Infrastructure: New Real Estate Product or New Paradigm?

Michael Anikeeff
Johns Hopkins University
Carey Business School
Edward St John Real Estate Program

AMERICAN REAL ESTATE SOCIETY
Annual Conference 2014
San Diego, California
April 4, 2014

DRAFT Do not reference without permission
Infrastructure: New Real Estate Product or New Paradigm?

This year Johns Hopkins University expanded the focus of the real estate program to “real estate and Infrastructure.” The plan is to implement the new program next year. In order to do this, we continue to investigate international approaches and emerging US examples on this topic. We are attempting to integrate the different perspectives into an approach which will be appropriate for the US. The general issue is the extent to which infrastructure is similar to or different from real estate as we generally understand it. Is it another product type like office, retail or multifamily? Another key element in understanding infrastructure is the public private partnership (PPP). Although they account for a minor portion of infrastructure development (5-10%) they have captured the imagination of those in the infrastructure sector. A colleague from York University, James Mackellar, has pointed out issues that we are trying to resolve in the US context: Is the fully integrated PPP structure used internationally and more recently in the US an efficient solution? Is there good value for money when the government can always borrow more cheaply than the private sector? The presentation outlines the issues we are trying to deal with and some preliminary findings.

Real Estate and Infrastructure

By 2050 80 percent of the world’s population will reside in cities or urban areas. This urbanization creates demand for real estate and infrastructure development around the globe. According to the World Bank’s Urban Group it is expected to increase the built area in cities by 30 percent.

In this period of rapid growth, creating sustainable development -- balancing population growth, employment expansion, and environmental protection -- places many demands on real estate and infrastructure technology to build and revitalize urban areas. Infrastructure has been developed by the public and the private sector independently. However, in the past decade public private partnerships have also evolved -- primarily overseas.

Governments at all levels control large and diverse portfolios of real estate and infrastructure. At local government level, land, built-up property and infrastructure make up over 65% of the value of all local government assets, yet little attention has been paid to asset management nationally or internationally. In the past, a significant amount of world-wide infrastructure was built by government and paid for through taxes or levies. This is still the case, but government at all levels has limited capacity to fund, deliver and maintain infrastructure. As a consequence, the amount they can contribute has decreased. New arrangements are now emerging that use the best of the public and private sectors, provide access to capital markets and offer creative solutions to infrastructure needs. The US is one of the few major economic powers lacking a national infrastructure policy. Initiatives are left to the state and local governments. According to Urban Land Institute (ULI) many state and local officials seek creative ways to advance infrastructure funding—including more private financing.
Private sector development and ownership of infrastructure is significant and in some sectors is greater than the public sector. Global pension funds have allocated funds for infrastructure investment for years and recently large US pension funds allocated funds for the infrastructure sector in their alternative investment portfolios. US institutional investors increased allocations to infrastructure either as a stand-alone asset class or as a part of a real asset allocation (Flanagan). In 2011, 28 infrastructure funds raised $16 billion. The top 200 US defined benefit plans in Pensions & Investments’ annual survey had an approximate weighted average infrastructure allocation of .6% in September 2013, which is up 0.2% from the previous year. The Oregon Investment Council, New Mexico Investment Council, Alaska Permanent Fund Corp., California Public Employees Retirement System and California State Teachers’ Retirement System have all created new infrastructure allocations or added to existing ones (Flanagan).

Public Private Partnership for infrastructure projects is well established in Europe, UK, Australia and Canada. The technique is used to a much lesser extent in the US. The US still uses public finance and the bond underwriting technique. This is different from the project finance method used in PPP. Infrastructure investment in PPP uses a different model from typical procurement. The more comprehensive role of the private sector includes agreements to design, build, finance, operate and maintain the project, and to transfer the project back to the public in good condition at the end of the agreed period.

In the rest of the paper we will examine several questions.

