

## Job Description

### ENGINEERING SCIENCE

<b>Job title</b>	Senior Research Associate in Just Energy Systems
<b>Division</b>	Mathematical, Physical and Life Sciences Division
<b>Department</b>	Engineering Science
<b>Location</b>	Holywell House, Osney Mead, Oxford
<b>Grade and salary</b>	Grade 8: £48,235 - £57,255 per annum (Whilst the role is a grade 8 position, we would be willing to consider candidates with potential but less experience who are seeking a development opportunity, for which an initial appointment would be at grade 7 (£38,674 - £46,913p.a.) with the responsibilities adjusted accordingly. This would be discussed with applicants at interview/appointment where appropriate.)
<b>Hours</b>	Full time but would consider 0.8 FTE
<b>Contract type</b>	Fixed-term (externally funded until 31 March 2026. Whilst the project is until 2030, we operate in yearly funding cycles. Therefore, there is the possibility of extension dependent on CCG programme funding).
<b>Reporting to</b>	Professor Stephanie Hirmer, Department of Engineering Science
<b>Vacancy reference</b>	179453

<b>Research topics</b>	<p><b>CCG:</b></p> <p>What are the visions of and pathways to climate-compatible and equitable energy and transport systems, and what synergies or trade-offs exist between national macroeconomic goals and local community development needs?</p> <p>What strategies, policies, institutional changes, and timelines are required to develop climate-compatible and equitable energy and transport systems, and how can cross-sectoral collaboration ensure alignment between national priorities, social equity, and climate impacts?</p> <p>How can soft and hard infrastructure be developed to meet both top-down national macro-economic and policy goals, and local bottom-up community development needs, and where are the synergies and trade-offs in decision-making?</p>
------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

	<p>How can local community development needs be captured and accounted for in decision-making to increase community resilience, reduce existing vulnerabilities and minimise negative impacts of transitions?</p> <p><b>SHIELD:</b></p> <p>How can green hydrogen and ammonia be strategically integrated into Ukraine's energy system to support sustainable development, energy security, and post-conflict reconstruction?</p> <p>What policy, financial, and technical pathways are most effective for enabling equitable and resilient hydrogen and ammonia adoption in Ukraine, given current geopolitical, economic, and infrastructural conditions?</p>
<b>Principal Investigator / supervisor</b>	<b>Prof. Stephanie Hirmer, Department of Engineering Science</b>
<b>Project web site</b>	<a href="https://climatecompatiblegrowth.com/">https://climatecompatiblegrowth.com/</a> <a href="https://epg.eng.ox.ac.uk/shield/">https://epg.eng.ox.ac.uk/shield/</a>
<b>Funding partner</b>	The funds supporting this research project are provided by the Foreign Commonwealth and Development Office (FCDO) as part of the Climate Compatible Growth (CCG) programme and SHIELD in Ukraine project
<b>Relevant publications</b>	<p>Hirmer, S., Tomei, J., Yang, P. et al. Inconsistent measurement calls into question progress on electrification in sub-Saharan Africa. <i>Nat Energy</i>, 9, 1046–1050 (2024).</p> <p>Egli, F., Schneider, F., Leonard, A., Halloran, C., Salmon, N., Schmidt, T., &amp; Hirmer, S. (2024). Mapping cost competitiveness of African green hydrogen exports to Europe.  <a href="https://doi.org/10.5281/zenodo.14025768">https://doi.org/10.5281/zenodo.14025768</a></p> <p>Lanza, M. F., Leonard, A., &amp; Hirmer, S. (2024). Geospatial and socioeconomic prediction of value-driven clean cooking uptake. <i>Renewable and Sustainable Energy Reviews</i>, 192, 114199.</p> <p>Müller, L. A., Leonard, A., Trotter, P. A., &amp; Hirmer, S. (2023). Green hydrogen production and use in low-and middle-income countries: A least-cost geospatial modelling approach applied to Kenya. <i>Applied Energy</i>, 343, 121219.</p> <p>Leonard, A., Ahsan, A., Charbonnier, F., &amp; Hirmer, S. (2022). The resource curse in renewable energy: A framework for risk assessment. <i>Energy Strategy Reviews</i>, 41, 100841.</p>

## The role

The successful candidate will join the [Climate Compatible Growth](#) (CCG) programme and the [Strategic Hydrogen Integration for Effective Low-Carbon Development](#) (SHIELD) in Ukraine project.

