.5%
Sewage and waste disposal	27.2	32.9	5.7	21.0%
Water supply	25.9	30.4	4.5	17.4%

Source: U.S. Census Bureau, *Construction Length of Time Statistics*

\$10 million increased by nearly 10 percent from 2008–2018 and increased across most major sectors of public infrastructure.

State and local governments should evaluate their procurement methods to identify impediments to delivery, so they can streamline the process and take advantage of the greater bandwidth in the design and permitting resources to more rapidly deliver projects during a recession.

REQUEST FLEXIBILITY FROM THE FEDERAL GOVERNMENT

In conjunction with identifying local pinch points that can affect infrastructure delivery, state and local governments should request flexibility from federal mandates that inhibit the timely and cost-effective delivery of infrastructure during a recession. One area state and local governments should seek flexibility is in capital planning requirements. A key problem in the planning process that prevents state and local governments from developing an actionable project pipeline during a recession is the requirements associated with capital project planning. To make projects eligible for funding, the federal government requires states and local governments to ensure their capital plans for transportation are “fiscally constrained.” Although this federal requirement specifically applies to transportation improvement plans, state and local governments also tend to impose fiscal constraints on their own broader capital plans. Fiscal constraint is well intentioned to protect taxpayers and prevent political gamesmanship over

which projects are truly affordable and likely to be built. It poses a problem, however, for assembling a pipeline of projects ready for deployment as soon as a recession causes revenue forecasts to decline. Governments should request more flexibility from the federal government in crafting transportation improvement plans and consider flexibility from similar self-imposed local requirements to take advantage of countercyclical development opportunities.

Another potential impediment is the environmental review process under the National Environmental Policy Act (NEPA). The NEPA approval process can take 4.5 years, on average, for completion of an Environmental Impact Statement, and even longer (about seven years, on average) for larger projects. Even when attempting to quickly disburse stimulus funding for projects during the 2009 economic recovery efforts, more than 192,900 projects were subject to NEPA reviews, of which more than 7,200 were required to complete lengthy Environmental Assessments, and 861 were required to complete even more time-intensive Environmental Impact Statements. Although efforts were then and have since been made to expedite this process, it is clear that the inefficiencies of the current approach to NEPA serve as an obstacle to the rapid deployment of infrastructure capital. State and local governments should encourage Washington and state Environmental Protection Agency counterparts to grant them flexibility from burdensome NEPA reviews when such reviews prove to inhibit the development of infrastructure projects during the recession.

EXPLORE CREATIVE FINANCING OPTIONS

States and local governments should think creatively about financing mechanisms available for project financing and how to fund critical governmental functions, such as project management. One novel option is the Federal Reserve’s Municipal Liquidity Facility. The facility supports up to \$500 billion in lending by purchasing eligible notes issued by states, cities with populations exceeding 250,000 residents, counties with populations exceeding 500,000 residents, multistate entities, and other revenue bond issuers. Governments

can employ the proceeds provided by the facility for a variety of uses, including deferrals or reductions of tax and other revenues, increases in expenses related to or resulting from the COVID-19 pandemic, or requirements for the payment of principal and interest on obligations.

Although it represents an unfamiliar source of financing, the Federal Reserve's facility could be a helpful source of funding for state and local governments to retain internal project-management capacity in the face of budgetary challenges. Key project-management staff require years of expertise gained from adopting local knowledge and developing projects over multiple years. If governments outright eliminate such positions in attempts to economize, they will lose institutional knowledge that will take years to replenish, even under the best circumstances.

Other available vehicles that would provide advantageous financial assistance to finance projects are federal credit programs, including TIFIA (for surface transportation projects), WIFIA (water infrastructure projects), and RRIF (rail projects), as well as state infrastructure banks. The federal credit programs provide especially favorable terms, including the ability to borrow at low federal rates and the deferral of payments up to five years following substantial completion of the project, which yield significant advantages for fiscally constrained governments seeking to deliver projects during recessions. A creative approach to project financing can be an important element in a government's ability to adequately maintain its infrastructure.

BE FEDERAL-READY, NOT FEDERAL-DEPENDENT

State and local governments should resist the urge to wait for the federal government to provide "windfall" funding for infrastructure projects. At best, it is unclear when or how the federal government will provide infrastructure funding for state and local governments. Despite apparent bipartisan support for infrastructure spending, lawmakers have not included major infrastructure funding in the \$3.6 trillion approved for COVID-19-related efforts by Congress thus far

(aside from funding meant to stopgap losses for transportation operators, such as airports and mass transit). While disparate pieces of infrastructure legislation have been introduced in the House and Senate, and may soon be proposed by the White House, a viable path forward for infrastructure legislation remains unclear and is complicated by politics surrounding the current environment. Instead, advancing projects as rapidly as possible should be considered as the dominant strategy for state and local governments. Advancing projects through predevelopment stages and getting them ready for construction to optimally time the dip will not only yield cost and quality benefits, but will also create a slate of active projects should the federal government eventually provide funding, allowing governments to put federal funding to use immediately. In short, proactively developing infrastructure independently of federal action is a win-win scenario for state and local governments.

CONCLUSION

State and local governments are being battered by the demands placed on them by a global pandemic and the ensuing economic recession. Now is the time to be creative to ensure all policy is not overtaken by the tyranny of the urgent. With a modest amount of effort and creativity, governments can focus the necessary resources on the unique demands of 2020 and still preserve their ability to deliver the critical infrastructure necessary for our nation's future growth and prosperity. Leaders can rise to the opportunity by focusing on capturing the little-recognized benefits of proactively developing infrastructure in a manner that takes advantage of recessionary trends. Those that do so will not only enjoy the short-term gains brought by investment, but will also be rewarded over the long run as projects are deployed sooner than otherwise possible at a significantly lower cost to users and taxpayers. The time to realize the benefits of countercyclical infrastructure policy is now. ❖

D.J. Gribbin is founder and **Michael Sargent** is director, policy and research, of **Madrus, LLC**.



Understanding greenfield and brownfield P3 projects

by Gianluca Minella

Public-private partnerships (P3s) encompass a range of infrastructure projects across different sectors, contract structures and payment mechanisms. One fundamental classification difference for P3s is between greenfield and brownfield, and it describes projects that are in different stages of their development and with different risk/return characteristics.

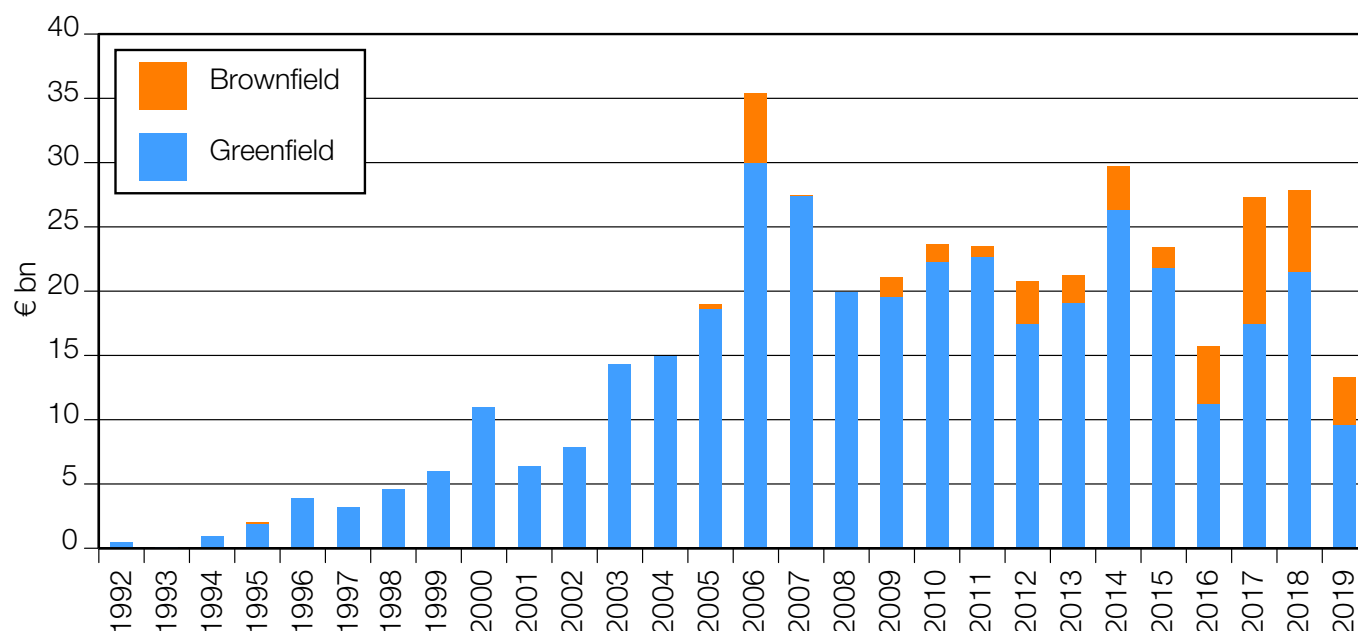
Definitions: Greenfield P3s involve the use of previously unused land — i.e., “green sites” for the development of new infrastructure facilities. Examples are new toll roads, courthouses, desalination plants or schools. A brownfield P3 project involves previously used land, i.e., “brown sites.” Brownfield projects can be developed on sites with pre-existing assets, and may involve the expansion and conversion of existing facilities, or only the operation and maintenance of existing facilities. The construction of a completely new school, for example, would be a greenfield project, while the modernization of an existing school would be a brownfield project. In both cases,

greenfield and brownfield projects can provide to state and local governments and their communities higher-quality infrastructure, jobs and budget flexibility.

Typically, brownfield projects are characterized by a flatter J-curve, meaning the time it takes the project to reach the operational phase and generate cashflow is faster than that of a greenfield project, thus providing services to users and cash-flow distributions to equity sponsors more quickly. As a result, investors might accept lower levels of returns for brownfield projects in return for being paid more quickly, although other factors, such as demand and tariffs, would also play a role.

