



PhD Studentship

Drones, Development and Disaster Risk Reduction in Nepal: Towards an Anticipatory Action Approach

Closing date: 21st October 2022

Interview date: 16th November 2022

Supervisory team

Director of Studies:

[Dr Alan Dixon, School of Science and the Environment, University of Worcester,](#)

Supervisors:

[Professor Ian Maddock, School of Science and the Environment, University of Worcester,](#)

Collaborating organisations:

Nepal Flying Labs: <https://flyinglabs.org/nepal/> and NAXA <https://naxa.com.np/>

Research Group: [Sustainable Environments Research Group](#)

The Project

Applications are invited for a fully-funded, full-time PhD studentship for the project:

Drones, Development and Disaster Risk Reduction in Nepal: Towards an Anticipatory Action Approach

Background

During the last four decades the occurrence of natural disasters, such as floods, cyclones and drought, has almost tripled, and there is increasing recognition that their occurrence is inextricably linked to range of global development issues and challenges, not least climate change and the resource demands of a growing population. Over one billion people worldwide live in countries that lack the resilience to adapt to the environmental changes they are expected to face between now and 2050. This resilience is both a function of the environment of a specific location but also the socio-economic and political context of that place, and hence why there is growing urgency to

integrate a more holistic understanding of risk, vulnerability and resilience into hazard and disaster management planning.

A key challenge to adopting such an approach is how to ensure the quality of the data that informs our assessment of place-specific environmental and socio-economic risks. The use of remote sensing imagery in assessing proximity to hazards, for example, has often been limited by poor spatial resolution that is not sufficient to accurately delineate individual households. This results in risk assessment only being applied at the whole community level, even though vulnerability will vary by household, depending on physical and socio-economic factors. Meanwhile, the use of drones or Uncrewed Aerial Vehicles (UAV) for environmental monitoring and mapping has seen exponential growth in recent years and this has led to a revolution in the assessment of physical hazards. UAVs offer a much higher spatial resolution alternative to satellite imagery that can allow the delineation of individual households, while their ease of use and ability to generate bespoke flights that match locational and time critical needs could drive significant advances in the resolution and therefore accuracy of hazard mapping and risk assessment. They also offer significant potential to democratise data collection and analysis, thereby enhancing the capacity of local users to take ownership over their own disaster risk assessment.

In May 2022, the G7 countries called for a paradigm shift in humanitarian assistance and the mainstreaming of 'anticipatory action' within disaster risk planning. This emphasises the need for the most vulnerable countries to enhance their capacity for monitoring, assessment, and knowledge exchange, in order to develop adaptive, flexible and responsive disaster risk management systems. At the core of anticipatory action is the mandate to facilitate inclusive multi-stakeholder approaches that involve government, NGOs, civil society organisations, and particularly local communities, who are considered to be best placed to understand and present their own vulnerabilities, needs, and assessments of the barriers and facilitators of resilience.

Due to its extreme variability in climate, topography, and the low socio-economic status of much its population, Nepal is particularly vulnerable to natural and human-induced hazards and ranks 4th globally for climate risk and 11th for earthquake impact risk. However, despite the development of national strategies for disaster risk reduction, disaster planning in Nepal is often characterised by an ad hoc approach that devolves decision-making and planning to local governments and NGOs. Yet, local governments remain under-resourced and are unable to facilitate the community-based data collection that is essential to inform accurate assessments of risk and resilience.

Project Aim

This project will explore how anticipatory action on disaster risk reduction in Nepal can be facilitated via the development of new community-based approaches, that combine UAV and household-level data in the assessment of vulnerability and resilience capacity building. This will involve the development and testing of a new social-ecological model and practical tool for household vulnerability assessment.

Indicative Methodology

The research will likely be both inter- and trans-disciplinary in nature, in that it seeks to combine knowledge and methodologies from the physical environmental sciences (UAVs and remote sensing) and social sciences (qualitative and quantitative assessments of household dynamics), while also engaging and empowering different stakeholders (NGOs, local communities) in the analysis and understanding of household vulnerability. This approach is critical in ensuring the tools and model developed are relevant, transferable, adaptive and sustainable in terms of their impact on society. The research will focus on several locations in Nepal that reflect a range of different disaster risk scenarios. These will be identified whilst the student undertakes a work placement in Year 1 with project partners Nepal Flying Labs, who have extensive field experience of disaster risk assessment in the region. They will continue this collaboration with further placements during Years 2 and 3.

Details of the studentship

The studentship is offered for a 4-year period on a full-time basis. The studentship is campus based. During the period of your studentship you will receive the following:

- a tax-free bursary of £15,609 per annum for 3 years
- a fee-waiver for 4 years
- a budget to support your direct project costs including dissemination costs
- a laptop and other IT equipment and software as appropriate to the project
- use of the Research School facilities
- although you will be based at the University of Worcester, you will be expected to undertake an annual work placement in Nepal, working in collaboration with our project partners, Nepal Flying Labs.

You will be expected to play an active role in the life of both the Research School and of your academic School. You will be given opportunities to gain experience in learning and teaching within the School under the guidance of your Director of Studies.

