

# Zofnass Program Symposium

## **INFRASTRUCTURE RESILIENCE**

### **Planning for Urban and Regional Resilience**

**November 2 - 3, 2015**

Monday at HBS Cummock Hall  
Tuesday at GSD Stubbins Room

Monday

**INTRODUCTION & HBS CASE STUDY [12:00pm]**

**PANEL 1: PLANNING FOR RESILIENCE [1:00pm]**

**PANEL 2: FINANCING RESILIENT INFRASTRUCTURE [4:00pm]**

Tuesday

**PANEL 3. CAPITAL OF SOCIAL RESILIENCE [9:30am]**

**CONCEPTUALIZATION & MEASUREMENT IN RESILIENCE STUDIES  
[11:40am]**

**PANEL 4: RESILIENCY BY INFRASTRUCTURE SECTOR [1:00pm]**



**ZOFNASS PROGRAM**  
FOR SUSTAINABLE INFRASTRUCTURE



**Harvard University**  
**Graduate School of Design**

*Symposium Directors:*  
*Judith Rodríguez, [jjrodrig@gsd.harvard.edu](mailto:jjrodrig@gsd.harvard.edu)*  
*Richa Shukla, [rshukla@gsd.harvard.edu](mailto:rshukla@gsd.harvard.edu)*

# Zofnass Program Symposium

## **INFRASTRUCTURE RESILIENCE**

### Planning for Urban and Regional Resilience

**Monday, Nov. 2 & Tuesday, Nov. 3, 2015.**

**Monday Location: Room 102, Cumnock Hall  
Harvard Business School, Boston, MA 02139**

**Tuesday Location: Room 112 ( Stubbins)  
Harvard Graduate School of Design,  
Gund Hall, 48 Quincy St. Cambridge, MA 02138**

The Zofnass Program for Sustainable Infrastructure aims to influence the practice of sustainable city planning through an infrastructure-based approach, towards sustainable and resilient development of our communities. Infrastructure is re-examined through a systemic and synergistic approach of the Zofnass Planning Tool, as well as through an assessment-based approach of the Envision™ Rating System, the result of a joint collaboration with the Institute for Sustainable Infrastructure.

After the development of tools to measure and guide infrastructure sustainability, the research at the Zofnass Program now moves towards resilience. The November 2-3, 2015, workshop will focus on urban and regional resilience, as the next step of sustainable planning. We will start with a working definition, and we will base the workshop on recent applied research on the resilience of cities and regions and the relation to the Zofnass Planning Tool. The workshop will bring together public officials, infrastructure engineers, planners, design professionals and academics who will share next generation perspectives on urban resilience, focusing on infrastructure planning at the urban and regional scales. In such a way, interesting panel discussions will trigger the larger discourse of urban and regional resilience.

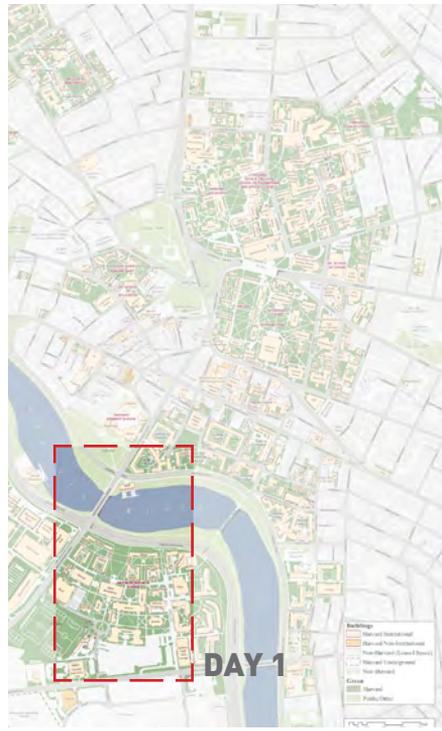
This symposium will focus on urban and regional resilience, as the next step of sustainable planning. It will bring together public officials, infrastructure engineers, planners, deesign professionals and academics to share next generation perspectives on urban resilience, focusing on infrastructure planning at the urban and regional scales.

**DAY 1 at HBS**  
Monday, November 2, 2015

**12:00 pm - 6:00 pm**



## Location Harvard Business School



Cumnock Hall, Room 102  
Harvard Business School  
33 Harvard Way  
Boston, MA

The University offers limited daily parking for faculty, staff, students, visitors and guests in the Business School (HBS) lot on Western Avenue in Allston. The cost is \$16.00 per weekday, \$7.00 after 5:00pm weeknights and \$7.00 per day on Saturday and Sunday. Overtime charges will be issued to any vehicle remaining in the lot overnight. Special weekend rates are also available. The HBS lot is staffed 24/7 and accepts cash and checks.

# MONDAY Agenda

12:00 pm-1:00 pm

## Introduction & HBS Case Study

**John Macomber** Senior Lecturer, Zofnass Program Faculty Advisor  
Harvard Business School

1:30 pm-3:45 pm

## Panel 1: Planning for Resilience

**Prof. Spiro Pollalis** Zofnass Program Director & Professor of Design,  
Technology and Management at Harvard GSD

**Jane A. Leggett** Specialist in Energy and Environmental Policy  
Congressional Research Service, Library of Congress

**Rebecca Flora** Sustainable Communities Practice Leader Ecology  
& Environment

**Nilda Mesa** Director  
NYC Office of Sustainability

**Alida Saleh** Head. Environment & Sustainable Development  
EXP

**Dr. Judin Karim** Chief Executive  
Construction Industry Development Board. Malaysia

4:00 pm - 6:00 pm

## Panel 2: Financing Resilient Infrastructure

**John Macomber** Senior Lecturer, Zofnass Program Faculty Advisor  
Harvard Business School

**Dr. Andreas Georgoulas** Lecturer & Zofnass Research Director  
Harvard Graduate School of Design

**Ana Maria Vidaurre** Principal Investment Officer  
IADB Structured & Corporate Finance Department

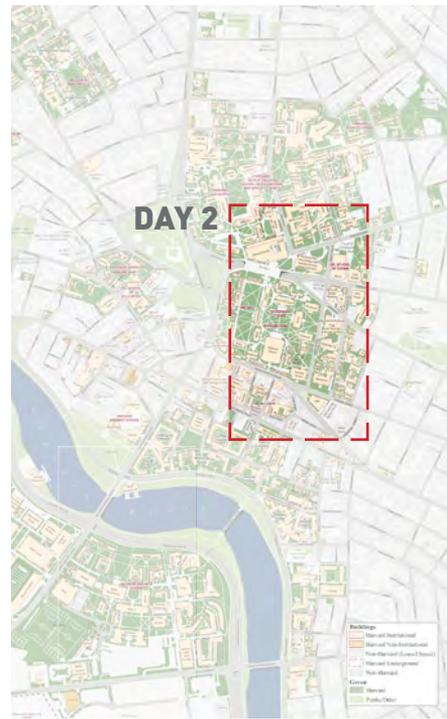
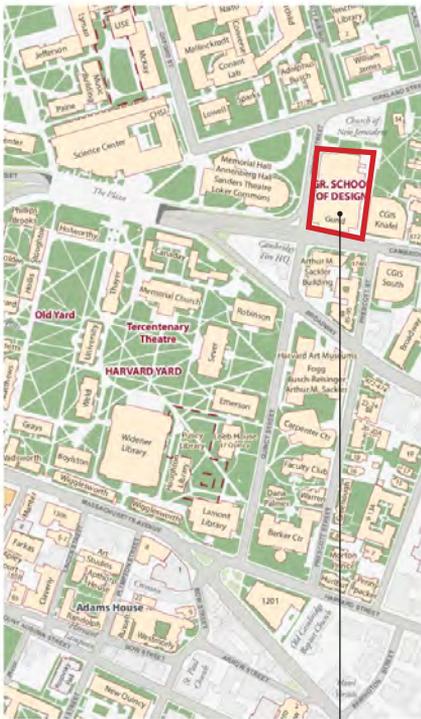
**Tom Wendorf** Vice President  
HNTB

**Dr. Sarah Slaughter** CEO & President  
Built Environment Coalitoin

**DAY 2 at Harvard GSD**  
Tuesday, November 3, 2015

**9:30 am - 4:00 pm**

## Location Harvard Graduate School of Design



Gund Hall, Room 112 [Stubbins]  
Harvard Graduate School of Design  
48 Quincy St.  
Cambridge, MA