Europe is a illustrative example of a market with a mature, observable track record of projects. P3s here have a successful history of more than two decades, across countries such as the United Kingdom, Italy, France and Germany. According to data from Inframotion Deals, as of September 2020, greenfield projects represent the majority of P3 projects reaching financial close

P3 transactions in Europe by type



Source: Inframation Deals, as of September 2020

in the period 1992–2019, particularly in sectors such as transportation and social infrastructure, including hospitals, judiciary facilities and schools. Also, according to Inframation Deals, historically, brownfield P3 projects were mostly concentrated in the transportation sector.

P3 frameworks have been particularly successful across Europe in supporting governments in developing projects in the early 2000s, with projects deemed essential for the economy, relying on the private sector to provide the capital and skillset needed to develop complex infrastructure. P3 frameworks have also helped support economic development and employment, while preserving the governments' fiscal capacity for other purposes. In the past decade, we have observed a slowdown of project volumes, but we expect transaction volume to gradually accelerate, supported by renewed interest from policymakers, particularly in the context of rising fiscal deficits and the need to stimulate the economy.

One key difference between greenfield and brownfield projects relates to the level of complexity in the development phase. The level of complexity and risks is generally higher in a greenfield project, as new facilities need to be designed and constructed “ex novo”, or, from scratch. Greenfield projects are typically centered around design-build-operate P3 frameworks, and projects can require

more capital than brownfield projects. Moreover, financial close for greenfield projects may be more difficult to achieve, because the design phase is typically more complex, and the project legal and financial structure have unique challenges, with equity sponsors and lenders generally expecting a higher level of return compared with brownfield projects, to compensate for the higher risks.

More to the point, the development phase of a greenfield project comes before the construction phase, and comprises a number of different stages, including the acquisition of land, the choice of a technology, and design of the project. Each of these phases involves the selection and participation of different stakeholders, including designers, suppliers and contractors, and can be subject to different legislative, tendering and administrative processes across different countries, as described by the World Bank's *P3 Reference Guide 3.0*. The underlying contract structure can be complex, as it needs to govern the behavior of the parties involved, and determines consequences and penalties in case of deviations from the original business plan.

In greenfield projects, the land acquisition process can be critical, and can bear considerable risks, as the purchase of land may be subject to lengthy administrative procedures, for example,

for the expropriation of private land. Across some jurisdictions, the underlying P3 legislation may enable sponsors and governments to proceed relatively rapidly in the land acquisition process. In other cases, the administrative process may be more fragmented.

Over the past two decades, P3 frameworks have gradually evolved and matured across Europe, and have become more integrated and flexible. This has contributed to providing investors with more certainty around the timing and costs of the development phase, supporting the ability to finance and bank greenfield projects. Yet, within Europe

there are some differences in the ability of governments to design P3 frameworks that are most able to attract private capital. The overall maturity and transparency of the P3 legal framework has generally been one of the key determinants for the volume of projects reaching financial close across countries, particularly for greenfield projects. This highlights the crucial role that the P3 legal framework may play in determining the success of a project.

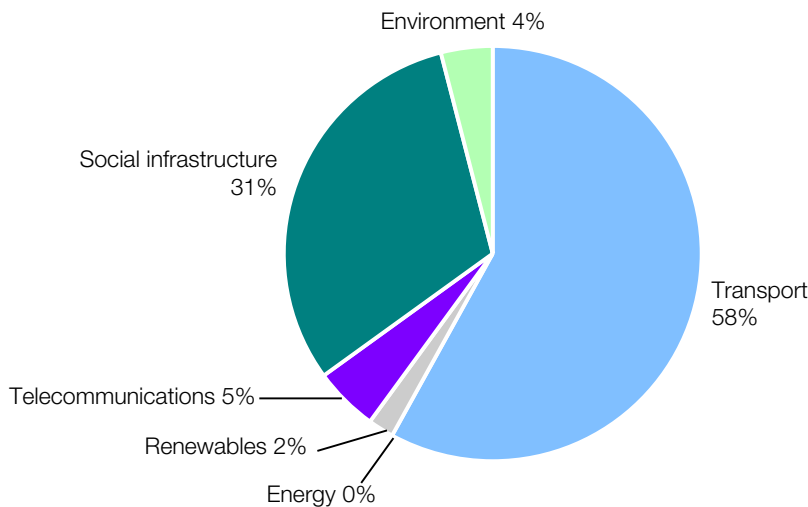
THE STAGES OF P3S — GREENFIELD VS. BROWNFIELD

The development phase is essential to reach the financial close stage, and can expose greenfield P3 projects to material cost uncertainties that need to be dealt with from a contractual perspective. Considering the choice of technology for a water desalination project to provide potable water, for example, available technologies may range from thermal processes to membrane processes, two solutions with different complexity levels, costs and track records. The design phase of greenfield projects may also vary in complexity based on the type of project. The design of a school building may be significantly easier than the construction of a complex water network, for example, as noted in *Standard & Poor's Project Finance Ratings Criteria Reference Guide*.

The construction phase of the project starts once financial close has been achieved, and lasts until the project reaches its operational phase. It is a critical phase, and the choice and experience of contractors may play a key role in the project success. This period typically includes several phases, such as construction, performance testing, and the rectification of any defect identified, concluding with the final acceptance of construction. Projects reaching financial close, generally include an estimate for construction costs, with a precision in the range of 5 percent to 15 percent, as costs may be subject to market variations, according to *Standard & Poor's Project Finance Ratings Criteria Reference Guide*.

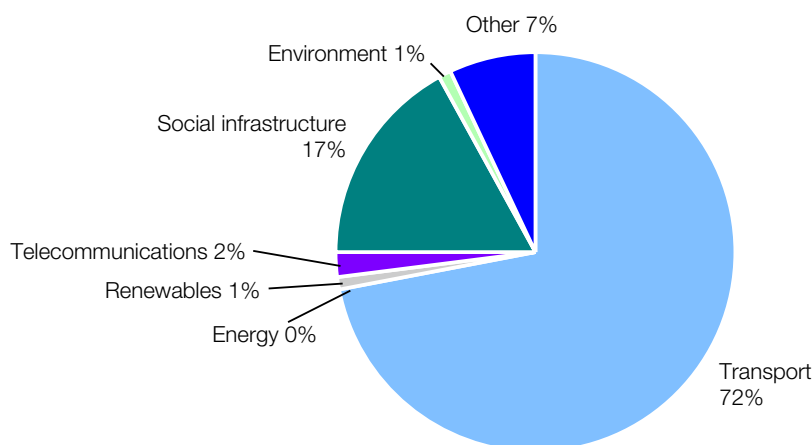
Greenfield projects, particularly if they are complex and large, may experience cost overruns that normally do not become fully evident until the project is nearing the end of construction.

Greenfield P3s in Europe by sector, 1992–2020 YTD



Source: Infraction Deals, as at September 2020

Brownfield P3s in Europe by sector, 1992–2020 YTD



Source: Infraction Deals, as of September 2020

Brownfield projects generally involve less risk in the development phase compared with greenfield P3s. In some cases, a brownfield P3 may only transfer an underlying concession from the public sector to the private operator, limiting responsibility of private operators to the operation and maintenance of the existing asset. For this type of brownfield project, governments may be able to monetize assets by receiving a large upfront sum in exchange for the right to use/operate an existing revenue-generating asset. This sum can be reinvested into community infrastructure, a process called asset recycling, and a benefit of brownfield projects.

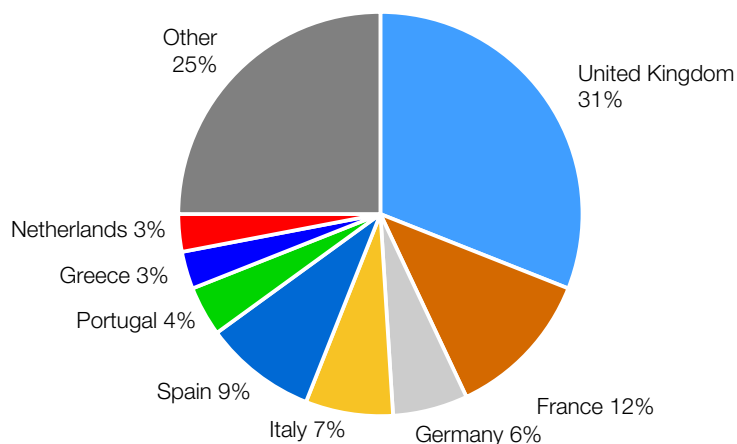
Nevertheless, brownfield projects can also be exposed to a wide range of risks that may lead to cost overruns or delays. The conversion of an existing industrial facility to a new use, such as a school, may expose the project to the presence of contaminated ground, for example; moreover, the existing facilities may constrain and delay construction activity and require novel solutions.

There are key differences between greenfield and brownfield projects in the development phase, but the operational phase can also expose investors to different risks and requires adequate planning, to ensure cash-flow projections to remunerate equity sponsor and lenders are met. In particular, while brownfield projects may have several years of performance data supporting the business case, a greenfield project may often have no such existing data. A brownfield toll road project may rely on existing traffic performance data, for example, while a greenfield toll road may have to rely on potentially more volatile projections, as Standard & Poor's notes in its *Project Finance Ratings Criteria Reference Guide*.