- How is infrastructure defined? It is difficult to plan for something you cannot identify.
- What is the investment need/demand for infrastructure?
- How much is the short fall—the infrastructure financial gap?
- How do we finance infrastructure?
- Is infrastructure a new investment paradigm—a new asset class?
- What is PPP?
- How successful is PPP?
- What role can academia play?

**How is Infrastructure Defined?**

There is not a common definition of infrastructure. Inderst (2013) points out that many would agree with the dictionary definition “the basic facilities, services, and installations needed for the functioning of a community or society, such as transportation and communication systems, water and power lines, and public institutions including schools, post offices, and prisons.” But he says infrastructure can have different meanings in the political, economic and financial worlds. It can be classified by physical characteristics (roads and bridges); economic sectors (energy, water); social sectors (education and health); or type of contractual agreements (project finance, PPP). He goes on to say that the empirical studies in economics look at sectors and sub-sectors in the national account statistics. The financial industry sees it as a new asset class with common investment characteristics. Investors are concerned with specific contractual and regulatory aspects of infrastructure. There are many questions about the
categories: Is energy production vs distribution included? Is renewable energy counted? The RREEF below on investment securities (exhibit 1) demonstrates some of the difficulty in defining infrastructure.

EXHIBIT 1: Definitions

![Global Infrastructure Securities Universe](image)

**What is the investment need/demand?**

Everyone believes we need more infrastructure, but quantifying the need/demand is more complicated. Are you concerned with new, renewal, improving or maintenance? What is the time frame? What quality standards?

The OECD reports ‘Infrastructure to 2030’ (OECD 2006, 2007) looked at demand in five areas. If you look at the first four areas: telecommunications, electricity (transmission and distribution) surface transport (roads and rail) and water, the need between 2000 and 2030 was $1.8tn a year or $53tn. That was about 2.5% of world GDP. If you include the fifth area-- energy generation ($12tn) and other energy related infrastructure ($6tn) the total would be $71tn or 3.5% of world GDP.

OECD (2012) added airports, ports, rail corridors, gas/oil transport and distribution up to 2030. This adds $11tn between 2009 and 2030 or $.5tn a year. Thus the OECD estimates the total infrastructure
requirements are about $82tn or a yearly amount of $3tn or 4% of world GDP. The estimates are meant to give a general estimate of demand and not precise forecast.

McKinsey (2013) examines three different approaches to estimate future infrastructure need. First, the historic spending as a constant per cent of GDP. Second, the ratio of infrastructure stock to GDP as a constant 70%: and, estimates of need by international institutions. The McKinsey estimates of investment range from $57tn to $67tn or 3.5% to 4.1% of world GDP. Annual spending would have to increase from the current $2.6tn to 3.0 to 3.5tn in 2020 and to $4.1tn to 4.8tn in 2030. These numbers do not include funds for renewal, climate change adaptation, or human development needs.

**How much is the shortfall--the Infrastructure financial gap?**

The difference between the funds needed and those available constitute the infrastructure financing gap. The World Economic Forum (2012) estimates the gap at $1tn per year. This is 1.25% of GDP. The difference is the amount between the current spending ($2.5tn) and the need ($3.5tn). This does not include money for green infrastructure ($700bn a year). In the US the American Society of Civil Engineers ASCE (2013) said this country’s need is $3.6tn by 2020.

In sum, there are a number of estimates of the future infrastructure demands. The estimates are the basic needs to keep up with economic growth. The projections differ depending on methodology, sectors included, countries covered, base year and data availability. That said, global projections for economic infrastructure investment range from yearly 2.5% of GDP to 4.5% of GDP. Mid-range estimates of 3.5% to 3.8% of GDP would be about $3.2tn to $3.4tn per year—a gap of $1tn.

