Infrastructure research at SPRU

We use SPRU's expertise in innovation and policy to understand the governance and development of critical infrastructure sectors and services, internationally and in the UK. At a time when infrastructure provision and investment is receiving regional, national and global political attention our research aims to understand how infrastructure can deliver better value for society in a sustainable way. We consider ways to improve decision-making to reflect the growing demand for infrastructure investment and the increasingly interconnected nature of infrastructure across scales and sectors. SPRU's research in infrastructure forms part of several flagship interdisciplinary projects: the International Centre for Infrastructure Futures, The UK Infrastructure Transitions Research Consortium, Multi-scale InfraSTRucture systems AnaLytics, and Infrastructure BUsiness models, valuation and Innovation for Local Delivery, which all proactively engage with policy makers, industry and other stakeholders to improve understanding and decision making in infrastructure governance.

UNIVERSITY OF SUSSEX

INTERNATIONAL CENTRE FOR INFRASTRUCTURE FUTURES PROJECT

As part of the International Centre for Infrastructure Futures (ICIF) research consortium, Professor Paul Nightingale, Dr Ralitsa Hiteva and Dr Kat Lovell are analysing business models for infrastructure development and delivery. This work involves understanding the contributions business model ideas can offer to policy and business within infrastructure sectors, and analysing developments in different infrastructure sectors to understand peculiarities and variety within infrastructure development. ICIF aims to inspire a broader national debate about the future of the UK's infrastructure, and how it might contribute towards a more sustainable, economically vibrant, and fair society, using multidisciplinary systemic thinking.

THE UK INFRASTRUCTURE TRANSITIONS RESEARCH CONSORTIUM PROJECT

The UK Infrastructure Transitions Research Consortium (ITRC) works to develop a new generation of infrastructure system simulation models and tools to inform the analysis, planning and design of National Infrastructure. Professor Jim Watson and Dr Ralitsa Hiteva were part of the ITRC team that investigated the governance of interactions between infrastructure sectors and infrastructure sectors in transition.

ITRC's ambition to provide a basis for cross-sectoral and long-term decision-making for infrastructure planning, design and operation, with its models and tools being taken up in the UK and adapted internationally is continued through the MISTRAL project (below).

MULTI-SCALE INFRASTRUCTURE SYSTEMS ANALYTICS PROJECT

At the beginning of 2016 ITRC was awarded £5.3 million of funding from the Engineering and Physical Science Research Council for another five years of research. The aim of the Multi-scale InfraSTRucture systems AnaLytics (MISTRAL) programme is to develop and demonstrate a highly integrated analytics capability to inform strategic infrastructure decision-making across scales, from local to global. SPRU researchers involved in MISTRAL, Professor Jim Watson, Dr Ralitsa Hiteva and Dr Kat Lovell, will examine the complex governance arrangements that inform a multi-scale systems perspective and explore governance arrangements across scales. We aim to identify key tensions and synergies in current governance arrangements and assess recent changes, as well as proposals for future reform through contributing to the analyses of long-term national infrastructure provision.

INFRASTRUCTURE BUSINESS MODELS, VALUATION AND INNOVATION FOR LOCAL DELIVERY PROJECT

As part of the Infrastructure BUsiness models, valuation and Innovation for Local Delivery (i-BUILD) consortium, Professor Tim Foxon is analysing new business models for low carbon infrastructure investment at the local level. Drawing on case studies of smart grids for electricity distribution and local heat networks, this work seeks to examine how environmental and social goals can be brought into infrastructure business model development and assessment methodologies. This informed policy-oriented research on economic evaluation of systems of infrastructure provision.

Our researchers

PROFESSOR TIM FOXON

Tim Foxon is Professor of Sustainability Transitions at SPRU. He is a co-investigator on the i-BUILD project, examining new business models for local infrastructure systems and services. His research explores technological and social factors relating to the innovation of new energy technologies, the co-evolution of technologies and institutions for a transition to a sustainable low carbon economy, and relations and interdependencies between energy use and economic growth.

DR. RALITSA HITEVA

Ralitsa Hiteva is a Research Fellow specialising in infrastructure governance and regulation. Ralitsa is working on changes to business models for infrastructure provision due to pressures such as cross–sector integrations and low carbon transitions. She is also investigating interdependencies between the energy, water, transport and ICT sectors and the complex governance arrangements across scales that inform multi-scale systems strategic infrastructure decision making.

DR. KAT LOVELL

Kat Lovell is a Research Fellow at SPRU. Her work considers how established infrastructure systems can develop and change. Kat's research examines business models in infrastructure sectors, connecting changes in value creation and value capture to innovation, and analyses the governance of infrastructure at different scales, considering how interactions between governance at different scales shape infrastructure development.

PROFESSOR PAUL NIGHTINGALE

Paul Nightingale is Professor of Strategy and Deputy Director of SPRU. Paul leads the SPRU research work that is part of the ICIF research consortium. His current infrastructure research considers business models and financing in infrastructure sectors as well as the management of projects for infrastructure delivery. Paul has held editorial roles at Research Policy and at Industrial and Corporate Change. His work contributes to innovation and to infrastructure policy.

PROFESSOR JIM WATSON

Jim Watson is Professor of Energy Policy at SPRU and Director of the UK Energy Research Centre. He leads the SPRU research contribution to the ITRC and MISTRAL research projects. Jim is a member of various expert and advisory groups including DECC and Defra's social science expert panel. His research considers energy, innovation, climate change and development and contributes to both energy and innovation policy.

RESEARCH BASED TEACHING

Our work underpins the interdisciplinary Infrastructure & Innovation MSc module offered at SPRU and the University of Sussex.

SELECTED RECENT OUTPUTS

Hiteva, R. and J. Watson, 2016. *Governance of Interdependent Infrastructure Provision*. In The future of national infrastructure: A system-of-systems approach, Cambridge University Press.

Lovell, K. and Nightingale, P., 2016. *Business models in rail infrastructure: explaining innovation*. In Proceedings of the Institution of Civil Engineers-Transport.

Hiteva, R., Lovell, K., Dolan, T. and Carhart, N. (eds.), 2017. *Understanding infrastructure: need, value and purpose*. Palgrave Pivot. (forthcoming Spring 2017) Open Access

Hiteva, R., Foxon, T. and Lovell, K., 2017. *The political economy of low carbon infrastructure in the UK*. In Handbook of International Political Economy of Energy and Natural Resources, (eds.) Caroline Kuzemko, Andreas Goldthau and Michael Keating, Edward Elgar (forthcoming 2017).

CONNECT WITH US

We would be interested to hear from academics and non-academic organisations interested in finding out more about our work. We can collaborate on both short and long term projects and take part in consortiums as well as host visiting academics. We can provide evidence-based expertise on a range of issues related to infrastructure governance and policy.

CONTACT

Let's connect!

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