



The Leibniz Centre for Agricultural Landscape Research (ZALF), Müncheberg, Germany, calls for applications for

### **1 Post-Doc position and 2 PhD positions**

for the research project “Climate Change Impact Assessment and Adaptation options in vulnerable agro-landscapes in East-Africa” financed by the GTZ/BMZ Research Programme: “Adaptation of African Agriculture to Climate Change”.

The project will be carried out together with the World Agroforestry Centre (ICRAF), the Potsdam Institute of Climate Change Research (PIK), and the Institute for Resource Assessment of the University of Dar es Salaam as the main partners.

#### ***Project Description:***

The project aims at assessing the regional impacts of climate change on agriculture and environment in Tanzania and at designing adaptation strategies and practices for small-scale agriculture and land use (agriculture, forest, hydrology, nature conservation and biodiversity, fishing, transport etc.). The widespread application of these adaptation strategies and practices is expected to result in resilient “agro-landscapes” and livelihood systems with improved adaptive capacity to climate change. In order to reach these goals, the project is built on 3 major analytical threads:

- 1.) Improving the description and understanding of inter annual climate variability, likely long term climate change in the region and their impacts on current land use systems and respective environmental, social and economic pressures.
- 2.) Assessing potential climate change impacts on agriculture and ecosystem services and related constraints and opportunities for smallholder farmers.
- 3.) Analysing, testing, and monitoring a range of technologies and good practices for improving the overall adaptive capacity of rural households, communities, and agro-landscapes. This task is based on the results of data driven model estimates and stakeholder driven agro-landscape and livelihood scenarios.

This project will contribute to the development of farming systems and livelihood strategies that are robust across a range of possible futures. After three years, the project will have achieved the following outputs:

- Regionally downscaled climate change scenarios for different IPCC emission scenarios
- Model based estimations of climate change impacts on current land use systems and practices.
- Scenarios of sustainable livelihoods and resilient agro-landscapes under climate change
- Assessment of adaptive responses/practices and criteria for best adaptation practices.

### ***Description of positions:***

#### **Post doc position (TVL 13, 80%) [code 07-A-2008]**

Driven by generated climate change scenarios integrated agro-ecosystem models (including soil water and nutrient dynamics and soil-crop-atmosphere-management interactions) will be used to assess combined climate change and management effects on crop production, water resources and soil fertility. Model outputs will be used to evaluate best management practices for future climatic conditions. Models will be linked closely to the hydrological models providing surface runoff, seepage, erosion and nutrient leaching as their input. The workplan comprises: 1) a review of existing experimental data on cropping systems of the region to extract data sets and to test selected models under African conditions 2) the establishment of field experiments for most relevant cropping systems to provide consistent data sets including weather data, soil properties, soil water and nutrient distribution, crop phenology and biomass, yields and crop nutrient status for model calibration and parameterisation. Measurements will be performed at investigation sites of local experimental stations. 3) The establishment of monitoring and demonstration fields at farmers fields for model validation under practical conditions.

After model adaptation, selected land use and management systems will be evaluated using regional climate change scenarios to assess their suitability for future conditions.

#### **Requirements:**

- Ph.D. degree in Agricultural Sciences, Geocology or Environmental Engineering
- Experience in agro-ecosystem modelling with basic programming knowledge
- Knowledge in crop and soil science, preferably in tropical agriculture
- Basic experience in GIS applications
- Working knowledge of English, both written and oral communication skills
- Capacity to work in an interdisciplinary team environment
- Willingness to travel abroad with long working stays in Tanzania
- Work experience abroad; preferably in Africa
- Relevant experience in the field of stakeholder participation related to interview survey techniques

The position will be based at institute for Landscape System Analysis of the Leibniz Centre for Agricultural Landscape Research.

#### **Duty station:**

The incumbent is expected to work in Germany (Müncheberg, 40 minutes by train from Berlin) and Tanzania:

- July - December 2008: Conceptualization and preparation of field research in Germany
- January 2009 - March 2010: Field work in the study area in Tanzania
- April 2010 - June 2011: Data analysis, integration, and modelling in Germany:

#### **PhD position Hydrology (TVL 13, 50%) [code 07-B-2008]**

Hydrological catchment models supply boundary conditions for agro-ecosystem models, water availability and water management planning. In this project, hydrological catchment models are used to determine the impact of climate and land use change on the hydrological cycle in landscapes, primarily in river basins. Important indicators are discharge in rivers, ground water levels and water levels in lakes and wetlands. The models consider the relevant processes of the hydrological balance of the project study region: surface runoff, percolation, lateral subsurface flow and evapotranspiration.