Application Process

To begin the application process for this studentship please go to <http://www.worcester.ac.uk/researchstudentships> and click 'apply now' next to the project you wish to apply for. It is expected that applicants will have the following qualifications:

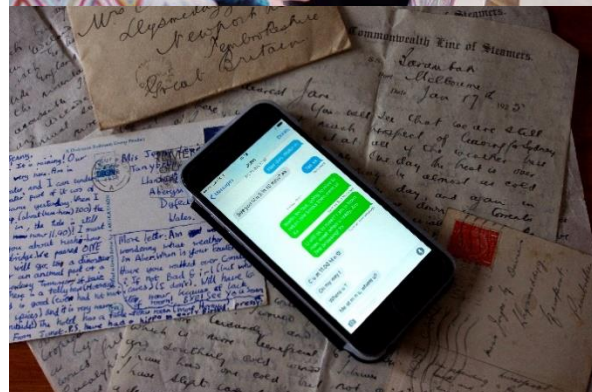
- A First or Upper Second Honours Degree
- A relevant Masters degree is desirable but not essential

It is also expected that applicants will be able to demonstrate the following:

- A sound understanding of, and interest in, both the project and the wider subject area
- An inter- or multi-disciplinary background, preferably with knowledge and experience of methodologies in both the social and environmental sciences
- Ability to develop the research design of the project
- Proficiency in oral and written English
- Proficiency in IT relevant to the project
- Ability to organise and meet deadlines
- Good interpersonal skills
- Ability to work independently
- Ability to work as part of a team
- Ability to work and undertake fieldwork in a developing country for extended periods.

The Interview

The interview will provisionally be held on 16th November 2022 either in-person or via Teams. Shortlisted candidates will be given at least 7 day's-notice of interview. In advance of interview, shortlisted candidates will be



asked to submit a sample of their written work (e.g. a publication or a dissertation). Alongside the interview, shortlisted candidates will also be asked to give a 10 minute presentation on a related topic.



Research at the University of Worcester

Research at the University of Worcester has grown significantly over the last 10 years. The outcomes of the Research Excellence Framework 2014 (REF 2014) showed that Worcester was the most improved University in the UK based on Research Fortnight's "Research Power" measure. The University's continued progress was shown in the outcomes of REF 2021 which demonstrated that both the scale and quality of our research has further increased, with over 40% of our research recognised as world-leading or internationally excellent.

The University has been successful in winning funding from a wide range of major funders: Research Councils such as AHRC, BBSRC, ESRC and NERC; major charities such as the Leverhulme Trust, the Alzheimer's Society and the British Academy; health-research funders such as the NIHR, the Department of Health and local NHS Trusts; European funding through Horizon 2020 and Erasmus+; and funding from local, national and global businesses.

The University is focused on research which addresses real world challenges and provides solutions to these challenges:

- [Human Health and Wellbeing](#)
- [Sustainable Futures](#)
- [Digital Innovation](#)
- [Culture, Identity and Social Exclusion](#)
- [Professional Education](#)

The University continues to provide a robust infrastructure for research. It has a well-established Research School which houses its growing research student body and which provides a comprehensive programme of researcher development for staff and students. It has a well-established Research Office, responsible for research funding, governance and strategy. The University is committed to further developing its research profile, through a strategic approach to its support for and investment in research. Its fully-funded studentships are part of this investment.

Research School

The Research School is a focal point for all our research students. It provides:

- day-to-day support for our students, both administrative and practical, through our dedicated team

- a Research Student Study Space with both PCs and laptop docking station
- a comprehensive Researcher Development Programme for students and their supervisors
- a programme of student-led conferences and seminars

School of Science and the Environment

Science and the Environment at Worcester encompasses subject areas including Archaeology, Biology (including Animal Biology, Biochemistry, and Human Biology), Biomedical Science, Environmental Management and Sustainability, Forensic and Applied Biology, Geography (including Human Geography and Physical Geography), Human Nutrition, and Medical Sciences.

We offer top quality degrees in a friendly and supportive environment, using modern approaches to learning and teaching.

From sustainability to crime scene analysis, our world-leading research focuses on today's key challenges. Working in collaboration with different disciplines and with other universities, private industry and the public sector, our research is a means to achieve real-life benefits.

Our mission is to ensure science is accessible and that our research is relevant to society.

Research and Knowledge Exchange within the School of Science and Environment is at the core of what we do, ensuring society benefits from our translational and applied research, and that our undergraduate students benefit from research informed teaching. The Degree Courses we deliver and the knowledge exchange we undertake therefore embody the range and reach of our impactful research.

Research within the school focuses on 'Sustainable Futures' and 'Human Health and Wellbeing'; Areas of Challenge outlined in the University's Research and Knowledge Exchange Strategy (2020-2025). We also actively engage in other research areas and encourage blue skies thinking.

To ensure the continued delivery of high quality and impactful research at the University of Worcester we have invested significantly over the last decade to enhance our research facilities. Find out more [here](#).

Widening Participation

As part of its mission statement the University is committed to widening participation for its higher degrees. Although most candidates will have an undergraduate and/or a Masters degree, the University is happy to accept applications from candidates with relevant professional qualifications and work related experience.



For further information or an informal discussion on this project, please contact Dr Alan Dixon (Director of Studies) via email at a.dixon@worc.ac.uk

Applications can be made at: <http://www.worcester.ac.uk/researchstudentships>