
MODERATOR: JOHN D. MACOMBER, Senior Lecturer of Business Administration, Harvard Business School

SPEAKERS: JEFFREY D. BROWN, Vice President, Project Finance, Summit Power

JOSÉ GÓMEZ-IBÁÑEZ, Harvard Graduate School of Design and Kennedy School of Government, Harvard University

WALTER HOWARD, CEO, Ze-gen, Inc.

OVERVIEW

The initiatives discussed in the conference’s prior sessions—in water, energy, transportation, and high-tech infrastructure—must be paid for. However, while financing is important, the panelists don’t see availability of capital as the issue. Instead, addressing risks such as gaining regulatory approvals for energy projects or securing adequate revenue streams to support new transportation infrastructure are bigger concerns. Capital won’t be freed up on a project-by-project level until issues such as these are addressed.

CONTEXT

Following sessions on urban infrastructure, water, energy, and transportation, this panel discussed the financing of major initiatives and the role of public/private partnerships and government.

There are situations where accessing capital is critical to starting and scaling new ventures.

Having used private financing to build successful water and wind turbine businesses, Walter Howard is following a similar model in creating Ze-gen. This startup is a venture capital-funded company that breaks down waste rubber, such as railroad ties, into its component parts and produces a clean, synthetic natural gas used for electricity. It is both a waste disposal business and a renewable energy company.

Mr. Howard said that the key to successful innovative technology ventures is being able to “turn corners.” This entails using different sources of funding to achieve various milestones. In the earliest stages, new technology companies typically start with angel or venture funding. Once they develop and prove the technology, they need later-stage private equity.

“I think the magic with the technology-driven companies is turning the corners. It is maybe angel funding to begin with or VC. Very quickly you need to transition to PE [private equity] or infrastructure funds.”

— Walter Howard

Ze-gen’s plan is to rely on equity funding to demonstrate its technology through two or three initial projects. These projects are located next to existing power plants, which allows the company to cut its capital costs and increase its efficiency. After the company proves success through its initial projects, the plan is to focus on manufacturing licensing that leads the company to be valued on a net income multiple.

With many infrastructure projects and PPPs, capital is not the problem. Other issues such as revenue streams and managing existing capacity are more important.

Agreeing with panelists from prior sessions, Mr. Gómez-Ibáñez said that access to capital is not the main problem for transportation infrastructure in either the developed or the developing worlds. He said there is an understandable

bias toward large-scale capital projects, which comes from investors, donors, and companies, all of whom have an interest in building things and realizing a favorable return. Bigger problems are:

- *Revenue streams.* Securing the capital to pay for a new road, bridge, or train isn’t the issue. The issue is the lack of ongoing revenue streams. This is a problem in the United States, but is an even greater problem in developing countries. There are two main revenue streams, both of which have issues:
 - *User charges.* Especially in developing countries, the general attitude is that user charges for essential infrastructure should be extremely affordable and accessible. As a result, user charges often are set so low that they don’t provide adequate funding.
 - *Taxes.* While cities are viewed as the engines of development, people in cities frequently complain that tax revenues from cities are siphoned off and diverted to rural areas. Few countries (with China being the exception) are investing tax revenue in cities.
- *Managing existing capacity.* While there is often an emphasis on capital-driven solutions to infrastructure problems, in many cases the solution lies in more effectively managing the capacity that already exists. For example, Jakarta is planning a significant investment in a Mass Rapid Transit (MRT) line. However, this line will affect only about 1% of the daily trips in and out of the city (just 400,000 daily trips out of 37 million).

This focus on the MRT comes as 95–98% of the capacity of the existing system is being badly mismanaged. By better and more efficiently managing Jakarta’s existing infrastructure—such as the bus system, which has been badly neglected—there would be a far greater impact than a huge capital investment for a new MRT line.

“What would be great is if the kind of energy in this room could be focused not just on capital-intensive projects but on better managing the existing capacity.”

— José Gómez-Ibáñez

KEY TAKEAWAYS

Public/private partnerships (PPPs) often are invoked as a solution. Mr. Gómez-Ibáñez's perspective is that PPPs are not a great idea if the only motive is to access capital, which is often the purpose of a PPP. There are in fact better ways to access private capital. The best reason for a public/private partnership is that the private sector is more efficient. For example, an MRT operated by the private sector will be more reliable and will deliver higher-quality service.

For many energy projects, the key barriers aren't financial; they involve mitigating various risks.

As with infrastructure projects, financing is not the barrier for energy projects. Instead, Jeff Brown says that the main issue hindering energy projects is the unpredictable risks associated with various layers of regulatory approval. This turns investors into project managers.

For example, for a \$300 million solar project in which Mr. Brown is involved, environmental permits, an approved power sales contract, and transmission all are required for the project to proceed. Each could fall through for a host of reasons, resulting in a loss of some or all of the investment. Thus, the issue is not the capital; it is navigating unpredictable and uncontrollable risks.