IN CONCLUSION

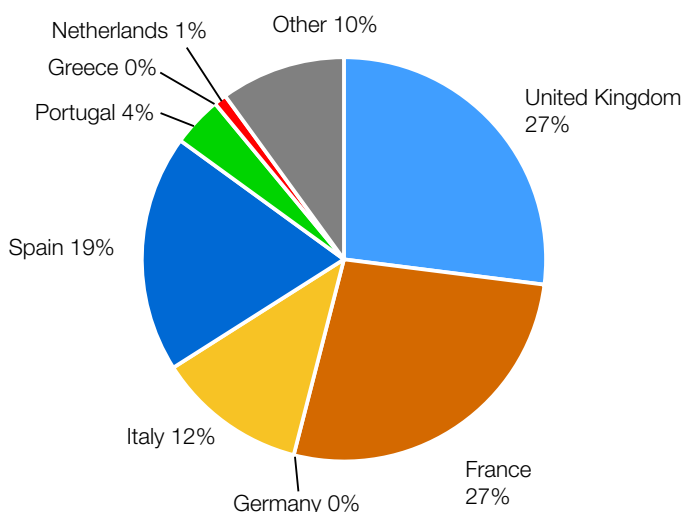
Greenfield and brownfield projects can present public officials ways to improve infrastructure in their communities and provide investors and their beneficiaries with investment returns. Each comes with unique challenges and opportunities, and understanding the differences between these project types, in terms of the risks, expectations and benefits, is a necessity

Greenfield P3s in Europe by country, 1992–2020 YTD



Source: *Inframation Deals*, as at September 2020

Brownfield P3s in Europe by country, 1992–2020 YTD



Source: *Inframation Deals*, as at September 2020

for stakeholder success. For public officials and investors wanting to learn more about these projects, Europe, the United Kingdom and Canada provide examples of not only these projects, but also the evolution of P3 markets, including how governments, regulators and investors have worked together to adapt and fine-tune greenfield and brownfield projects to meet stakeholder needs. ❖

Gianluca Minella is the global head of infrastructure research for **DWS**. He joined the firm in 2014. Prior to joining, he was an associate director in the utilities and transportation team at *Fitch Ratings* and earlier, a rating specialist for **Standard & Poor's**, and an M&A analyst at **Enel Green Power**.



Building a culture of P3s in the United States

Developing and implementing tools and processes to support public-private collaboration are critical

by Yousef Salama

"The time for owners dictating terms has passed. We don't get reasonable terms, we wave goodbye." — Ronald Tutor, chairman and CEO, Tutor Perini, Q2 2019 earnings call, Aug. 8, 2019

"Instead of entering into what we believe to be a partnering relationship, it is now clear that especially in the context of these megaprojects, the best price design-build contract delivery model and the public-private partnership contract delivery model resulted in an untenable imbalance of risk sharing between ourselves and the project owners. These projects clearly are not aligned with our expectations or with those of our stakeholders." — James H. Roberts — president and CEO Granite Construction, Q2 2019 earnings call Aug. 2, 2019

Today's business leaders are skeptical of the potential value of public-private partnerships (P3s). Arguably, P3s have never been given a fair chance in the United States. On one hand, this is due to a lack of political support: The model is not actively promoted by agencies at any level of

government. Neither political party at the federal level has historically supported the use of P3s. Democratic presidential candidate Joe Biden, who released an infrastructure plan that involves investing \$2 trillion to upgrade U.S. infrastructure, leaves P3s largely out of the equation. President Trump has called P3s more trouble than they're worth, as reported in *The Wall Street Journal*.

On the other hand, the rollout of P3s has not been supported by strong legal frameworks, which would help to stimulate greater market confidence and project pipelines. Each of the 50 states has separate legislative and regulatory regimes and, at present, only two-thirds of these states have P3-enabling legislation. Although some states, such as Maryland, Virginia and Texas, have a state procurement agency, projects in the United States are being procured at all levels — municipal, county and state. In other words, the lack of a unified P3 procurement body in the United States has slowed the development of much-needed projects throughout the country. This means there can be multiple procurement agencies in one state, which makes it more difficult for projects to

move forward, as it leaves limited space for lessons learned from past projects.

Unfortunately, the patchwork of regulatory requirements that apply to infrastructure projects in states and local jurisdictions have a variety of rules governing the use of P3s, and 17 states don't allow P3s at all. Projects must go through numerous regulatory reviews, which can be lengthy and duplicative. And political uncertainty may result in the plug being pulled on a project after capital has been expended but before it generates revenue.

The U.S. infrastructure market routinely ranks No. 1 globally in terms of deal value and volume — it ought to be fertile ground for P3s. Yet due to the two issues mentioned, the result is a fragmented P3 culture, with an unstable pipeline of infrastructure projects; few to no standardized procurement processes; and minimal trust between the public and private sectors to elicit and sustain a diverse and competitive supply market.

To achieve long-term success, public owners need to develop culture — that is, make a deep commitment to the frameworks, methodologies, and pre-procurement due diligence required to develop market-accepted and financeable projects. In other words, what they need to build are world-class careers, where public servants see a pathway to meaningful work and long-term professional growth. These catalysts will lead to ancillary benefits for public owners, including internal knowledge capacity and reduced staff attrition.

The U.S. federal government should work in cooperation with local and regional governments to establish a national infrastructure plan with investment priorities, clear guidelines and transparent procedures for the disbursement of public monies funding infrastructure projects. Regulatory agencies that oversee infrastructure investment and the operations of enterprises with infrastructure investments should then be independent from undue political interference. The government should also develop mechanisms to uphold the principle of transparency and procedural fairness for all investors bidding for infrastructure contracts, to protect investors' rights from unilateral changes to contract terms and conditions.

Efforts to create a common, national policy will allow investors to scale their investments into larger programs and to develop benchmarks for relative risk across different sectors and geographies. This same policy would attract investors to supply infrastructure

at fair and reasonable prices, to ensure contracts serve the public interest, and to maintain public support for P3 projects.

Some public owners, such as the Los Angeles County Metropolitan Transportation Authority, San Diego Association of Governments, and Virginia Department of Transportation, have recognized an effective way to move beyond world-class moments by investing in their own P3 offices, and staffing them with experienced P3 staff and external advisers.

In the absence of experienced and centralized P3 agencies providing the necessary commercial procurement and project management support, a proven and successful way to implement P3s in the United States is by integrating critical external advisory services, such as technical, financial and commercial procurement roles, into one team. Doing so improves decision making, mitigates risk, increases speed to market and decreases costs. The value of the integrated advisory model is that it develops a single point of accountability, allocates responsibilities effectively across the team of experts, and generates coordinated and collaborative recommendations to accelerate decision making.

CREATING A 'MADE IN USA' P3 MODEL

In stark contrast to the United States, Canada is widely acknowledged as a key source for international best practices in emerging P3 programs around the globe — an inspiring case study that the United States can continue to leverage through organizations such as the Association for the Improvement of American Infrastructure to create a model that works for the American context.

Especially since the onset of the 2008 financial crisis, the Canadian P3 market has emerged as one of the world's most consistently productive — a market characterized by a strong pipeline, efficient procurement, vigorous competition in supply and a supportive political environment. In the first three quarters of 2019, P3 projects in Canada represented more than 30 percent of its \$15.1 billion total deal value.

Canada's place in the global P3 market didn't happen overnight. It happened because of culture. Although the context is different — federal and provincial support in Canada are strong — the United States can adopt several elements the provinces use to enable a culture supportive of P3s. In particular, the provinces of Alberta, British Columbia, Ontario and Saskatchewan have established their own

specialist agencies: Alberta Infrastructure, Partnerships British Columbia, Infrastructure Ontario, and SaskBuilds.

Through the creation of P3 Canada and the \$1.25 billion P3 Canada Fund, the federal government of Canada played a more active role in encouraging P3 project delivery, particularly at the municipal level. The agency later developed into “one of the world’s great centers of P3 knowledge and expertise,” as noted by the Canadian Council for Public-Private Partnerships.

The work of these agencies benefitted the Canadian market significantly, providing a steady pipeline of well-structured economic and social infrastructure projects, and standardized procurement processes. It also fostered a collegial approach both among and within the provinces, including the sharing of lessons learned and new approaches.

At the heart of each agency’s approach are two key elements — a culture of pre-procurement due diligence and an integrated strategy toward managing external advisers. In addition, a lot of time is spent early in the process on developing a robust and comprehensive P3 business case. These elements play a key role in improving the efficiency of the procurement process and greatly reducing bid costs.

In contrast, standardization in due-diligence activities and procurement have been largely lacking in the United States when it comes to the P3 environment. Expertise in the specialized nature of P3s varies from state to state, and many public owners — through no fault of their own — are unaware of the tools needed to successfully execute this model.

To address the absence of centralized P3 agencies in the United States, public owners can emulate the Canadian provinces by adopting

a similar approach at the organizational level through an integrated advisory model that includes a critical role that is typically missing from P3 advisory in the United States: a commercial procurement, cost and project management adviser.

THE INTEGRATED ADVISORY MODEL EXPEDITES DELIVERY AND REDUCES COST

To successfully adopt an integrated advisory model, three key roles are housed on one consolidated team — technical, commercial and financial advisers, with remits drawn from those (see below left).

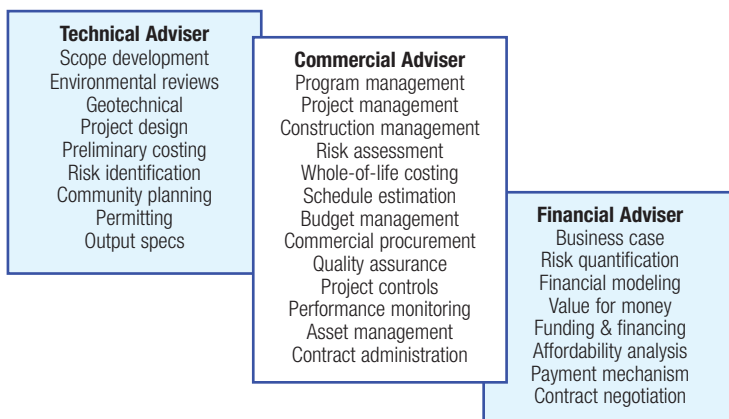
Collectively, these capabilities are responsible for P3 evaluation and implementation, with the purpose of limiting risk, improving project decision making, increasing speed to market and decreasing project costs. By establishing this expertise on one team, public owners can expect to bring projects seamlessly from the planning phase to P3 procurement and contract award/implementation.

