

Abstracts & Bio – Israel Pollak Distinguished Lecture Series 2018

Prof. Jim Hall

* Faculty of Mechanical Engineering:

Monday, 8.01.2018, 11:00,
hosted by the Faculty of Mechanical Engineering, at Shirley and Manny Ravet Auditorium,
Entrance Floor, D. Dan & Betty Kahn Mechanical Engineering Bldg.

Preparing for Catastrophe: Climate-resilient infrastructure systems

National infrastructure systems are characterised by growing complexity and interdependencies between different networks e.g. energy, transport and digital networks. These interdependencies can exacerbate the possibility of cascading failures, where failure in one location can propagate to disproportionately large numbers of infrastructure users. The UK Infrastructure Transitions Research Consortium (ITRC) has developed methodology for mapping interdependencies in large spatially distributed networks and modelling the consequences of cascading failure, in order to identify and prioritise vulnerabilities in the network. We have proposed a definition of ‘critical infrastructure hotspots’ and have mapped these hotspots for the UK. We are modelling the potential impacts on the wider economy of infrastructure failures and are using the evidence to prioritise interventions to reduce the risks of infrastructure failure.

* Grand Technion Energy Program

Tuesday, 9.01.2018, 11:00,
hosted by the Grand Technion Energy Program, at Auditorium 1, (next to the main entrance),
The Wolfson Department of Chemical Engineering Bldg.

System-of-systems methodology for national infrastructure assessment

There have been many calls for a more strategic, long-term approach to national infrastructure in the UK and elsewhere around the world. Whilst appealing in principle, in practice developing a national infrastructure strategy poses major challenges of complexity and uncertainty. The UK Infrastructure Transitions Research Consortium (ITRC) has set out a systematic methodology for long term analysis of the performance of national infrastructure systems, which deals with each infrastructure sector (energy, transport, digital communications, water supply, waste water, flood protection and solid waste) in a consistent framework and assesses the interdependencies between infrastructure sectors. The methodology is supported with the world’s first infrastructure system of systems model (NISMOD), which has been developed for long term decision analysis in interdependent infrastructure systems. This talk will explain the ITRC’s methodology for national infrastructure assessment and will explain how NISMOD is being used to assess options for infrastructure provision in Britain.

Wednesday, 10.01.2018, 12:30,
hosted by the Faculty of Civil & Environmental Engineering and the Grand Water Research Institute, at GWRI, Ground Floor, seminar room

* CEE Faculty and Grand Water Research Institute

Title: Risk-based water resources planning under uncertainty

Water resources planning decisions can involve major commitments, for example to infrastructure investment or regulatory reform, with a long legacy. Climatic, hydrological and socio-economic uncertainties are therefore critical. This talk will describe a growing set of simulation-based methodologies for dealing with hydrological and climatic uncertainties in water resources decisions. We will explore metrics of risk and resilience and problems of sequential decision making under uncertainty.

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Speaker: Israel Pollak Distinguished Lecture Lectures Series 2018 –

Professor Jim W Hall



Fellow of the Royal Academy of Engineering
Professor of Climate and Environmental Risks
Director of the Environmental Change Institute

Professor Jim Hall FREng is Director of the [Environmental Change Institute](#) in the University of Oxford, where he is Professor of Climate and Environmental Risks in the [School of Geography and the Environment](#), a Senior Research Fellow in the [Department of Engineering Science](#) and fellow of [Linacre College](#). His research focuses upon management of climate-related risks in infrastructure systems, in particular relating to various dimensions of water security, including flooding and water scarcity. Jim Hall is a member of the [UK independent Committee on Climate Change Adaptation](#). In 2010 Jim was elected as a Fellow of the [Royal Academy of Engineering](#) "for his contribution to the development of methods for flood risk analysis, which underpin approaches for flood risk management in the UK and internationally." He sits on the Public Voice Committee of the [Institution of Civil Engineers](#) and was a member of the panel conducting the Institution of Civil Engineer's 2014 [State of the Nation Infrastructure](#) assessment and the Executive Group for the [National Needs Assessment – A Vision for UK Infrastructure](#). Until 2015 Jim Hall was co-chair of the [Global Water Partnership / OECD Task Force on the Economics of Water Security and Sustainable Growth](#). He advises the World Bank on water security and is editor of the AGU journal Water Resources Research. Jim leads the UK [Infrastructure Transitions Research Consortium](#), which has developed the world's first national infrastructure simulation models for appraisal of national infrastructure investment and risks. His book "[The Future of National Infrastructure: A System of Systems Approach](#)" was published by Cambridge University Press in 2016. He sits on the Expert Advisory Group for the [National Infrastructure Commission](#) and Chairs the [DAFNI Data and Analytics Facility for National Infrastructure](#).

Website: <http://www.eci.ox.ac.uk/people/jhall.html>