Public transportation is recommended. However, if you wish to obtain a parking permit you may do so by going to the following website: <https://www2.uos.harvard.edu/cgi-bin/permit/purchase.pl> Instructions: Click visitor. Click to register. Create an account. For department list the Graduate School of Design. For the code list 1001



## TUESDAY Agenda

9:30 am - 11:40 am

### Panel 3: Capital of Social Resilience

**Marty Janowitz**

Vice President, Practice Leader Sustainable Development  
Stantec

**David Dixon**

Urban Places Group Leader  
Stantec

**Harriet Tregoning**

Principal Deputy Assistant Secretary for Community Planning & Development. U.S. Department of Housing and Urban Development

**Jonathan Rose**

President  
Jonathan Rose companies LLC

**Dr. S. Atyia Martin**

Boston Chief Resilience Officer & Director of the Office of Public Health Preparedness  
City of Boston & Boston Public Health Commission (BPHC)

11:40 am - 12:10 pm

### Conceptualization and Measurement in Resilience Studies

**Prof. Diane Davis**

Charles Dyer Norton Professor of Regional Planning & Urbanism  
Chair of the Department of Urban Planning & Design  
Harvard Graduate School of Design

1:00 pm - 3:45 pm

### Panel 4: Resiliency by Infrastructure Sector

**Prof. Spiro Pollalis**

Zofnass Program Director & Professor of Design, Technology and Management, Harvard Graduate School of Design

**Nasri Munfah**

Chairman Tunnel Services  
HNTB

**Thomas Rossbach**

VP of Aviation Architecture  
HNTB

**Elizabeth J. Bradford**

Sustainable Communities Service Area  
CH2M

**Jerry Touval**

Latin America Science Director  
The Nature Conservancy

**Peter Glus**

NYC Business Development Director  
Arcadis

**Dr. Costas E. Synolakis**

Professor of Civil Engineering  
University of Southern California

# DAY 1 at HBS

Monday, November 2, 2015

Room 102, CUMNOCK HALL, HBS



**Poseidon Carlsbad Desalination Project**  
San Diego County, California

Image source from <http://carlsbaddesal.com>

## Opening Session: *Introduction & Case Study*

**12:00 pm - 1:00 pm Welcome and introductions**

**Introduction & Discussion: What is Infrastructure Resilience?**

John Macomber, *Harvard Business School, Senior Lecturer, Zofnass Program Advisor*

The symposium will open with an interactive exploration of vocabulary and issues in researching infrastructure resilience. John Macomber of HBS will lead us in an analysis of "Poseidon Carlsbad: Seawater Desalination and the San Diego County Water Authority" (HBS Case Study 215-057). We will explore vocabulary and concepts in infrastructure sectors, exposures, and uncertainties as a starting framework for the four panels to follow.

1. Is seawater desalination good public policy?
2. Consider how risks and uncertainties are allocated between Poseidon and the San Diego County Water Authority in this public-private partnership. Do you think the allocation is fair?
3. Is this project an investment in resilient infrastructure? Why or why not?
4. Arguably, seawater desalination is a special and unusual illustration. How can the assessment of risk and finance in this case study be extended to other sectors of infrastructure?

John Macomber is a Senior Lecturer in the Finance unit at Harvard Business School. His professional background includes leadership of real estate, construction, and information technology businesses. At HBS, Mr. Macomber is engaged in the Business and Environment Initiative and Social Enterprise Initiative. He teaches Finance, Real Estate, Urbanization, and Entrepreneurship courses in the elective curriculum and in Executive Education. He is the former Chairman and CEO of the George B H Macomber Company, a large regional general contractor; and remains a principal in several real estate partnerships. John serves or has served on the boards of Young Presidents Organization International (YPO), Boston Private Bank, and Mount Auburn Hospital.

**1:00 pm - 1:30 pm Short Lunch Break**

**DAY 1 at HBS**

**Monday, November 2, 2015**

**Detail Schedule**

**Room 102, CUMNOCK HALL, HBS**

## **Panel 1 *Planning for Resilience***

**1:30 pm - 1:45 pm**

### **Panel Introduction**

Prof. Spiro Pollalis, *Director of Zofnass Program, Professor of Design, Technology and Management*

**1:45 pm - 2:00 pm**

### **Perspectives on Resilience at the Federal Level**

Jane A. Leggett, *Specialist in Energy and Environmental Policy Congressional Research Service Library of Congress.*

Members of Congress and the federal agencies hold diverse views and are taking varying approaches to promoting the resilience of U.S. infrastructure. Their approaches provide a context and often set the incentive structures for states, localities and businesses in their planning and investments. A number of bills recognize infrastructure resilience as an objective or a value, but legislation has not addressed the issue broadly. Approaches of federal agencies include: improving access to data and other information; examining and addressing the federal government's own risks, including in its supply chain; establishing regulatory and programmatic incentives, such as in transportation planning; assisting non-federal partners; and financing resilience recovery.

**2:00 pm - 2:15 pm**

### **Building Resiliency into the Creation of Sustainable Societies**

Rebecca Flora, *Sustainable Communities Practice Leader. Ecology & Environment.*

Building resiliency into communities requires personal responsibility and behavioral shifts, along with addressing the systemic stresses existing in most urban and rural environments that heighten the impact of sudden shocks on the most vulnerable populations. Resiliency capacity indices are measures for assessing the ability of a community to rebound from disaster. Utilizing socio-demographic and connectivity indices this presentation will examine the human factor of resilience and its importance when planning for resiliency. The State of Colorado will be used as an example of how the creation of resilient communities starts with a long term commitment to community education and culture change, and actions that serve the dual purpose of reducing the impact of sudden shocks and alleviating underlying community stresses. Colorado is a participant in the National Disaster Recovery Competition for which the presenter is serving as project manager supporting Colorado's NDRC application and resiliency planning efforts.

**2:15 pm - 2:30 pm**

**One New York: The Plan for A Strong and Just City**

Nilda Mesa, *Director, NYC Office of Sustainability*

Nilda will be discussing OneNYC: The Plan for A Strong and Just City. Her presentation will cover the four visions in OneNYC- growth, equity, sustainability, and resiliency- as well as the short and long-term goals of the plan. Nilda will also discuss the process of drafting the plan and implementation.

**2:30 pm - 2:45 pm**

**Rebuilding for Resilience**

Alida Saleh, *Head, Environment & Sustainable Development, EXP*

In the wake of a disaster there are insurmountable challenges for those impacted. The costs of disaster recovery far exceed the costs of preparedness; however, the imminence of a disaster—with its images of devastating loss—is sometimes the only catalyst for change. It is certainly the most compelling. This presentation will discuss lessons from across the globe in their efforts towards rebuilding resilient infrastructure.

**2:45 pm - 3:00 pm**

**Perspectives from the Construction Industry Development Board of Malaysia**

Dr. Judin Karim, *Chief Executive, Construction Industry Development Board*

**3:00 pm - 3:45 pm Panel Discussion moderated by Prof. Pollalis**

**3:45 pm - 4:00 pm Coffee Break**

# DAY 1 at HBS

Monday, November 2, 2015

## Detail Schedule

Room 102, CUMNOCK HALL, HBS

## Panel 2 *Financing Resilient Infrastructure*

**4:00 pm - 4:10 pm**

### **Panel Introduction**

John Macomber, *Senior Lecturer, Zofnass Program Faculty Advisor, Harvard Business School*

**4:10 pm - 4:25 pm**

### **Zofnass Economic Process Tool for Sustainability, A Real World Test**

Dr. Andreas Georgoulas, *Lecturer & Research Director, Zofnass Economic Process Tool of Sustainability*

The Zofnass Program recently completed the first direct application of the Economic Process Tool in conjunction with the NYC Department of Environmental Protection. Together, we applied the tool to a project related to repairing or replacing a wastewater treatment plant severely damaged during Tropical Storm Sandy. Research Director Andreas Georgoulas, working with EFCG's Bob Beinstein, reviewed DEP's Envision analysis and apply the Economic Process Tool to develop preliminary monetary values for the sustainability externalities from the three alternatives under considerations. Developed jointly with faculty and researchers from the Harvard Business School (HBS) and the Graduate School of Design (GSD), with iterative review and input from SIAB members, the Economic Tool is the first of its kind to begin quantifying the monetary externalities related to sustainable infrastructure and the Envision Rating System. It is clear that economic analysis is key to demonstrating the benefits of sustainable infrastructure. Involvement of SIAB members has been instrumental in making this tool a reality, and ensuring its usefulness in the marketplace.

