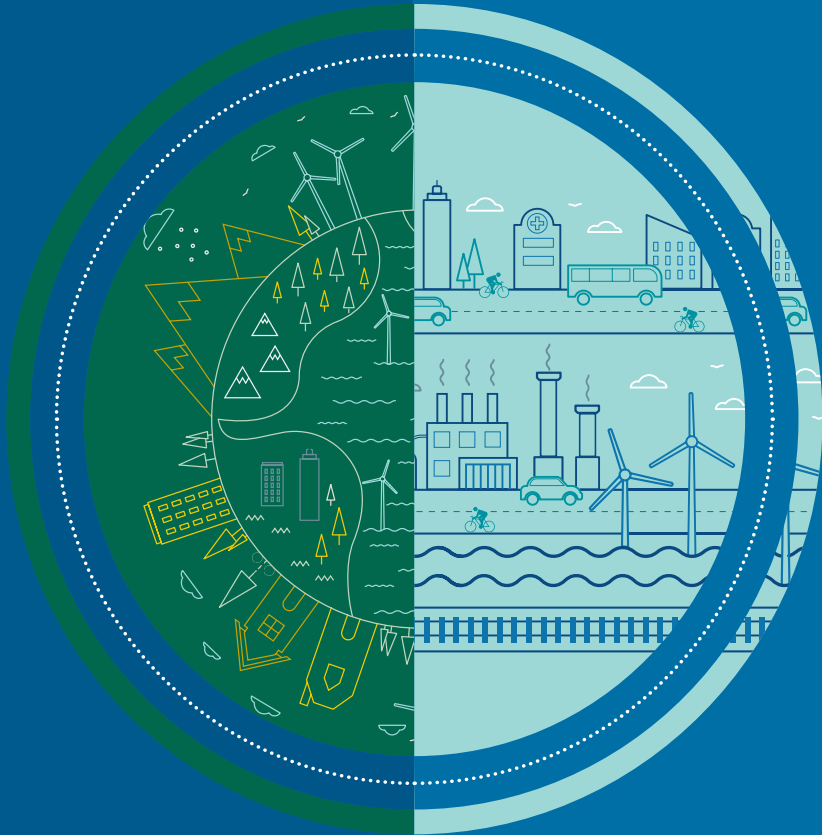


# Research Themes

SUSTAINABILITY AND URBAN LIVING



FUNDED PROJECTS,  
PLACEMENTS AND AWARDS  
2017-18



## Foreword

PROFESSOR RICHARD MURPHY, SUSTAINABILITY THEME CHAMPION  
& PROFESSOR MATT LEACH, URBAN LIVING THEME CHAMPION

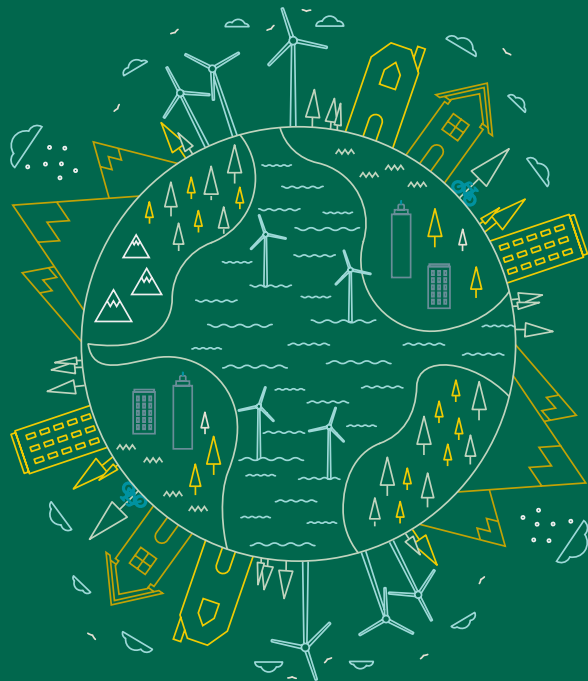
As part of the University's Research Strategy (2015) to realise ambitious objectives for research excellence and impact, a series of thematic research priorities was identified. This built upon in depth analysis carried out across the University to ascertain Faculty-specific research objectives, strengths and research funder interests, and an assessment of where targeted support could help expand activity. Six cross-cutting Themes were identified originally:

- Sustainability
- Urban Living
- Digital Innovation
- Innovation for Health
- Lifelong Health and Wellbeing
- Space and Aerospace

These Themes allow us to build on our existing strengths and invest in new complementary areas where we can demonstrate a distinctive capability.

