



Alexander von Humboldt  
Stiftung/Foundation

# Stipendiatinnen und Stipendiaten 2016/2017

Internationales Klimaschutzstipendium

Fellows 2016/2017

International Climate Protection Fellowship



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## Adaptation to the Associated Impacts of Climate on Water and Energy Resources in the River Niger Basin

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Africa has a substantial sustainable water supply capacity of an estimated 4,520 km<sup>3</sup>/year. However, access to these water resources in the Sub-Saharan region will be threatened by the region's growing human population (up to 1.4 billion by 2025) and climate change. Specifically, there are strong indications that climate change will have a severe impact on the water and energy resources of the River Niger Basin, even as the basin is currently threatened by a 40-year drought. The basin holds the 3<sup>rd</sup> longest river in Africa which is a source of water for domestic use, irrigation, hydro electricity generation and the cooling of thermoelectric plants.

In particular, Nigeria might be strongly affected because the country is very reliant on the River Niger and its tributaries for hydro electricity generation and thermoelectric cooling. Reports already suggest that drought in the basin has reduced the amount of water available for hydroelectric needs in Nigeria. Proposed developments along the middle and upper Niger such as the construction of new dams will also exacerbate climate change impacts in the basin. In view of this, the study will develop better adaptation measures to help the inhabitants of the basin (Nigerian portion) cope with the impacts of climate change on water and energy supplies in the region using a "climate-water-energy" nexus approach.



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**Afolabi, Oluwabamise Lanre**

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**Degree:** Master of Science | **Field:** Energy and the Environment | **Affiliation at the time of application:** Niger Delta Power Holding Company Ltd., Environment and Community Relations Department, Abuja, Nigeria

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**Host Institution in Germany:** United Nations University, Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES), Dresden | **Host:** Dr Stephan Hülsmann

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## Towards Climate-smart Cocoa (*Theobroma cacao*) Production and Sustainability in Ghana

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In recent times, cocoa (*Theobroma cacao*) production in Ghana has experienced a major decline. Climate change is considered to have aggravated complications in re-establishment due to high rates of cocoa seedling mortality and prolonged droughts. As a rule, climate change studies in Ghana have typically indicated considerable uncertainties about the value of empirical quantities. This makes it difficult to develop future climate scenarios, which in turn indirectly causes uncertainty regarding the costs and benefits of adaptation policies.

To date, existing studies have not extensively investigated how the climate will affect cocoa in terms of physiological processes (e.g. pollination and flowering), disease abundance and pest outbreaks, weed proliferation, water use potential or the rate of (i.e. faster or slower) growth. On the other hand, since real impact projections focus on drivers of production, exploring market demand, tree rejuvenation, pests and diseases, and consumer preferences will also be critical in this case.

During his stay in Germany, Gabriel Antwi-Boasiako and his host will develop a holistic, transdisciplinary model of cocoa system dynamics that can be used for predicting the future performance of cocoa in the face of climate change. They will use Bayesian Networks, a business analysis tool, to establish a robust benchmark for reasoning under uncertainty. This tool is also capable of taking different sources of information into account, including hard data and expert opinions. Its use will help the team make realistic recommendations for future climate projections and adaptation in Ghana's cocoa sector.

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## Antwi-Boasiako, Gabriel

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**Degree:** Master of Science | **Field:** Rural Development and Natural Resources Management | **Affiliation at the time of application:** Sustainable Livelihood Ghana

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**Host Institution in Germany:** Universität Bonn, Zentrum für Entwicklungsforschung ZEF | **Host:** Dr. Eike Lüdeling

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## Accelerating Clean Energy in Indian Cities: Policy and Legal Reforms for Comprehensive Urban Energy Planning and Governance

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Cities are typically 'engines of growth'. The epicentres of this urban growth are primarily found in developing countries, led by India and China. India has a burgeoning urban population: by 2050, India's urbanisation level will reach 55% and its urban population will total 0.9 billion, the second largest in the world. However, cities in developing countries in general and in India in particular have a serious lack of clean energy initiatives and have had little success in their efforts to promote clean energy locally. Indian cities are a complex mosaic of growing population, diverse non-agricultural economic activities, extreme heterogeneity, high demographic flux, migration and inequity, dangerous pollution and energy-related carbon emissions. Yet, policies and programmes for energy efficiency and renewable energy are a top-down affair, without much participation on the part of the municipal governments, whereas local socio-economic and political contexts like payment capability, extent of subsidies, investment willingness, political discourse, public acceptance, future consumption patterns and other such fluid areas have a strong bearing on energy planning.

