

How does the US ensure a big, new round of infrastructure investment will pay for itself?

We need to invest in nearly every facet of our infrastructure. This appears to have bi-partisan support, at every level of government. The national investment backlog is estimated by The American Society of Civil Engineers at \$3T and will increase to \$3.6T by 2020. The Society gives US infrastructure an overall grade of D+. The World Economic Forum rates US infrastructure 16th in the world. Thousands of bridges are deemed structurally deficient. Chris Matthews, MSNBC, in reviewing the state of US infrastructure on 4/19/2016 celebrated outstanding examples of our success from the Golden Gate to the Brooklyn Bridge and the Empire State Building. He asks if we would ever build them today.

Over \$20T sitting in US pension funds constantly seeks adequate returns, returns that should be achievable with a broad range of infrastructure projects. With \$20T available, why haven't we solved the infrastructure problem? **We haven't made the business case.** Consensus is growing that the US is poised for a sustained, long-lasting drive in public-private capital spending on infrastructure. However, studies from the Wall Street Journal to the International Monetary Fund report a weak connection between large sustained investments in infrastructure and economic growth.ⁱ How can we better ensure that our physical and social infrastructure investment triggers the economic growth to pay for our priorities?

Individual investors' returns depend on balancing a complex portfolio of interdependent initiatives. Suites of projects designed and sequenced to steadily improve the live-ability, productivity, and governmental fiscal strength of a city or region support a variety of revenue-recapture strategies. Funding those same investments at the wrong levels, in the wrong sequence, or with the wrong policy support either fails to build momentum for attracting households and businesses, or makes gains inaccessible to the original investors. **The key to success is monitoring and maintaining balance in the portfolio**, with full understanding of the dependencies and time-delays that tie the system together.

This is a complex, dynamic systems problem of the kind Ventana Systems, Inc. has specialized in for 30 years. Ventana draws on the work of leaders such as Fred Schweppe (father of electrical power grid calculations) and Jay Forrester (father of system dynamics) at MIT, using advanced statistics from radar and code-breaking. Ventana has patented improvements in dynamic modeling for model quality and advanced treatment of data to address the complexity of multi-faceted, long-horizon investments, and a rich history applying these tools to complex issues in portfolio analysis, project planning, and public policy.

Ventana wants to solve the challenge of connecting sufficient capital to infrastructure and coupling it to economic, social and environmental well-being. This is one of the primary challenges of our times. **Creating the sustainable fiscal framework to meet this challenge requires new applications of advanced tools.**ⁱⁱ Those who leverage them will lead in creating sustainable prosperity.

ⁱ Our financial industry defines the infrastructure challenge as follows:

- "There is no correlation between the amount of necessary infrastructure and profitable opportunities for the private sector." - Jim Barry, Global Head of BlackRock Infrastructure Investment Group
- "There are not enough viable projects." - Bertrand Badré, Director General of the World Bank
- "It's really an issue of public policy. If there was a financial and sustainable fiscal framework, investors would soon provide money for projects." - Cherian George, Managing Director, Infrastructure Americas, FitchRatings

ⁱⁱ Resources on modern tools applied to making the business case for civic investment:

- Governing Magazine's [FutureStructure](#) June 1, 2013 anticipates this advance. See mid-article "[Vibrancy, Engineered: The City as a System](#)":
<http://www.govtech.com/fs/news/Vibrancy-Engineered--City-as-a-System.html>
- Video on new tools keynoted by Geoff Beckwith, CEO of the Massachusetts Municipal Association: http://www.ventanasystems.com/examples_general/ (9 minutes)
- In January 2017 the CEO of the iSelect Fund, Carter Williams, led a podcast on infrastructure and economic growth with Ventana's Tom Fiddaman:
<https://www.iselectfund.com/iselect/3-trillion-problem-systems-dynamics-can-help-solve-america-infrastructure-crisis/> (47 minutes)