The first two Themes launched in 2016-17 were Sustainability and Urban Living. Since their inception, both have facilitated increased research in each area by supporting Theme-related research bids, developing plans for collaboration and investing in a variety of pilot projects, placements and competitions. This booklet highlights the successes of these Themes by providing insights on the second rounds of these funding programmes implemented during 2017-18 and their outcomes.

We would like to thank all of our applicants across all programmes and congratulate all of our winners! Details about all awarded projects are provided on the following pages.





# Sustainability

AT THE CORE OF THE SUSTAINABILITY THEME IS RESEARCH THAT ENABLES SOCIETY TO UNDERTAKE ACTIVITIES AND DEVELOPMENTS SUCH THAT THEY MEET THE NEEDS OF THE PRESENT WITHOUT COMPROMISING THE ABILITY OF FUTURE GENERATIONS TO MEET THEIR OWN NEEDS.

Our Sustainability research includes: developing a better understanding of the world's resources; understanding environmental phenomena and how they impact on society; developing understanding of the behaviours and attitudes that shape the way people interact with their environment; and the development of technologies, processes and models that seek to improve our ability to live sustainably and well.

The Sustainability Research Theme ran two funding programmes during 2017-18, one

of which facilitated academic and research colleagues' attendance at sustainability-related conferences and the other provided undergraduate students with the chance to undertake a relevant research opportunity over the summer.

We would like to thank all of our applicants and to congratulate our winners!

Brief details about all awarded applications are listed below.

## SUSTAINABILITY CONFERENCE SUPPORT PROGRAMME

The first round of the Sustainability Research Theme Conference Support Programme closed in January 2018 and we are pleased to have been able to support five colleagues and students to attend their chosen sustainability-related conferences throughout the rest of the year. The applications received were of a high standard and involved both European and international conferences. Our Sustainability Conference Support 2017-18 winners were:

### Rosie Cole

Surrey Business School, FASS

*5th International EurOMA Sustainable Operations and Supply Chains Forum Kassel, Germany*

The conference was part of the European Operations Management Association which deals with sustainable supply chain management. It aimed to stimulate discussions between related research communities and to encourage multi-method studies exploring how to manage operations and supply chains in a sustainable way.

### Mauro Lafratta

Centre for Environment and Sustainability, FEPS  
*International Water Association's SMICE2018 – Sludge Management in the Circular Economy Rome, Italy*

The aim of the conference was to build understanding of opportunities and limits in the adoption of European policies of circular economy for sludge management. Research in circular waste water and sludge management could help contribute to the general knowledge and real application by water utilities of more sustainable technologies.



### **Candice Howarth**

School of Hospitality and Tourism Management  
(SHTM), FASS

*Intergovernmental Panel on Climate Change –  
Edmonton, Canada*

The IPCC conference was a pivotal event in advancing global understanding of how climate change will impact cities and the role of cities in tackling climate change. The event aims to inspire research, inform a special IPCC report on cities and support the implementation of the Paris Agreement and the 2030 Sustainable Development Agenda at an urban level.

### **Piyush Mohanty**

Civil and Environmental Engineering, FEPS

*9th European Conference on Numerical  
Methods in Geotechnical Engineering  
Porto, Portugal*

This conference provided an excellent forum for researchers, scientists and engineers from around the globe to exchange ideas on topics related to behaviour of different buildings, bridges and their foundations in the event of earthquakes and will contribute to the aim of building resilient infrastructures and making cities and human settlements safe.

### **Kavin Narasimhan**

Sociology, FASS

*International Association People-Environment  
Studies – Rome, Italy*

IAPS brought together researchers working on topics exploring the relationship and interactions of people with the natural and built socio-physical surroundings. Themes of the conference included: sustainability and social innovation, resource crises, selection, design, operation and management of built environments and their ecological impacts, green economy.