By focussing on India, this research will produce a deeper understanding of the impact of socio-economic and political factors in policy design by decentralised municipal energy governance, for greater energy efficiency and a higher penetration level of renewable energy technologies in Indian cities. Current initiatives and practices in Germany and other cities will be examined to fill the knowledge gap on the potential impacts socio-economic and

political factors have on clean energy policy-making and implementation schemes and will help Indian policy-makers address the gaps in the current framework of clean energy governance and implementation. It will also pave the way for a more decentralised approach to low-carbon energy planning through greater involvement of municipal governments and further integration into urban energy planning activities. This type of enabling framework highlights multi-pronged approaches and will support the Indian government's recent major efforts to deploy clean energy initiatives - all aimed at the target of generating 175 GW of renewable energy by 2022, including 40,000 MW from rooftop or decentralised solar energy systems, predominantly in urban areas.



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## Basu, Sumedha

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**Degree:** Master of Science | **Field:** Environmental Studies | **Affiliation at the time of application:** Climate Parliament South Asia, New Delhi, India

**Host Institution in Germany:** Wuppertal Institut für Klima, Umwelt, Energie | **Host:** Dr Stefan Thomas

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## Mangrove Degradation and Socioeconomics of the Tanbi Wetland National Park, The Gambia

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Like most countries in West Africa, The Gambia has suffered many climate-induced ecosystem changes. These are even more pronounced in the River Gambia estuary, where long-term hyper-salinity is a major contributor to mangrove degradation and fisheries decline. Located in the Sahelo-Sudanian climate zone, the River Gambia estuary suffers extensive floods during the peak rainy season as well as overwhelming salt intrusions during the peak dry season, leading to insufficient time for colonisation/succession by any given aquatic species. Conservation efforts during the past couple of decades have failed, as vulnerable coastal communities continue their daily socio-economic activities with little or even no hope for better yields. Adam Ceessay plans to use this research to assess the long-term change in mangrove vegetation and the changes in coastal micro-economies and to document local adaptation strategies of mangrove-dependent communities. This research will also provide useful recommendations for sustainable land use, as well as suggest alternative livelihoods for the major socio-economic groups in the wetland.

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## Ceessay, Adam

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**Degree:** Master of Science | **Field:** Climate Change and Tropical Marine Ecology | **Affiliation at the time of application:** Université Felix Houphouët-Boigny, Abidjan, Côte d'Ivoire

**Host Institution in Germany:** Leibniz-Zentrum für Marine Tropenökologie | **Host:** Professor Dr Matthias Wolff

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## Adaptation Needs and Gaps for Nepal: An Assessment to Support Adaptation Action in Nepal and Less Developed Countries (LDC)

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Nepal, a mountainous Less Developed Country, is one of the most vulnerable countries to climate change due to its diverse topography, nature-based livelihoods, and low technical and financial capacity. Due to the limited scientific basis and conceptual ambiguity, it is not possible to assess Nepal's adaptation needs and gaps with certainty. This project will analyse adaptation needs and gaps for Nepal, identify ways to bridge these gaps and draw lessons for other Less Developed Countries in similar circumstances. All available information on impacts, adaptation needs and resources available in the country will be gathered and analysed. For sectors with limited (or no) scientific assessment, analogy studies will be carried out using regions with similar topographic and climatological characteristics. This first-of-its-kind and latest estimation of adaptation needs, available resources and gaps in Nepal will contribute to improved adaptation planning and implementation. This framework could also be applied to other countries with similar circumstances.



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### Chapagain, Dipesh

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**Degree:** Master of Science | **Field:** Climate Change Adaptation | **Affiliation at the time of application:** United Nations Development Programme (UNDP), Kathmandu, Nepal

**Host Institution in Germany:** Climate Analytics gGmbH, Berlin | **Host:** Dr Michiel Schaeffer

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## Setting Sound Institutional Arrangements for Efficiently Handling Climate Finance in Peru

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Climate finance has been largely recognised as a core element in climate discussions. There are two facts related to this element: First Climate finance is growing and secondly there is growing concern about the capacities of developing countries for making efficient use of available resources. In the past few years, the amount of Climate Finance flowing to Peru has increased substantially, and it is expected that it will continue growing in the years to come. Institutions in Peru, however, are not accustomed to handling major investments and this new scenario will confront them with a significant inflow of resources. The way Peru handles those resources will shape its capacity for leveraging additional Climate Finance. Peru therefore needs to improve its capacity for accessing, managing, executing, monitoring and reporting Climate Finance. The very first step in this direction is the establishment of ad-hoc institutional arrangements that are best suited for handling Climate Finance efficiently. The main objective of this project is to develop a proposal for such arrangements.