A few issues currently exist, however, in the United States. First, public owners typically procure these advisers separately and manage them within individual departments. In turn, advisers report to a project leader, often a department representative who has multiple project responsibilities and limited P3 experience.

Second, often the responsibilities of the commercial adviser are commingled with the technical adviser, financial adviser, or both, leading to an expansive list of responsibilities for each advisor. Instead, public owners ought to draft solicitations that bring all of these responsibilities under one RFP but divide the capabilities according to the adviser best able to manage and deliver them. In effect, this approach mimics the advantages of a P3 contract by creating a single point of accountability that could be incented through an agreed upon painshare/gainshare regime. This regime would include a baseline project implementation schedule, failure points and payment deductions (when project milestones are not met), incentive payments when milestones have met or exceeded the baseline schedule, and a rate schedule for additional scope of work.

There will undoubtedly be challenges getting such an approach off the ground, foremost generating competitive tension among

Integrated advisory model



Source: Townsend & Turner

advisers to bid. The main issues being reliance on the performance of the public owner to be able to contribute to project milestones, and there being enough realizable value for the public owner to make the “gainshare” portion attractive enough for advisers. To mitigate these issues, public owners ought to solicit feedback from the advisory community through a request-for-information, market sounding or virtual forum. Changing culture is not an overnight phenomenon.

Without an integrated advisory model, many P3 projects in the United States have fallen victim to scope creep, lack of accountability for cost and schedule issues, slow and cluttered decision making, potential for P3 advisers to work in silos rather than as an integrated team, and expansive management responsibilities for public owners.

BRINGING IT ALL TOGETHER: AN INDEPENDENT COMMERCIAL PROCUREMENT ADVISER

The final piece to a “made in USA” P3 model is ensuring the commercial procurement, cost and project management adviser hired is independent from the supply chain. In other words, this adviser should not have ties to any design, construction, engineering or financial team, so that they approach every task with an independent mindset. Consequently, public owners can be sure that the information and recommendations they receive improves balance and objectivity. This role operates much like the centralized provincial agencies in the Canadian example, providing key functions that optimize the end-to-end procurement process:

- Program set-up, which includes procurement methodologies, governance structures and due diligence frameworks to articulate how a public owner will deliver projects in an innovative and successful way.
- P3 screening, which ensures risk identification/analysis and contributes rich insights to the business case development.
- Risk management to ensure strategic issues or opportunities that could impact the overall project’s schedule, scope, quality or affordability are identified and resolved quickly.
- Minimizing scope creep by ensuring the design and output specifications conform to project requirements and cost parameters set.
- Providing a single point of accountability for all the work, from delivering procurement documents, managing processes, and facilitating procurement evaluation with transparent reporting to the public owner.

Building a culture that supports better P3 models in the United States is long overdue. While the United States may not yet have the policy environment to adopt a more centralized approach to P3 procurement, public owners can learn from best practices and apply them at the organizational level to mitigate some of the less-than-ideal outcomes that some U.S. P3s have historically experienced.

Namely, public owners can adopt an integrated advisory team with the expertise outlined in this article. Crucially, including a commercial procurement adviser on the integrated team provides the specialized expertise required to navigate the unique nature of P3 agreements, validate costing and scheduling estimates, and play an independent role that ensures public owners maximize their return on investment. The value of approaching P3s as an exercise in building “world-class careers” will result in the following outcomes:

- A more collaborative approach across the end-to-end procurement process, which will save time in decision making and improve communication.
- A greater robustness and accuracy in due diligence to set up a comprehensive business case, which will prevent unnecessary scope creep, off-market risk transfer and delays in procurement.
- Greater precision in costing and scheduling.
- Pathways for long-term professional growth for public owners’ staff, knowledge development and capacity building.
- A single point of accountability that better distributes tasks to the best advisory role on the team.
- Reduced management responsibilities for the public owners’ staff.

By applying some lessons from international examples and adapting them to the American context, public owners can deliver on a better “made in the USA” P3 culture that benefits communities across the country now and for years to come. ♦

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Lessons learned from the United States

Insights on innovative finance in U.S. infrastructure

by Jeff Baudier

Investment in infrastructure in the United States in the modern era has been largely accomplished through two routes — (a) government budgeting allocated from tax revenue, including the federal gas tax; and (b) the municipal bond market. What has been used to a lesser degree — but which has enjoyed greater use outside the country — are innovative finance models, such as public-private partnerships and similar alternatives.

THE CLASSIC U.S. PUBLIC FINANCE MODEL MUST BE MODIFIED

In the United States, historically, public officials have approached infrastructure needs by issuing public debt, leveraging federal funding or

incentives, instituting tax-based revenue streams to “pay as you go,” or using some combination of these. Although this model has been successful in some instances, it is also fraught with inefficiencies, such as overly burdensome contracting processes and duplication in project-delivery functions. In turn, projects experience significant delays and excessive costs, coupled with mounting frustrations of residents and constituents, leading to a loss of credibility for government agencies and local municipalities that rely on these traditional sources of funding to meet basic public needs. The public finance model is also fundamentally, and in many cases legally, contrary to private participation in public projects. Existing private activity

restrictions on municipal bonds and other public funding usually require the expensive defeasing of such debt, the forgoing of federal and state grants, or other incentives to make a private deal work.

This system has been somewhat perpetuated by the public finance and consulting industries, which incorrectly fear detrimental impacts from more public-private deals. In the United States, much of the water infrastructure spending is influenced by consulting engineering firms — the top 20 firms by revenue volume have an 80 percent market share. This level of control influences a greater propensity to maintain the status quo and more traditional infrastructure funding options, but it also represents a greater opportunity for disruption for well-leveraged and innovative private-sector financing partners. Recently, however, even historical opponents of public-private partnership (P3s) structures have recognized that private involvement must not only be allowed, but it must also be incentivized. This is apparent in the recent letter from the National Association of Bond Lawyers to the U.S. Congress and the recent resolution passed by the U.S. Conference of Mayors, both of which encourage the use of P3 arrangements and the relaxing of historically private activity restrictions to meet the nation's pressing infrastructure needs.

Regardless of one's view on public funding sources, the reality is many government agencies — particularly municipalities — are not in a position to continue operating as they have historically. Many are facing decisions to replace or significantly overhaul infrastructure that is beyond its useful life, operate utilities and deliver services with an aging workforce and overburdened pension systems, or extract revenues from a tax base that simply cannot afford what is asked of it.

It has also become clear that local governments can no longer wait for or rely upon federal action to make progress, particularly at a time when federal spending is at unprecedented levels that, to date, do not include any substantial infrastructure investments. Furthermore, history has shown that even when federal funding does exist, it takes years to move a project from contract execution through groundbreaking to completion because of the myriad bureaucracy and red tape. Local governments have traditionally turned to municipal bond markets in lieu of federal funding sources to

leverage required local matching funds for projects; however, many municipalities are limited in their bonding capacity and cannot even meet local match requirements. Further, COVID-19 response efforts have consumed time, attention and resources of local municipalities entirely, further exacerbating what was already a tenuous situation for local infrastructure funding. In such instances, P3s can serve as a useful innovative counterbalance to funding local needs — but they must be approached with diligence and leverage structures or forms that minimize risk and maximize the potential for short- and long-term success on all sides.

DIFFERENT COMMUNITIES REQUIRE DIFFERENT SOLUTIONS

Communities grow and evolve over time — rural, urban or suburban, hundreds of years old or newly built, each is different, and is driven to transact or not transact by individual dynamics. The key is spending the time necessary to understand what that particular community needs and how to best provide a specific, custom plan that fits. Trying to force a prescribed structure, without strong regard for what drives a particular community's need will not be successful. The term P3 is used generally to reference any type of public-private agreement, but the actual structure can vary significantly based on the situation and need. Public officials, for example, may be interested in an outright sale of key infrastructure or privatization of services, a concession agreement, a traditional franchise agreement, or an operating agreement, among other alternatives — all of which could be considered a P3. Concession agreements can be easier to facilitate with a municipality, given there is not an outright sale of any underlying assets, which in some instances can require a public vote or in others stoke dissension among residents.

From the private-sector perspective, formal public bidding processes create a rigid environment that disincentivizes innovative proposals or solutions. Some public-sector agencies, such as those in the states of Florida and Virginia, have adjusted their procurement policies to address these deficiencies by allowing unsolicited P3 proposals. Because many municipalities take procurement policy guidance from their state counterparts, more states making improvements such as these will have a positive “downstream” effect on how local

governments approach similar needs. Some jurisdictions require a vote by residents or referendum when public asset sales or leases are under consideration, regardless of the little public value they hold or costs associated with operating and maintaining aging infrastructure or assets. In these instances, the residents who are placed in a position to vote on such propositions may not fully understand these intricacies and instead focus on the potential loss of an asset — despite the fact it is obsolete and not performing.

Other policy measures place restrictions on how government agencies can use the proceeds of recycled assets — those that are leased or sold with proceeds used to invest in community infrastructure — or result in awkward governance of critical infrastructure, such as when local government agencies delegate oversight responsibilities to quasi-public utility boards that may not have the knowledge, understanding and expertise to operate with the public's interest in mind. Local government agencies have also been hesitant to consider the consolidation of assets or infrastructure that cross jurisdictional boundaries and would mean entering into partnerships with neighboring communities to help achieve economies of scale and sustainability.

THE COMMUNITY MUST RECOGNIZE THE NEED FOR A SOLUTION

Citizens must be made aware of problems in their communities that need solving; public support for a response simply cannot be built without an existing and well-publicized need. Each community will also have its own challenges that require unique approaches. In instances where asset recycling and/or an up-front concession payment is involved, for example, public sentiment and political acceptance could be more easily driven by the use of transaction proceeds, rather than the underlying concession arrangement itself. Furthermore, if there is no clear consensus about how to use the proceeds, that alone can be divisive enough to derail a transaction. This was partly the case with Bernhard Capital Partners' proposal to the City of Lafayette, La., regarding its Lafayette Utilities System, where numerous stakeholders had varying opinions as to how the cash payments should be re-invested into the city and no consensus was reached. Another potential pitfall is the proposal involving a capital infusion to

rehabilitate aging assets or improvements to operating performance. If the deficiencies have been concealed or otherwise are not broadly recognized and accepted by the community, the private investor will be seen as attempting to bring a solution where no perceived problem exists.