**4:25 pm - 4:40 pm**

### **Basis for Successful and Sustainable Infrastructure Projects**

Ana Maria Vidaurre, *Principal Investment Officer, IADB Structured & Corporate Finance Department*

Latin America today is the world's most urbanized region, with 80% of the population living in cities. By 2030, the region will have six megacities, each having at least 10 million inhabitants. This rapid urban population growth, along with the impacts of climate change, are pressing challenges that require a systemic change in the way we finance, plan, design, and operate infrastructure. To improve people's quality of life and ensure social inclusion we need to increase the resilience of our already stretched physical, economic, and social infrastructure.

At the Inter-American Development Bank, we make sustainability a priority. We strengthen the knowledge base for clients through technical assistance and we finance infrastructure projects that move from a business-as-usual mindset to a more forward-thinking approach, adding environmental and social considerations to the different stages of the project and increasing, as a result, resilience against short and long term hazards.

The AUSA Road Safety and Urban Mobility Program, in Argentina, or the Chaglla Hydroelectric Power Plant, in Peru, are some examples of resilient infrastructure projects that we have invested in that increased the competitiveness of a company, while protecting the environment and improving the livelihoods of local communities.

The AUSA Road Safety and Urban Mobility Program consists of the execution of a series of civil works to enhance road safety in Buenos Aires, improve mobility and traffic flow, and reduce carbon emissions due to idling cars. In addition to these impacts, the IDB incorporated significant non-financial additionality into the project to improve AUSA's environmental and social performance as well as management processes through capacity building and transfer of know-how on leadership and corporate governance matters.

The Chaglla Hydropower Project is Peru's third largest hydroelectric facility, and will represent about 13 percent of the country's installed hydropower capacity once construction is completed by 2016. The plant is expected to prevent greenhouse gas emissions of 467,000 metric tons of CO<sub>2</sub> annually, and has also boosted socio-economic development in the area. The project has provided qualified labor training to more than 1,300 local people, and has created over 2,500 direct and 10,000 indirect jobs in a now-thriving town. Chaglla represents a challenging yet innovative project from an environmental perspective, as the project design and location had to be reconsidered and changed to avoid adverse environmental impacts in an area that is already prone to natural disasters. As a result, the dam and reservoir downstream were moved to increase the catchment area, reduce hydrological risks, and increase the overall resilience of the project.

Examples like the ones mentioned above have proven to make infrastructure investments more resilient. In other cases, higher stakeholder participation or additional consultation efforts have also contributed to the successful identification of risks and its mitigation. In areas where projects may be exposed to droughts, or high electricity costs, adequacy of reserves, sound water management, and energy efficiency solutions can be quite relevant in the successful long term implementation of infrastructure projects.

**4:40 pm - 4:55 pm**

### **Financing Resilient Infrastructure in US Public Agencies**

Tom Wendorf, *Vice President, HNTB*

Financing resilient Infrastructure is a constant challenge for all public agencies in the United States. Determining the right balance between function, cost, lifecycle and other factors is challenging in the public arena. Educating the public on the need is a key factor and utilizing a recognized system like the Envision

**4:55 pm - 5:10 pm**

### **Financing for Resilient Infrastructure**

Dr. Sarah Slaughter, *CEO & President, Built Environment Coalition*

Financing for resilient infrastructure is predicated on the assumption that the estimated benefits will be greater than the costs over time. There are significant challenges associated with quantifying economic impacts over time, compounded with the complexity of risk probabilities associated with climate change impacts and other external disruptions. The benefit/cost categories for built facilities include the direct recurring and nonrecurring costs, and the direct and indirect impacts. Strategies for financing resilient infrastructure can include identifying new benefit streams from resilience investments, incorporating resilience into all expenditures, bundling efficiency and resilience improvements, and utilizing longer term and multi-attribute financing vehicles.

**5:10 pm - 6:00 pm Panel Discussion moderated by John Macomber**

**7:00 pm Dinner at Harvard Faculty Club for invited guests and SIAB Members**



## DAY 2 at Harvard GSD

Tuesday, November 3, 2015

Detail Schedule

Room 112 [STUBBINS], GUND HALL

## Panel 3 *Capital of Social Resilience*

9:30 am - 9:40 am

### Panel Introduction

Marty Janowitz, *Vice President, Practice Leader Sustainable Development. Stantec*

9:40 am - 9:55 am

### A Strategic Case for Social Resilience: It takes Resilient Communities to Build Resilient Places

David Dixon, *Urban Places Group Leader. Stantec*

Social and environmental resilience are inevitably intertwined, without both, ultimately both are severely compromised. If we cannot succeed at making a moral case for social equity, we can make a compelling strategic case. Social resilience requires a comprehensive perspective that integrates the full spectrum of challenges communities face.

A strategic approach requires a holistic perspective that makes social equity an essential dimension of environmental resilience.

- Until struck by major environmental catastrophic events (Katrina, Sandy), cities facing the impending challenges of climate change are far more aware of immediate social and economic challenges, e.g. recovering from decades of disinvestment (New Orleans)
- Racial and other social conflict make it impossible for communities to come together to plan for environmental resilience (always seen through a racial or class lens).
- Making environmental resilience about community building is essential to build political will to move a resilience agenda forward. E.g. using “livability” tools like parks, new neighborhoods, transit improvements etc. and “economic” tools like tying resilience investments to getting people trained and employed builds support for environmental resilience far more readily than “engineering” tools involving massive infrastructure investments.
- It is far more pragmatic to protect communities in place than to move them “out of harm’s way”—in part because “harm” means much more than environmental hazards (destroying informal social support networks, putting an entire local business economy out of business, finding acceptable relocation sites, etc.).

Without integrating social and environmental resilience agendas, the two will compete for increasingly strained public resources. America’s aging population and consequent growing healthcare costs and the growing costs of dealing with the impacts of intergenerational poverty will likely use up the entire discretionary Federal budget before 2050.



## PANEL 3

**9:55 am - 10:10 am**

### **Building Resilience in Your Community**

Harriet Tregoning, *Principal Deputy Assistant Secretary for Community Planning & Development*  
*U.S. Department of Housing and Urban*

All across the country, communities are facing significant risk from extreme weather like heat waves, tropical storms, high winds, storm surges, and heavy downpours. Natural disasters and other major shocks have devastating and disproportionate effects on low and moderate income families. Harriet Tregoning, as Principal Deputy Assistant Secretary for Community Planning and Development, leads HUD's resilience initiatives. In this presentation, she will discuss some of these efforts, including the Sustainable Communities Initiative, the National Disaster Resilience Competition, and Build America. Through these initiatives, HUD is supporting communities' efforts to plan for and respond to significant changes more successfully.

**10:10 am - 10: 25 am**

### **The Cognitive Ecologies of Communities**

Jonathan Rose, *President. Jonathan Rose Companies LLC*

Cities emerge from the confluence of the natural ecology, a technical ecology of infrastructure and a cognitive ecology, the collective intention of communities. The talk will explore three aspects of the cognitive ecology - connectivity, coherence and compassion.

**10:25 am - 10:40 am**

### **Social Resilience: Equity, Engagement, and Partnership**

Dr. S. Atyia Martin, *Boston Chief Resilience Officer & Director of the Office of Public Health*  
*Preparedness, City of Boston and Boston Public Health Commission*

In December 2014, the City of Boston was selected to as part of the second wave of cities for the 100 Resilient Cities program pioneered by the Rockefeller Foundation. Mayor Martin J. Walsh appointed Dr. S. Atyia Martin as the Chief Resilience Officer in August 2015 to lead the City of Boston's Resilience Strategy. In this session, Dr. Martin will describe the manner in which social vulnerability to emergencies relates to the daily circumstances of people's lives. She will also provide an overview for Boston's approach to the 100 Resilient Cities process.

