# Universidade Eduardo Mondlane

## Faculty of Agronomy and Forest Engineering

### Department of Forest Engineering

### Department of Agrarian Economy and Rural Development

## Post Doctoral Research Assistant: Land change science and modelling of ecosystem services and poverty alleviation

## University of Eduardo Mondlane, Maputo, Mozambique

We are seeking to appoint one Postdoctoral Research Associate (PDRA) as part of an interdisciplinary project entitled: Abrupt Changes in Ecosystem Services and Wellbeing in Mozambican Woodlands (ACES, https://miomboaces.wordpress.com) ACES is a 3-year, £2M interdisciplinary project funded by the Ecosystems Services for Poverty Alleviation (ESPA) Programme.

**1. Job Details**

Job title:                       Post Doctoral Research Assistant: **Land change science and modelling**

Location:                       University of Eduardo Mondlane, Mozambique

Start date and duration:        Mid 2014 (ideally June) for a period of approximately 36 months

                                (depending on agreed starting date)

Salary:                         Salary: $2700/month. This is the gross salary (~20% will be deducted for

                                tax etc.).

**2. Application details**

To apply, please send a folder to Kate Morrison: [kate.morrison@ed.ac.uk](mailto:kate.morrison@ed.ac.uk)  containing:

- Your CV
- A list of your publications
- A copy of a manuscript for which you are lead author (in press/or progress is acceptable)

- A letter of motivation.

**The application must be submitted by Friday the 18th of April, midnight UK time.**

Interviews will be held in late April (To be determined): by skype or video-conference.

### 3. Job Purpose

The successful candidate will conduct a preliminary identification of stakeholders with interests in poverty alleviation, livelihood and land management in Mozambique. Stakeholder mapping will be used to minimise the risk of marginalising underrepresented actors. Using Bayesian Belief Networks (BBNs formalise the conceptual understandings of our stakeholders in the issues listed above), the causes and effects of different drivers of change, management impacts and other factors will be modelled. BBNs are adept at representing uncertainty in socialecological systems. You will use them both to help formalise our research protocol by representing current land use/ES/wellbeing linkages at local, regional and national scale and to allow the construction of quantitative future scenarios (with Stakeholder input). BBNs have been used widely by our team for exploring the impacts of land cover change under different scenarios and by others in the context of community-led decision-making in African woodlands. They provide a graphical method of displaying the relationships between variables - crucial to aid stakeholder participation. Variable linkages are represented by conditional probability tables, which are parameterised by elicitation involving experts and local stakeholders or from data.

As such this will involve a range of techniques including BBNS, Stakeholder mapping, the design of scenarios, their quantification and parameterisation. Specialists are involved in ACES on all these topics, and so, although a commitment to multi-method working is important you do not need to have experience in all of these areas. A demonstrable interest and ability to learn new methods and integrate different type of data is however, essential.

You will be required to spend the majority of your time in Mozambique, and be involved in at least two major fieldwork campaigns to collect data in a range of landscapes differentially experiencing land use change. This will involve mapping stakeholders at a village level. This work will be conducted alongside (a) the mapping of land cover change using a range of data, and the characterisation of the key ecosystems and the services they provide and (b) the collection of livelihood and poverty data to characterise the links between land use change and wellbeing. Therefore you will have to work closely with colleagues from a range of disciplines.

You will have to be flexible and adapt to conditions in the field, and will need empathy for the livelihoods of rural people in Mozambique, and the ability to communicate across cultures. The ability to speak Portuguese is an essential skill. Strong data management and organizational skills are also required. The analysis of the data will need a variety of statistical approaches, so the ability to learn and implement new numerical analyses is essential.