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## García, Aída Rocío

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**Degree:** Master of Arts | **Field:** Public Management and Environmental Studies | **Affiliation at the time of application:** Ministry of Economy and Finance, Lima, Peru

**Host Institution in Germany:** adelphi, Berlin | **Host:** Dennis Tänzler

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## Policy and Legal Interventions for Carbon Capture and Use in the Extractive Industry in Kenya

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Many of the world's poorest countries possess astounding natural wealth. Paradoxically, those governments that choose to exploit their mineral, oil and gas reserves often find their citizens worse off as a result. This situation is compounded by the additional effects of the extractive industry on the continued deterioration of the environment and the resultant effects of climate change. Kenya is East Africa's largest economy and one of the most successful economies in Sub-Saharan Africa. Its future sustained economic growth will depend on better management of the environment. Cicilia Wangari Githaiga will therefore look into the availability of adequate policy and legal interventions for carbon capture and use in the extractive industry in Kenya. She will undertake this research in anticipation of the problem in Developing Nations. She will investigate the challenges and gaps that exist in the policy and legal frameworks for carbon capture and use in the extractive industry in Kenya. She will also seek to find a balance between the environment and development in the regulation of the industry. Kenya has in place various policy and legal frameworks for regulating, adapting and mitigating the effects of climate change. Cicilia Wangari Githaiga will use these frameworks as points of reference in her investigation of the challenges and gaps in the regulation of carbon capture and use. Furthermore, best practices will be explored which can be adopted by Kenya using selected case studies from Germany as main reference point intended to convince policy makers of the need. Cicilia Wangari Githaiga hopes that her research findings will provide guidance for how the extractive industry in Kenya can play a vital role in achieving environmental sustainabil-

ity and overall climate change mitigation and adaptation within the scope of relevant policy and legal frameworks. Her research findings will provide policy- and decision-makers and industry players, among other stakeholders, guidance on how they can include carbon capture and use in their planning and development goals.



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### Githaiga, Cicilia Wangari

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**Degree:** Bachelor of Laws | **Field:** Law | **Affiliation at the time of application:** National Environment Management Authority, Nairobi, Kenya

**Host Institution in Germany:** Institute for Advanced Sustainability Studies, Potsdam | **Host:** Dr Barbara Olfe-Kräutlein

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## Enhancing of a Prioritization Tool for the Planning of Climate Change Adaptation Measures

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Developing countries frequently have limited financial resources for adaptation. Consequently the choice of measures is critical to getting the most out of the monies invested. There is a need for decision-makers, at both governmental and non-governmental level, to have tools that help them to decide which adaptation measures to implement that are consistent with their financial resources and socio-economic conditions. A first elaboration of such a tool has already been developed by Ms Guillén using the forestry sector of Nicaragua as a case study. The Saaty's Analytical Hierarchy Process was used as the basis for ranking potential adaptation measures, taking into account a catalogue of social, economic, environmental and climate change criteria and indicators. This research project therefore intends to further develop and enhance the existing tool to make it more flexible in terms of governance and geographical areas. It is hoped that by expanding the tool's applicability, this project will contribute to the transferability and robustness of climate change adaptation planning across sectors and regions, especially in Latin America.