### **UNDERGRADUATE SUSTAINABILITY RESEARCH OPPORTUNITIES PROGRAMME (USROP)**

The second USROP round closed in May 2018 and provided undergraduate students with an opportunity to carry out a research placement relevant to the Sustainability Theme and ongoing research development over the summer vacation, with supervision by a member of academic staff. We received a number of excellent applications and were delighted to be able to fund four students to undertake projects. Our Sustainability USROP 2017-18 winners were:

#### **Faizal Amin**

Electrical and Electronic Engineering, FEPS

*Supervisor(s): Professor Ravi Silva & Dr Imalka  
Jayawardena*

The project characterised and modelled hybrid solar cells using commercial technology computer aided design software, emulating behaviour and performance.

#### **Amrit Singh Samra**

Civil and Environmental Engineering, FEPS

*Supervisor(s): Dr Devendra Saroj, Ms Cat  
Reeby & Miss Joan Talubo*

Water consumption at Surrey is higher than that of our peer institutions, therefore this project aimed to ascertain where use is highest and what we can do to reduce consumption levels.

#### **Carla Marti Sobrepera**

Mechanical Engineering Sciences, FEPS

*Supervisor(s): Dr Kin Hing Lo*

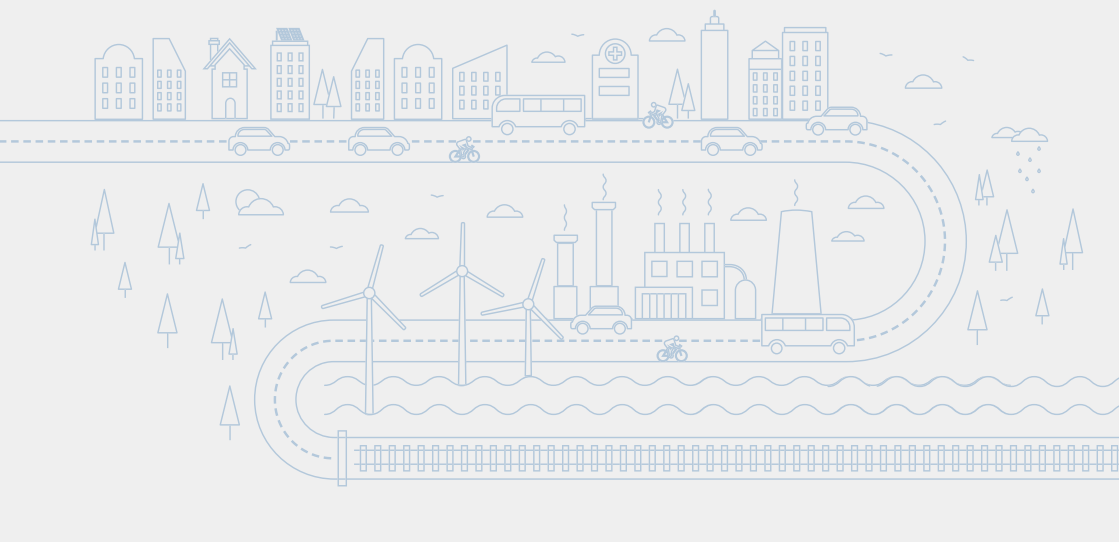
How much can electric vehicles be optimised through the study of external and cooling flows? This project aimed to find ways to reduce the air resistance of these vehicles in order to increase the range and reduce the amount of energy used to power them.

#### **Paul Agbaje**

Mechanical Engineering Sciences, FEPS

*Supervisor(s): Dr Kin Hing Lo*

This project aimed to achieve flow separation control and drag reduction on a passenger car model using wind tunnel tests and force balance measurements.



## Urban Living

THE URBAN LIVING THEME FOCUSES ON RESEARCH AND INNOVATION TO ADDRESS THE CHALLENGES FACED BY URBAN AREAS AND TO HELP THEM REALISE VISIONS FOR FUTURE URBAN LIVING, TRANSFORMING THEM INTO SAFER, SMARTER, MORE SUSTAINABLE AND HEALTHIER ENVIRONMENTS THAT BETTER SERVE THE POPULATION AND SOCIETY.

Research in this area could include:

understanding how communities work and how to build greater social cohesion; dealing with the challenges of an increasing/ageing urban population; realising opportunities associated with the development of Smart Cities and/or autonomous vehicles; aspects of urban design and urban infrastructures; and optimising economic performance.

This year, the Urban Living Theme funded a second round of Urban Living Awards with a competition that closed in January 2018. Four exciting projects/activities were funded.