**EXHIBIT 2 Infrastructure Finance**

![Infrastrucutre Finance Diagram](source: Inderset Advisory)
**How do we finance infrastructure?**

Wagenvoort et al (2010) examined the composition of infrastructure finance in Europe. They wanted to measure the relative importance of public and private sector finance. This was an early attempt to compile comprehensive data on infrastructure finance. Although they believe the data is less than ideal they decided to make a first attempt. Europe has a history of public private involvement in infrastructure for decades and can provide an indication of how different countries finance infrastructure.

They break down infrastructure finance by institutional sector –public versus private –into its main components: traditional public procurement, project finance, and finance by the corporate sector. (See figure 2.) They identified differences across sectors of activity (education, health, transport, and utilities). They also looked at different financial instruments in project finance.

They found that data on infrastructure investment or its finance sources were not available in an easy to use form. Infrastructure was not separately classified in National Accounts statistics. The best they could do was look at Gross Fixed Capital Formation in those sectors thought of as infrastructure sectors: Education, Health, Transport, and Utilities. (Utilities include energy, water, sewage and waste management). In the US the congressional budget office uses a similar approach to classification. In their analysis they include total investment by infrastructure sector. This means that they may over estimate actual infrastructure investment (including all fixed capital formation)-- not just those that created infrastructure assets. Also, the transportation sector combines road and telecom networks.

**Data**

They used Eurostat national accounts data to get estimates. They found the total amount, and government amount. Private investment was a residual.

\[
\text{Private} = \text{Total} - \text{Government}
\]

The second source of data was Projectware that allowed them to differentiate investments made through Special Purpose Vehicles (projects) and investments by corporations. SPV’s provide funding against cash flows of a particular project. However, in corporations investors are responsible for all business activities of the firm—including non-infrastructure activities. They calculate the amount of corporate investment as the difference between total private and private project investment.

\[
\text{Corporate} = \text{Private} - \text{Private Project}
\]

In the final step they use Public-Private Partnership project data from the EIB (European Investment Bank) noting that the PPP finance is almost entirely private they determine the share of non-PPP projects in project finance.

\[
\text{Non-PPP} = \text{Private Project} - \text{PPP}
\]
The authors point out some issues in the classification system, but they explain that the total reported for the economy means that no infrastructure was excluded, and that there was no double counting.

In sum, infrastructure is paid for by 1) private finance which is corporate sector, PPPs and non-PPP project finance using loans, bonds and equity. 2) Government budget finance consists of traditional public procurement, using taxing and borrowing. Authors do not include fees or the few projects paid for from public sources.

**EXHIBIT 3: Infrastructure finance by institutional sector**

![Graph showing infrastructure finance by institutional sector](source: Eurostat, Projectware, EIB/EPEC)

**SOURCE:** Wangonvoort et al

The figure shows the breakdown of infrastructure finance by country for the old members of the EU and the new members of the EU. The numbers are averages for the period 2006-2009. Note that there are significant differences between countries in each group and a difference between the two groups.

The figures demonstrate the relative importance of each funding source in total infrastructure finance for each country. In the Old member states (OMS), the public sector accounts for about one-third of infrastructure finance. Finance by the corporate sector accounts for slightly more than half, and the remaining part is split between PPP (5%) and Non-PPP project finance (4%). In the New member states (NMS) over half of all infrastructure investment is financed by the public sector. The corporate sector finances 38% and the PPP’s 3% and non-PPPs 3%. Project finance is limited to only a few of the eight countries for which data was available.

There are significant differences between the countries in the composition of infrastructure finance. In Austria public sector finance is 14% while in Poland it is 76%.
The EU’s total investment in infrastructure amounts to 3.9% of GDP. The GDP breakdown is transportation 2.2%, utilities 0.7%, health 0.6%, and education 0.4%.

Economic infrastructure accounts for 75% of infrastructure investment. In the EU social infrastructure investment is the remaining 25%. Transportation is the largest infrastructure sector by investment. It accounts for over half of infrastructure in Europe. Utilities (energy, water, waste and sewage) come second.