**10:40 am - 11:30 am Panel Discussion moderated by Marty Janowitz**

## DAY 2 at Harvard GSD

Tuesday, November 3, 2015

### Detail Schedule

Room 112 [STUBBINS], GUND HALL

# Conceptualization and Measurement in Resilience Studies

**11:40 am - 12:10 am**

Prof. Diane Davis, *Charles Dyer Norton Professor of Regional Planning and Urbanism  
Chair of Department of Urban Planning and Design, Harvard GSD*

Using material from a 3 year project on Urban Resilience in Situations of Chronic Violence, which was funded by USAID, I will share some critical reflections on the way resilience is conceptualized and measured, while also providing the alternative definitions and methodologies we used to study the proactive efforts by individuals and institutions to reduce risk.

Diane E. Davis, Charles Dyer Norton Professor of Regional Planning and Urbanism, and Chair of the Department of Urban Planning and Design, is the author of *Urban Leviathan: Mexico City in the Twentieth Century* (Temple University Press 1994; Spanish translation 1999) and *Discipline and Development: Middle Classes and Prosperity in East Asia and Latin America* (Cambridge University Press, 2004) as well as co-editor of *Irregular Armed Forces and their Role in Politics and State Formation* (Cambridge University Press, 2003) and *Cities and Sovereignty: Identity Politics in Urban Spaces* (Indiana University Press, 2011).

Her published works examine the relations between urbanization and national development, comparative international development, the politics of urban development policy, and conflict cities. She has explored topics ranging from historic preservation, urban social movements, and identity politics to urban governance, fragmented sovereignty, and state formation to planning theory.

Her current research focuses on the transformation of cities of the global south, particularly the urban social, spatial, and political conflicts that have emerged in response to globalization, informality, and political or economic violence. A prior recipient of research fellowships from the John D. and Catherine T. MacArthur Foundation, the Heinz Foundation, the Ford Foundation, the Social Science Research Council, the United States Institute for Peace, the Andrew W. Mellon Foundation, and the Carnegie Corporation of New York, Davis now coordinates a large scale project titled *Urban Resilience in Conditions of Chronic Violence*, funded by USAID.

Currently, Davis is involved in various research projects hosted at the GSD. She directs a project funded by the Volvo Research and Educational Foundation titled "Transforming Urban Transport -- The Role of Political Leadership" (TUT); is the co-PI for the project "Rethinking social housing in Mexico" (ReSHIM), funded by Mexico's National Worker Housing Agency (INFONAVIT); and heads the "The Mexican Cities Initiative" (MCI).

**12:10 pm - 12:55 pm Lunch in Porticos rooms 121-122**

## Panel 4 Resiliency by Infrastructure Sector

**1:00 pm - 1:10 pm**

### **Panel Introduction**

Prof. Spiro Pollalis, *Director of Zofnass Program, Professor of Design, Technology and Management*  
*Harvard Graduate School of Design*

**1:10 pm - 1:25 pm**

### **Designing More Resilient, Secure Tunnels**

Nasri Munfah, *Chairman Tunnel Services. HNTB*

Many leaders have seen their communities damaged or virtually disabled by a range of major storms, floods, wildfires and earthquakes. And there is increasing likelihood that our transportation infrastructure will continue to be tested by intense natural forces in the coming years. Although no one can predict the next disaster, there are ways to minimize its impact.

The first line of defense against a potential disaster is, of course, to fortify those elements of the infrastructure that are both critical and in peril. The Federal Emergency Management Agency has helped to guide communities in tackling this task. The process, multi-hazard mitigation planning, aims to preempt certain disaster losses so the vicious cycle of continuous destruction and rebuilding can be broken. These plans help communities make decisions about where to invest — and what to do — to reduce the human and economic toll of disasters. As of September 2014, FEMA reported that nearly 24,000 communities in all 50 states, the District of Columbia and five territories now have FEMA-approved state mitigation plans. While every community tackles its risks in a different way, best practices for hardening public assets, including transportation systems, are well known.

**1:25 pm - 1:40 pm**

### **Planning and Designing a Resilient Infrastructure (Case Study-Airport Infrastructure)**

Thomas Rossbach, *Vice President of Aviation Architecture. HNTB*

The presentation will encompass proactive resiliency planning and design of airport infrastructure which are much like whole cities themselves. The presentation will include topics of resilient systems and redundancy, energy efficiency, strategies convincing airport authorities/governments to think of long term life cycle costs/consequences versus first time capital costs, airport infrastructure issues of rising seas, hotter weather and reduced water resources. The presentation will portray case studies of airports dealing with various resiliency and climate issues and how their local geography affects the solution strategies to proactively overcome these challenges.

# DAY 2 at Harvard GSD

Tuesday, November 3, 2015

## Detail Schedule

Room 112, GUND HALL

## Resiliency by Infrastructure Sector [cont.]

1:40 pm - 1:55 pm

### The Role of Natural Capital in Securing Investment in Wastewater Treatment Infrastructure in Developing Nations

Elizabeth J. Bradford, *M.S./ENV SP Sustainable Communities Service Area Lead. CH2M*

Natural capital is Earth's stock of natural assets, including land, air, water, and living organisms. In Caribbean, like many developing island nations, key ecosystem services that flow from natural capital include drinking water, fisheries, and tourism. The quantity and quality of these ecosystem services continue to decline due to the negative impacts of domestic and industrial wastewater pollution. Traditional economic analyses evaluate the cost of various wastewater treatment alternatives and may address social benefits (e.g., improvements in health) and direct economic benefits (e.g., the ability to attract development). However, instructive elements related to natural capital are often missing from the economic case and therefore are not considered by governments, businesses, the public, donors, and investors in their decision-making or priority-setting processes. We expanded upon an important regional framework developed to support countries in meeting their wastewater obligations, to demonstrate that leveraging an economic case approach that integrates the effects of wastewater pollution on natural capital would strengthen support for increasing public and private investment in critically needed wastewater infrastructure. Additionally, where natural infrastructure is used for wastewater treatment, island nations can create, or enhance existing, natural capital.

1:55 pm - 2:10 pm

### The Nature Conservancy's Approach to Landscape Planning for Infrastructure Development in Latin America

Jerry Touval, *Latin America Science Director. The Nature Conservancy*

The Nature Conservancy supports a comprehensive approach to mitigation planning for infrastructure development, identifying potential conflicts and tradeoffs, steering impacts away from areas of high conservation value, and directing mitigation funding more effectively for restoration and conservation. The framework is applied at two distinct spatial scales to inform mitigation decision-making: first at a landscape or watershed level to determine conservation priorities in the context of multiple objectives, assess potential cumulative impacts, identify possible conflicts between objectives, assess the compatibility (or incompatibility) of impacts with conservation goals, and evaluate opportunities for sustainable outcomes; and second at a project or site level to assess site-level impacts, design a mitigation strategy involving offsets to address impacts, and measure progress toward fully compensating for impacts.

This framework addresses many key shortcomings of current mitigation policy and practice. By integrating planning for conservation, development, and other objectives at a landscape or watershed scale, it supports application of mitigation at a more appropriate ecological scale. Projecting cumulative impacts at this scale moves mitigation beyond a piecemeal project-by-project approach to one that can support a dynamic conservation vision. Whereas mitigation can be fraught with subjective and opaque decision-making, applying science-based conservation planning through this framework provides a more transparent and credible basis for informing key issues: are anticipated impacts compatible with conservation goals; what are the opportunities for moving beyond zero-sum development vs. conservation conflicts; and how well can offsets address project impacts and contribute to broader landscape- or watershed-scale goals.

The underlying approach to developing ecologically sustainable infrastructure projects lies in disseminating the "mitigation hierarchy" concept—an approach for avoiding, minimizing and offsetting impacts—via a practical, transparent and widely applied suite of tools for reducing risk and ensuring positive conservation outcomes in infrastructure project design.