Objectives of the hydrological sub-project are the estimation of impacts of climate change and agricultural adaptation strategies on the hydrological system in small catchments in Africa. Main tasks are 1) delineation of a suitable catchment for the investigations in the project region 2) establishment of a hydrological monitoring system 3) selection and assembling of a suitable hydrological catchment model 5) application of the model in scenario analyses.

**Requirements:**

- Degree (Diploma/Master) in hydrology / water resources management, geoscience, geoecology, agricultural science
- Working knowledge of English, both written and oral communication skills
- Capacity to work in an interdisciplinary team environment
- Willingness to travel abroad with working stays in rural areas
- Work experience abroad; preferably in Africa
- Relevant experience in the field of stakeholder participation related to interview survey techniques
- Familiarity with numerical modeling would be a plus.

The position will be based at the institute for Landscape Hydrology of the Leibniz Centre for Agricultural Landscape Research.

**Duty station:**

The incumbent is expected to work in Germany (Müncheberg, 40 minutes by train from Berlin) and Tanzania:

- July - December 2008: Conceptualization and preparation of field research in Germany
- January 2009 - March 2010: Field work in the study area in Tanzania
- April 2010 - June 2011: Data analysis, integration, and modelling in Germany:

**PhD position “Scenario Development”/ “Sustainability Impact Assessment” (TVL 13, 50%)**  
**[code 07-C-2008]**

Based on regional climate scenarios, stakeholders develop options of potential management of future agro-landscapes in their regions. All three sustainability dimensions (social, environmental and economic) will be taken into account by different groups of decisions makers (farmers, local politicians, local experts, etc.). Stakeholder visions will be visualised and linked to the development of good practices. Options for viable, climate change adapted good practices embedded into sustainable agro-landscapes are the output of these exercises. Stakeholder-based scenarios will be made compatible in an iterative process with model-based scenarios. Impact Assessment will allow for a selection of resilient agro-landscapes in the region.

The position will elaborate inter alia: 1) a survey on relevant existing land use and management systems and on the current state of the agro-landscape. 2) Scenarios for the management of potential future agro-landscapes, allowing for local constraints and opportunities concerning climate change, through participatory methods with stakeholders from different decision levels. 3) A methodological framework for the elaboration of an ex-ante assessment tool (indicators, applied methods, scenario building) to support decision making. 4) An overview on Good Practices (GP) in agroforestry and potential consequences of future climate change conditions concerning food security, protection of natural resources and sustainability.

**Requirements:**

- Masters degree in Agricultural Sciences, Environment or Ecology
- Working knowledge of English, both written and oral communication skills
- Capacity to work in an interdisciplinary team environment
- Willingness to travel abroad with long working stays
- Work experience abroad; preferably in Africa
- Relevant experience in the field of stakeholder participation and interview survey techniques
- Experience in the fields of ex-ante impact assessment and scenario development

The position is embedded in the cross-institutional group of “Sustainability impact assessment” of the Leibniz Centre for Agricultural Landscape Research.

**Duty station:**

The incumbent is expected to work in Germany (Müncheberg, 40 minutes by train from Berlin) and Tanzania:

- July - December 2008: Conceptualization and preparation of field research in Germany
- January 2009 - March 2010: Field work in the study area in Tanzania
- April 2010 - June 2011: Data analysis, integration etc. in Germany:

**General information:**

**Start and duration:**

The positions start at June/July 2008 and are limited to three years.

All positions require very good communication skills in an international context, strategic thinking, ability to work in a team and openness to international developments.

**Further information may be obtained from Dr. Karen Tscherning Tel.: 0049 (0)33432 82441 or [tscherning@zalf.de](mailto:tscherning@zalf.de).**

Women are explicitly asked to apply. In case of equal abilities, applications of disabled people are considered first.

Job interviews will take place between 21<sup>th</sup> to 23<sup>rd</sup> of May at ZALF.

Applications with curriculum vitae, relevant references and your list of publications should be sent to the respective e-mail address ([tscherning@zalf.de](mailto:tscherning@zalf.de)) **with reference 07-(ABC)-2008** until 14. May 2008.

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