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## Guillén Bolaños, Tania Yaoska

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**Degree:** Master of Science | **Field:** Environmental and Land Management | **Affiliation at the time of application:** Centro Alexander von Humboldt, Managua, Nicaragua

**Host Institution in Germany:** Helmholtz-Zentrum Geesthacht, Climate Service Center Germany, Hamburg | **Host:** Professor Dr María Máñez Costa

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## Making Planning for Energy Plant in Contaminated Soil Associated with Former Military Activity in Central Vietnam

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The issue of climate change impacts is extremely serious in Central Vietnam where people are still dealing with the life-and-death effects of war-era environmental contamination. In light of this, remediation activities to expand areas for agriculture, reforestation and cultivation for underprivileged people who are struggling to survive under the pressures of climate change are of strategic importance. This project will identify links between climate change and soil protection. Thi Binh Minh Hoang will combine various types of databases: topography, slope, soil types, weather zones, sprayed areas and types of spray maps, watershed maps, bomb distribution and small topography. Besides exploring the potential for localising contaminated areas, the project will look for affordable strategies by using energy crops, public education and popular perceptions in tandem with historic research to build the knowledge base in preparation of remediation projects in the future.



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### Hoang, Thi Binh Minh

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**Degree:** Master of Science | **Field:** Geography | **Affiliation at the time of application:** Vietnam Academy of Science and Technology (VAST), Mientrung Institute for Scientific Research (MISR), Thua Thien Hue Province, Vietnam

**Host Institution in Germany:** Unabhängiges Institut für Umweltfragen (UfU), Berlin | **Host:** Dr Michael Zschiesche

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## Sino-German Comparative Study of Air Pollution Litigation

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Clean air is essential to the health of human beings and the environment. Germany's successful experience in connection with protecting air quality and reducing pollutants, especially as regards the role that courts and judges have played in these areas, is very helpful for China. Collecting cases and documents in Germany, comparing the criminal, civil and administrative cases involving air pollution in China and Germany, ascertaining similarities and differences between the two countries in air quality protection in judicial terms are essential for judicial work in China. Lastly, the project will promote work being done to improve the judicial rules governing air pollution from the perspective of judicial organs, and affect legislation and administrative law enforcement from the judicial perspective so that problems and experience arising in connection with judgments can be subsequently reflected in legislation and regulations.

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## Liu, Huihui

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**Degree:** Master of Civil and Commercial Law | **Field:** Environmental Law | **Affiliation at the time of application:** The Supreme People's Court of China, Environment and Resources Division, Beijing, China

**Host Institution in Germany:** Universität Münster, Institut für Umwelt- und Planungsrecht | **Host:** Professor Dr Sabine Schlacke

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## Readiness of Mexico's Emissions Trading System and its Linking Potential with other Markets: Tackling Political Economy Challenges and Learning Lessons from Germany and the European Union

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With the expansion of emissions trading systems worldwide, the linking of these markets is developing into an increasingly relevant policy option for realising a global carbon market. This project will study the prospects and readiness of Mexico's Emissions Trading System and its potential for linking with other markets. Mariza Montes de Oca will conduct research at International Carbon Action Partnership to analyse and draw lessons from the features and implementation of the EU Emissions Trading System in Germany and the European Union. Mariza Montes de Oca will also analyse the prospects for linking carbon markets with other instruments, such as carbon taxes. One of the innovations of the Mexican carbon tax is that emissions reductions can be used as credits to offset tax liability. This subject is relevant for Mexico and other countries that already have a carbon tax in place. Germany's experience with the implementation of an Emissions Trading System and the active role it is playing in the reform of the Emissions Trading System within the EU can make a significant contribution to Mexico's climate protection efforts.



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**Montes de Oca León, Mariza**

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**Degree:** Bachelor of Arts | **Field:** Economics | **Affiliation at the time of application:** Centro Mario Molina, Mexico City

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**Host Institution in Germany:** International Carbon Action Partnership (ICAP), Berlin | **Host:** Dr Constanze Haug

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## Components for an Emission Trading Scheme in Mexico, a Policy Review of Mitigation Policies and Suggestions for Achieving their Targets

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In 2012, Mexico's Congress enacted the General Climate Change Law establishing a series of policy and planning instruments to contribute to the design of the national climate change policy. The General Climate Change Law also sets the indicative objective or aspirational goal of reducing Mexico's emissions by 30% over the baseline scenario by the year 2020, as well as achieving a 50% reduction in emissions by 2050, as compared with emission levels in the year 2000. To achieve these goals, the federal government has started to build the institutional, human resource and technological capacities that would underpin such reduction goals. The project aims to learn about the EU Emissions Trading Systems and its implementation in Germany, with a main focus on Monitoring, Reporting and Verification. Besides gaining an overview of the EU Emissions Trading System the research will cover a comparison of Germany's and Mexico's mitigation policies. As this research is focused on the Emissions Trading System Sector, Elizabeth Mosqueda will conduct a general analysis of the broad range of measures covered by the Emissions Trading System, from its main Monitoring, Reporting and Verification components to the details of the Emissions Trading System. In addition, data collection and reporting from other sectors/schemes will make it possible to provide recommendations for bringing Mexico's policies into line with the country's climate change policy. The results of this study will be submitted to the Ministry of Environment and Natural Resources of Mexico.