**2:10 pm - 2:25 pm**

**Climate Resilience Strategies as a Driver for the Sustainable Development of Coastal Cities**

Peter Glus, *PE, BCEE, CPM, NYC Business Development Director. Arcadis*

This paper considers the integrated principles of flood protection and water resiliency and explain the challenges and opportunities that come with large scale adaptation strategies in the New York City Region. Resiliency measures for private and semi-private industry that are being studied and implemented need to be factored in in long term strategies with a regional reach. The multi-tiered resiliency studies of the BIG U, encompassing Southern Manhattan and the Lower East Side as well as the Coney Island Creek feasibility study reveal complex urbanistic challenges and opportunities. Not just the protection of the community through waterfront adjustments but the active enhancement of the community is becoming a priority. This paradigm shift shows how a comprehensive transition, as a result of New York's ongoing resiliency planning efforts, can become a key driver for the sustainable revitalization of larger urban areas.

**2:25 pm - 2:40 pm**

**Exploring Coastal Resilience**

Dr. Costas E. Synolakis, *Professor of Civil Engineering. University of Southern California  
Department of Civil and Environmental Engineering*

Coastal communities rely upon a range of protection elements, both constructed and natural, for resilience. Although extreme events might be assumed to be quite rare, given the level of protection that is available for many communities, extreme events can happen every few decades. Resilience of protection will diminish over time unless the elements are maintained, or in the case of natural systems, given the resources to expand and grow. As a result, communities with well-balanced and diverse resilience might find that resilience decreases with time. Extreme events or the consideration of extreme events through contingency planning and scenario development, provide valuable insights into the weaknesses in any resilience effort and help identify steps to enhance resilience for a broad spectrum of future conditions. We propose a definition for resilience that covers the pre-disaster conditions, disaster response and post-disaster recovery This presentation examines resilience of various protection management and suggests a quantitative coastal community hazard resilience index to evaluate alternatives. While a do-nothing approach can be the most cost-effective approach, if there is no risk that an extreme event might happen, for situations where extreme events are possible, the resilience of a community can be enhanced by a modified status quo approach in which elements are maintained regularly and rebuilt to the current design standards when they experience significant damage.

**2:40 pm - 3:25 pm Panel Discussion moderated by Spiro Pollalis**

**3:25 pm - 3:45 pm Closing Discussion on Defining Resiliency for Zofnass Program Research Agenda**

**Closing Remarks by Prof. Spiro Pollalis**

# SPEAKER BIOS

## Elizabeth Bradford

M.S., ENV SP Sustainable Communities Service Area Lead  
CH2MHILL

Elizabeth Bradford is CH2M's Sustainable Communities Service Area Lead, and advances the collaboration between The Nature Conservancy and CH2M on a number of projects and thought leadership pursuits, including TNC's Coral Reefs and Wastewater Pollution Strategy, and the World Business Council for Sustainable Development's (WBCSD) Business Guide for Natural Infrastructure. Elizabeth began her career over 20 years ago in the United States Navy. After seven years she left the Navy to pursue a BS in Geology from the University of South Alabama (2004), and an MS in Hydrogeochemistry from Dartmouth College (2007). Elizabeth joined CH2M in 2008, and lives in Rhinebeck, NY. Ms. Bradford is an Envision™ Stainability Professional (ENV SP) and Trainer. She is passionate about workplace diversity and addressing socioeconomic disparities – she serves on the CH2M's Women's Network Global Steering Committee; and volunteers for the National Diversity Council in Cuba, and has lived in Harlem since 2001.

## Prof. Diane Davis

Charles Dyer Norton Professor of Regional Planning and Urbanism. Chair of the Department of Urban Planning and Design  
Harvard GSD

Diane E. Davis, Charles Dyer Norton Professor of Regional Planning and Urbanism, and Chair of the Department of Urban Planning and Design, is the author of *Urban Leviathan: Mexico City in the Twentieth Century* (Temple University Press 1994; Spanish translation 1999) and *Discipline and Development: Middle Classes and Prosperity in East Asia and Latin America* (Cambridge University Press, 2004) as well as co-editor of *Irregular Armed Forces and their Role in Politics and State Formation* (Cambridge University Press, 2003) and *Cities and Sovereignty: Identity Politics in Urban Spaces* (Indiana University Press, 2011).

Her published works examine the relations between urbanization and national development, comparative international development, the politics of urban development policy, and conflict cities. She has explored topics ranging from historic preservation, urban social movements, and identity politics to urban governance, fragmented sovereignty, and state formation to planning theory.

Her current research focuses on the transformation of cities of the global south, particularly the urban social, spatial, and political conflicts that have emerged in response to globalization, informality, and political or economic violence. A prior recipient of research fellowships from the John D. and Catherine T. MacArthur Foundation, the Heinz Foundation, the Ford Foundation, the Social Science Research Council, the United States Institute for Peace, the Andrew W. Mellon Foundation, and the Carnegie Corporation of New York, Davis now coordinates a large scale project titled *Urban Resilience in Conditions of Chronic Violence*, funded by USAID.

## David Dixon

Urban Places Group Leader  
Stantec

David argues that significant investments to protect communities from climate change represent a unique opportunity to help them respond to dramatic social challenges stemming from growing income disparities, a globalizing economy, and rapidly aging populations. David was the first urban designer honored with the AIA's Thomas Jefferson Award for Public Architecture for "a lifetime of ... [creating livable neighborhoods, vibrant civic spaces, and vital downtowns ...]" Residential Architecture named David as the recipient of its 2012 Hall of Fame Award "as the person we call when we have a question about cities." Under his leadership David's previous firm won the APA's Excellence in Planning Award to a Firm. Last year Wiley published the second edition of *Urban Design for an Urban Century: Shaping more livable, equitable, and resilient cities*, which David coauthored with Lance J. Brown FAIA.

## Rebecca Flora

Sustainable Communities Practice Leader  
Ecology & Environment

Rebecca L. Flora earned an international reputation through her work at Green Building Alliance (GBA) in Pittsburgh and the USGBC, where she served as chair of the board of directors in 2008 and later as Senior Vice President of Education and Research. She was a founding member of the committee that established the LEED for Neighborhood Development rating system.

As Ecology and Environment, Inc.'s Sustainable Communities Practice Leader, Ms. Flora is serving project manager for the Colorado Governor's Office of Resiliency and Recovery's resiliency plan and NDRC application to HUD. She also recently oversaw development of award-winning sustainability plans for four regions in New York State. As executive director of the GBA she led the development and adoption of the City of Pittsburgh's first Climate Action Plan in 2008 and established western Pennsylvania as an early leader in the green development and jobs movement.

Ms. Flora is an educator in the field of sustainability, serving as an adjunct professor at Carnegie Mellon University's Heinz College where she created one of the first classes in the nation on sustainable community development, and as a former member of the USGBC@ Faculty™. Recognition of her work includes the AIA Pittsburgh Leadership Award, Carnegie Science Center Environmental Award, and Interiors & Sources magazine Environmental Hero. She has a Master of Urban/Regional Planning and BA in Environmental Science.

# SPEAKER BIOS

## **Dr. Andreas Georgoulis**

Research Director, Zofnass Program & Lecturer in Architecture, Harvard GSD

Prof. Andreas Georgoulis is the research director of the Zofnass Program for Sustainable Infrastructure at Harvard University Graduate School of Design, where he also teaches since 2007. His work focuses on infrastructure and large-scale developments, where he has published two books and continues to develop methods and tools to evaluate their environmental, social and economic impacts. His current projects include the Infrastructure 360 Awards, the first sustainability assessment and recognition program in Latin America in collaboration with the IDB, a wide interdisciplinary effort to assess health impacts of cities in Asia, and research on hybrid models of waste-to-energy facilities. He is the lead developer of the Zofnass Economic Tool, a comprehensive analytic model that quantifies the external costs and benefits of sustainable infrastructure. He has collaborated with Obermeyer, Hochtief and the US General Service Administration, and in infrastructure financing with UniCredit Markets and Investment Banking. He has consulted for the Economist Intelligence Unit and the United Nations Development Program, and led feasibility studies for new city developments in Cameroon, Saudi Arabia and Pakistan. Prof. Georgoulis holds degrees in Architecture Engineering from the University of Athens, a Master's and a Doctorate from Harvard.

## **Peter Glus**

PE, BCEE, CPM NYC Business Development Director  
Arcadis

Peter Glus has more than 20 years' experience as a professional engineer in New York City, and ARCADIS's City Executive for New York. Peter's expertise is in managing and running large-scale environmental projects, including resiliency and sustainability, water and wastewater facilities, and water conveyance and storage. Peter's experience ranges from program management on the \$1B Bay Park STP repair and resiliency program to project management for the \$1.6B NYCDEP Hillview Reservoir Program to bringing \$1.7B in FEMA funding for NYC Health and Hospitals Corporation (HHC) following Hurricane Sandy.