THERE MUST BE STRONG AND ENDURING COMMUNITY CHAMPIONS

There must be strong advocates who are respected and accepted within the community, and that are promoting the approval of the transaction, as opposed to the outside private partner. This can be the executive, the legislative power/council, the business community or even civic leaders, but there must be internal endorsement of the project from strong community leadership with the endurance and passion to see the transaction through to sanction and completion. The project cycle is long, and there are many stakeholders. Election cycles can have a major impact on whether a transaction can get closed, or whether a governmental body will even consider one, as they almost certainly become campaign issues. Patience and flexibility are musts.

THE NEED FOR DIRECT INFRASTRUCTURE INVESTMENT IS MORE COMPELLING THAN ASSET RECYCLING

We have found particularly in the wastewater and water arenas, the need for investment in existing infrastructure is great, and often these utilities operate within public bodies at a loss, or break even at best. These utilities may be subsidized by taxes, by revenue from other profitable utilities such as electric, or by direct transfers of fund from the general treasury. As expected, this situation is prevalent in low-income communities, and the problem has typically been exacerbated over many years by political aversion to raising rates to sufficient levels, or the inability to do so where the citizens could not afford such increases regardless. This leaves little to no room for up-front cash payments that municipalities can deploy for needs beyond the utility itself. This need, however, is a much more direct and compelling driver for the municipality to seek the help of a private partner, compared with asset recycling. It is more difficult to convince a community to divest control of a known asset to redeploy proceeds into an unproven endeavor, especially if there is a public lack of

confidence in the governing body's ability to wisely and efficiently reinvest such proceeds. In direct-investment concessions, however, the private party must be creative in finding ways to deliver a solution at acceptable returns without significant rate increases. This is typically where private investors with extensive operational experience can be a differentiator in striking an acceptable balance and reaching a transaction.

PUBLIC AWARENESS/PERCEPTION CAN NEVER BE ASSUMED OR OVERESTIMATED

No matter how much outreach occurs and how much information is released, the public absorption rate is low and slow. Existing public perceptions and misperceptions regarding local government and public assets are extremely difficult to change. The motivations of public bodies and politicians are rarely apparent, and the pure logic of the transaction will not win the day if we do not get the politics and the public perception right. Numerous misconceptions exist regarding P3s and their impact — from the idea that the public will lose ownership and ability to hold operators accountable for the performance of an asset, to worries that rates will increase with a private-sector operator only focused on extracting maximum profit. The reality is well-negotiated P3 structures with vetted private-sector partners allow public ownership and local control to continue, if desired. They can also provide greater certainty in stable, consistent rates by holding operators to these requirements through performance guarantees. In nearly all instances, qualified private operators familiar with competitive environments can better control costs that influence rate increases, a critical component to maintaining a stable customer base throughout the decades associated with the P3 agreement and ultimate success of this model. Ultimately, privately held companies or consortiums of investors have readily available capital and resources, allowing them to be much more agile, as opposed to being bound to traditional bureaucratic red tape and procedures.

Private operators are also motivated to build customer loyalty, trust, and community goodwill from the outset of the agreement to ease their transition into this new operating environment and ongoing delivery of services. Through freezing rates in the early years of operations, providing rate rebates to customers, or sponsoring community events

and organizations, private operators view an investment in the community as a necessary to a successful P3 agreement. For example, when Bernhard Capital Partners acquired Ascension Wastewater Treatment, Louisiana's largest private sewer operator with more than 17,000 customers, it immediately instituted a two-month reprieve for all customers' utility charges to help them navigate financial challenges resulting from the COVID-19 pandemic. Further, active participation in community matters is mutually beneficial to private partners and residents alike — lower rates and customer accommodations attract new businesses, and ultimately more jobs, to the area, establishing a cycle of economic opportunity.

Even where citizen stakeholder's recognize private operatorship as preferable to government management, there can be skepticism around whether government negotiators have the sophistication to protect the public's interest in a complex transaction with private parties. In that sense, it is crucial private investors insist on the government entity having adequate support from outside advisers across legal, financial and engineering competencies, as well as instill a legitimate sense that the private investor does, in fact, have the community's interest at heart.

In other areas where the public clearly lacks confidence in local officials to properly manage their utility, concession agreements have still failed because of further distrust that officials were justly and fairly exploring other options. In late 2019, when the City of Jacksonville, Fla., explored alternative solutions for delivering utility services through Jacksonville Electric Authority, city leaders ultimately canceled the bidding process because of a negative public response associated with transparency and other process-related concerns, despite proposals that would have achieved mutual goals for the city, utility, its customers, and private investors.

Most concerns regarding P3 agreements increasing public risk are unfounded. Public risk actually decreases, and can do so dramatically, in an appropriate P3 structure. Private operators are better equipped to manage risk, as opposed to the public bearing all risk, burden, and financial responsibility associated with a self-executed project or self-managed asset. ❖

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Lessons learned from Canada

Insights on innovative finance in Canadian infrastructure

by Derron Bain

Across Canada billions of dollars have been committed to infrastructure projects by different levels of government. In response to the economic impact of COVID-19, infrastructure investment is being both accelerated and increased. In addition to ambitious plans to build new transit lines, hospitals, schools, bridges and community sports centers, there is also a sizeable backlog of repairs and maintenance that needs to be addressed.

Over the course of the past 15 years, the public-private partnership (P3) model has become an important part of infrastructure investment and delivery in Canada for the federal, provincial and municipal levels of government. At the same time, opposition and skepticism of the model and its benefits remain and, in several cases, have impeded progress in meeting infrastructure investment intended to support the delivery of critical

public services. There are several important lessons to be drawn from the Canadian experience as well as the opportunity to improve and strengthen the value and outcomes of P3 infrastructure investment and delivery.

SUPPORTIVE POLITICS AND POLICY

The “right” politics and government are critical to the success and progress of a P3 infrastructure program. Governments should establish a formal policy framework for P3 infrastructure delivery, setting out the principles, objectives and process that will be followed. Beyond policy, a long-term infrastructure plan will demonstrate commitment to infrastructure investment as a priority. A dedicated specialist P3 infrastructure procurement and delivery agency has also been critical to successful project delivery.

CERTAINTY AND CONSISTENCY OF PROCESS

The private sector will look to government for certainty and consistency of process. Politics and policy support this, but more important is how the rubber hits the road in terms of documentation and process. Effective and efficient processes, with balanced risk transfer, are critical to ensuring the private sector dedicates resources to the pursuit of P3 infrastructure opportunities. A public long-term pipeline of opportunities enables the private sector to plan and commit resources to the pursuit of P3 projects.

There is a risk that, over time, the P3 process can become bureaucratic and overly focused on the lowest-cost outcome. Government should remain open to evolving its risk transfer and process to ensure that projects deliver best value and best outcomes.

Procurement and delivery models that integrate the benefits of the P3 model with stronger models of collaboration and integration can be an effective response to these issues. Examples of more collaborative models include integrated project delivery, progressive design build and co-development. These models are less commonly used to deliver Canadian public infrastructure but are instructive in enhancing infrastructure delivery outcomes. The closer collaboration and integration of project teams that are the hallmarks of these models equate to greater transparency in project delivery, including for costs, schedule and risk. The ultimate objective is better problem solving and better outcomes when issues arise in each project.

This evolved approach — the integration of P3 and more collaborative delivery models — can be expected to allow for a move away from the paradigm that infrastructure development and procurement is a commodity, and support the delivery and operation of effective assets that can be used for 30 to 50 years or more.

FOCUS ON BROADER BENEFITS OF P3

The P3 model is proven to deliver value. As a first principle, project profitability must be evaluated based on the true cost of capital, accounting for appropriate premia for risk transferred from taxpayers and assumed by the private sector. This approach will ensure the right projects get approved. The experience and benefit of P3 experience is that it sets the true cost of capital of a project.

Experience has shown that the P3 delivery model has been consistently successful in ensuring that projects are built on time and on budget delivery — this is easy to see and difficult to argue against.

It has been more challenging to demonstrate and communicate the long-term operational benefits, such as maintenance and management of P3 projects. The reality is that P3 projects do not allow governments to neglect and defer long-term maintenance costs. Historically, neglect and the risk of long-term maintenance has been passed from government to government and generation to generation. P3 project delivery ensures accountability for maintenance.

Infrastructure delivery is about more than simply the asset. It is about the critical public services the asset supports and the broader public-policy objectives or societal

“Infrastructure delivery is about more than just the asset. It is about the critical public services the asset support and the broader public-policy objectives or societal benefits that may be achieved through the infrastructure investment.”

benefits that may be achieved through the infrastructure investment. As an example, the opportunity for institutional investors (public or private) to engage in the financing and management of P3 infrastructure projects also supports the long-term pension returns for workers, whether in Canada or the United States. The stability and long-term benefits of investing in public infrastructure are critical components to the overall performance and security of these pension plan investment portfolios and the workers they support in retirement. The approach meets public-policy objectives of increasing and accelerating infrastructure investment and supporting the financial security of retired workers.

Many Canadian pension plans have established platforms to develop, invest and manage public infrastructure across the country. They have established successful partnerships with Canadian governments in delivering infrastructure investment programs and objectives, primarily through the P3 model. They have demonstrated that they are uniquely positioned through an alignment of values,

interest and objectives with government the investment delivery and management of public infrastructure.

FLEXIBILITY TO SECURE MORE VALUE

With governments facing extreme fiscal challenges, there is an opportunity for the public and private sectors to not only improve, but also reinvent how they work together to ensure more value through infrastructure investment. A broader definition of P3 or evolution of the model will allow for this opportunity.