A high number of applications were received and the standard was very strong; all applications offered valuable contributions. However, the requested funds exceeded the total budget available therefore the four projects/activities offering the greatest value to the development of the Urban Living Theme were chosen. Each project involved researchers from more than one department and researchers from all Faculties and all levels were involved across all projects. The winners of the Urban Living Awards 2017-18 were:

### Green Infrastructure and Health Mapping Alliance of Surrey Academics (GREENMASS)

PI: Professor Prashant Kumar - Civil and Environmental Engineering (FEPS)

Co-I(s): Professor Simon de Lusignan – Clinical and Experimental Medicine (FHMS)

Professor Angela Druckman – CES (FEPS)

Professor Dirk Jan Dijk – Clinical and Experimental Medicine (FHMS)

Dr Birgitta Gatersleben – Psychology (FHMS)

Dr Anne Skeldon – Mathematics (FEPS)

The aim of GREENMASS was to establish a cross-disciplinary, University-wide alliance to understand links between Green Infrastructure (GI), such as trees and hedges and public health in urban areas. The relationship between GI interventions and health problems such as respiratory diseases, hospital admissions and mental and cardiovascular illnesses will be explored.

The development of a multi-disciplinary bid to explore the impact energy theft is having on efforts to provide sustainable, equitable and economic energy for all in developing countries

PI: Dr Tom Roberts - Sociology (FASS)

Col(s): Professor Matt Leach – CES (FEPS)

The aim of the project was to support development of a large multi-disciplinary research proposal to the Global Challenges Research Fund (GCRF) during summer 2018. The project aimed to enable the existing consortium of British and Indian researchers to recruit additional partners in sub-Saharan Africa and to provide them with support to build capacity to engage with a global research project.



## Funding programmes 2018-19

### State of the art review on the impact of urban living, including lifestyle and social factors, on vitamin D status for ethnic populations

PI: Marcela Moraes Mendes - Department of Nutrition (FHMS)

Col(s): Dr Andrea Darling – Department of Nutrition (FHMS)

Dr Kathryn Hart – Department of Nutrition (FHMS)

Professor Susan Lanham-New – Department of Nutrition (FHMS)

Professor Richard Murphy – CES (FEPS)

Professor Steve Morse - CES (FEPS)

The project aimed to contribute to the development of further research on the impact of ethnicity and urban environment on risk of vitamin D deficiency. The review aimed to outline the need to investigate the role of urban living to address vitamin D deficiency in different ethnic groups whilst promoting the improvement of urban living in order to develop a healthier community.

### Increasing sustainable travel behaviour in urban environments: proactive and reactive responses to environmental images in a digital setting

PI: Candice Howarth - School of Hospitality and Tourism Management – (FASS)

Col(s): Iis Tussyadiah – SHTM (FASS)

Chris Jones – Psychology (FHMS)

Joe Kantenbacher – SHTM (FASS)

Stella Wen Tian – SHTM (FASS)

The project aimed to explore the impact of climate change and air pollution images on sustainable travel behaviour intentions in an urban context. It also aimed to examine whether the images increase salience to sustainable transport solutions and are effective in increasing sustainable urban transportation behaviour intentions.

The Urban Living Theme Awards scheme 2018-19 is now open; deadline is 4pm on Friday 18 January 2019

The Sustainability Conference Support Programme for 2018-19 is open for applications to attend conferences between February and July 2019. The deadline for the scheme is 4pm on Friday 18 January.

The Sustainability 2018-19 USROP will be launched in Spring 2019 – look out for further details in due course

For further details and information about how to apply please visit our Themes websites:

[surrey.ac.uk/research/vision/strategic-research-themes](http://surrey.ac.uk/research/vision/strategic-research-themes)

## Who we are



**Professor Richard Murphy**  
Theme Champion  
Sustainability

Richard is Professor of Life Cycle Assessment and Director of the Centre for Environment and Sustainability (CES). He has been Sustainability Theme Champion since November 2016.



**Professor Matt Leach**  
Theme Champion  
Urban Living

Matt is Professor of Energy and Environmental Systems, based in CES and has been Urban Living Theme Champion since November 2016.



**Susie Cornick-Willis**  
Theme Coordinator

Susie is based in the Research Strategy Directorate in Professional Services and has been Research Theme Coordinator since September 2016.



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