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## Mosqueda, Elizabeth

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**Degree:** Master of Engineering | **Field:** Chemical Engineering | **Affiliation at the time of application:** Secretariat of Environment and Natural Resources (Environmental Ministry), Mexico

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**Host Institution in Germany:** Umweltbundesamt, Deutsche Emissionshandelsstelle, Berlin | **Host:** Dr Jürgen Landgrebe

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## Vulnerability to Flooding in Bukavu Urban Areas, Democratic Republic of the Congo

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The evidence released by the Intergovernmental Panel on Climate Change (IPCC) in its fourth assessment report indicates that the Earth's climate is warming and that it is very likely that heavy precipitation events will increase in frequency over most areas. The climatic projections put the world's low- and middle-income countries on red alert to be the most affected by climate change-related extreme weather events. Consequently, reducing vulnerability to climate change must be made a priority in these countries. In these low- and middle-income countries, urban areas require more attention. They are densely populated and exhibit a high level of economic activity. This increases the number of people and assets at risk (exposure). Globally, most of the population growth in the coming decades is expected to take place in urban areas. Unfortunately, the sealed surfaces in the cities will exacerbate flood risk due to reduced infiltration and increased runoff.

This study will investigate the vulnerability of Bukavu's urban community to flood events. Different methodological approaches are envisioned, among them the mapping of flood-prone areas and the identification of social and environmental factors that increase the susceptibility of the people and assets to flood risk. The results of the study will provide orientation for thematic adaptation strategies and guide actions towards exploiting potential opportunities emanating from the changing climate, such as the opportunity for climate change to influence development priorities: a first step toward building cost-effective strategies and integrated institutional capacity in developing countries for responding to climate change.



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## Muliro, Mashauri

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**Degree:** Bachelor of Science | **Field:** Disaster Management and Climate Change | **Affiliation at the time of application:** Ministry of Disaster Management and Refugee Affairs, Rwanda

**Host Institution in Germany:** United Nations University, Institute for Environment and Human Security (UNU-EHS), Bonn | **Host:** Dr Matthias Garschagen

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## Women's Access to and Control over Land and Natural Capital: Implications on Food Security and Adaptation to Climate Change in Cameroon

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Cameroonian women constitute 70% of the country's agricultural work force. They are already experiencing the impacts of climate change which are severely affecting their livelihoods (mostly rain-fed agriculture). Although women are important food producers and providers, they presently have limited access to and control of resources. Women's lack of secure land tenure places further strains on livelihoods and food security, undermining their capacity to adapt to climate change.

Innocent Ngiehnu Nchu aims to provide empirical evidence to support how secure and equitable access to and control over land and natural capital reduce vulnerability, achieve gains in agriculture and food security, and improve climate change adaptation in Cameroon.

The results will guide policy on how women could be supported to make better decisions on how to adapt to climate change and how social differentiation and changing gender relations can play a major role in the development and transformation of societies that are able to adapt to climate change.

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## Nchu, Innocent Ngiehnu

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**Degree:** Bachelor of Science | **Field:** Agricultural Sociology | **Affiliation at the time of application:** Konye Municipal Council, Cameroon

**Host Institution in Germany:** Technische Universität Dresden, Institut für Internationale Forst- und Holzwirtschaft, Tharandt | **Host:** Professor Dr Gerald Kapp

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## Assessing Rural Peoples' Intention to Adopt Sustainable Forest Use and Management with Respect to Climate Change Adaptation in South Africa