CCG is a £95 million UK FCDO-funded research programme running until March 2030. It supports developing countries in pursuing low-carbon development pathways while unlocking profitable investment in green infrastructure, opening new markets, and advancing the Sustainable Development Goals (SDGs). The programme focuses on energy systems and the decarbonisation of transport, with in-country offices in seven locations, including established offices in Kenya, Zambia, Ghana, India, Vietnam, Laos, and Nepal, with Malawi to follow.

SHIELD is a £1.7 million FCDO-funded research initiative that assesses the potential of green hydrogen and ammonia within Ukraine's energy system. It also explores how this long-term objective can inform short-term decision-making for reconstruction, including financing pathways and policy reform.

The team leads innovative, interdisciplinary projects that plan low-carbon and critical infrastructure—such as solar-powered irrigation, green hydrogen, mining, and other sectors—to advance broader development goals at national and regional levels. Using contextualised modelling frameworks and deep in-country engagement, the work involves identifying key policy reforms, investment needs, and energy system planning approaches to support sustainable outcomes and area-based development. Equity and justice are central to the team's ethos, with a strong focus on ensuring that marginalised and vulnerable groups are meaningfully included in planning and decision-making processes. The team also champions decentralised energy planning and community resilience, with a deep commitment to addressing gender, equality, and broader social inclusion.

The successful candidate will take on a senior role, producing high-quality research, providing management and leadership across the SHIELD and CCG projects, in close collaboration with the Principal Investigator, Professor Stephanie Hirmer. They will offer strategic oversight and technical leadership. The role also involves contributing to fund-raising efforts to grow the team's research portfolio, and working alongside the Project Manager to ensure timely delivery of outputs and effective reporting.

The position sits within the Energy and Power Group, led by Professor Malcolm McCulloch. You will closely be working with Professor Stephanie Hirmer. The ethos of the group is focused on developing individuals to reach their goals, developing real-world tools and techniques for sustainable energy systems and to celebrate diversity. A hybrid working pattern is normal practice for the group.

Interviews will take place on **Friday, 30 May, and Monday, 2 June**. They will include a technical presentation based on an exercise sent prior to the interview, along with competency-based questions.

## Responsibilities

The post-holder will be employed by the Department of Engineering Science, University of Oxford. You will work with the Principal Investigator, Professor Stephanie Hirmer, as well as the other members of the research team, including other Oxford faculty members with backgrounds in all the relevant fields, as well as postdocs and graduate students. Key duties will include:

### Specific Tasks

- **Climate-Compatible Infrastructure Planning:** Support the design and evaluation of soft and hard infrastructure projects (e.g., solar irrigation, transport networks, hydrogen systems, mining) to assess how they meet national policy goals while addressing local development needs.
- **Cross-Scale System Modelling:** Apply and adapt energy and transport system models (e.g., CLEWS, OnSSET, OSeMOSYS) to simulate future development scenarios and analyse synergies/trade-offs between macroeconomic policy and community resilience.
- **Geospatial and Spatial Data Analysis:** Conduct geospatial analysis (e.g., using QGIS/ArcGIS) to assess regional disparities in access and infrastructure, supporting equitable planning and identifying areas of vulnerability or opportunity.

