May 16 - 17, 2022

ZPH WORKSHOP at HARVARD
Sustainable Infrastructure for Climate Action

Harvard Graduate School of Design
Gund Hall, Room 112 (Stubbins)
48 Quincy Street, Cambridge, MA

DAY 1
WELCOME <12:00 pm>
ZPH Research: Sustainability and Lifecycle Assessment (LCA)
Session 1 Climate action at the building level: Decarbonizing the Building Stock
Session 2 Planning, Design, and Monitoring Tools for Decarbonization
Session 3 Climate Action at the Country Level
WRAP-UP DAY 1 <5:20 pm>
SIAB Dinner <6:00 pm>

DAY 2
WELCOME <9:00 am>
ZPH Research: Climate Action at the Project Level
Session 4 Climate Action at the City Level
Session 5 Assessing Climate Change Risk
Session 6 Climate Action at the Company Level
Session 7 Climate Action in Transportation Projects, Networks, and Systems
CLOSING REMARKS <3:50 pm>
The Zofnass Program for Sustainable Infrastructure presents our in-person/hybrid ZPH Workshop: Sustainable Infrastructure for Climate Action on May 16-17 at Harvard University and online.

This ZPH Workshop is dedicated to understanding how climate action is planned and executed at various levels, from the project, systems, networks, building stock, and companies, to the city and country levels.

Please join us to learn more about sustainable infrastructure for decarbonization efforts, its implementation at different scales, through different frameworks, contexts, and actors.

Workshop coordination:
Judith Rodríguez, Senior Research Associate
Zofnass Program for Sustainable Infrastructure
Harvard GSD, jirodrig@gsd.harvard.edu
Public transportation is recommended, as well as other mobility options such as taxi, Uber, or Lyft. Parking permit available for purchase.

Virtual location via ZOOM:
https://harvard.zoom.us/webinar/register/WN_VjxZjH3tQlyK3rs42OR_Uw
Agenda

[All times shown in ET]

12:00 p.m.
Welcome to the ZPH Workshop
Moderated by Prof. Spiro Pollalis.

Spiro Pollalis  Professor and Director of the Zofnass Program
Harvard University GSD

Joan Zofnass  Director of Conferences and Senior Advisor
The Environmental Financial Consulting Group (EFCG)

12:10 p.m. – 1:00 p.m.
ZPH Research
Sustainability and Lifecycle Assessment [LCA]
In collaboration with the National Research Council of Canada and
the Ontario Ministry of Transportation West Region.
Moderated by Prof. Spiro Pollalis.

Spiro Pollalis  Professor and Director of the Zofnass Program
Harvard University GSD

Jieying Zhang  Senior Research Scientist
National Research Council of Canada (NRC)

1:05 p.m. – 2:30 p.m.
Session 1
Climate Action at the Building Level:
Decarbonizing the Building Stock
Moderated by Kathy Collins.

Aladdine Joroff  Senior Staff Attorney and Lecturer
Emett Environmental Law & Policy Clinic,
Harvard Law School

Ari Greenberg  Senior Associate
BR+A Consulting Engineers

Kathy Collins  Director of Sustainability
NV5 / SIAB

Amy Leedham  Associate
Atelier Ten

2:45 p.m. – 4:00 p.m.
Session 2
Planning, Design, and Monitoring Tools for
Decarbonization
Moderated by Deepa Sathiaram.

Andrea Love  Director of Building Science & Associate Principal
Payette / Lecturer, Harvard GSD

German Aparicio  Project Manager and LEED AP
Trimble / SIAB

Deepa Sathiaram  Executive Director
En3 Sustainability Solutions / SIAB

4:05 p.m. – 5:20 p.m.
Session 3
Climate Action at the Country Level
Moderated by Tom Lewis.

Loren Lavobitch  Vice President for International Development
Stantec / SIAB

Thomas Lewis  National Business Line Leader for Climate,
Resilience & Sustainability (CRS)
WSP / SIAB

Deepa Sathiaram  Executive Director
En3 Sustainability Solutions / SIAB

5:20 p.m.
Wrap-up Day 1 by Prof. Spiro Pollalis.

SIAB Dinner
Harvard Faculty Club, Library Room, 20 Quincy St., Cambridge MA
Networking from 6:00 p.m., Dinner at 7:00 p.m.

[May 16, 2022] MONDAY
Agenda

[All times shown in ET]

7:00 a.m.
SIAB Meeting (By invitation only)

9:00 a.m.
Welcome to the ZPH Workshop Day 2

Spiro Pollalis  Professor and Director of the Zofnass Program
Harvard University GSD

9:05 a.m. – 10:00 a.m.
ZPH Research
Climate Action at the Project Level
Moderated by Prof. Spiro Pollalis.

Spiro Pollalis  Professor and Director of the Zofnass Program
Harvard University GSD

Shallan Fitzgerald  Infrastructure Manager
Harvard Allston Land Company [HALC]

David A. Smith  Senior Vice President, Director of Strategy
Stantec / SIAB

10:05 a.m. - 11:00 a.m.
Session 4
Climate Action at the City Level
Moderated by Aladdine Joroff.