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In South Africa as elsewhere in most African countries, community-based participatory forest management is being promoted as a key climate change adaptation initiative. Such initiatives are aimed at enhancing the sustainability of rural households' livelihoods and livelihood resilience to climate variability and change. However, the implementation of community participatory forest management initiatives in South Africa has experienced several pitfalls. This is largely due to weak adoption of sustainable forest use and management practices by the local people. Considerable gaps in knowledge exist, particularly with respect to psychosocial factors that influence rural people's intentions to adopt sustainable forest use and management practices in response to climate change and environmental shocks. The present research aims to fill this gap by drawing on a widely used psychosocial model, the theory of planned behaviour, to identify psychosocial factors that determine individuals' intentions to engage in sustainable forest use and management. This study aims to provide government and stakeholders insights into the underlying psychological factors that influence rural people's intentions to engage in sustainable forest use and management. These insights can be used to adjust current policies and develop new initiatives to facilitate implementation of effective and sustainable forest-based climate change intervention initiatives in rural communities of South Africa



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Ofoegbu, Chidiebere

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**Degree:** Master of Science | **Field:** Forest Management and Climate Change | **Affiliation at the time of application:** University of Pretoria, Pretoria, South Africa

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**Host Institution in Germany:** United Nations University, Institute for Environment and Human Security (UNU-EHS), Bonn | **Host:** Professor Dr Chinwe Ifejika Speranza

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## Assessing the Role and Potential of Ecoparks towards a Low Carbon Economy

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The window for action regarding climate change is rapidly closing. Therefore, innovative solutions for mitigation and adaptation are urgently needed. In this context, science and technology parks with environmental features (ecoparks) have enormous inherent potential for meeting society's need for a low-carbon economy through innovation – especially in Triple Helix arrangements among companies, governments and academia. Unfortunately, such settings still are seldom. This study will include field research in Germany and other European countries, as well as an online survey with parks worldwide to investigate their characteristics, technologies, enablers and obstacles. The goal is to analyse, compile and facilitate access to information so that key players in their roles as university managers, business executives and government authorities get to know and be inspired to develop projects for mitigation, adaptation and biodiversity protection in their own context.

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## Pereira Ramos, Diego

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**Degree:** Master of Business Administration | **Field:** Environmental Management | **Affiliation at the time of application:** Sao Paulo Business Administration School, Getulio Vargas Foundation (FGV), Sao Paulo, Brazil

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**Host Institution in Germany:** Fachhochschule Trier, Institut für angewandtes Stoffstrommanagement, Birkenfeld | **Host:** Professor Dr Peter Heck

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## The Effectiveness of Climate Protection Policies in the Context of International Policy and Legal Transfer

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Global climate change policy is primarily developed by a multilateral system that focuses on finding solutions to the symptoms of environmental degradation, including climate change, but not the original problems themselves, i.e., persisting global patterns of production and consumption. Moreover, these multilateral policies have to prove their effectiveness when implemented at national level. One of the problems that arise in this respect is that these policies are generally transferred to other countries – especially to developing countries– using a *top-down* approach and their implementation depends on these countries' capacity and will to implement them. This research project aims to strengthen policy effectiveness at national level, using the example of the institutional and legal framework of Peru, by finding a method of comprehensive policy creation and transfer, incorporating the needs of public and private actors, including strong communication strategies and capacity-building at schools, universities and professional levels.



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**Pinto Bazarco, Jose Felix**

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**Degree:** Master of Law | **Field:** Law and Policy | **Affiliation at the time of application:** Ministry of Foreign Affairs, Lima, Peru

**Host Institution in Germany:** Freie Universität Berlin, Forschungszentrum für Umweltpolitik | **Host:** Privatdozentin Dr. Heike Walk

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## From Agro and Municipal Organic Wastes to Bio-coal: A Complete Value Chain Analysis for Climate Change Mitigation in Nepal

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More than 60% of industrial energy in Nepal is derived from coal that is severely impacting the environment. Nepal has some sporadic deposits of low-grade lignitic coal and primary production of coal resources in the country is about 5% of total annual coal imports that amount to €9.3 million. CO<sub>2</sub> emissions from burning coal in industries account for 24% of the total CO<sub>2</sub> emissions in Nepal. Moreover, Nepal is an agricultural country and its potential production of agriculture residues is estimated at 23 million tonnes for the year 2011/2012. In addition to this, according to the Central Bureau of Statistics, Kathmandu Metropolitan City alone generated 457 metric tonnes of solid waste per day in the fiscal year 2012/2013, while the total amount of waste generated by the other 58 municipalities was around 670 metric tonnes per day. Of the total solid waste generated on a daily basis in Kathmandu Metropolitan City, 63.2% is organic while plastic, paper, and glass constitute 10.8%, 9% and 5.4% of the solid wastes respectively. These wastes are directly dumped into dumping zones without any segregation. Hence, the broad objective of this project is to enhance knowledge and understanding regarding the entire value chain nexus governing the conversion of agro and municipal organic wastes into bio-coal that is carbon neutral. The project will make it possible to understand the procurement and processing of raw materials, industrial conversion processes, human resource utilisation, marketing, institutional linkages, economic analysis and subsequent environmental protection. Moreover, the project will serve

to identify the subsequent opportunities and challenges for the project's execution in Nepal.