- **Data Science and Advanced Analytics:** Utilise Python and data science techniques (including machine learning and multi-criteria decision analysis) to process complex data sets, forecast system behaviour, and support evidence-based decision-making.
- **Stakeholder Engagement & Grounded Data Collection:** Conduct participatory data collection and stakeholder engagement in LMIC and post-conflict settings, ensuring the integration of local knowledge and needs in planning processes.
- **Just Transition:** Apply a just transition lens to research.
- **Political Economy and Risk Mapping:** Map institutional, financial, and political risks, especially in fragile and post-conflict contexts like Ukraine, to understand potential barriers to equitable energy transitions.
- **Policy Impact and Government Engagement:** Build and manage relationships with high-level government actors, disseminating research findings to influence policy frameworks and enhance uptake of resilient energy solutions.
- **Research Leadership and Project Development:** Independently lead workstreams within CCG/SHIELD, including development of research questions, coordination of teams, and collaboration with Southern-based partners to co-create solutions.
- **Funding & Proposal Development:** Share responsibility for shaping the research group's strategic direction; Contribute to the preparation of research funding applications and raise research funds independently.
- **Scientific Writing, Strategic Communication & Dissemination:** Regularly write research articles for peer-reviewed journals, book chapters, and conference proceedings. Present papers at academic and policy-focused conferences, and lead seminars to disseminate research findings. Translate research into high-impact outputs (policy briefs, working papers, social media content) that target both national and local audiences, increasing visibility and practical relevance.

#### Additional tasks

- **Research Design & Analysis:** Develop research questions within specific contexts related to equitable and sustainable energy systems and the decarbonisation of transport. Conduct individual and collaborative research, analysing complex qualitative and/or quantitative data to generate original insights.
- **Analytical Techniques & Methodology:** Develop, establish, and apply appropriate analytical protocols and techniques to support research on climate-compatible infrastructure, energy systems, and policy analysis.
- **External Collaboration:** Conduct collaborative research with colleagues at partner institutions and contribute to multi-disciplinary projects.
- **Internal Collaboration:** Communicate effectively with Prof. Stephanie Hirmer, research team members, and other collaborators through meetings, reports, and publications. Engage with related projects within the research group as appropriate.
- **Teaching & Supervision Responsibilities:** Deliver lectures and set/mark assignments for the MSc in Energy Systems, with a focus on specialist areas such as Energy for Development where applicable. Engage in small-group teaching, tutoring, demonstrating, and assessment activities. Supervise MSc and DPhil students, providing guidance on research design, methodology, and academic writing. Teaching must be pre-approved and limited to 4 hours per week.
- **Group Participation:** Actively participate in the intellectual life of the Energy and Power Group (EPG), including seminars, reading groups, and team meetings.
- **Team Leadership:** Organise and delegate tasks to junior colleagues; oversee workstreams to ensure delivery of outputs.
- **Mentorship:** Provide guidance on specialist methodologies, acting as a resource on scientific protocols and experimental techniques.

- **Project Management:** Manage day-to-day responsibilities with autonomy, taking initiative to resolve issues and coordinate multiple tasks.
- **Reporting:** Liaise with funding bodies and key stakeholders to provide updates, reports, and maintain positive working relationships.
- **Other Duties:** Perform any other tasks appropriate to the role as required.

## Selection criteria

### Essential Selection Criteria

- **Academic Qualifications:** Hold a relevant PhD/DPhil with post-qualification research experience.
- **Specialist Knowledge:** Possess expertise in geospatial energy modelling and optimisation, with experience using Python and GIS, as well as translate qualitative scenarios into quantitative modelling inputs.
- **Computational Skills:** Proficiency in data analytics and computational methods.
- **Thematic Expertise:** Demonstrate specialist knowledge in just transitions, gender equality and social inclusion, and community resilience in the context of energy systems planning—particularly within rural and developing energy access settings (e.g., SDG 7.1).
- **Stakeholder Engagement:** Proven experience engaging stakeholders in complex geopolitical contexts, such as developing countries, displacement settings, or conflict zones.
- **Publication Record:** Clear track record of high-quality academic outputs in high impact factor publications, including an h-index of 5 or above.
- **Communication Skills:** Excellent verbal communication skills, present research findings, externally (e.g., host workshop, panel discussions).
- **Translating Outputs:** Possess the ability to use research findings to generate impact.
- **Project Management:** Proven ability to independently plan and manage research teams and projects, including budgeting responsibilities.
- **Fundraising Experience:** Demonstrated success in raising research funds through grant applications.

### Desirable Selection Criteria

- **Policy Translation:** Ability to translate modelling results into actionable energy policy recommendations, particularly from an investment and finance perspective.
- **Energy Markets Insight:** Background in energy financing, investment, and market structures.
- **Value Chain Understanding:** Understanding of energy transition value chains, such as critical minerals and decarbonisation technologies.
- **Machine Learning:** Specialist knowledge in machine learning and AI applied to energy systems research.
- **Staff Supervision:** Experience supervising junior researchers or staff members.
- **Budget Management:** Previous experience managing research budgets or overseeing project finances.