The social infrastructure sources of finance in the EU differ between Education and other sectors. The public sector accounts for over 85% of investment in education. In the health sector private finance (68%) is larger than public finance (32%). In the social sectors PPP projects have 6% to 7% of the total finance but are found in a small number of countries. Non PPP finance is negligible.

The government finances between one-fifth and one-third of the health utilities and transport. The corporations finance around 60% of this infrastructure. There are no differences between the transport and utility sectors in the shares of government or corporate finance. However, the type of project finance differs significantly between utilities and transport. The share of PPP finance is significantly higher in the transport (5.1%) sector than in the utility sector (1.8%). However, the share of non-PPP project finance is higher in the utility sector (16.4%) than in the transport sector (1.1%).

In sum, looking at the breakdown of infrastructure finance in the EU;

- The largest part of private finance is by the corporate sector. Project finance accounts for about 10% of total finance. Of this, half is used to fund PPP’s (5% of total)
• The government funds are the most important source in education (85%). Private sector is twice as large as public sector in health. Government finances one-third to one-half of economic infrastructure.

Change in financial sources

The previous discussion describes the current situation. In the past the government played a larger role in infrastructure finance. Total government investment as a ratio of GDP fell from 5% in the 1970’s to less than 2.5% in 2010. The decline in government infrastructure investment stabilized at the end of 1990’s. The most interesting development is the rise of Public-Private Partnerships. They were introduced in the UK in the beginning of the 1990’s. Ten years later a number had been undertaken in other EU countries. In 2000 about 80% of PPP’s were in the UK (Kappler and Nemoz, 2010). Today most of the PPP’s are outside the UK. Public finance declined while private project finance increased. The trend over the past 40 years has been a decline in public finance and an increase in private finance’s importance. Unfortunately, the increase in private finance has been relatively small. Thus overall there has been a decline in infrastructure investment (Wagenvoort et al, 2010).

Is infrastructure a new paradigm – a new asset class?

Inderst (2010) investigates infrastructure as an asset class. This section summarizes his findings. He mentions that infrastructure has become popular with institutional and private investors recently. Specialty products have been developed to provide a new asset class with special investment characteristics. The specialist infrastructure funds were established by Australian investment banks in mid1990’s and the local pension plans invested in them. Canadian pension plans also entered the field. Institutional investors have been growing since the mid 2000’s in Europe, Asia and the US. Infrastructure is to be an “alternative “asset class. It is to provide new sources of return and diversification of risk. Other alternatives are real estate, private equity, hedge funds, and commodities).

Investment characteristics attributed to infrastructure: Investors are expected to look at the economic and financial characteristics of infrastructure not the physical. Economically: there should be limited competition; high barriers to entry, economies of scale; high fixed, low variable costs; inelastic demand for service; low operating costs, high target operating margins and long duration (99 year leases, 25 year concessions).

As an asset class infrastructure is expected to financially offer: attractive returns; low sensitivity to swings in the economy and market; low correlation of returns with other assets; long term, stable and predictable cash flow; good inflation hedge; natural fit with long-lasting inflation linked pension liabilities; low default rates; and socially responsible investing.
New asset class?

Should infrastructure be regarded as a new and separate asset class? Investing in infrastructure is not new (utilities) but there are other options today.

Inderst asks, why should listed infrastructure or utilities be considered a separate asset class rather than a traditional stock market sector that has somewhat different investment characteristics than the market as a whole? Private infrastructure proponents of unlisted infrastructure as a distinct class stress the difference not only to listed stocks and corporate bonds but also to private equity (longer time frame, higher yield) and to direct real estate. Analysis suggests that unlisted infrastructure funds look similar to private equity funds and could be considered a particular sector within the universe of private equity.

Inderst offers an alternative proposition that treats infrastructure simply as a particular sector within the appropriate financing vehicle (listed stock, private equity, and bonds). As a sector or sub-class, infrastructure may well have certain average characteristics compared to the universe of equities (more defensive, higher yield); bonds (lower default rate); and private equity (more stable returns over time).