As an example, value can come from paying for new highway lanes through smart lanes that can favor transit and provide faster travel options for commuters. Maintenance upgrades for existing schools can be paid for through energy savings. Affordable housing and

“With governments facing extreme fiscal challenges, there is an opportunity for the public and private sector, to not only improve, but also reinvent how they work together to ensure more value through infrastructure investment. A broader definition of P3 or evolution of the model will allow for this opportunity.”

community amenities can be built on an integrated basis with transit stations or other public infrastructure.

Value can also come from being less prescriptive in how infrastructure is built and evaluating what is most important to public-policy outcomes. Smaller projects, such as schools or bridges, can be bundled together to bring efficiency savings in design, project management and offsite construction.

Recently in Canada, the Future of Infrastructure industry group broadly identified five opportunities where the private sector can deliver greater value

to governments in the delivery of public infrastructure:

- **Revenue:** Where there is long-term revenue through utility bills, user fees, tolls, or rent, there are opportunities for the private sector to finance new infrastructure.
- **Leveraging land value:** Rising land values and scarcity, especially in an urban setting, provide partnership opportunities, especially when there is a strong need for additional housing (market, affordable, social) or other public amenities or infrastructure.
- **Reducing capital costs:** Reducing the cost of building infrastructure frees up government funding that can be spent on additional projects.
- **Operating cost reductions:** Operating costs can represent 80 percent of the overall cost of an asset; by reducing those costs in the long term, those funds could then be used to finance capital investments.
- **Unlocking economic potential:** Future tax revenue from new resource or property developments, and engaging local communities to invest in their economic future, can enable investments in critical job-enabling infrastructure.

CONCLUSION

Intelligent evolved or new approaches to accelerate infrastructure projects, incorporating the value of private investment, finance and P3 risk transfer will benefit governments and taxpayers. Governments should be prepared to adopt this type of framework to allow greater innovation in infrastructure investment and delivery, get shovels in the ground more quickly and, ultimately, get better outcomes. ❖

Derron Bain is managing director of the **Concert Infrastructure Fund** and was formerly an executive with **Infrastructure Ontario**.



Lessons learned from the United Kingdom and Europe

Insights on innovative finance in U.K. and European infrastructure

by Georg Inderst

This article gives a brief overview of private-public partnerships (P3) in the United Kingdom and Europe. It covers the development of the P3 markets, their size and relevance. This leads to important insights and lessons for investors and policy makers.

LONG HISTORY OF PRIVATE CAPITAL INVESTMENT IN INFRASTRUCTURE IN EUROPE

Infrastructure investment in Europe has fluctuated considerably over time in terms of volume, structure and the source of funding. Over the past two centuries, the pendulum has swung several times between public, and private-sector dominance of infrastructure.

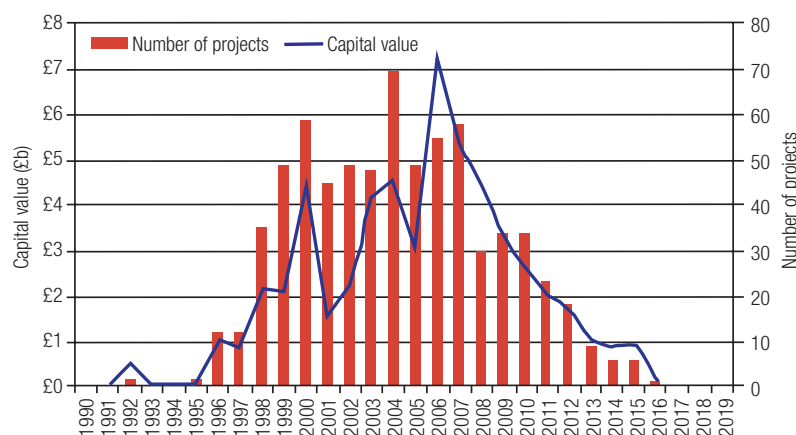
Co-operation between the public and private sectors in financing and operating infrastructure is nothing new in European history. Private investment in roads, bridges and canals has been significant for centuries. “Concession contracts,” have existed for centuries in France and some

other countries. In Victorian times, railways and most other infrastructure projects were built and financed privately.

Post-World War II, a large proportion of infrastructure was nationalized, and the public sector was central to the ownership, financing, and delivery of infrastructure services. In the 1970s, public investment started to falter, as in other Western developed countries, and cracks were beginning to show. Private-sector participation rose in many countries from the 1980s as a result of privatizations of state utilities and, from the 1990s, in a new form with public-private partnership schemes.

There is no single definition of P3s in the modern form. They typically involve a long-term contract between a public-sector authority and a private party to provide a public project or service. It may cover the design, finance, construction, operation and maintenance of an infrastructure asset, and the delivery of

PFI project numbers and capital values



Source: HM Treasury (2019)

associated services to an agreed standard. Incentive structures and the sharing of the various risks depend on the specific contract.

In-between pure public and private provision of services, rather different P3 or concession models of mixing public and private responsibilities are at work in different sectors, countries and at different levels of government. P3 laws, regulations and models vary considerably across European countries.

The United Kingdom, Australia and Canada were early adopters of P3s in the modern form; many other countries soon followed. Although Europe still has the highest number of projects, North America, Asia and Latin America have become more active in recent years.

THE U.K. AS AN EARLY ADOPTER OF P3S

The United Kingdom became a leading country for private capital investments in infrastructure for several decades. In the first wave, there was a widespread privatization of telecom, water, gas, electricity, airports and rail assets, from which the U.K. model of regulated asset base (RAB) evolved. In the 1990s, the focus shifted to social infrastructure, where new ways of financing through private capital emerged, and the United Kingdom developed extensive experience with P3s.

Post-financial crisis, infrastructure investment moved up the political agenda, and economic infrastructure sectors once more became a priority. The U.K. state has become more interventionist and activist in its infrastructure policies. It developed national infrastructure plans and project pipelines (since 2010), as well as new institutions and policy instruments. The socio-political pendulum has swung back markedly toward tougher regulation, higher public investment and

greater interventionism, if not nationalization — arguably in some other countries, as well.

In the United Kingdom, P3s are not used for all infrastructure sectors but are concentrated on social infrastructure, municipal waste management and on transport projects — e.g. some motorways, tunnels and bridges (starting with the Channel Tunnel by a French-British consortium in 1986).

The U.K. Private Finance Initiative (PFI) is a form of P3. It was announced in 1992 as an alternative financing and procurement method, whereby the private sector finances, builds and operates infrastructure, while the public sector pays for services over the project life under a long-term concession agreement (“availability payments”). Most of U.K. PFI follows the DBFO model (design, build, finance and operate) or BOOT model (build, own, operate, transfer) of private sector participation.

THE PRIVATE FINANCE INITIATIVE EXPERIENCE

Given its historical importance, it is worth having a closer look at the PFI. U.K. government statistics show about 700 PFI projects in 2018, with an aggregate capital value of £59 billion. The value of PFI projects has been declining from a peak of £7.2 billion in 2006 (about 0.5 percent of GDP) to nearly zero (see, “PFI project numbers and capital values,” above). This procurement method accounted for about 25 percent of public-sector capital investment between 2000 and 2012. PFI was the dominant procurement method in some sectors, accounting for 70 percent of schools and 60 percent of hospitals.

Over the period 1992–2012, the majority of PFI capital went into social infrastructure: hospitals, £14 billion (24 percent); schools, £12 billion (21 percent); and other buildings (e.g., fire and police, courts, service centers), £5 billion (9 percent). In terms of economic infrastructure, transport projects had a total capital value of about £8 billion (13 percent), and waste treatment at £5 billion (8 percent) over the 20 years. In terms of size, only six projects had a capital value greater than £1 billion, mostly in transport or defence.

RISE AND FALL OF PFI

Opinions on PFI were polarized from the beginning. Some saw PFI contracts as a reference model for Europe and beyond. Many countries around the world looked at the U.K. experience and made adjustments. Others disliked PFI, and P3s in general, for all sorts of reasons, ranging from the technical to the ideological.

Proponents of P3 emphasize the additional financing coming from the private sector, speedier development, and cost-efficient operation and maintenance. Governments can save the capital needed for upfront investment, can act as regulator and standard setter for service quality, and will ultimately gain control of the assets.

PFI was criticized for many reasons: too expensive, too opaque, too slow and too rigid. According to critics, the private sector could make windfall gains despite the “low-risk” nature of availability-based payments by the public sector. The risk transfer and potential future liabilities for the public sector were unclear. Some projects were unsuitable for PFI, but there was an incentive to offload them from the public books.

A modified approach introduced in 2012 — called PF2 — had little success. With PF2, the government tried to address the criticisms with a number of changes, including:

- a minority equity stake for the public sector
- third-party funding competitions for a portion of equity
- consideration of debt solutions other than bank loans
- cheaper and faster procurement, with a maximum duration of 18 months
- standardized documentation in the procurement process
- more-flexible service contracts (making renegotiation easier)
- measures to improve transparency for both public and private partners.

Some risks were transferred back to the public sector, however, and most of PF2 was still outside the normal public accounts. In a 2016 report, the Office for Budget Responsibility (OBR) estimated the present value of obligations for future PFI payments was £190 billion of which £114 billion rested with the central government, £72 billion with local authorities and £4 billion with public corporations. In 2018, the National Audit Office found that “value for money” for the taxpayers was questionable. As the wall of opposition rose, the U.K. government abandoned the whole PFI venture in 2018, citing two main reasons: inflexibility and fiscal risk to government.

The current U.K. government would still like to see private-sector participation in some user-paid sectors, such as (clean) energy and digital infrastructure. There is also an attempt to relaunch the RAB model to other sectors, but

there is little clarity on the infrastructure strategy, even less so during the coronavirus crisis.

