

Lecture

Quantitative building and infrastructure sustainability and resilience

Dr. Jeremy Gregory (MIT)

March 14 | 14h30

Auditorium of the Department of Mechanical Engineering, University of Coimbra

Incorporating sustainability into building and infrastructure design requires simultaneous consideration of performance, costs, and environmental impacts. Sustainable design is an optimization of these three elements. The engineering and design community quantifies performance in the design process, but cost and environmental impacts are typically considered when the design is mostly complete, if at all. This presentation will summarize research on quantitative assessments of life cycle costs and environmental impacts in the design of buildings and pavements. Emphasis is placed on incorporating uncertainty into performance, cost, and environmental impact assessments given the long life of these applications. In addition, engineering methods to quantifying the operational impacts of buildings and pavements will be demonstrated, including repairs due to natural disasters for buildings, and excess fuel consumption of vehicles driving on pavements. The importance of optimizing performance, cost, and environmental impacts will be highlighted with examples in both applications.



Doctor Jeremy Gregory (PhD in Mechanical Engineering, MIT) is a research scientist in the Department of Civil and Environmental Engineering and the Materials Systems Laboratory, and is the Executive Director of the Concrete Sustainability Hub at the Massachusetts Institute of Technology (MIT). Dr. Gregory studies the economic and environmental implications of engineering and system design decisions, particularly in the area of materials production and recovery systems. Research topics include product and firm environmental footprinting, manufacturing and life-cycle cost analysis, and characterization of sustainable material systems. He has applied these methods, often with industry partners, to a range of different products and industries including pavements, buildings, automobiles, electronics, consumer goods, and waste treatment and recovery.

Admission is free. No registration is needed.

Organization:



Center for Industrial Ecology,
University of Coimbra
tel: + 351 239 790 708/39
e-mail: cie@dem.uc.pt



Energy for Sustainability Initiative,
University of Coimbra

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