Aladdine Joroff  Senior Staff Attorney and Lecturer
Emmett Environmental Law & Policy Clinic, Harvard Law School

Rebecca Hatchadorian  Associate Principal
Arup / SIAB

11:05 a.m. - 12:45 p.m.
Session 5
Assessing Climate Change Risk
Moderated by Roberto Mezzalama.

Roberto Mezzalama  Senior Project Director
Golder Associates – WSP / SIAB

Alexis Lautard  Corporate Advisor, Sustainable Development
Société de Transport de Montréal (STM)

Nichola Mckenzie  Environment Manager
Transport for London [TFL]

Cris B. Liban  Chief Sustainability Officer
Los Angeles County Metropolitan Transportation Authority / SIAB

12:45 p.m. - 1:30 p.m.
Lunch Break (Food available to attendees)

1:30 p.m. - 2:25 p.m.
Session 6
Climate Action at the Company Level
Moderated by Prof. Spiro Pollalis.

Deepa Sathiaram  Executive Director
En3 Sustainability Solutions / SIAB

Carrie Sabin  Vice President, Corporate Sustainability
Stantec / SIAB

2:30 p.m. - 3:55 p.m.
Session 7
Climate Action in Transportation Projects, Networks, and Systems
Moderated by Jim Grant.

Jim Grant  Associate Vice President; Sustainable Energy and Utilities Director, HNTB Corporation

Margaret Cederoth  Director of Planning and Sustainability
California High-Speed Rail Authority

Annika Ragsdale  Climate Analyst
California High-Speed Rail Authority

Nichola Mckenzie  Environment Manager
Transport for London [TFL]

Cris B. Liban  Chief Sustainability Officer
Los Angeles County Metropolitan Transportation Authority / SIAB

Alexis Lautard  Corporate Advisor, Sustainable Development
Société de Transport de Montréal (STM)

3:55 p.m.
Closing Remarks

<End of Day 2>
Welcome to the ZPH Workshop
Moderated by Prof. Spiro Pollalis.

**Spiro Pollalis**
Professor and Director of the Zofnass Program for Sustainable Infrastructure, Harvard University GSD

Prof. Pollalis, now Emeritus, has been Professor of Design Technology and Management at the Graduate School of Design since 1986. He is the Director of the Zofnass Program for the Sustainability of Infrastructure, which has developed the Envision® rating system and the Planning Guidelines for Sustainable Cities, and the Principal Investigator of the research project “Gulf Sustainable Urbanism” (2010-2013). His ongoing research efforts focus on developing a rating system for infrastructure systems regarding climate action.

Prof. Pollalis has taught as a visiting professor at Uni-Stuttgart, TU-Delft, and ETH-Zurich. He has published several books and articles in journals and has given many lectures at conferences.

In his private practice, Prof. Pollalis consults worldwide on sustainability, urbanism, and management. He is a consultant to the GSA, the Asian Development Bank, the World Bank, the UNECE, the UNEP, the NRCC, and the Greek Government. He has led the National Urban Assessment of Pakistan and has planned sustainable cities in Asia, including the DHA City Karachi, which is under construction.

Prof. 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.

**Joan Zofnass, PhD**
Director of Conferences, The Environmental Financial Consulting Group.

Joan joined EFCG in 1996 and is the firm’s Director of Conferences and head of internal HR and the outside office garden. She is responsible for all five of EFCG’s conferences. Joan holds both a PhD and certificate in psychoanalytic psychotherapy, and still maintains a private practice.

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**Integrating Sustainability and LCA: Pilot Application on transportation infrastructure projects**

This research proposes a Sustainability Lifecycle Tool for integrating infrastructure sustainability assessment with the lifecycle assessment for transportation projects. The tool development is based on research review of Lifecycle Assessment (LCA) of infrastructure in terms of the triple bottom line (TBL); three widely used Sustainability Assessment systems for the lifecycle of a project (Envision, CEEQUAL and ISCA); and the analysis of a transportation infrastructure project.

The research findings were summarized and formulated into a sustainability assessment-based LCA tool to enhance the lifecycle sustainability of transportation infrastructure projects. Project sustainability is defined as a balance of social, economic, and environmental trade-offs, considering the project’s lifecycle performance.

For the Sustainability Lifecycle Tool, a sustainability assessment-based system was chosen as methodology since:

- A sustainability assessment framework, by definition, considers the environmental, social, and economic aspects of a project.
- In contrast, LCA, as explained in the analysis, accounts only for either environmental or economic impacts.
- A sustainability assessment considers the entire Lifecycle of a project.
- LCA follows a highly technical and labor- and data-intensive process. Capacity building is necessary for agencies to perform LCAs in-house, which has been a constraint for LCA’s use.

Among the three analyzed sustainability assessment systems, the Envision® framework was selected to address lifecycle sustainability and the needs of transportation. The tool prioritizes strategies on the triple bottom line impacts and potential trade-offs.

The Sustainability Lifecycle Tool, can be used for the self-assessment of transportation projects (roadways, bridges, and transit) within the Envision® framework. It incorporates input from: (1) The literature review on infrastructure LCA and transportation infrastructure LCA; (2) Analysis of the three Sustainability Assessment frameworks; (3) Input from Ontario’s Ministry of Transportation West Region Bridge Office for the replacement of a typical bridge.