The candidate will be assessed based on the essential and desired criteria. Instead of a traditional cover letter, applicants must provide a **supporting statement in the form of a selection criteria response** (maximum of 3 pages) alongside a CV (maximum of 3 pages). Applications not following this format or exceeding 6 pages will not be considered. The candidate may reference their research profile, video recording or relevant publications/reports in the supporting statement.

## Pre-employment screening

If you are offered the post, the offer will be subject to standard pre-employment checks. You will be asked to provide: proof of your right-to-work in the UK; proof of your identity; and (if we haven't done so already) we will contact the referees you have nominated. If you have previously worked for the University we will also verify key information such as your dates of employment and reason for leaving your previous role with the department/unit where you worked. You will also be asked to complete a health declaration so that you can tell us about any health conditions or disabilities for which you may need us to make appropriate adjustments.

## About the University of Oxford

Welcome to the University of Oxford. We aim to lead the world in research and education for the benefit of society both in the UK and globally. Oxford's researchers engage with academic, commercial and cultural partners across the world to stimulate high-quality research and enable innovation through a broad range of social, policy and economic impacts.

We believe our strengths lie both in empowering individuals and teams to address fundamental questions of global significance, while providing all our staff with a welcoming and inclusive workplace that enables everyone to develop and do their best work. Recognising that diversity is our strength, vital for innovation and creativity, we aspire to build a truly diverse community which values and respects every individual's unique contribution.

While we have long traditions of scholarship, we are also forward-looking, creative and cutting-edge. Oxford is one of Europe's most entrepreneurial universities and we rank first in the UK for university spin-outs, and in recent years we have spun out 15-20 new companies every year. We are also recognised as leaders in support for social enterprise.

Join us and you will find a unique, democratic and international community, a great range of staff benefits and access to a vibrant array of cultural activities in the beautiful city of Oxford. For more information, please visit [www.ox.ac.uk/about/organisation](http://www.ox.ac.uk/about/organisation).

## Engineering Science Department

Engineering teaching and research takes place at Oxford in a unified Department of Engineering Science whose academic staff are committed to a common engineering foundation as well as to advanced work in their own specialties, which include most branches of the subject. We have especially strong links with computer science, materials science, medicine and also the Saïd Business School. The Department employs 120 academic staff (this number includes 13 statutory professors appointed in the main branches of the discipline, and 25 full professors); in addition, there are nine visiting professors. There is an experienced team of teaching support staff, professional services and administrative staff and technicians. The Department has well-equipped laboratories and workshops, which together with offices, lecture theatres, library and other facilities have a net floor area of about 25,000 square metres.

The Department is ranked fifth in the world, and the top European University, in the 2023 *Times Higher Education World University Rankings* for Engineering & Technology. Further information about the Department is available at [www.eng.ox.ac.uk](http://www.eng.ox.ac.uk).

## Teaching

We aim to admit 170-180 undergraduates per year to take a 4-year course leading to the MEng degree in Engineering Science. The course is accredited at MEng level by the major engineering institutions. The syllabus has a common core extending through the first two years. Specialist options are introduced in the third year, and the fourth year includes further specialist material and a major project.

## Research

Research in the Department is particularly strong. We have approximately 600 research students and about 250 postdoctoral researchers. Direct funding of research grants and contracts, from a variety of sources, amounts to an annual turnover of approximately £70m.

The results of the seven-yearly UK-wide assessment of university research, REF2021, published on 12<sup>th</sup> May 2022, demonstrate that the University of Oxford made the highest volume of world-leading research submissions. The Department of Engineering Science had 71% of submissions which met the requirements for the highest grading of 4\* (research that is world-leading in terms of originality, significance, and rigour). Research activities fall into 8 broad headings, though there is much overlapping in practice: Information Engineering (Robotics, Computer Vision and Machine Learning); Control; Thermofluids; Materials and Mechanics; Civil and Offshore; Electrical and Optoelectronic; Chemical and Process; and Biomedical.

