

**UNIVERSITY OF READING  
POSTGRADUATE PROSPECTUS  
2022**



# RESEARCH SUCCESS



**It can be a lengthy but rewarding journey to becoming an independent researcher – with opportunities to make a positive, real-world impact along the way.**

Hear about the pioneering research of Cathie, one of our current doctoral students, and of Marek, a graduate, who in their own ways are both helping to make significant strides towards a cleaner, greener future.

## REDUCING AVIATION EMISSIONS

Current transatlantic flight paths mean aircraft are burning more fuel and emitting more carbon dioxide than they need to. Upgrading to more efficient aircraft or switching to biofuels or batteries could lower emissions considerably, but these solutions are costly and may take decades to achieve.

Mathematics and Meteorology PhD researcher, Cathie Wells, has shown that simple tweaks to flight paths can offer cheap and immediate environmental benefits – by taking better advantage of jet stream winds, aircraft could save up to 16% of fuel, and therefore reduce emissions and journey times. Her study, co-authored by atmospheric scientist Professor Paul Williams, was published in *Environmental Research Letters* in January 2021.

Shortly after, NATS, the UK's national provider of air traffic control, announced a landmark trial to allow transatlantic aircraft to change their routes to take maximum advantage of favourable air currents – and cited evidence provided by Cathie's study in the announcement.



**"It is hugely satisfying to see my research having a genuine impact on the aviation industry, and potentially helping to make a real difference in the fight against climate change."**

**Cathie Wells, PhD researcher in the Mathematics of Planet Earth Centre for Doctoral Training**



**The reach and global impact of your doctoral research at Reading could be enormous.**

**Meet Marek, one of our doctoral graduates whose research keeps on giving.**

## LEADING THE CHARGE FOR RENEWABLE ENERGY

Dr Marek Kubik has become a key figure in the global drive for sustainable energy, both during and after his time as a doctoral student at the University of Reading. He is a founding member and Managing Director at Fluence – a global leader in energy storage technology.

Marek's doctorate investigated the impact of high levels of variable or intermittent renewable generation – like wind power – on the operation of electricity grids. His work led to the proposal of some of the solutions that are helping the UK towards 100% sustainable energy and its legally binding target of net zero emissions by 2050.

During his time studying in the School of the Built Environment at Reading, Marek collaborated with researchers and experts across multiple departments at the University, including the world-class Department of Meteorology.

**"If you can find the right balance between academia and industry, a doctorate is a real propellant to a successful career. My goal is now to get us to a 100% sustainable energy future as fast as possible."**

**"I benefited from the support and guidance from my project supervisors, who made sure to test what I was producing and ensure it would meet the original contribution to knowledge criteria."**

He also spent significant time working with external organisations and on international assignments, including trips to power plants in Spain, Bulgaria and Northern Ireland, and several months conducting policy work in Westminster at the Parliamentary Office of Science and Technology. During his doctorate, he published more than 10 conference and journal papers and presented at multiple international conferences.

Marek has tallied up some impressive achievements since then, such as being honoured in the Forbes 30 Under 30 list in 2017, but he is particularly proud of how his doctoral research has been a catalyst for massive energy storage growth. His work led to the development of the first utility-scale 10MW commercial battery storage facility in Europe, and there are now over 1,000MW of batteries operational in the UK.

**"The achievement that I'm most proud of is seeing the research I completed become directly relevant and actionable to enable the rapid acceleration of renewable generation."**