The Sustainability Lifecycle Tool highlights Envision-based indicators specific to the lifecycle stages and the Triple Bottom Line, and works together with the Envision Guidance manual. The criteria contains greater detail than the Envision Pre-assessment Checklist YES/NO-based criteria, but contains less detail than the Envision Online Scoresheet, which constitutes a full Envision assessment.

The Sustainability Lifecycle Tool is presented with its manual, and the replacement of the bridge by the MTO West Region Bridge Office is used as a case study of how to use the tool. This application should be considered as a first step to eventually lead to a general tool for all types of infrastructure projects, consistent with Envision and its philosophy.
Jieying Zhang
Senior Research Scientist, National Research Council Canada (NRC)

Jieying Zhang obtained a Ph.D. degree in Civil Engineering at University of California Berkeley, and she is a Senior Research Scientist of the National Research Council Canada (NRC). Her research areas include corrosion, concrete durability and service life prediction. More recently, she has been also leading a task of life cycle assessment (LCA) for the NRC-Infrastructure Canada Initiative of Climate Resilience of Built Environment, an effort to develop decision-support tools to reduce carbon footprints in design and management of Critical Public Infrastructures for climate resilience.

Jieying is the Team Lead of Infrastructure Asset Management group at NRC-Construction Research Centre, focusing on concrete materials, corrosion protection and mitigation of bridges, risk-based design and management, and environmental LCA, in critical support of NRC’s new initiative of Decarbonization of Canada’s Construction Sector. Jieying serves in Canada’s bridge code and standard committees and leads the update and development of sustainability design.

Discussion questions:
1. How to support sustainable asset management, after the design stage?
2. How to support the decarbonisation of the construction sector and yet make it climate resilient?

Q & A led by Prof. Spiro Pollalis.

1:05 p.m. - 2:30 p.m.

Session 1

Climate Action at the Building Level:
Decarbonizing the Building Stock
Moderated by Kathy Collins.

Joroff
Senior Staff Attorney and Lecturer, Emmett Environmental Law & Policy Clinic, Harvard Law School

Aladdine Joroff is a Senior Staff Attorney and Lecturer at Harvard Law School’s Emmett Environmental Law & Policy Clinic, where her work includes supporting innovative municipal, state and tribal climate change mitigation and adaptation initiatives. Aladdine runs the Climate Solutions Living Lab course and teaches at the College and Extension School. Prior to joining Harvard Law School, Aladdine practiced environmental, energy and land use law in the Boston offices of Beveridge & Diamond and Goodwin Procter. She received her J.D. from the University of Pennsylvania and her M.S. and B.S. from the Massachusetts Institute of Technology.

Boston’s GHG Emissions Standards for Existing Buildings

Boston is one of a handful of municipalities in the United States that requires existing buildings to reduce their greenhouse gas emissions. Boston’s revised Building Emissions Reduction and Disclosure Ordinance applies to large buildings and mandates net zero GHG emissions by 2050 via a sliding schedule. The ordinance creates a performance standard that provides building owners multiple compliance pathways and features a significant role for community organizations.

Ari Greenberg
Senior Associate, BR+A Consulting Engineers

Ari Greenberg is a Senior Associate at BR+A Consulting Engineers in Boston, MA. As an integrated member of both the HVAC design and Sustainable Design teams, he focuses on developing strategies that push the boundaries of building decarbonization and keeping those strategies on track throughout design and construction. His work focuses on efficiency and electrification for hard-to-heat and high-energy building typologies in the healthcare, research, commercial, and institutional sectors. Ari holds a B.S.E. in Mechanical Engineering with a Certificate in Sustainable Energy from Princeton University and is a registered Mechanical Engineer in Massachusetts.

ZNC S, M, L, XL - Carbon Neutral at Every Scale

To address the urgency of climate change, carbon neutral buildings need to tackle the challenges of urban environments, energy-intense typologies, and realistic budgets. What are the strategies and technologies we are using to deliver electrified, decarbonized buildings at the mass scale? How do we do this in cold climates? And most importantly, how do we do this cost-effectively?

Kathy Collins
Director of Sustainability, NV5, and SIAB Representative

Kathy Collins is Director of Sustainability at NV5. She has more than 24 years of experience in the building development and real estate industry and has provided sustainability and engineering services for large complex office projects and campuses involving architectural design and construction administration, as well as coordinating MEP, Energy Modeling, and Commissioning services. Kathy is a licensed professional in New York, Illinois, and Texas, and holds accreditations in Building Design and Construction for LEED projects, Operations & Maintenance for LEED Existing Buildings, and Building Envelope Commissioning. She has completed more than 100M SF of sustainability projects, and advises clients on their sustainability portfolios, data tracking & standards, and ESG (Environmental Social Governance) solutions for their asset portfolios and company operating disclosures.

Understanding Decarbonization of Buildings

Decarbonization of the built environment is perhaps the greatest challenge of our time, and if we intend to reach NetZero by 2050, we will need to decarbonize 3 times faster than typical operation and construction practices over the next 30 years. The path forward is holding each part accountable—owners, occupiers/users, operators, manufacturers, infrastructure & the grid, and most importantly innovators. This cannot be achieved with just buildings alone--infrastructure plus renewables will play a major role.
Embodied Carbon

In the critical 10 year time span to take climate action, embodied carbon comprises 80% of building-related emissions. Most building-focused embodied carbon programs focus on core and shell, but expanding the focus to include interiors, site design, and infrastructure elements reveals many more opportunities to reduce the carbon footprint of our built environment.