The Department of Engineering Science holds a bronze Athena Swan award to recognise advancement of gender equality: representation, progression and success for all.

## The Mathematical, Physical, and Life Sciences Division

The Mathematical, Physical, and Life Sciences (MPLS) Division is one of the four academic divisions of the University. In the results of the six-yearly UK-wide assessment of university research, REF2014, the MPLS division received the highest overall grade point average (GPA) and the highest GPA for outputs. We received the highest proportion of 4\* outputs, and the highest proportion of 4\* activity overall. More than 50 per cent of MPLS activity was assessed as world leading.

The MPLS Division's 10 departments and 3 interdisciplinary units span the full spectrum of the mathematical, computational, physical, engineering and life sciences, and undertake both fundamental research and cutting-edge applied work. Our research addresses major societal and technological challenges and is increasingly focused on key interdisciplinary issues. MPLS is proud to be the home of some of the most creative and innovative scientific thinkers and leaders working in academe. We have a strong tradition of attracting and nurturing the very best early career researchers who regularly secure prestigious fellowships

We have around 6,000 students and play a major role in training the next generation of leading scientists. Oxford's international reputation for excellence in teaching is reflected in its position at the top of the major league tables and subject assessments.

MPLS is dedicated to bringing the wonder and potential of science to the attention of audiences far beyond the world of academia. We have a strong commitment to supporting public engagement in science through initiatives including the Oxford Sparks portal (<http://www.oxfordsparks.net/>) and a large variety of outreach activities. We also endeavour to bring the potential of our scientific efforts forward for practical and beneficial application to the real world and our desire is to link our best scientific minds with industry and public policy makers.

For more information about the MPLS division, please visit: <http://www.mpls.ox.ac.uk/>

## How to apply

Applications are made through our online recruitment portal. Information about how to apply is available on our Jobs website <https://www.jobs.ox.ac.uk/how-to-apply>.

Your application will be judged solely on the basis of how you demonstrate that you meet the selection criteria stated in the job description.

As part of your application you will be asked to provide details of three referees and indicate whether we can contact them now.

You will be asked to upload a CV (max 3 pages) and a supporting statement (max 3 pages). The supporting statement must explain how you meet each of the selection criteria for the post using examples of your skills and experience. This may include experience gained in employment, education, or during career breaks (such as time out to care for dependants). Application material should not exceed 5 pages and will not be considered if so.

Please upload all documents **as PDF files** with your name and the document type in the filename.

All applications must be received by **midday** UK time on the closing date stated in the online advertisement.

### Information for priority candidates

*A priority candidate is a University employee who is seeking redeployment because they have been advised that they are at risk of redundancy, or on grounds of ill-health/disability. Priority candidates are issued with a redeployment letter by their employing departments.*

*If you are a priority candidate, please ensure that you attach your redeployment letter to your application (or email it to the contact address on the advert if the application form used for the vacancy does not allow attachments)*

## If you need help

Application FAQs, including technical troubleshooting advice is available at: <https://staff.web.ox.ac.uk/recruitment-support-faqs>

Non-technical questions about this job should be addressed directly to Gemma Watson at [gemma.watson@eng.ox.ac.uk](mailto:gemma.watson@eng.ox.ac.uk)

To return to the online application at any stage, please go to: [www.recruit.ox.ac.uk](http://www.recruit.ox.ac.uk).

Please note that you will receive an automated email from our online recruitment portal to confirm receipt of your application. **Please check your spam/junk mail** if you do not receive this email.

## Important information for candidates



## Data Privacy

Please note that any personal data submitted to the University as part of the job application process will be processed in accordance with the GDPR and related UK data protection legislation. For further information, please see the University's Privacy Notice for Job Applicants at:

[www.admin.ox.ac.uk/councilsec/compliance/gdpr/privacynotices/job/](http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/privacynotices/job/). The University's Policy on Data Protection is available at:

[www.admin.ox.ac.uk/councilsec/compliance/gdpr/universitypolicyondataprotection/](http://www.admin.ox.ac.uk/councilsec/compliance/gdpr/universitypolicyondataprotection/).