DEVELOPMENT OF P3S IN CONTINENTAL EUROPE

European P3 volumes had been rising from the 1990s to the mid-2000s. According to figures from the European P3 Expertise Center (EPEC), 2007 was the peak year, with €28 billion. Volumes have been trending down since, reaching a level of about €10 billion from 29 transactions in 2019 — i.e., less than 0.1 percent of GDP.

Over the full reporting period 1990–2019, EPEC registered about 1,800 projects with a total volume of €368 billion (see, “EU P3 projects in social infrastructure sectors, 1990–2019,” page 38). In terms of numbers, 70 percent of projects were in social sectors, of which 24 percent in education and 22 percent in healthcare. In terms of capital value, however, transport is by far the strongest sector across Europe (share of 56 percent), while healthcare and education captured a share of 14 percent and 10 percent, respectively. Environment/energy and communication volumes have lately been growing from low levels. Social infrastructure projects tend to be much smaller than economic infrastructure projects (i.e., value of about €110 million compared with €430 million).

Looking at more recent trends, P3s are now somewhat more evenly spread across countries than in the past. In the past, the United Kingdom accounted for nearly half of European P3 volumes, but the share has declined substantially due to the sharp fall in PFI deals in social infrastructure. Over the past five years (2015–2019), Turkey moved into first place with a volume of about €22 billion, followed by the United Kingdom (€12 billion), France (€12 billion), Netherlands (€6 billion), Germany (€4 billion) and Italy (€3 billion).

P3 bonds had a very modest recovery post-2013 in a few countries. Institutional investors are slowly becoming more active on the debt side of P3 projects, especially larger economic ones. The shift from social to economic infrastructure in recent years is also reflected in a renaissance of the user-pay model, such as large transport or (French) broadband projects.

In summary, various P3 arrangements have been established across Europe since the 1990s/2000s. Many countries, such as the United Kingdom, France, the Netherlands, Germany, Spain, Greece, Turkey, and others, had periods of strength but also of weakness. Overall, the contribution of P3s to infrastructure

EU P3 projects in social infrastructure sectors, 1990–2019					
1990–2019	Project number	%	Value (€b)	%	Average value (€m)
Transport	384	21%	€205	56%	€534
Environment	135	8%	€22.3	6%	€165
Telcos	20	1%	€4.3	1%	€215
RDI	2	0%	€0.2	0%	€100
Economic infrastructure	541	30%	€231.8	63%	€428
Social infrastructure					
Education	434	24%	€35	10%	€81
Healthcare	387	22%	€50	14%	€129
Public order and safety	144	8%	€12	3%	€83
Defense	56	3%	€18	5%	€327
General public services	75	4%	€7	2%	€97
Housing and community services	83	5%	€7	2%	€89
Recreation and culture	79	4%	€7	2%	€85
Social infrastructure	1258	70%	€136	38%	€109
All P3s	1799	100%	€368	100%	€205

Sources: EPEC Data Portal (July 2019); author's calculations

investment is still small, – 0.1 percent of GDP (and globally). In fact, European investment volumes have been falling from their best years in the mid/late-2000s.

KEY LESSONS LEARNT FROM EUROPEAN P3S

Micro perspective: P3s can work

P3s potentially provide innovative and useful solutions for infrastructure problems across a broad range of economic and social infrastructure sectors. Experience shows that P3 projects can work well when the conditions are right and the partners — public and private — take a collaborative, responsible approach not only at the outset, when contracts are negotiated, but also over the whole life. Good ongoing management and maintenance is essential.

Macro perspective: limited potential

Several countries in Europe and worldwide have seen periods of sizable P3 activity, at least temporarily. Even during the best periods, however, P3s only make a small contribution to overall infrastructure investment (currently a contribution of about 2 percent to 3 percent to total infrastructure spending globally). It is not easy to scale up over a longer period, and there have also been setbacks in various countries.

Efficiency and quality: mixed evidence

The key purpose of modern P3s is — by involving the private sector — to enhance the efficiency and quality of infrastructure provision compared with traditional public procurement. Empirical research finds mixed evidence on this (e.g. Vållä 2020), *An overview of economic theory and evidence of public-private partnerships in the procurement of (transport) infrastructure* - Utilities Policy 62. Good P3s can use private sector expertise to find ways of dealing with the notorious delays and cost overruns in infrastructure. Some P3s keep delivering good services longer-term, but there are also complete failures. There is a potential trade-off between (excessive) cost management and (lowering) of service quality.

Relief for public budgets?

A key motive for governments is that private financing of infrastructure projects would free up government funds for other purposes. Academics are more skeptical about this claim, certainly over the long-term costs of funding. Shorter term, it depends on how public budgets account for P3s. Also, over time, “off-balance sheet” may become “on-balance sheet” items, and risks may revert to the public sectors — expected or unexpected. In addition, most governments can borrow capital very cheaply these days, given low interest rates.

Complexity

In practice, long-term contracts between public and private partners are difficult to design and monitor. P3s are very delicate return- and risk-sharing arrangements. There is a high degree of complexity, with typically high set-up costs. But it is not easy to standardize P3s as the appropriate risk allocation is very project-specific. Contract renegotiations are a difficult territory in theory and practice Engel, E., Fischer, R. and Galetovic, A. (2020), *When and How to Use Public-Private Partnerships: Lessons from the International Experience* - NBER Working Papers Series 26766.

RISK SHARING IN A CHANGING WORLD

Even when a public-private deal is “right” today, it may not look so tomorrow, given changes in technology, regulation, consumer preferences and other market dynamics. Agreed-upon risk allocation easily becomes inappropriate over time. Some examples: The private side may have been too aggressive in the bidding process. The public side is often much less willing or able to manage macro risks than hoped. When ‘excess profits’ materialize or highly indebted projects hit the public budgets, we see a backlash from the media and the voters.

WHERE BEST TO USE

There is an academic view that P3 works best with user fees. The link between asset quality and service quality is typically stronger, in roads and ports than in hospitals and schools, for example, which makes them more difficult to contract and renegotiate. Such issues tend to be even stronger in developing countries with weaker institutions and governance (Estache 2010), *Infrastructure finance in developing countries: An overview* - EIB Papers, Vol. 15, No. 2.

In practice, availability payments from public authorities are standard for P3s in the health and education sectors and for some transport projects. They are typically linked to performance criteria. Various contract types and payment systems exist. Each country and sector has its own ways of bundling together multiple project phases or functions, facility development, or services.

CONSISTENT P3 PIPELINE NEEDED

These days, much institutional capital is flowing to areas where cash flows are thought to be better captured, such as renewable energy, digital infrastructure and alternative real estate (e.g., student accommodation, care homes and affordable housing). One of the main hurdles for investors is the lack of investable

infrastructure projects and assets. Governments at all levels need to get their acts together to enlarge and enhance the pipeline of investable infrastructure projects. P3s can still play an important role in this.

RECOMMENDATIONS FOR INVESTORS AND POLICY MAKERS

Some lessons have been learned over the years, in Europe and elsewhere, about infrastructure investment and private finance. There is good guidance available from national and international institutions on how to set up and manage P3s. Putting them into practice, comes down to political realities. Recommendations include:

1. Consistent infrastructure and P3 policies with a clear, stable regulatory framework and good public governance. Develop national infrastructure plans, audits and capital stock assessments, including the private-sector investments and P3s.
2. No retrospective changes of rules and regulations. P3 systems especially require much time and a high degree of trust to succeed. A notion of “value for money” should be defined, agreed and also understood by the public.
3. Strengthen the public-sector capabilities for procurement and contracting processes not only in central government, but also at the important sub-national levels, where much of the infrastructure provision actually happens.
4. P3s also require strong capabilities and commitment on the private side, with adequate corporate governance and clear accountability.
5. Improve transparency and disclosure on P3 infrastructure projects, including on environmental, social and economic (ESG) impact. Better data availability, transparency and quality would be a public good in itself.
6. Good communication: P3s operate in sensitive areas in the economy and society. The public will insist on more transparency, quality improvements, sustainable practices and “social purpose” — even more so from private owners and operators of public infrastructure. Investors will need to do more than “green-washing” and “social-washing” with ESG paperwork. Credibility of private and public partners is crucial. ❖

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Building better

Connecting opportunity zones to urban infrastructure

by Patrick Sabol and Bruce Katz

Oppportunity zones (OZs), a tax incentive created through the Tax Cuts and Jobs Act of 2017, were not specifically designed to tackle America's many infrastructure challenges. However, the flexible nature of the program and cities' broad ability to regulate and guide project development present numerous opportunities for cities to increase investment in public buildings, transit, water, energy, freight rail, broadband, roads, and more. To help cities realize the full potential of this unique tax incentive, this brief lays out nine steps that cities can take to use OZs to improve their infrastructure assets:

1. Enact strong public-private partnership (P3) legislation that includes public buildings to help attract new private capital to OZs and

bring a new type of investor to the community development table.

2. Create an empowered and skilled team capable of negotiating P3s or other innovative infrastructure procurements that serve the public interest.
3. Proactively reach out to developers to communicate existing infrastructure policies, particularly on issues such as stormwater management, transportation, energy efficiency, and renewable energy
4. Craft specific zoning, permitting, and incentive overlays for OZs that incorporate infrastructure improvements
5. Assign staff to serve as liaisons between infrastructure asset owners and OZ inves-

tors to identify specific opportunities for collaboration

6. Work with communities to map specific needs in OZs and be prepared to negotiate community benefit agreements that include infrastructure improvements
7. Actively identify, map, and facilitate opportunities for land assembly that include properties owned by utilities, railroads, transit agencies, ports, and other infrastructure asset owners
8. Communicate past or planned infrastructure improvements to OZ investors to increase the attractiveness of specific areas by highlighting critical transit routes, grid enhancements, broadband deployments, highway or freight rail access, or other projects
9. Actively work to integrate economic development, public utility, environmental, and transportation departments to identify infrastructure needs and opportunities

BACKGROUND

Created through the Tax Cuts and Jobs Act of 2017, opportunity zones (OZs) are primed to catalyze economic development in nearly 9,000 communities across all 50 states, the District of Columbia, and Puerto Rico, directly impacting the lives of more than 35 million Americans.