Q & A led by Kathy Collins.

Towards a Greener Future

As environmental sustainability becomes an increasingly hot topic, the construction industry is falling under pressure to reduce its carbon emissions, fast. In order to achieve the aspiration of ‘building green’, you first need to be able to assess, analyze and evaluate the embodied carbon within a building or structure at the initial stages of design. Only then can you make more informed and engineered decisions about its delivery. Fortunately, there are tools available to help designers, engineers and contractors deliver on this greener future.

Deepa Sathiaram
Executive Director, En3 Sustainability Solutions / SIAB
LEED Fellow, IGBC Fellow, USGBC & WELL Faculty

Deepa is a leading international sustainability, HVAC and wellness design professional. Deepa has been named as one of “India’s Top 15 Nature’s Keepers” for actively spearheading India’s green building movement in the last 20 years and tirelessly propagating sustainability in the built environment. She has also been recognized and featured as one of the “Top 5 Women in Sustainability in the World” by USGBC+ in early 2020.

She is a USGBC LEED Fellow Class of 2013, IGBC Fellow and an international recognized USGBC and WELL Faculty. She is the recipient of the USGBC Leadership award at the Inaugural Greenbuild India 2018 Conference and the IWBI Leadership Award in 2019 and the WELL Community Award in 2020.

As a highly admired leader and technical expert in the built environment, Deepa founded En3 in 2003 to specialize in sustainability and energy efficiency consulting. Since then, under her leadership, En3 has been consulting for over 500 million square feet of green and well buildings world-wide with operations in the U.S., India the Middle East and Africa.

Her sustainability work has gained world-wide recognition and the same is evident from the fact that En3 has won 3 “LEED Earth Awards” from USGBC, an unique recognition for demonstrating sustainability leadership in new regions and helping establish LEED and sustainable development in those new geographies. Deepa was chosen by USGBC as one of the select few leaders world-over to be the face of the USGBC “LEED ON” campaign in their effort to promote sustainability and recognize champions leading the green movement globally.
In Data We Trust
As countries and organizations move towards a zero-carbon approach, it is becoming more critical than ever before for organizations to embrace sustainability, energy efficiency, zero carbon strategies for all their activities. For the Real Estate Sector and the A/E/C industry, buildings are the single largest emitters of greenhouse gases and it is imperative that buildings reduce their energy use, water use, waste generation and most importantly its carbon emissions and all these efforts start with performance data tracking, analysis and management. Tracking performance data for buildings is easier said than done and this session will talk about the various platforms/frameworks available for tracking building performance data and management, the various challenges faced by buildings and strategies that can be adopted to overcome them.

Q & A led by Deepa Sathiaram.

4:05 p.m. - 5:20 p.m.
Session 3
Climate Action at the Country Level
Moderated by Tom Lewis.

Loren Lavobitch
Vice President for International Development, Stantec / SIAB

Loren Labovitch, Stantec Vice President for International Development, is an environmental and social sustainability specialist with 29 years of international project, policy and management experience. Loren has held technical and managerial roles in the design and implementation of a wide range of infrastructure, natural resource management, and remediation projects in the water, power, agriculture, and extractives sectors. Loren is a credentialed Envision Sustainability Professional (ENV SP) with extensive knowledge of international environmental and social performance standards such as those of the World Bank, International Finance Corporation, and others. Prior to joining Stantec, Loren spent eight years as a Director of Environmental and Social Performance at MCC, and a year as Climate Adaption Manager for the White House Council on Environmental Quality.

Renewed Emphasis on Climate Change in U.S. Foreign Assistance Programs
In June 2021, President Biden and G7 partners launched a new global infrastructure partnership called “Build Back Better World (B3W)” designed to help “narrow the $40+ trillion infrastructure need in the developing world” by mobilizing private sector capital in four key focus areas, one of which is climate change. This initiative prompted the development of new climate change strategies or action plans by several U.S. foreign assistance agencies, including the U.S. Agency for International Development (USAID), Millennium Challenge Corporation (MCC), and the U.S. Development Finance Corporation (DFC). This presentation will provide an overview of these strategies and how the Envision Framework could potentially be used to guide or support some of the key objectives contained in these strategies.

Q & A led by Thomas Lewis.

5:20 p.m.
Wrap-up Day 1

7:00 p.m. [Networking and drinks from 6:00 p.m., dinner starts at 7:00 p.m.]
Sustainable Infrastructure Advisory Board (SIAB) Dinner
Harvard Faculty Club, Library Room, 20 Quincy St., Cambridge MA

Session 3

Thomas Lewis
National Business Line Leader for Climate, Resilience & Sustainability (CRS), WSP / SIAB

Tom Lewis is National Business Line Leader for Climate, Resilience & Sustainability (CRS), which is also inclusive of the professional consulting firm’s emergency management practice and best-in-class Future Ready™ innovation program.

Prior to its acquisition by WSP, Tom served as president of Louis Berger U.S. and a corporate board member, and prior to that as its lead executive on environment, emergency management, sustainability and climate resilience working across the U.S. as well as globally. Tom has also served on a variety of boards and committees promoting the International Coalition for Sustainable Infrastructure, Resilience First and the Zofnass Program’s Sustainable Infrastructure Advisory Board at the Harvard University Graduate School of Design.