## The University's policy on retirement

The University operates an Employer Justified Retirement Age (EJRA) for very senior research posts at **grade RSIV/D35 and clinical equivalents E62 and E82** of 30 September before the 70<sup>th</sup> birthday. The justification for this is explained at: <https://hr.admin.ox.ac.uk/the-ejra>.

For **existing** employees on these grades, any employment beyond the retirement age is subject to approval through the procedures: <https://hr.admin.ox.ac.uk/the-ejra>.

There is no normal or fixed age at which staff in posts at other grades have to retire. Staff at these grades may elect to retire in accordance with the rules of the applicable pension scheme, as may be amended from time to time.

## Equality of Opportunity

Entry into employment with the University and progression within employment will be determined only by personal merit and the application of criteria which are related to the duties of each particular post and the relevant salary structure. In all cases, ability to perform the job will be the primary consideration. No applicant or member of staff shall be discriminated against because of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity, race, religion or belief, sex, or sexual orientation.

## Benefits of working at the University

### Employee benefits

University employees enjoy 38 days' paid holiday, generous pension schemes, travel discounts, and a variety of professional development opportunities. Our range of other employee benefits and discounts also includes free entry to the Botanic Gardens and University colleges, and discounts at University museums. See <https://hr.admin.ox.ac.uk/staff-benefits>

### University Club and sports facilities

Membership of the University Club is free for all University staff. The University Club offers social, sporting, and hospitality facilities. Staff can also use the University Sports Centre on Iffley Road at discounted rates, including a fitness centre, powerlifting room, and swimming pool. See [www.club.ox.ac.uk](http://www.club.ox.ac.uk) and <https://www.sport.ox.ac.uk/>.

### Information for staff new to Oxford

If you are relocating to Oxfordshire from overseas or elsewhere in the UK, the University's Welcome Service website includes practical information about settling in the area, including advice on relocation, accommodation, and local schools. See <https://welcome.ox.ac.uk/>. There is also a visa loan scheme to cover the costs of UK visa applications for staff and their dependants. See <https://staffimmigration.admin.ox.ac.uk/visa-loan-scheme>

## Family-friendly benefits

With one of the most generous family leave schemes in the Higher Education sector, and a range of flexible working options, Oxford aims to be a family-friendly employer. We also subscribe to the Work+Family Space, a service that provides practical advice and support for employees who have caring responsibilities. The service offers a free telephone advice line, and the ability to book emergency back-up care for children, adult dependents and elderly relatives. See <https://hr.admin.ox.ac.uk/my-family-care>

The University has excellent childcare services, including five University nurseries as well as University-supported places at many other private nurseries.

For full details, including how to apply and the costs, see <https://childcare.admin.ox.ac.uk/>

## Disabled staff

We are committed to supporting members of staff with disabilities or long-term health conditions. For further details, including information about how to make contact, in confidence, with the University's Staff Disability Advisor, see <https://edu.admin.ox.ac.uk/disability-support>

## Staff networks

The University has a number of staff networks including the Oxford Research Staff Society, BME staff network, LGBT+ staff network and a disabled staff network. You can find more information at <https://edu.admin.ox.ac.uk/networks>

## The University of Oxford Newcomers' Club

The University of Oxford Newcomers' Club is an organisation run by volunteers that aims to assist the partners of new staff settle into Oxford, and provides them with an opportunity to meet people and make connections in the local area. See [www.newcomers.ox.ac.uk](http://www.newcomers.ox.ac.uk).

## Oxford Research Staff Society (OxRSS)

A society run by and for Oxford University research staff. It offers researchers a range of social and professional networking opportunities. Membership is free, and all researchers employed by Oxford University are welcome to join. Subscribe at [researchstaff-subscribe@maillist.ox.ac.uk](mailto:researchstaff-subscribe@maillist.ox.ac.uk) to join the mailing list to find out about upcoming events and other information for researchers, or contact the committee on [committee@oxrss.ox.ac.uk](mailto:committee@oxrss.ox.ac.uk). For more information, see [www.ox.ac.uk/oxrss](http://www.ox.ac.uk/oxrss), Twitter @ResStaffOxford, and Facebook [www.facebook.com/oxrss](http://www.facebook.com/oxrss).