Peter earned his BS in Civil Engineering from Columbia University and his ME in Environmental Engineering from Manhattan College. He is a registered Professional Engineer and Board Certified Environmental Engineer.



## **Marty Janowitz**

VP, Discipline Leader Sustainable Development  
Stantec

Marty Janowitz is Vice President, Sustainable Development at Stantec. He has more than 30 years' experience consulting internationally in environmental and sustainability planning, policy and engagement. He's responsible for guiding Stantec's efforts to become an exemplary model of sustainability in all its operations and leads the company's initiatives to develop an integrated sustainability consulting practice. He's played a leading role in the sphere of sustainable infrastructure serving on the Zofnass Program's Sustainable Infrastructure Advisory Board. He's an Envision Professional, Verifier and Trainer, was Chair of an ISI Technical Committee and is a member of its new Envision Review Board. He was advisor to Stantec's Envision Platinum Grand Bend Wastewater treatment project – the first such project first and first Envision project in Canada. Marty was elected a member of Canada's Clean 50 - outstanding contributors to sustainable development and clean capitalism.

## **Dr. Judin Karim**

Chief Executive  
Construction Industry Development Board  
Malaysia

Dato' Sri Ir. Dr. Judin Abdul Karim is the Chief Executive of the Construction Industry Development Board Malaysia (CIDB) since August 2011. In this position, Dato Sri Judin is entrusted to lead the development of the Malaysian construction industry towards global competitiveness. To these ends, Dato' Sri Judin has placed great emphasis on enhancing productivity in the construction industry by promoting mechanisation, sustainability, adoption and utilization of technology such as the Industrialised Building System (IBS) and Building Information Modelling (BIM) as well as effective implementation of training and development program for personnels and construction companies.

Dato' Sri Judin has served the Public Works Department (PWD) of Malaysia for 33 years. Starting his career in PWD in 1978, he has progressively moved up the hierarchy to ultimately became the Director General of PWD; the post he held for 4 years prior to his current appointment.

Dato' Sri Judin received his Bachelor of Science (Hons) Civil Engineering degree from the University of Manchester Institute of Science and Technology, UK and his Master of Science in Structural Engineering and Ph.D in Civil Engineering from the University of Southern California. For his significant contributions to construction and engineering, he has been awarded the Honorary Doctorate of Engineering from Universiti Teknologi Malaysia and Honorary Doctorate of Engineering from Universiti Kebangsaan Malaysia.

Dato' Sri Judin is currently the President of the Malaysian Structural Steel Association (MSSA), President of the Malaysian Asset and Project Management Association (MAPMA) and Chairman of the World Road Association (PIARC) for Technological Exchanges and Development Commission. He is also the Fellow of IstructE, UK, the Fellow of the Institution of Engineers Malaysia (IEM) and the Fellow of the Academy of Sciences, Malaysia.

# SPEAKER BIOS

## Jane A. Leggett

Specialist in Energy & Environmental Policy  
Congressional Research Service, Library of Congress

Jane A. Leggett is a Specialist in Energy and Environmental Policy at the Congressional Research Service (CRS), which supports Members of Congress and their staff. She is the CRS coordinator for climate change, and leads responses on climate change science, federal funding, international cooperation and additional topics. For more than 15 years, Leggett led work on climate change mitigation and risk analysis at the U.S. Environmental Protection Agency, and collaborated in many inter-agency initiatives. She was a negotiator for the United States on the Kyoto Protocol. She shared in the 2007 Nobel Peace Prize awarded to the Intergovernmental Panel on Climate Change. Leggett was an administrator at the Organisation for Economic Cooperation and Development in Paris from 1984 through 1990, covering the nexus between environmental and energy issues. She has also served for brief periods in the Department of Energy, and in the Office of Management and Budget. Leggett has a Masters degree in City and Regional Planning from the Graduate School of Design of Harvard University, and a

## Dr. S. Atyia Martin

Boston Chief Resilience Officer & Director of the Office of Public Health Preparedness  
City of Boston and Boston Public Health Commission

Dr. S. Atyia Martin is a Certified Emergency Manager (CEM) with a diverse set of experiences in public health, emergency management, intelligence, and homeland security. Mayor Martin J. Walsh recently appointed her as the Chief Resilience Officer for the City of Boston as part of the 100 Resilient Cities initiative pioneered by the Rockefeller Foundation. Dr. Martin is also adjunct faculty in the Master of Homeland Security at Northeastern University. She was previously the Director of the Office of Public Health Preparedness at the Boston Public Health Commission (BPHC). Her previous professional experience includes the Boston Police Department's Boston Regional Intelligence Center; City of Boston's Mayor's Office of Emergency Management; the Federal Bureau of Investigations (FBI); and active duty Air Force assigned to the National Security Agency.

## Nilda Mesa

Director  
NYC Office of Sustainability

Nilda Mesa is Director of the NYC Mayor's Office of Sustainability. Prior to joining the de Blasio administration, Mesa worked at Columbia University in several roles, including as the Assistant Vice President of Environmental Stewardship, Adjunct Professor at the School of International and Public Affairs, and as the Associate Dean of Administrative Affairs at the Graduate School of Journalism. Previously, Mesa served in the Clinton Administration in key environmental policy roles at the White House Council on Environmental Quality, the US Air Force, and at the U.S. Environmental Protection Agency as Counsel to the NAFTA Taskforce, where she led U.S. legal negotiations with Canada and Mexico and implemented legislation related to trade and the environment. Mesa began her career at the California Attorney General's Office enforcing toxic waste and natural resources laws. She is a graduate of Harvard Law School and Northwestern University. She was born in Cuba, and has lived in Harlem since 2001.

## Nasri Munfah

Chairman Tunnel Services  
HNTB

Nasri Munfah chairs the HNTB Tunneling practice of more than 100 people. He has been responsible for managing all phases of multi-billion-dollar multidisciplinary domestic and international tunneling and transportation projects, from feasibility and conceptual engineering through final design and construction, always placing special emphasis on project control and contract management to meet tight schedules and budgets. He's currently project manager and principal-in-charge for design of the Istanbul Strait Road Crossing (Eurasia) Tunnel for the Republic of Turkey Ministry of Transport. The project consists of 5.4 km of road and tunnels, including a 3.3 km underwater tunnel to accommodate a double deck for a 2x2 lane road. The project also includes cut-and-cover, earth pressure TBM and/or NATM tunnels inland, cross passages, open approaches, ventilation structures, toll plazas, a tunnel control building, and electrical and mechanical work. The tunnel is subject to 10.5 bars of water pressure and is located in a highly seismic zone.



# SPEAKER BIOS

## **Prof. Spiro Pollalis**

Zofnass Program Director & Professor of Design, Technology & Management  
Harvard Graduate School of Design

Professor Pollalis is Professor of Design, Technology and Management at the Harvard Design School. Since 2008, he is the Director of the Zofnass Program for the Sustainability of Infrastructure that has led to the Envision Rating System. He is also the Principal Investigator of the project "Gulf Sustainable Urbanism" for 10 cities in the Arab Gulf, sponsored by the Qatar Foundation. He has taught as a visiting professor at the ETH-Zurich, Switzerland; TU-Delft, Holland; Uni-Stuttgart, Germany; U-Patras, Greece; and has offered joint courses with the Harvard Business School on planning and development. He serves as the co-chair of the Advisory Committee on Future Cities for the Singapore-ETH Center.

Prof. Pollalis is the chief planner for the new DHA City Karachi for 600,000 people, currently under construction. He served as the Chairman and CEO of the public company for the redevelopment of Hellinikon, the former Athens airport, and he developed the base master plan and business plan ([www.pollalis-hellinikon.com](http://www.pollalis-hellinikon.com)).