Tom is a licensed professional engineer (PE) and passed the bar in multiple states, holds both a bachelor of science and a master’s degree in Engineering from the University of Connecticut, and holds a Doctorate of Jurisprudence with focus on environmental law/regulation from Rutgers University.

WSP National Decarbonization Work

Deepa Sathiaram
Executive Director, En3 Sustainability Solutions / SIAB
LEED Fellow, IGBC Fellow, USGBC & WELL Faculty

Sustainability policies/mandates coming up in India and the AEC sector going forward.

Q & A led by Thomas Lewis.
Detailed Program: Tuesday

May 17, 2022

7:00 a.m.  «Breakfast and coffee available»
SIAB Breakfast Meeting  [by invitation only]

9:00 a.m.  «Start of Workshop Day 2, coffee available»
Welcome to the ZPH Workshop Day 2
Moderated by Prof. Spiro Pollalis.

Spiro Pollalis
Professor and Director of the Zofnass Program for Sustainable Infrastructure, Harvard University GSD

Prof. Pollalis, now Emeritus, has been Professor of Design Technology and Management at the Graduate School of Design since 1986. He is the Director of the Zofnass Program for the Sustainability of Infrastructure, which has developed the Envision® rating system and the Planning Guidelines for Sustainable Cities, and the Principal Investigator of the research project “Gulf Sustainable Urbanism” (2010-2013). His ongoing research efforts focus on developing a rating system for infrastructure systems regarding climate action.

Prof. Pollalis has taught as a visiting professor at Uni-Stuttgart, TU-Delft, and ETH-Zurich. He has published several books and articles in journals and has given many lectures at conferences.

In his private practice, Prof. Pollalis consults worldwide on sustainability, urbanism, and management. He is a consultant to the GSA, the Asian Development Bank, the World Bank, the UNECE, the UNEP, the NRCC, and the Greek Government. He has led the National Urban Assessment of Pakistan and has planned sustainable cities in Asia, including the DHA City Karachi, which is under construction.

Prof. 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.

9:05 a.m. – 10:00 a.m.
ZPH Research
Climate Action at the Project Level
Moderated by Prof. Spiro Pollalis.

Climate Action at the Project Level
This research aimed to assist the Envision framework in adapting and contributing to the ongoing global discourse and research on climate change and the urgency of channeling investments in climate action projects.

The Zofnass Program focus for 2020-2021 consisted of research to help support investors for funding projects that address climate change through mitigation and adaptation. A dual approach is proposed to address the importance of climate change mitigation and adaptation while supporting investors on decision-making or selecting projects to invest in.

The research builds upon the Envision V3 framework and studies how Envision can respond to the current urgency and investors demand for climate-friendly projects. To bring out these high-priority criteria, a specific ‘filtering’ of Envision credits has been developed. The filtering follows the research methodology of the Lifecycle Sustainability tool, developed in collaboration with the National Research Council of Canada (NRC) geared for the early decision-making process.

Priority credits and strategies were considered across the full extent of their related impacts to provide a stronger case of why investors should choose to fund these projects and the multiple benefits and trade-offs of such decisions. This holistic approach for climate change avoids the limitations of monocriteria or two-or-three criteria analysis of projects.

Key related research areas were highlighted, and current climate-action goals were identified based on a literature review (a) on climate change and (b) the investors’ demand for climate action. The analysis of selected established ESG (Environmental, Social, and Governance) standards – the primary tool for investor knowledge on companies’ sustainable performance- and climate-related reporting frameworks like the Taskforce for Climate-related Financial Disclosures (TCFD) recommendations provides additional insight on how climate-related performance is defined and communicated to investors.

Based on the findings of the literature review and the ESG systems analysis, key criteria for assessing climate-related performance were identified and used for a targeted analysis of Envision. The analysis focused on (a) how Envision assesses project performance in climate change mitigation and adaptation, (b) if Envision is in line with current trends and methods and (c) if the climate-related risks and opportunities of projects for investors are adequately captured.

The findings of the review process were synthesized as follows:

- identification of gaps in Envision’s climate-related assessment of projects and guidance to project teams,
- potential recommendations to Envision on how to address the identified gaps and enhance its climate-related assessment and guidance, and
- prioritization of 26 Envision credits to assist in selecting the right projects for climate action, which is critical in the current climate emergency.

Shalan Fitzgerald
Infrastructure Manager, Harvard Allston Land Company [HALC]

Shalan Fitzgerald is the Infrastructure Manager at the Harvard Allston Land Company, where she leads a diverse group of consultants and internal stakeholders to implement Enabling Infrastructure in support of the ERC’s Phase A development. She began her career in construction on Boston’s Central Artery Tunnel Project, continued in design on local and state municipal roadway and water resources projects, and progressed to project management for state and institutional clients. As a consultant, Shalan provided construction management and program controls services for several large infrastructure projects including the MBTA Greenline Extension Project (GLX), MIT’s Investment Management Company and Harvard University’s Capital Projects Group.
In addition, Shallan is an active member of the Boston Society of Civil Engineers (BSCES), serving as the Secretary for FY22. She is registered Professional Engineer (in MA, NH, NCEES), a certified Project Management Professional (PMP), a certified Envision Sustainability Professional (ENV SP) and holds a Bachelor of Science in Civil Engineering from the University of New Hampshire.

