Dr Iain Staffell

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A multi-disciplinary scientist and research leader across engineering, physics, economics, data analytics and science communication; with a drive for sustainable energy.

My research spans **energy systems modelling** (renewable resources, weather-energy interfaces, power station dispatch, demand projection), **energy economics** (market pricing, econometrics, investment modelling), and **engineering** (field demonstrations, data acquisition and analysis, LCA). I primarily work on **electricity systems** (wind, solar, battery storage, fossil, nuclear, CCS, transmission, renewables integration), **low-carbon heating** (heat pumps, CHP, fuel cells), and **sustainable transport** (hydrogen and electric vehicles, emissions modelling).

I am co-developer of the [Renewables.ninja](), an open research tool for simulating global wind and solar power which is used by 4,000 researchers from 95 countries, and lead the [Electric Insights]() website and reports on the UK electricity system. My work receives international media coverage [[a](),[b](),[c](),[d](),[e](),[f](),[g](),[h](),[i]()], and I write articles for [The Conversation]() and [Carbon Brief]() which reach >100,000 readers. I co-founded the 400-strong [Power Swarm]() network which brings together industry, policymakers and academics across the UK energy community. I consult for policymakers (IEA, European Commission, BEIS, Ofgem), operators (National Grid, ANLEC, Axpo) and various commercial firms (Baringa, McKinsey, OVO, Drax).

Career

2015 – *present:* Senior Lecturer in Sustainable Energy, Imperial College London
Lecturer (2015–18), Senior Lecturer (2018–). Convenor of 3 modules in Energy Policy for the world renowned [Environmental Technology]() MSc. My group is 2 Research Associates and 6 PhD students (+2 completed).

2012–15: Research Fellow, Imperial College Business School
Awarded an [Imperial College Research Fellowship]() to advance my field of weather-energy-economic modelling. Previously a researcher on [UKERC Phase III](), and EPSRC's [Energy Networks]() grand challenge.

2010–11: Research Fellow, University of Birmingham Business School

2009–10: Research Associate, University of Birmingham, Centre for Hydrogen and Fuel Cells

Teaching and Supervision

2015 – *present:* Convenor of Energy Policy MSc Course, Imperial College London
Designing and delivering the syllabus for ~20 MSc students specialising in Energy Policy. Lecturing on power station technology, energy storage, electricity markets and general energy economics. Evaluations: 4.6–5.0 / 5.

2014 – *present:* Lecturing in Energy Economics and Strategy, Imperial College London
20-hour course on the energy industry (oil and gas markets, electricity trading, regulation and liberalisation, carbon pricing) for the MSc Economics and Strategy for Business programme. Evaluations: 4.7–4.9 / 5

2012–14: Lecturing for the European Climate KIC, Imperial College London

2011–13: Lecturing in Energy Economics, University of Birmingham

Research Income

2019: Co-I on €5m H2020 SENTINEL project, building open-source energy system models (€400k share).

2018: Co-I on £7m (+£5m from industry) EPSRC [IDLES]() programme grant (£750k share).

2018: Co-I on £1m Global Challenges Research Fund: [Resilient Energy Networks]() (£140k share).

2016: Co-I on £240k EPSRC project: [Maximising the Carbon Impact of Wind Power]() (£100k share).

2014: Co-I on £1m EPSRC [MESMERISE-CCS]() project (£350k share).

2013: PI on £250k [Supergen H2FC White Paper #1 and #3]() (£48k share) and £75k IEA [FlexEval]() project.

Awards

2019: [President's Award for Excellence in Research](#) from Imperial College London.
2016, 2017, 2018: **Best Supervision** at Imperial's Student and Academic Choice Awards.
2014: **Sustainable Business Thinking** award from Imperial College Business School for the research into wind farm performance, and its impact on government and financial institutions.
2014: **Prize for Best Paper** at the 13th International Conference on Clean Energy.
2011: Institution of Civil Engineers' **Baker Medal** for publishing a top-three paper across all ICE journals.

Publications and Presentations

- 60 **journal papers** with **4,300 citations** (H-index 37), and **450,000 downloads** from open repositories.
- **Invited talks** at London's [Science Museum](#), a [TED^x talk](#), and the [UNFCCC COP24](#) climate conference.
- **Editor** of *[Domestic Microgeneration](#)* (Routledge) and *[The Energy Landscape in South Africa](#)* (Springer).

A full list of publications available from [goo.gl/nts983](#). Selected journal publications:

1. Wilson and Staffell, 2018. *[Rapid fuel switching from coal to natural gas through effective carbon pricing.](#)* Nature Energy.
2. Staffell, 2017. *[Measuring the Progress and Impacts of Decarbonising British Electricity](#)*. Energy Policy.
3. Schmidt, Hawkes, Gambhir & Staffell, 2017. *[The future cost of electrical energy storage based on experience rates.](#)* Nature Energy.
4. Grams, Beerli, Pfenninger, Staffell & Wernli, 2017. *[Balancing Europe's wind power output through spatial deployment informed by weather regimes.](#)* Nature Climate Change.
5. Staffell & Pfenninger, 2016. *[Using Bias-Corrected Reanalysis to Simulate Future Wind Power Output.](#)* Energy.

Education

2005 – 2009: PhD in Chemical Engineering and Economics, University of Birmingham
Dissertation title: *[Fuel Cells for Domestic Heat and Power: Are They Worth It?](#)* Awarded without corrections.

2004 – 2005: MSc Physics and Technology of Nuclear Reactors, University of Birmingham
Dissertation title: *[The Economic Potential of Future Nuclear Build](#)*. Awarded with Distinction.

2001 – 2004: BSc (Hons) in Physics (First Class), University of Birmingham
Moreton prize for graduating 2 / 120.

Professional

- **Organisation:** Core organising team for the 3rd OpenMod Energy Workshop (London, 2015).
- **Consultancy:** Provided expert opinion, reports and original research for the European Commission, the International Energy Agency, BIES, National Grid, Ofgem, Drax, OVO and the ETI.
- **Programming:** 15 years' experience with C, C++, VBA / Excel and PHP; 10 years with R; familiar with D, FORTRAN, Javascript, and database-driven websites using HTML, SQL and AJAX.
- **Software:** Proficient with SimaPro (for LCA); GAMS (optimisation), LabVIEW (hardware control and data acquisition); R GIS (geographic information).
- **Practical:** 5 years' experience with laboratory and field experimental work, with training in COSHH, working with radioactive sources, power electronics, hydrogen, and in and biosafety level 2 labs.
- **Editorial Board / Guest Editor:** International Journal of Sustainable Energy, Sustainability.
- **Reviewing:** RCUK, Elsevier Books, US Department of Energy, Nature journals + 14 leading others.
- **Memberships:** IAEE & BIEE (Energy Economists), IAHE (Hydrogen Energy), Energy Institute, OpenMod.
- **Media:** Hosted [visits from senior politicians](#); international media coverage on [renewable](#) [energy](#), [decarbonised](#) [electricity](#), [CCS](#) and [open modelling](#); interviewed on [BBC Radio](#).