Infrastructure is diverse (transportation, utilities, health). With the high degree of heterogeneity in the underlying physical infrastructure assets, how much do they have in common? Evidence does not show that infrastructure assets correlate more with each other than with other asset classes. At the level of investment returns there is a broad range of correlation coefficients for different sub sectors of listed infrastructure and utilities indices (Peng and Newell 2007). At the cash flow level of infrastructure companies, (JPMAM 2008) there is a low correlation between the cash flow growth rates of US infrastructure sectors (gas, electricity, water, toll roads, sea ports and airports) ranging from -0.09 to 0.42.

The traditional economic-sector approach (energy, utility, transport) may be more meaningful than a higher aggregation into infrastructure. Also, the combination of early stage assets (similar to private equity) and mature assets (similar to utility bonds, real estate) under the same asset class may be inappropriate and not useful.

Inderst concludes, “The idea of infrastructure as a new, alternative real asset class works well in marketing. However, there is no proper financial theory to back the proposition and the empirical evidence suggests that the infrastructure investments look more like a sub-asset class or sectors within the conventional finance vehicles such as listed equities, private equities, bonds, etc.

What is Public Private Partnership?

Infrastructure and the Public Private Partnership PPP’s are becoming increasingly popular in the US recently even though they have been used in Europe and Canada for decades (exhibit 5). In the past the US public agencies did not need alternative funding to meet their infrastructure needs. That has
changed. The first and largest user of PPP was transportation—the construction of roads. More recent projects include university facilities, parking garages, courthouses, and water treatment plants.

In the US, there are variations in the organizational structure of PPPs depending on the state in which the activity takes place. In general the PPP is a partnership between a public agency and private entities to deliver projects for a public purpose (exhibit 7). In a PPP a private entity will design, build, finance, operate and maintain facilities for public use over a long period of time (e.g. 30 years). The funding is initially provided by the private entity with the objective of repayment and a return on investment from a combination of public funding, project revenue or some other source. The project remains in public sector ownership and reverts to the public at the end of the contract. The projects are large ($100 million).

The public benefits from the availability of private funds to pay for the initial design, construction, and operation of public facilities. The private entity receives a payment during the operating period. In addition, the payments could be augmented by external funding sources such as revenue generated from the facility.

EXHIBIT 5: Understanding Public Private Partnerships

SOURCE: Balfour Beatty
PPP can deliver projects faster than traditional procurement methods because the financing is available as soon as the contract is signed. The developer is motivated to complete the building to start generating revenue. Quality is not sacrificed by speed of construction because the private sector must absorb the cost of maintaining the facility during the multi-year operating period.

The long-term costs to the public agency are often reduced because the private sector will hire the best design and construction firms because it wants to reduce operational costs. The desire for the private firm to increase profits benefits the public owner at the end of the contract.

Risk of facility performance is transferred from the public to the private entity. Low tenant occupancy or poor attendance at a stadium is not the government’s financial concern. The extent of the risk transfer differs by project and is part of the contract negotiations. The chart below (exhibit 6) illustrates the risk transfer in different approaches.

EXHIBIT 6: Risk Transfer

Risk Comparison to “International” PPP Model

<table>
<thead>
<tr>
<th>Risk Element</th>
<th>Traditional</th>
<th>Lease</th>
<th>63-20 Corp</th>
<th>PPP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Procurement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design &amp; Construction</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finance</td>
<td></td>
<td></td>
<td>Tax Exempt</td>
<td></td>
</tr>
<tr>
<td>Land/Building Ownership</td>
<td></td>
<td></td>
<td>At end of Term</td>
<td></td>
</tr>
<tr>
<td>Operating Term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rights Retention</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating costs above Plan*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cost of Operations</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Availability/Abatement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life Cycle Replacement</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condition at end of Term</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Plan set during procurement, prior to commitment to proceed

Sponsor | Shared | Private Partner

SOURCE: Plenary Group

Governments pay for operation and maintenance expense from funds annually appropriated by the state legislature, which changes from year to year. When the amount appropriated to the agency
declines the agency’s ability to operate and maintain the facility is reduced. PPPs reduce the appropriation risk for future costs of operating the facility. The PPP pays to operate and maintain the facility regardless of the legislature appropriation. Therefore the public is provided a consistent level of service regardless of the agency’s operating budget.