**Envision for Climate Action in the Harvard Allston Campus**

**David A. Smith**
Senior Vice President, Director of Strategy, Stantec / SIAB

David heads Stantec’s corporate and global strategy. He has over 30 years of utility and infrastructure sector experience and advises on infrastructure strategies using knowledge of trends and best practices from across the world. He holds Board Director positions within Stantec’s Global, Europe and UK operating companies.

David has completed the University of Cambridge Programme for Sustainability Leadership; he is a graduate of Harvard Business School’s Advanced Management Program; and a Fellow of the Institution of Civil Engineers. He co-founded the ICE/Heriot-Watt/Stantec prestige lecture series on Resilience and has co-authored recent publications and articles such as ‘Community Futures’ and ‘Beyond Sustainability’. David is chair of the ICE Sustainable, Resilient Infrastructure Community Advisory Board and a member of the ICE Decarbonization CAB.

**Clifton Integrated Constructed Wetland**

Q & A led by Prof. Spiro Pollalis.

10:05 a.m. - 11:00 a.m.

**Session 4**

**Climate Action at the City Level**
Moderated by Aladdine Joroff.

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

Aladdine Joroff is a Senior Staff Attorney and Lecturer at Harvard Law School’s Emmett Environmental Law & Policy Clinic, where her work includes supporting innovative municipal, state and tribal climate change mitigation and adaptation initiatives. Aladdine runs the Climate Solutions Living Lab course and teaches at the College and Extension School. Prior to joining Harvard Law School, Aladdine practiced environmental, energy and land use law in the Boston offices of Beveridge & Diamond and Goodwin Proctor. She received her J.D. from the University of Pennsylvania and her M.S. and B.S. from the Massachusetts Institute of Technology.

**Leading Up: Climate Action at the Municipal Level**

If states are the laboratories of democracy, as posited by Justice Brandeis, then cities and towns may be the laboratories for climate change mitigation and adaptation strategies. But innovation at the local level can call into question the dividing lines between municipal and state authority, as well as policy questions as to when it makes sense to have a patchwork approach to addressing climate change versus more uniform requirements and funding mechanisms.

**Rebecca Hatchadorian**
Associate Principal, Arup / SIAB

Rebecca Hatchadorian, is an Associate Principal at Arup with over 17 years of experience driving a more sustainable built environment. Rebecca works to optimize environmental and human outcomes with project teams which range from mixed-use masterplans, to higher education, commercial office, residences and labs. Her experience has evolved to larger strategic planning work focused on decarbonization on projects such as Carbon Free Boston, and the Massachusetts Decarbonization Roadmap, and the City of Cambridge to ESG strategy and due diligence assessment. She is on the Board of Directors for Built Environment Plus and is a LEED and WELL AP.

**Using advanced modeling to decarbonize Boston’s building sector**
The Carbon Free Boston report, released in 2019, identified the pathways and most impactful actions for the City of Boston to reach its Net Zero 2050 goal. Comprising approximately 75% of Boston’s GHG emissions, the buildings sector technical analysis provided the foundation for changes to BERDO and the Zero Net Carbon Zoning proposal. At the time, the analysis was the most comprehensive energy analysis at a city scale and shed new light on priorities and policy potential.

Q & A led by Aladdine Joroff

11:05 a.m. - 12:45 p.m.

**Session 5**

**Assessing Climate Change Risk**
Moderated by Roberto Mezzalama.

**Roberto Mezzalama**
Senior Project Director, Golder Associates – WSP / SIAB

Roberto Mezzalama is Senior Project Director of Golder – WSP where he carries out his professional activities from 1999. In 2004 and 2005 he has been the Manager of the Environmental Assessment Division of the Calgary office, and from 2007 to 2011 he has been the Managing Director of Golder Associates Europe. From 2011 to 2014 he has been Global Sustainability Advisor for Golder Associates Corporation. From May 2014 to March 2019, he was Leader of the Global ESIA community for Golder Associates Corporation. He is external board member of the Polytechnic University of Torino and member of the Sustainable Infrastructures Industry Board at the Zofnass Program at Harvard University. He holds a B.Sc. in ecology and an M.Sc. in environmental engineering; his technical experience includes leading projects in Environmental and Social Impact Assessment, Biodiversity assessment and Climate risk assessment for infrastructure developments. His geographical experience includes projects led by national and international governments and multilateral organizations.
in over 20 countries in Europe, North America, Central Asia, and Africa.

Climate Change Risk Assessment for Infrastructure Projects
The reality of a rapidly changing climate is starting to have a strong influence in decision making during the regulatory approval and financing of new infrastructures. Physical assets are exposed to climatic factors and particularly to extreme meteorological events for a very long time and some infrastructures are also exposed to economic and societal changes related to the decarbonization process. Several International and National regulatory bodies, particularly in the financial sector, are now routinely requiring an assessment of the physical and transition risks for new projects and this is creating a strong demand for a rigorous process that incorporates the best science and engineering as well as market and economic considerations. Given the uncertainties in future climatic conditions and their effects on infrastructures this increased demand is creating various challenges to practitioners and clients. In this presentation we will introduce the basic concepts and methodologies for physical risk assessment and discuss some of the main challenges based on the experience of our team in conducting physical risk assessment in different countries in Europe, Africa, and Central Asia.