"In the U.S. people ask why don't we have more wind or solar or transmission. It is not the financing; the financing is not the hard part. The hard part is to somehow find a way to systematically take enough of the horrible risks . . . off the table."

— Jeffrey D. Brown

Government financing of unproven technologies can be important, but more important is for government to give investors greater certainty by creating a predictable environment.

While Mr. Gómez-Ibáñez and Mr. Brown don't see financing as their major obstacle, other conference attendees described situations where financing is a barrier—and where the government can help overcome this barrier.

An example would be an unproven technology that holds significant promise for society. (This might include the potential to create new industries and to provide environmental benefits.) But, the high risk and the amount of capital required cause private investors to shy away. In this situation, capital from the government may be necessary to help demonstrate the viability of the technology, lower the risk, and attract capital to scale the concept.

The panelists were in agreement that even more important than funding, that governments—especially the U.S. government—can create a more consistent, predictable environment that allows investors to make long-term investment decisions and to fund major works. Absent a predictable set of expectations of project and regulatory risk and ground rules, investors are reluctant to commit capital even though plenty of capital is available.

JOHN D. MACOMBER (MODERATOR)

John Macomber is a senior lecturer in real estate at Harvard Business School. His professional background includes leadership of real estate, construction, services, and technology businesses.

At HBS, Macomber teaches Finance and Real Property courses in the elective curriculum, including Real Property Asset Management; Real Estate Development, Design, and Construction; and Sustainable

Cities: Urbanization, Infrastructure, and Finance. He is part of the teaching team for the Building Green

Businesses field study seminar. Macomber also teaches Real Estate Sustainability, Strategy, and Finance at Harvard's Graduate School of Design.

Prior to coming to HBS, Macomber was a lecturer at MIT in Civil Engineering and Real Estate. He is chair or a co-chair of Executive Education programs including Real Estate Management, Real Estate Executive Seminar, and Develop India: Real Estate Strategies for Growth.

JEFFREY D. BROWN

Jeff Brown joined Summit Power Group, Inc. in mid 2009 and is Summit's vice president for project finance. Summit is a 20-year-old electric power project development with a long track record in gas and wind projects, and the company currently is financing its first photovoltaic solar project and a very large coal gasification/carbon sequestration project.

Prior to Summit, Brown had a long career in infrastructure and energy project financing on Wall Street. Most recently, Brown was a managing director at Merrill Lynch, where his role included managing the Pacific Northwest office as a senior investment banker, and prior to that he served in New York, Seattle, and Hong Kong for Goldman Sachs. His career at those two firms was in the fixed-income area (taxable and tax-exempt bond financing and debt management), focusing heavily on electric utilities, natural gas projects, major infrastructure projects, and interest rate/currency risk management.

Brown began his career as legislative assistant to U.S. Congressman Jim Weaver, where he was responsible for activities pertaining to Federal Power Marketing Agencies, including BPA, TVA, and WAPA.

Brown holds an AB with honors in economics from Harvard College and an MBA (with distinction) from Harvard Business School. As an investment banker, he held registrations under NASD (Series 7, 56, and 63).

JOSÉ A. GÓMEZ-IBÁÑEZ

José A. Gómez-Ibáñez is Derek C. Bok Professor of Urban Planning and Public Policy at Harvard University, where he holds a joint appointment at the Graduate School of Design and the John F. Kennedy School of Government. He teaches courses in economics, infrastructure, and transportation policy in both schools. His research interests are in transportation, infrastructure, and economic development, and he has authored or edited a half-dozen books on these topics.

At Harvard, Gómez-Ibáñez currently serves as the faculty co-chair (with Henry Lee) of the Infrastructure in a Market Economy executive education program at the Kennedy School. He also serves as chair of the Social and Urban Policy Area Faculty at the Kennedy School.

He received an AB degree in government from Harvard College in 1970 and MPP and Ph.D. degrees in public policy from Harvard University in 1972 and 1975, respectively.

Gómez-Ibáñez also has served as an advisor on infrastructure policy to U.S. and foreign government agencies, and to international financial institutions.

WALTER HOWARD

Walter Howard is president and CEO of Ze-gen.

An industry veteran with more than 30 years of global power project development experience, Howard has held CEO, COO, CFO, and SVP executive positions with utility leaders, including General Electric, American Water, U.S. Generating (an affiliate of PG&E and Bechtel), Noble Power Assets, J. Makowski Company, Inc. (partly owned by Duke Power), and Poseidon Resources.

Most recently, Howard served as CEO and director of Noble Environmental Power, where he led Noble in developing and putting into operation 484 wind turbines in New York and Texas. His projects have won Deal of the Year awards in finance and engineering categories in New York, Florida, Massachusetts, and Algeria. Furthermore, Howard has served on the Trade Advisory Committees for U.S. Secretaries of Commerce William M. Daley and Norman Mineta.

Howard holds BSCE and M.Eng. degrees from Cornell University and an MBA from Harvard Business School. He is a licensed professional engineer in the State of New York.