Professor Pollalis received his first degree from the University in Athens (EMP) and his Master's and PhD from MIT. His MBA in high technology is from Northeastern University. He has an honorary Master's degree in Architecture from Harvard

## **Jonathan Rose**

President  
Jonathan Rose Companies LLC

Jonathan F.P. Rose's business, public policy and not-for-profit work all focus on creating more environmentally, socially and economically resilient cities. In 1989, Mr. Rose founded Jonathan Rose Companies LLC, a multi-disciplinary real estate development, planning, and investment firm which has successfully completed more than \$1.5 billion of work. In 2005, the firm launched the nation's first green transit oriented acquisition and redevelopment fund, followed by several green affordable housing and office transformation funds.

The company's mission is to repair the fabric of communities. The firm's work touches many aspects of community health; working with cities and not-for-profits to build not only affordable and mixed-income housing, but also cultural, health and educational infrastructure.

The firm's innovative development, planning, investment, new construction, conversion and historic preservation work has won awards from a wide range of notable organizations including: the National Trust for Historic Preservation, the Natural Resources Defense Council, the Urban Land Institute, the American Planning Association and the American Institute of Architects. Mr. Rose's book on resilient cities, *The Well Tempered City*, will be published by Harper Collins in 2016.

Mr. Rose is Vice Chair of Enterprise Community Partners and is a trustee of the Natural Resources Defense Council. He also serves on the Board of the Brooklyn Academy of Music, and is an Honorary Member of the American Institute of Architects.

## **Thomas Rossbach**

VP of Aviation Market Sector  
HNTB Architecture

Mr. Rossbach is the VP of Aviation Market Sector for HNTB Architecture and leads the practice through 50 local HNTB offices nationwide. He is a licensed architect practicing the planning and design of airport terminals and infrastructure projects for the last 35 years. He has worked on over 40 airports projects throughout the US and abroad, including some of the nation's largest airport projects such as LAX's \$1.3Billion International terminal and Houston Intercontinental Airport's \$1.4B terminal expansion. He recently completed as the role of the planning and design director of the expansion of the San Diego International Airport where the project was awarded the highest sustainability certification (LEED Platinum) ever achieved for an airport project. Tom has a BS of Architectural Studies in Architecture from the University of Nebraska- Lincoln.

He focuses on airport capital development and construction, including airport terminal design, terminal planning, landside planning and design, airfield planning, airport business consulting, airport program management, alternate delivery methodologies for airports and airport privatization. He is a frequent speaker in the aviation and transportation industry.

## **Alida Saleh**

Head, Environment & Sustainable Development  
EXP

Alida Saleh is the Head of Environment and Sustainability at Exp Services Inc. and is one of the firm's in-house sustainable design, construction and operations experts. Ms. Saleh has been involved in a broad range of public and private projects globally. She specializes in 'Green' infrastructure development and implementing sustainable business practices.

## **Dr. Sarah Slaughter**

CEO & President  
Built Environment Coalition

Dr. Sarah Slaughter is CEO/President of the Built Environment Coalition, and currently serves on the Green Building Advisory Committee to the GSA. She was recently a Visiting Lecturer in the MIT Department of Urban Studies and Planning, the Associate Director for Buildings and Infrastructure in the MIT Energy Initiative, faculty head of the Sustainability Initiative in the MIT Sloan School of Management, and previously the founder and CEO of MOCA Systems, Inc. She was a MIT professor in the Department of Civil and Environmental Engineering, and earlier was a Lehigh University professor of Civil and Environmental Engineering. Dr. Slaughter is a member of the National Academy of Construction, an Associate Member of the National Academy of Sciences, Engineering, and Medicine, and serves on the Board of Directors for the Charles River Watershed Association. She received her PhD, SM, and SB from the Massachusetts Institute of Technology.

# SPEAKER BIOS

## **Dr. Costas E. Synolakis**

Professor of Civil Engineering  
University of Southern California, Sonny  
Astani Department of Civil and Environmental  
Engineering

Professor Costas Synolakis got his B.S., M.S., and Ph.D. degrees from Caltech. He is one of the world experts on tsunamis. The suite of computer codes he and his students developed in the 1990s, known as MOST, are now used operationally by the US Tsunami Warning Centers for real time forecasts of tsunamis. He has surveyed and documented the immediate aftermath of 24 tsunamis worldwide. He is the author of over 100 ISI publications, and he has over 100 interviews and quotes in national and international newspapers. His recent work has focused on climate-induced beach erosion, coastal resilience and the role of coastal structures. Dr. Lesley Ewing and Professor Synolakis developed the Coastal Community Hazard Protection Index (CCHPR Index), now in use for evaluating the resilience of coastal protection measures.

## **Jerry Touval**

Latin America Science Director  
The Nature Conservancy

Jerry Touval manages the Latin America Infrastructure Program for The Nature Conservancy. His works with governments, corporations, and finance institutions on development of infrastructure projects (transportation systems, hydropower, mining, oil & gas) in a way that minimizes impacts on biodiversity and ecosystem services.

Mr. Touval has over 35 years' experience in conservation and natural resource management. He joined the Conservancy in 1994 and has held several positions, including Regional Science Director for Latin America, and Colombia Country Program Director. Before joining the Conservancy, he worked for the U.S. Fish and Wildlife Service's Latin America Program, and prior to that as a Wildlife Biologist for the U.S. Bureau of Land Management. He began his career as a Peace Corps Volunteer in Honduras. He has an MS in Conservation Biology and Sustainable Development from the University of Maryland, and a BS in Forestry and Wildlife from Rutgers University.

## **Harriet Tregoning**

Principal Deputy Assistant Secretary for  
Community Planning & Development  
U.S. Department of Housing and Urban  
Development

Harriet Tregoning leads the Office of Community Planning and Development at the US Department of Housing and Urban Development. She recently led HUD's Office of Economic Resilience, helping regions, cities, counties and towns across the country build a strong foundation for a diverse and prosperous economy based on enhancing community quality of place, economic opportunity, fiscal stability, transportation choice, and affordability. She was previously Director of the District of Columbia Office of Planning, where she worked to make DC a walkable, bikeable, eminently livable, globally competitive and thriving city. Her priorities included re-writing the city's zoning code for the first time in 50 years, planning the revitalization of National Historic Landmark St. Elizabeth's Hospital campus as part of the consolidation of the Department of Homeland Security's Headquarters, and collaborating with her transportation colleagues to bring the nation's (then) largest bike-sharing program to DC in 2010. Prior to this she was the director of the Governors' Institute on Community Design and co-founded with former Maryland Governor Glendening. She served Governor Glendening as Secretary of Planning. Prior to her tenure in Maryland state government, Tregoning was the director of Development, Community and Environment at the United States Environmental Protection Agency. Tregoning's academic training is in engineering and public policy. She was a Loeb Fellow at the Harvard University Graduate School of Design for 2003-2004.

## **Ana Maria Vidaurre**

Principal Investment Officer  
IADB Structured & Corporate Finance  
Department

Ana Maria Vidaurre is Principal Investment Officer with the Infrastructure Division of the Structured and Corporate Finance Department of the Inter-American Development Bank, based in Washington DC. The Structured and Corporate Finance Department of the IDB fosters private sector participation in sustainable economic growth in Latin America and the Caribbean. As a Principal Investment Officer, she leads the origination, analysis, structuring and execution of project finance transactions in the infrastructure space. Ms. Vidaurre has worked on financing water and sanitation, gas transportation, port, and power utility projects for over 15 years, and is currently focused on financing renewable energy projects in Latin America. She is also responsible for the IDB Infrastructure 360 Sustainability Awards, which, in three editions has received 148 project applications with investments amounting US\$120 billion in the Latin American region. Prior to joining the IDB, she worked in infrastructure project finance in Latin America's Andean Region at CAF development bank. Ms. Vidaurre has a BA degree in Business Administration from Universidad Metropolitana in Caracas, Venezuela, and an MBA from École Supérieure des Sciences Économiques et Commerciales (ESSEC), Paris, France.

# SPEAKER BIOS

## **Tom Wendorf**

P.E., ENV SP, Vice President  
HNTB

Mr. Wendorf has led efforts for the \$3.2 billion Hurricane Ike and Dolly recovery for the State of Texas; delivered post Katrina Submerged Roads Program in Louisiana; provided disaster recovery expertise for the Port Authority of New York and New Jersey, New Jersey Transit and others; and has provided municipal services for many Texas cities and counties. He retired as Director of Public Works for the City of San Antonio, the 2nd largest city in Texas and 7th largest city on the United States in September 2008 with an operating budget of \$110 million, capital budget of \$60 million, over 1000 employees and a wide range of businesses. He is an APWA Public Works Leadership Fellow, was named Public Leader of the Year in San Antonio in 2007, Engineer of the Year for the State of Texas in 2005 and an APWA Top Ten Public Works Leader of the Year in 2004.



