

PhD in Sustainable Futures – Energy

Summary

- *Want to become an expert in your field while also making a real difference?*
- *Keen to work and learn alongside some of Australia's leading researchers?*
- *Looking for flexible working arrangements with access to world class facilities and benefits?*

The Energy Team within the Institute for Sustainable Futures (ISF) at the University of Technology Sydney is seeking applications for PhD candidates to carry out doctoral research in energy futures and a fair, sustainable and rapid global transition to renewable energy.

ISF is at the forefront of innovative research on technical, economic and social dimensions of the energy transition and is currently seeking high-quality, motivated candidates that wish to pursue a PhD. The research topic should align broadly with our program focussing on 100 per cent renewable energy scenarios and modelling; customer energy innovation; and energy jobs and fairness.

We are particularly interested in PhD candidates that will research one or more of our areas of expertise listed below:

100% Renewable Energy Scenarios and Modelling

- 100% renewable energy scenarios for regions and communities; stakeholder engagement with remote communities.
- Net-Zero pathways – Implementing theoretical pathways in real economy sectors; data management of energy and financial data for the finance industry.
- How can we build resilient energy systems (e.g., develop new metrics, create new tools and develop stress test scenarios for Australian energy systems to understand resilience, etc.)?
- The potential contribution of offshore wind to Australia's renewable energy future.
- The economics of smart grids, batteries and demand management.
- Inter-optimisation of electricity, gas, and water infrastructure to accelerate the transition to a net-zero-carbon economy.
- Explore the energy infrastructure implications if Australia were to become a major renewable energy exporter.
- How can we better understand stakeholder impacts of energy futures using advanced modelling techniques?
- How do we harness the power of spatial energy datasets to better understand energy demand and forecasts?

Customer Energy Innovation

- How will Electric Vehicles (EV) and other large scale transport electrification impact the electricity system?
- Flexible capacity and energy technologies in homes, including hardware, software, policy, regulation, standards and customer value proposition.
- Opportunities for energy upgrades in Australian homes
- Exploring pathways and obstacles to net zero precincts
- Business solutions for minimum demand flexibility

Energy Jobs and Fairness

- Modelling demand for employment in the renewable energy transition.
- Investigating energy jobs and skills policy.
- Exploring the linkage between energy supply-chains, local provision and industry policy.
- First nations and clean energy.
- What role does energy equity and fuel poverty play in an Australian context?
- How can developing countries with low electricity access leapfrog fossil fuels for 100% renewable energy access?
- What business models are needed to ensure positive community outcomes when looking at 100% renewable energy at the fringe of the grid?
- How can we incorporate carbon emissions from agriculture/food production into a carbon budget?
- How can we support regional innovation ecosystems to retain value locally and improve resilience co-benefits?
- How can grassroots community participation be embedded in clean energy business models to improve equity outcomes and social licence?
- What new institutional models are needed to optimise societal value creation in energy supply chains?

Application deadlines and scholarships

Domestic applicants only: To commence in Research Session 1 2024 (from January 2024), pre-approval applications to ISF are due by 14 September 2023 (followed by application to UTS by 15 October 2023 if application is pre-approved).

International applicants only: To commence in research Session 1 2024 (from January 2024), pre-approval applications to ISF are due by 29 June 2023 (followed by application to UTS by 31 July 2023 if application is pre-approved).

Scholarships are available but subject to successful application through a competitive process. For more details, please refer to <https://www.uts.edu.au/research-and-teaching/graduate-research/future-research-students/scholarships>.

Who we are looking for

ISF's award-winning Graduate Research Program empowers students to create a better future in their chosen field. Consequently, we are seeking PhD candidates who are passionate about and ideally experienced in any aspect of renewable energy and low carbon transitions in developed or developing countries. PhD candidates should also be keen to align their research with the broader ISF approach.

Essential skills and aptitudes

- An enquiring mind, a collaborative spirit and a passion to contribute to the renewable energy transition.
- A masters or strong undergraduate degree in a relevant discipline or equivalent.
- Demonstrated ability to undertake research at higher degree level i.e., demonstrated research experience or honours degree or master's degree with meaningful research component.

- Demonstrated high level critical thinking skills.
- Experience in working with/across different disciplines.
- Experience working in cross-cultural teams in developing country contexts.
- Experience in and/or knowledge of one of our areas of expertise listed above gained in academia, industry and/or government.

About ISF and the HDR program

The Institute for Sustainable Futures at University of Technology Sydney (ISF-UTS) has been creating change towards sustainable futures by conducting independent project-based research with Australian and international partners since 1997. Our research and professional staff come from varied backgrounds, including engineering, architecture, management, economics, science, the social sciences, international studies and political studies.

ISF-UTS offers an award-winning postgraduate program for Masters and Doctoral research students. Our graduate research students work at the leading edge of complex societal problems and sustainability challenges, across diverse topics. Our graduate research delivers real-world impacts, contributes to the flow of knowledge, and provides transformative learning experiences for participants. ISF-UTS's unique graduate research program is an integral part of our path to a better future. We nurture and develop the brightest, most curious minds, giving them the skills to navigate this complex multidisciplinary environment. Our vibrant community of scholars brings fresh insight, inspiring new ways of seeing – and solving – wicked problems.

Application process

Please refer to the [ISF website](#) for instructions on how to apply for a PhD at ISF. *Please note that an initial expression of interest is required prior to the pre-approval process, so allow plenty of time for this.*

For more information on ISF and the ISF HDR program, please visit <https://www.uts.edu.au/isf>.

For further information please contact Dr Simon Wright at simon.wright@uts.edu.au.

Current and Past ISF PhD Candidates

Ed Langham - Ed is a specialist in low carbon energy transitions, working with new and emerging energy market players to develop decentralised energy resources to accelerate climate action. Ed's PhD examines the dynamics of how societal value is created and maintained in 'open business models' where collaborative relationships with a broader partner ecosystem are central to explaining the overall value creation logic. The study investigates six energy businesses experiencing rapid change towards more complex and collaborative business models.

Ella Middelhoff – Ella's research explored the potential for Hybrid Concentrated Solar Biomass (HCSB) plants to support the clean energy transition in Australia. These resources are currently underutilised, however are expected to play an important role in future energy supply systems. The findings show that HCSB plants provide dispatchability services that are aligned with current NSW government climate and energy policy priorities. In NSW, these dispatchability services will become even more advantageous as larger amounts of renewable energy is deployed and fossil fuelled stations are retired.

Simon Wright – Simon's doctoral research focused on the role of government and other innovation intermediaries in accelerating the transition to renewable energy. Investigating a range of metropolitan and regional case studies, Simon used theories from the innovation and network literatures to highlight policy and program opportunities for all levels of government. Prior to joining ISF, Simon held a variety of sustainability roles in industry, academia and consulting.