At the end of the agreed period ownership and operation are turned over to the public entity. The PPP agreements require high maintenance standards so the facility will be in very good condition when the government begins operating it.

EXHIBIT 7: Alternative Public-Private Partnership structures

Private sector

PPPs are used for large complex projects with a level of risk. The profitability is based on the costs of design, construction and operation and the amount and stability of the revenue from which the private entity is paid. Exhibit 8 shows the different level of commitment the private sector can make to a PPP project. If the project generates revenue (toll road) then a portion of the revenue will pay the private entity during the period it operates the project. The private entities revenue may be supplemented by other revenue (appropriations). PPP projects can be mixed use facilities where rental income from the other uses can be part of the private sector repayment.
In the US, at this point, there is frustration with the process because there is a lack of uniformity among states with the PPP procedures. In fact there is a lack of uniformity among the different agencies within a particular state. Some states (Virginia, Texas) have passed legislation supporting PPP. They promote a uniform process in the way the method is implemented. National projects are occurring in those states with legislation because state legislation indicates support for the method and provides some level of uniformity among state agencies (exhibit 9).

SOURCE: Urban IS
State legislation helps but the statutes are not uniform and do not provide the level of detailed guidance needed to facilitate uniformity. This creates a problem. Private lenders do not want to invest in projects in states that have not endorsed PPP as a method by statute. In those states the process is longer, more difficult, frustrating, costly and uncertain in part because the agency is unfamiliar with PPP projects.

Jane Garvey, North American Chair of Meridian Infrastructure (PPP investment firm) explains: “Every public entity is unique. Each state has its own peculiarities. We’re not looking for uniformity so much as a consistent framework for the criteria and procedures involved (e.g. Clarity of contract and
procurement procedures, transparency, and centralized decision making). Understanding public goals is what they are trying to achieve. Is the project critical to the community? We won’t do jobs where the importance changes depending on who is in office. We must think long term.”

**How successful is PPP?**

The use of public private partnerships to fund infrastructure projects has increased significantly in the past 15 years internationally. As we discussed earlier the government sector and the corporate sector finance over ninety per cent of infrastructure, but the role of this alternative form of project finance has grown in importance as the government role has decreased. The PPP procurement process allows the private sector to become involved with the financing, designing, developing and operating of infrastructure projects. The PPP model is used in over forty countries and models from UK, Canada and Australia are often looked to as examples. The US is becoming increasingly interested in the model – the US P3 conference met recently for its third annual meeting with 800 members. PPP will not replace the traditional procurement process, but it can supplement it. And it may serve as a model for facilitating the relationship between government and the private sector. RICS Research (2011) did a study of PPP and private finance and found a number of trends. They looked at PPP in Australia, India, Canada, UK and the US. They found successful programs had certain characteristics:

- **Government needs to create a market for the private sector if they want their participation.** They need to have a standard template, a consistent regulatory framework for the procurement. In addition, there has to be a pipeline of projects. It is expensive to compete for PPP projects and if there are not going to be significant opportunities there are no motivation to participate. The US is increasing the number of states with legislation for PPPs. In addition, a number of groups are promoting standard frameworks for PPP projects (AIA).

- **The process of making the offer and bid costs are more time consuming and complex than conventional procurement models.** They discourage many potential firms. In the UK the process can take an average of 34 months. In Canada it is more efficient and takes from 16 to 18 months from expression of interest to financial close.