# PARTICIPANT LIST

Aladdine Joroff, *Staff Attorney and Instructor*, Harvard Law School, Emmett Environmental Law & Policy Clinic

Alec Smith, *Haley & Aldrich*

Angela Vincent, *Senior Resiliency Planner*, BSC Group

Ali Malkawi, *Professor, Founding Director* of Harvard Center for Green Buildings & Cities

Alida Saleh, *Head*, Environment & Sustainable Development, EXP

Ana Maria Vidaurre, *Principal Investment Officer*, IADB Structure & Corporate Finance Department

Andreas Georgoulas, *Lecturer & Research Director*, Zofnass Program for Sustainable Infrastructure

Andy DeSantis, *Assistant Director*, Department of Public Works, City of Chelsea

Anthony Kane, *Vice President* of Research & Development, Institute of Sustainable Infrastructure

Arik Khan, *Loeb Fellow*, Harvard Graduate School of Design

Bob Beduhn, *Dams and Levees Lead*, HDR

Bob Sinkler, *Water Infrastructure Director*, The Nature Conservancy

Bowen Xiang, *Student*, Merrimack College

Chris Merritt, *MLA II student*, Harvard Graduate School of Design

Dr. Costas E. Synolakis, *Professor*, University of Southern California, Sonny Astani Department of Civil and Environmental Engineering

Dan Schrag, *Director*, Harvard University Center for the Environment

David Dixon FAIA, *Urban Places Group Leader*, Stantec

Diane Davis, *Charles Dyer Norton Professor of Regional Planning and Urbanism, and Chair of the Department of Urban Planning and Design*, Harvard Graduate School of Design

Dick Corolewski, *Federal Business Unit Director*, Power Engineers

Dickerson Wright, *CEO*, NV5

Douglass Owen, *Executive Vice President & Chief Technical Officer*, Arcadis

Elizabeth J. Bradford, *M.S., ENV SP Sustainable Communities Service Area Lead*, CH2M Hill

Erin Mosley, *Management Consulting Practice Lead*, CH2M Hill

Euneika Rogers-Sipp, *Loeb Fellow*, Harvard Graduate School of Design

Flavio Sciaraffia, *Research Associate*, Harvard Graduate School of Design

Gareth Doherty, *Lecturer, Senior Research Associate*, Zofnass Program, Harvard Graduate School of Design

George Stubbs, *Senior Editor*, Environmental Business Journal & Climate Change Business Journal



# PARTICIPANT LIST

Geoff Boraston, *Vice President*, Environmental Affairs, Granite Construction  
Gosia Sklodowska, *Associate Director of Administration*, Harvard Center for Green Buildings & Cities  
Hans-Peter Egler, *CEO*, Global Infrastructure Basel  
Harriet Tregoning, *Principal Deputy Assistant Secretary for Community Planning and Development*, Office of Community Planning and Development U.S. Department of Housing and Urban Development  
Heather Scranton, Haley & Aldrich  
Heather Unger, Louis Berger Group  
Hendrik Meller, *Seconded Advisor*, Inter-American Development Bank  
Hernan L. Bianchi Genguria, *MDes ULE student*, Harvard Graduate School of Design  
Jack Spengler, *Professor*, Harvard School of Public Health  
Jacquelyn Renee Schneider, Merrick & Company  
Jane A. Leggett, *Specialist in Energy and Environmental Policy*, Congressional Research Service  
Jason Brain, Harvard University Graduate School of Design  
Jeffrey Casey, *Business Development Manager*, Burns & McDonnell  
Jeffrey North, *Senior Corporate Practices Advisor*, The Nature Conservancy  
Jerry Touval, *Latin America Science Director*, The Nature Conservancy  
Jim Grant, *Energy and Fueling Director*, HNTB  
Joan Zofnass, *Founder of Zofnass Program*, Director of HR ERCG, EFCG  
John DePriest, *Director of Planning & Development*, City of Chelsea  
John Macomber, *Senior Lecturer, Zofnass Program Faculty Advisor*, Harvard Business School  
John Mauleg, *Manager of Resiliency Programs*, Stantec  
Jonathan Rose, *President*, Jonathan Rose Companies LLC  
Joseph Aiello, *Director of Business Development North America*, Meridiam  
Dr. Judin Karim, *Chief Executive*, Construction Industry Development Board Malaysia  
Judith Rodriguez, *Research Associate*, Zofnass Program, Harvard Graduate School of Design  
Julia Africa, Harvard T.H.Chan School of Public Health  
Karen Heymann, *Legislative Director*, Massachusetts Climate Change Adaptation Coalition  
Kate Cahill, *MDes ULE student*, Harvard Graduate School of Design  
Kate Konschnik, *Policy Director*, Harvard Law School, Emmett Environmental Law & Policy Clinic



# PARTICIPANT LIST

Linda Tomasso, Harvard T.H.Chan School of Public Health  
Loren Labovitch, *Director*, MWH  
Mansi Chhatralia, *Student*, Merrimack College  
Maria Cecilia Ramirez Bello, Infrastructure & Environment, Interamerican Development Bank  
Maria I. Arraste, *Research Associate*, Zofnass Program, Harvard Graduate School of Design  
Marty Janowitz, *VP, Practice Leader Sustainable Development*, Stantec  
Mary Anne Ocampo, MIT  
Maureen Sakakeeny, *Director*, Science & Engineering, Merrimack College  
Michaela Wittmann, *Sustainability Director, SVP*, HDR  
Mor Sidi, *MBA Student*, Harvard Business School  
Nasri Munfah, *Chairman Tunnel Services*, HNTB Corporation  
Neil Angus, Devens Enterprise Commission  
Nilda Mesa, *Director*, NYC Office of Sustainability  
Paul Gallay, *President*, Riverkeeper  
Paul Zofnass, *Founder of Zofnass Program. President*, EFCG  
Peter Glus, *PE, BCEE, CPM, NYC Business Development Director*, Arcadis  
Peter Lowitt, Devens Enterprise Commission  
Ramon Sanchez, Harvard T.H.Chan School of Public Health  
Rebecca Flora, *Sustainable Communities Practice Leader*, Ecology & Environment  
Rich Allen, *Senior Vice President, Chief Operating Officer*, Stantec  
Robert Beinstein, *Director of Sustainability*, EFCG  
Rob Daurio, *Research Associate*, Exuma Lab, Harvard Graduate School of Design  
Roberto Mezzalama, *Global Sustainability Advisor*, Golder Associates.  
Dr. S. Atyia Martin, *Boston Chief Resilience Officer/ Director of the Office of Public Health Preparedness*, City of Boston/ Boston Public Health Commission (BPHC)  
Sang Cho, *Research Assistant*, Zofnass Program, Harvard Graduate School  
Dr. Sarah Slaughter, *CEO & President*, Built Environment Coalition  
Sonja Vangjeli, *Research Associate*, Harvard Graduate School of Design  
Spiro Pollalis, *Director of Zofnass Program & Professor of Design, Technology and Management*, Harvard Graduate School of Design  
Stephan Gray, Harvard Graduate School of Design



# PARTICIPANT LIST

Stuart Lesser, *President, Principal-In-Charge*, NV5

Terry Bennett, *Senior Industry Manager*, Autodesk

Tim Barry, *Senior Vice President*, O'Brien & Gere

Thomas Rossbach, *VP of Aviation Architecture*, HNTB Corporation

Tom Wendorf, *P.E., ENV SP, Vice President*, HNTB

Vidhya Muthuram, *Harvard Business School India Research Center*

Wendy Jacobs, *Clinical Professor & Director*, Harvard Law School, Emmett Environmental Law & Policy Clinic

Yannis Orfanos, *Research Associate*, Zofnass Program, Harvard Graduate School of Design

Yoonjee Koh, *Research Assistant*, Zofnass Program, Harvard Graduate School of Design

















ZOFNASS PROGRAM  
FOR SUSTAINABLE INFRASTRUCTURE



Harvard University  
Graduate School of Design