Alexis Lautard
Corporate Advisor, Sustainable Development, Société de Transport de Montréal (STM)

Alexis holds a Master’s degree in Environment and has over 15 years of experience in sustainable development. From 2004 to 2013, he held various positions in these fields (waste management, environmental management system, etc.). In particular, he has advised territories and businesses develop sustainable development strategies and action plans (energy-climate, industrial ecology, circular economy). Since 2013, he is a sustainable development advisor at the STM. Its main missions are the integration of sustainable development measures into metro infrastructure projects (in particular by using the Envision framework) and adaptation to climate change.

Climate Resilience Assessment In STM
This presentation will highlight the climate resilience assessment of the extension of Montreal Metro Blue Line project. Alexis Lautard will present the key elements of the assessment methodology (scope of the assessment, selection of climate hazards, risk assessment tools/matrix etc.).

Nichola Mckenzie
Environment Manager, Transport for London [TfL]

Nichola Mckenzie is an Environment Manager for Transport for London (TfL). With a background in strategy, projects, and SHE (safety health and environment), her experience covers the transport and logistics sectors. She is enthusiastic about climate change adaptation and is in the process of developing TfL’s adaptation action plan. This work will focus the business on what activity needs to happen to build a transport network that is well adapted to climate change.

Assessing Climate Change Risk for Transport for London
Focussing on the development, methodology and results of a Pan-TfL asset climate risk assessment. This presentation highlights the key climate risks at an asset category level, and how this information will be used for adaptation planning.

Cris B. Liban
Chief Sustainability Officer, Los Angeles County Metropolitan Transportation Authority / SIAB

Dr. Cris B. Liban, P.E., serves as Chief Sustainability Officer at the Los Angeles County Metropolitan Transportation Authority (LA Metro). Dr. Liban has worked at LA Metro since 2003 and has grown his agency’s environmental and sustainability practice into one of the most progressive and forward-looking in the country, implementing over 150 sustainability initiatives to date. He is working to ensure that $140B in capital projects that are programmed for the next 40 years are sustainable, climate-adapted, and resilient for the more than 10 million people of Los Angeles County. Many of these are to be completed in time for the 2028 Olympics.

He held previous political appointments as a member of the USEPA’s National Advisory Council for Environmental Policy and Technology and the California Climate Safe Infrastructure Working Group.

Cris was the recent Chair of the American Society of Civil Engineers’ Committee on Sustainability where he led the effort to develop a global sustainable infrastructure standard; and guidance documents that incorporate climate science into both the practice of civil engineering and procurement and execution of sustainable infrastructures. He is currently the Co-Chair of the American Public Transportation Association’s Sustainability Commitment Committee. He conceptualized and co-led the formation of the International Coalition for Sustainable Infrastructure in 2019, which now has become a global coalition of almost 200,000 engineers and more than 10,000 cities around the world. Cris previously received in 2016 the Philippines’ highest civilian honor for Filipinos living overseas, the Pamanang Pilipino Award, from Philippines President Rodrigo Duterte. In addition, because of his singular focus on building a sustainable transportation system that is also economically and socially beneficial to all levels of society, Cris was awarded the Engineering-News Record’s (ENR) 2020 Award of Excellence. Cris was elected to the National Academy of Construction in 2021. Dr. Liban has degrees in geology, civil engineering, and environmental science and engineering.

Assessing Climate Risk in LA Metro

Q & A led by Roberto Mezzalama.

12:45 p.m. - 1:30 p.m.
Lunch Break (Food available for attendees)
Session 6
1:30 p.m. - 2:25 p.m.

Climate Action at the Company Level
Moderated by Prof. Spiro Pollalis.

Deepa Sathiaram
Executive Director, En3 Sustainability Solutions / SIAB
LEED Fellow, IGBC Fellow, USGBC & WELL Faculty

A Survey of the ESG Adoption by Real Estate Companies in India & Future Trends
Real Estate and infrastructure companies constitute more than 20% of India’s GDP. As government and private expenditure is set to exponentially increase and drive further GDP growth adoption of ESG becomes crucial to achieve the goals of sustainable development. This session will present the results of a survey of ESG Adoption and practices of the Top 25 Real Estate Organizations and Funds in India. It will also highlight the key future trends in the real estate sector that will drive its progress towards a zero-carbon industry.

Carrie Sabin
Vice President, Corporate Sustainability, Stantec / SIAB

As vice president, corporate sustainability, Carrie manages our corporate sustainability commitments. She has 28 years of experience in sustainability, community engagement, and operations management with more than 12 years managing projects with staff from around the world including Argentina, Australia, Belgium, Brunei, Chile, China, India, Italy, Netherlands, New Zealand, Panama, Peru, Qatar, the United Arab Emirates, the United Kingdom, and the United States.

Committed to sustainability and social partnerships, Carrie focuses on effective change management, stakeholder adoption, and attention to cultural norms. As manager for the overall sustainability program, which encompasses an environmental, social, and governance approach, Carrie oversees internal change management and performance reporting.