With more than \$6 trillion in potentially investable private capital, the program is poised to become one of the most powerful economic development incentive programs the federal government has ever created. Unlike most federal, state, or local tax incentives, OZs have very few limitations on their use and limited direct oversight beyond basic IRS compliance.

Most discussions around OZs are focused on straightforward residential and commercial real estate transactions, or general business development. This excludes the billions of dollars of desperately needed investments in core urban infrastructure, including public buildings, transit, water, energy, freight rail, broadband, highways and roads, ports, and airports. While there are challenges in deploying OZ capital in public infrastructure, cities have multiple opportunities to leverage the program to make investments in these assets.

OVERVIEW OF OZ CAPITAL RULES

Section 1400Z of the Internal Revenue Code, amended by the Tax Cuts and Jobs Act of 2017, allows a taxpayer to defer paying

federal capital gains tax on the sale of property if that gain is invested in a qualified opportunity fund (QOF).

A QOF must invest at least 90 percent of its assets in businesses or property in designated low-income communities, known as opportunity zones. In addition, taxpayers that hold investments in those funds for at least five years receive a 10 percent reduction in their original capital gains tax obligation; holding investments at least seven years adds an additional 5 percent reduction for a total of 15 percent; finally, holding an investment a full 10 years means taxpayers do not have to pay any capital gains tax on the appreciation of the new investment.

OVERARCHING PRINCIPLES

As cities seek to attract OZ investment dollars, it is critical that they do not repeat the mistakes that have driven significant pushback to recent economic development incentive packages. Due to the inherently public nature of infrastructure and its intergenerational impact on urban environments, it is especially important for cities to:

- 1. Engage in systems thinking:** One-off infrastructure improvements tied to any OZ project will impact the entire system, whether it's traffic flow, wastewater management, transit service, or anything else. When designing projects, mandates, or incentives, cities must examine and address the way new investments will alter the demand on existing systems.
- 2. Ensure equity is part of the decision-making process:** Although an essential component of America's economic success, major urban infrastructure investments are haunted by a legacy of divided cities and disparate impacts on minority and low-income communities. Neighborhood-level input must be an essential part of the way infrastructure resources are allocated to OZ-specific projects, as well as a top consideration before breaking ground.
- 3. Link investments to human capital:** Infrastructure-related jobs are disproportionately well paid compared with similar professions in other fields, particularly for workers with lower educational-attainment levels. By tying infrastructure improvements to job training programs or deliberately supporting minority- and women-owned busi-



nesses, cities can leverage OZ capital to create inclusive economic opportunities for all of their residents.

Key challenges to deploying OZ capital for infrastructure projects

Although there are numerous ways for OZ investments to flow into urban infrastructure, the program was not designed to specifically address transportation, water or other challenges in the built environment. Specific barriers to entry include:

- 1. Ownership rules:** The program requires equity investment in projects, meaning that assets fully owned by the public sector or quasi-governmental agencies are unlikely to be strong candidates for OZ funds without privatization or a public-private partnership structure.
- 2. Profit motive:** Many investors are focused on projects that will not only appreciate over time, but also provide ongoing revenue and profit. This immediately excludes non-revenue-generating or break-even public infrastructure.
- 3. Geography:** The inflexible geographic boundaries imbedded in the program do not easily accommodate infrastructure systems that can span entire neighborhoods, cities, counties, or beyond.
- 4. Investment timelines:** Investments need to be made and deployed within 30 months of project acquisition. Many major infrastructure projects are either too far into their development timeline or too early in the planning process to effectively take advantage of the subsidy.

These issues do present challenges to direct OZ investment in infrastructure, but they are by no means insurmountable. Furthermore, cities have multiple direct and indirect avenues to leverage OZ projects to improve their built environments.

THREE PATHS TOWARD TRANSFORMATIVE INFRASTRUCTURE IMPACT

Despite these challenges, cities have at least three paths to driving OZ capital into infrastructure: creating direct investment opportunities, mandating or incentivizing investments, and facilitating investments. Within each category, there are specific steps cities can take to leverage the program to address their core infrastructure needs.

Direct investment

Creating direct investment of OZ funds in public infrastructure will require cities to take active steps to create formal agreements with the private sector to take full advantage of the tax subsidy. These infrastructure projects will likely have to be structured as formal public-private partnerships and thus require a dedicated source of user revenue in a location that is primarily within an OZ.

Specific P3 infrastructure investments that may work with OZs include:

- Community broadband
- Large-scale distributed storm water management
- Privatized drinking or wastewater facilities
- Court houses, civic centers, schools, and other public buildings

Key recommendations for direct investments:

- Enact strong P3-authorizing legislation that includes public buildings
- Create an empowered and skilled team capable of negotiating P3s or other innovative infrastructure procurements that serve the public interest

MANDATES AND INCENTIVES

Like any other urban development, cities have a broad array of powers to encourage or compel OZ investors to make specific infrastructure upgrades. Examples of specific asset types include:

- Small-scale distributed storm water management

- Energy-efficiency retrofits
- Distributed energy storage
- Renewable-energy production
- 5G small cells
- LEED-certified construction
- Grid improvements
- Low-income housing
- K–12 schools
- Transit-oriented development
- Transit improvements or stations

Key recommendations for mandates and incentives:

Proactively reach out to developers to communicate existing infrastructure policies, particularly on issues such as stormwater management, transportation, energy efficiency and renewable energy

Craft specific zoning, permitting and incentive overlays for OZs that incorporate infrastructure improvements

Work with communities to map specific needs in OZs and be prepared to negotiate community benefit agreements that include infrastructure improvements

FACILITATION

Cities can serve an essential role as intermediaries between OZ investors and both public and private infrastructure owners. By connecting the relevant parties, key public infrastructure priorities that enhance equity, sustainability, resilience and economic development can be achieved without cities committing financial resources or resorting to enforcement. Although facilitation will be an essential part of all OZ work, there are areas where it may be particularly relevant:

- 5G small cells
- Microgrids
- Intermodal freight facilities
- Postsecondary or vocational educational facilities
- Transit-oriented development

Key recommendations for facilitation:

Work with communities to map specific needs in OZs and be prepared to negotiate community benefit agreements that include infrastructure improvements

Actively identify, map and facilitate opportunities for land assembly that include properties owned by utilities, railroads, transit agencies, ports, and other infrastructure asset owners.

Communicate past or planned infrastructure improvements to OZ investors to increase the attractiveness of specific areas by highlighting critical transit routes, grid enhancements, broadband deployments, highway or freight rail access, or other projects

Actively work to integrate the planning processes of economic development, public utility, environmental, and transportation departments to identify infrastructure needs and opportunities



CONCLUSION

Opportunity zones have the potential to reshape cities in big ways and small — through everything from startup investments in neighborhood businesses all the way up to multi-billion-dollar redevelopments. Regardless of whether infrastructure is formally brought into the conversation, transportation, water, energy, and public spaces will be impacted by these investment decisions. Cities can choose to passively accept and manage the consequences of OZ investment or to become active partners in steering capital into the projects that will serve the greatest public good. ♦

Patrick Sabol is a deputy director and co-founder of *Infrastructure Week*, and **Bruce Katz** is the co-founder and inaugural director of the Nowak Metro Finance Lab at **Drexel University**.

The state of infrastructure and public-private collaboration in the United States

by Drew Campbell



It is well known that much of the United States' infrastructure has reached the end of its life cycle and in some cases is failing; the consequences of this state of disrepair have been crippling for too many communities. But the reasons for this are less understood and present difficult challenges for infrastructure practitioners.

Infrastructure is not only an economic backbone for commerce, supporting and growing tax bases and attracting and facilitating business and services, but also a foundation people rely on to thrive.

In some places, infrastructure lives up to this promise. But in too many places, roads and schools, and water and power systems are decaying, putting communities and people on paths of decline.

The need for investment is not in question. The growing balance of deferred maintenance that governments have accrued is a drag on budgets already crowded out by pension, healthcare and other service commitments. As populations age and expand, and infrastructure wear and tear continues, the choices governments make to fund programs and allocate capital will only become more difficult.

This problem is not unique to the United States. All governments decide how to allocate capital to provide services and support communities, and strike a balance between public- and private-sector roles to accomplish their goals.

A solution for infrastructure that many countries and communities have adopted is to use more private investment to help. Australia, the United Kingdom and Canada are leaders in this market, and for decades have partnered with private investors to invest in and maintain infrastructure.

In fact, record amounts of private capital have been raised to invest in infrastructure globally. In the United States, this seems to point to an obvious solution — similar to other countries, private capital can help fix America's infrastructure deficit. But for several reasons, that idea has not found the expected success.

Now, the COVID-19 crisis has exposed the limits of a model too heavily dependent on government. Shrinking tax bases are accelerating cuts not only in infrastructure but also in services, such as police, fire, schools, healthcare, and more.

ESG considerations meanwhile, are increasingly at the top of agendas for public officials and investors alike. Infrastructure is a nexus, with assets that connect to these issues philosophically and physically. Transit systems, power grids, transmission lines, water-delivery and fiber networks that span up to hundreds of miles tie together diverse people and communities with their promise of services.

A new outlook is needed for infrastructure investment and management. The conventional routes of raising taxes, issuing debt and taking loans are increasingly burdensome for a growing number of communities. The traditional procurement models need updating to meet 21st century realities.

TAKING A LONG-TERM PERSPECTIVE

This report is a guide to foster dialogue and collaboration between private-sector and public-sector practitioners, to help them navigate difficult discussions and choices about infrastructure services and community priorities, and build support for projects.

It will be updated regularly to reflect developments in the market and to share the experiences of participants. We welcome feedback to add ongoing value for readers. ❖

Drew Campbell is senior editor of *Institutional Investing in Infrastructure*.

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