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## Poudyal, Shalabh

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**Degree:** Master of Business Administration | **Field:** Biomass Engineering | **Affiliation at the time of application:** People, Energy and Environment Development Association (PEEDA), Kathmandu, Nepal

**Host Institution in Germany:** SunCoal Industries GmbH, Ludwigsfelde | **Host:** Dr. Tobias Wittmann

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## A Regional Reanalysis for Madagascar, the Mascarene Islands and the surrounding Indian Ocean

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Tsinampoizina Marie Sophie Randriamahefasoa specialises in the climate of Madagascar and its surrounding area and proposes to contribute to the regional climate services of this region. Her project will set up a regional re-analysis system for Madagascar, the Mascarene Islands and the surrounding Indian Ocean. She will use the Consortium for Small-scale Modelling regional weather forecast model, which was developed by several European national meteorological agencies. Her work will begin with the region-specific set-up and a review of the Consortium for Small-scale Modelling model. A one-year test will be performed with the climate data provided by the region's national meteorological services. Tsinampoizina Marie Sophie Randriamahefasoa will incorporate satellite data for evaluation towards the end of the project. The expected results are climate datasets with a higher resolution and better representation of severe events than the existing datasets. The new datasets will be valuable for a wide range of applications – in particular, research that focuses on local climate and regional climate change impacts.



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**Randriamahefasoa,  
Tsinampoizina Marie  
Sophie**

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**Degree:** Master of Science | **Field:** Ocean and Climate Dynamics | **Affiliation at the time of application:** University of Cape Town, South Africa

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**Host Institution in Germany:** Universität Bonn, Meteorologisches Institut | **Host:** Professor Dr Andreas Hense

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## Development of a Methodology for Evaluating Energy Efficiency and Thermal Comfort Measures at the Uzbekistan's Rural Housing Design Level

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Uzbekistan is the second-largest producer of CO<sub>2</sub> (about 110 million tonnes of CO<sub>2</sub> per year) in Central Asia, after Kazakhstan. Uzbekistan's continental climate leads to high energy consumption from residential heating, especially in badly insulated rural houses. As part of the government's Rural Housing Programme, more than 10,000 new houses are built annually. This programme uses three standard designs: 3-, 4- and 5-bedroom rural houses.

In light of this, the Ministry of Economy of the Republic of Uzbekistan requested the Energy Efficiency and Renewable Energy Department at the Institute of Energy and Automation to develop sets of energy efficiency measures for 3-, 4- and 5-bedroom rural houses. However, the Institute of Energy and Automation doesn't have any methodology for analysing or evaluating the energy efficiency of the housing designs to be used for rural housing. Therefore this collaborative project aims to develop measures to improve energy efficiency and thermal comfort in typical rural houses in Uzbekistan on the basis of practical experience gathered in Germany.

The project intends to acquire technical knowledge from the Institute for Building Climatology of the Technical University of Dresden on energy efficiency and thermal comfort analysis methods by working on two real buildings. The strategic aim is to offer Uzbek families a more sustainable alternative that will help them improve their living conditions and avoid excessive energy consumption in their houses. Providing solutions for thermally comforta-

ble and energy-efficient houses to the people of the Uzbek regions will increase their motivation for regional development and promote climate protection and reduced energy consumption. The ultimate aim of this project is to acquire specialist knowledge about these solutions and transfer it to the rural housing sector. A second objective is to disseminate energy-efficient methods and solutions to similar regions in Uzbekistan.

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## Salikhov, Pulat

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**Degree:** Master of Engineering | **Field:** Energy Efficiency in Buildings | **Affiliation at the time of application:** Uzbekistan Academy of Sciences, Institute of Energy and Automation, Tashkent, Uzbekistan

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**Host Institution in Germany:** Technische Universität Dresden, Institut für Bauklimatik | **Host:** Professor Dr John Grunewald

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