Carrie holds a Masters Certificate in Sustainability, a Masters in Business Administration with a focus on International Business, a Bachelors in Communications, and is a certified Envision Sustainability Professional (ENV SP) and Corporate Social Responsibility Professional (CSR-P). She’s also fluent in Spanish as a result of multiple years of living and working in Spain and Latin America.

Stantec Net Zero Commitments

Q & A led by Prof. Spiro Pollalis.

Session 7
2:30 p.m. - 3:55 p.m.

Climate Action in Transportation Projects, Networks, and Systems
Moderated by Jim Grant.

Margaret Cederoth
Director of Planning and Sustainability, California High-Speed Rail Authority

Annika Ragsdale
Climate Analyst, California High-Speed Rail Authority

Climate Mitigation and Adaptation Action on a Mega-Project Scale: California High-Speed Rail
The California High-Speed Rail system is a statewide, transformational transportation investment. Intended to serve as the backbone of electrified, high-speed transportation over
the next century, the system is being designed intentionally to both mitigate and adapt to a changing global climate with localized stressors and events. The California High-Speed Rail Authority (Authority) actively considers the impacts of climate change and extreme weather in system design, delivery and operation.

How do multi-jurisdictional projects manage climate risks and exposure across jurisdictions, when climate stressor thresholds may vary? How do agencies adapt processes and delivery methods to best accommodate the evolving nature of climate data? What role do State and Federal agencies play in setting climate risk data and thresholds? The Authority will provide details on one of our major achievements: the 2021 Climate Adaptation Plan (CAP), as well as work with other California agencies on core state climate documents.

The Authority’s CAP summarizes work to date to assess changing climate hazards like temperature rise and precipitation change and ways in which the Authority is preparing for those changes through design, operations and maintenance, and program-level strategies. The CAP also summarizes key next steps for the agency, which include implementing a Climate Policy and integrating climate risks into the Authority’s risk management process. The plan is a core resource for Authority staff who need to understand how climate change may affect the system and decisions they make day-to-day.

The presentation will also touch on how the CAP will be updated as new climate data and information become available, and as the Authority makes progress on the next steps identified to prepare for an uncertain future.

Nichola Mckenzie
Environment Manager, Transport for London (TfL)

Nichola Mckenzie is an Environment Manager for Transport for London (TfL). With a background in strategy, projects, and SHE [safety health and environment], her experience covers the transport and logistics sectors. She is enthusiastic about climate change adaptation and is in the process of developing TfL’s adaptation action plan. This work will focus the business on what change they need to happen to build a transport network that is well adapted to climate change.

Transport for London’s Climate Action for Adaptation
Focussing on current adaptation activity and how this will provide a benefit to TfL. Covering research programmes and physical adaptation interventions for assets and infrastructure projects.

Cris B. Liban
Chief Sustainability Officer, Los Angeles County Metropolitan Transportation Authority / SIAB

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Dr. Liban holds concurrent appointments in the State of California Green Bonds Development Committee, Los Angeles County Beach Commission, and the City of Los Angeles Board of Transportation Commissioners. He is currently the Chapter Lead in writing the Transportation Chapter of the forthcoming Fifth National Climate Assessment [https://www.globalchange.gov/nc45].

He held previous political appointments as a member of the USEPA’s National Advisory Council for Environmental Policy and Technology and the California Climate Safe Infrastructure Working Group.

Cris was the recent Chair of the American Society of Civil Engineers’ Committee on Sustainability where he led the effort to develop a global sustainable infrastructure standard; and guidance documents that incorporate climate science into both the practice of civil engineering and procurement and execution of sustainable infrastructures. He is currently the Co-Chair of the American Public Transportation Association’s Sustainability Commitment Committee. He conceptualized and co-led the formation of the International Coalition for Sustainable infrastructure in 2019, which now has become a global coalition of almost 200,000 engineers and more than 10,000 cities around the world. Cris previously received in 2016 the Philippines’ highest civilian honor for Filipinos living overseas, the Pambana ng Pilipino Award, from Philippines President Rodrigo Duterte. In addition, because of his singular focus on building a sustainable transportation system that is also economically and socially beneficial to all levels of society, Cris was awarded the Engineering-News Record’s (ENR) 2020 Award of Excellence. Cris was elected to the National Academy of Construction in 2021. Dr. Liban has degrees in geology, civil engineering, and environmental science and engineering.

Climate Action in LA Metro

Alexis Lautard
Corporate Advisor, Sustainable Development, Société de Transport de Montréal (STM)

Alexis holds a Master’s degree in Environment and has over 15 years of experience in sustainable development. From 2004 to 2013, he held various positions in these fields (waste management, environmental management system, etc.). In particular, he has advised territories and businesses develop sustainable development strategies and action plans (energy-climate, industrial ecology, circular economy). Since 2013, he is a sustainable development advisor at the STM. Its main missions are the integration of sustainable development measures into metro infrastructure projects (in particular by using the Envision framework) and adaptation to climate change.

Climate Action in the Blue Line Metro Expansion– Montreal

This presentation is dedicated the results of the climate resilience assessment of the extension of the Montreal Metro Blue Line project. Alexis Lautard will present the main risks identified and the mitigation measures planned for design and operations.

Q & A led by Jim Grant.

3:55 p.m.

Closing Remarks by Prof. Spiro Pollalis.

<End of Day 2>