- **Value for Money**

  Value for money is a key criterion for selecting PPP. It is evaluated by project efficiency, risk transfer, and whole life costs. PPPs are more expensive than conventional forms of procurement (governments borrow at lower rates), but the efficiency of the private sector more than over comes these additional costs. Studies in the UK (NAO) and Australia (Allen Consulting) have private firms to be more effective in terms of being on time and on budget. Risk transfer is a sensitive issue. There is a feeling that the public sector may take more than its fair share of risk in PPPs. This is an area for further research. The Whole-life-cost area is also open to discussion. Exhibit 10). Good data does not exist to verify the premise that PPPs are less expensive than standard procurement over the life of the project. The PPP projects are 20 to 30 years in length and they have not been around that long.
Creative alternative finance

- PPP has demonstrated a creative way to involve the private sector in the delivery, financing and maintenance of infrastructure. It has helped government replace public finance and yet continue to meet the community needs. An interesting aspect of PPPs is the variety of structure that has been developed. There is a range of procurement possibilities from the standard
procurement to privatization. This allows governments to select the best structure for their need and objectives.

The findings of the RICS study are supported by the Plenary Group experience illustrated in exhibit 11.

EXHIBIT 11: A US model for public-private partnership success

SOURCE: Plenary Group

What role can academia play?

A program in Real Estate and Infrastructure would provide MSRE and MBA students with the opportunity to pursue careers throughout the United States and abroad. Graduates of the program would be prepared for management positions in development companies, advisory firms, financial institutions, corporations and consulting practices.
Course work in real estate development and investment has been around for over 25 years but infrastructure teaching, research, and service is a relatively unexplored area at US universities – although, Toronto’s York University has a program.

Based on a review of infrastructure sector, current JHU courses can be modified to meet most of the curriculum needs of the program. However, there are three areas where research and new curriculum materials will be needed:

1) Introduction to Public Private Partnership Infrastructure Development

   Students will learn to:

   • Describe business models and approaches to public private partnership.
   • Compare new PPP construction, financing, and service provision contracting techniques with current practice.
   • Understand the structure of the contractual arrangements, and the legal, financial and operational aspects of PPP model
   • Describe the standard approaches to financing both debt and equity contributions.
   • Assess the components of risk and risk allocation and mitigation between the different parties.
   • Compare the different payment mechanisms in the PPP model.

2) Sustainable Cities: Urbanization and Infrastructure

   Students will learn to:

   • Comprehend the consequences of the pace of urban growth on the world’s demand for infrastructure.
   • Examine the pros and cons of developed and developing world efforts to create new strategies, new technologies, new business models, and new financing techniques that can be used for a range of infrastructure needs.

3) Project Finance for Infrastructure.

   Students will learn to:

   • Describe the differences between project finance and similar contractual structures and the reasons project finance is used and for what projects.
   • Identify the roles and responsibilities of the participants
   • Identify the sources of funds for project finance.
   • Understand how a project structure reflects the project finance requirements, including risk allocation, ownership, and contractual obligations.
   • Identify finance agreements that encumber commitments for both equity and debt.
Conclusion

Real estate and infrastructure represents one of the largest industry sectors locally, nationally and internationally and encompasses business enterprises that range from investment and asset management to the development of residential, industrial, office, and retail uses to highways, transit major public facilities, and underground supply networks. By filling a niche that currently exists to support this industry, the program will prepare graduates with the skills and knowledge to take leadership roles in this important field.

REFERENCES


Inderst, G. Infrastructure as an Asset Class. EBI papers 2010 Vol 15 No. 1. 70-106.

Inderst, G. Private Infrastructure Finance and Investment in Europe. EBI working papers. 2013/2. 3-41.


OECD. Infrastructure to 2030 telecom, Land transport, Water and Electricity. 2006.


OECD. Strategic Transport Infrastructure Needs to 2030. 2012.


RREEF. European Infrastructure Update. July 2010.