### 4. Main Responsibilities

- Plan and undertake stakeholder engagement activities, to assess priorities and evaluate the drivers land use change and how this affects ecosystem services and wellbeing of the rural poor in Mozambique
- Manage, manipulate and analyse large and diverse datasets, narrative and quantitative based, and archive them appropriately
- Review relevant literature
- Work closely with other project staff and students to deliver contribution to the project
- Represent Work Package 5 at ACES meetings
- Take the lead and contribute to the writing of academic publications, promote the project at relevant national and international conferences and develop future research proposals
- Undertake other duties as may be required within the general role, including leading teams in Mozambique and creating contacts

## 5. Required Skills and Experience

We seek candidates with the following skills and experiences:

**Essential skills and experience:**

- A PhD (or a PhD close to completion), or equivalent, in a relevant field, or equivalent experience
- Expertise in planning and undertaking socio-ecological fieldwork in the tropics.
- Convening participatory processes, stakeholder engagement and a demonstrable aptitude for cross-cultural communication.
- A good grounding in ecosystem science and an ability to analyse social-ecological systems.
- Rural livelihoods and land use analysis, with an understanding of wellbeing / poverty and its links to agricultural transformation. In particular, an understanding of poverty in rural Africa, in the context of high dependence on ecosystem services is essential.
- Excellent statistical knowledge and data management ability, using appropriate programming languages
- Good written and spoken Portuguese
- Excellent written and spoken English
- Proven ability to work independently and efficiently
- Excellent organisational and communication (both written and oral) skills
- Proven ability to work as a member of an international team
- Proven ability to work as part of an interdisciplinary team
- Ability to lead and author publications in the peer reviewed literature

**Desirable skills and experience:**

- Experience of land change science and modelling
- Experience of mathematical modelling
- Scenario development (with stakeholders); understanding local, regional and larger scale drivers of change; quantification of qualitative scenarios outputs
- Peer reviewed publications in a relevant field

- GIS skills would be an added bonus

## 6. Project details

ACES will examine how woodland loss is changing ecosystem services and wellbeing of the rural poor in Mozambique. In the miombo woodlands of Southern Africa, poor rural households depend vitally on ecosystem services. However, little is known about how the impacts of woodland loss and agricultural expansion affect rural wellbeing. We know that gradual land use change can cause abrupt or non-linear changes to ecosystem services and rural livelihoods, but given the complexity of the system, the key ecological and social processes remain opaque. Better land use policy and practice require empirical evidence on the impacts of land use change on rural wellbeing. ACES aims to deliver such evidence, within a framework designed for, and by, those involved in land use decisions. The project will inform pro-poor land use policy formulation and implementation at a national level and will influence policies relating to the expansion of commercial agriculture, intensification of small-holder agriculture, rural development, and the likely trade-offs in management of miombo woodlands for food, energy, timber, carbon and biodiversity. The project will run from Dec 2013 for three years and involve extensive data collection in three areas of Mozambique. The fieldwork will take place each year in May-Sept, with all team members taking part for some of this period. In addition, some engagement with stakeholders may take place outside of this field season.

The PDRA appointed at the University of Eduardo Mondlane will join a consortium of six institutions and over 20 people working on ACES, including policy specialists, stakeholder analysts, ecosystem and social scientists, and land use modellers. Full details of the project and the consortium can be found at: http://miomboaces.wordpress.com

You will be based in Mozambique, working alongside a large group of researchers working on similar project. You will work closely with the University of Edinburgh as well as other partners in Sweden, Zimbabwe and Brazil to design and implement fieldwork, analyse data and communicate the results of the project in both the peer-reviewed literature and to other audiences.

In addition to the three PDRAs based at the University Eduardo Mondlane in Mozambique, researchers will be based at the University of Zimbabwe and at the Brazilian National Institute For Space Research (INPE). If you are interested in these positions, please see the ACES website for details.

You will have a PhD in an appropriate discipline, with experience of fieldwork in developing countries. An interest in inter-disciplinary working, and a commitment to both social and biophysical sciences will be needed. The ability to communicate in Portuguese will be essential.

You will: a) take responsibility for core elements of the stakeholder engagement and contribute to the design of, and fully participate in, several extensive field campaigns in Mozambique, together with other project partners (expected to take several months a year); b) take day-today responsibility for the analysis and archiving of the data and information emerging from the project, in consultation with project partners and the stakeholders; c) contribute significantly to the dissemination and publication of the research team's findings at conferences and in international peer-reviewed journals; d) provide

guidance to other staff and students, collaborating with the team members including on other ongoing projects, when required. You will also have the opportunity to supervise post-graduate research students in similar fields of research, and lead a team in the field.

**7. Enquiries**

Informal enquiries should be directed to Prof Almeida Sitoe almeidasitoe@gmail.com or Dr. Marc Metzger marc.metzger@ed.ac.uk