Alexander von
HUMBOLDT
STIFTUNG

Fellows 2025/2026

International Climate Protection Fellowship

Stipendiatinnen und Stipendiaten 2025/2026

Internationales Klimaschutzstipendium

Exzellenz verbindet –
be part of a worldwide network.

A livelihood and farming systems approach to support food security policies under climate change in developing countries

Dr Mariam Abdul Gani Abbas

Degree: PhD | Field: Agricultural Economics, Agricultural Policy, Agricultural Sociology

Home Institution: Observatório do Meio Rural, Maputo, Mozambique | **Host Institution in Germany:** Technische Hochschule Köln, Institut für Technologie- und Ressourcenmanagement in den Tropen und Subtropen (ITT), Köln | **Host:** Prof. Dr Sabine Schlüter

Mariam Abdul Gani Abbas develops a systematic framework with regard to sustainable livelihoods and farming systems approaches that translates research into policy recommendations.

The climate crisis negatively impacts the farming sector, exposing the weaknesses of food systems both globally and locally. Africa is the region with the highest prevalence of hunger and food insecurity. In Mozambique, it chronically affects 24% of all households, mainly in regions where the most food is produced. Farmers are considered to be the most vulnerable to food insecurity, because they are disproportionally impacted by climate change. The continuing population growth, low land productivity, poverty, food insecurity and malnutrition have been exacerbated by climate change and will significantly affect the dynamics of livelihoods and farming systems in the future. Sustainable livelihood and farming system approaches have emerged as crucial fields in understanding the complexities of human well-being, economic and social development and environmental sustainability in such rural settings. However, the effective translation of research findings into policies remains a challenge.

Dr Mariam Abdul Gani Abbas seeks to address this gap by establishing a systematic framework, identifying and mapping livelihood types at a national level and exploring the relationship between the livelihood types and farming systems. Mariam wants to look at the role of livelihood and farming systems when it comes to food insecurity, as well as the effects of climate change and population growth on the choice of livelihood and farming systems, food security and biodiversity. Her goal is to contribute to synthesizing sustainable livelihoods and farming systems and transform them into evidence-based outcomes for policy recommendations. Mariam Abdul Gani Abbas is supported by the Institute for Technology and Resources Management in the Tropics and Subtropics (ITT) at the Technische Hochschule in Cologne.

Mangrove ecosystems as climate guardians

Shamira Yakubu Abdulai

Degree: Master of Science | Field: Ecology and Biodiversity of Animals and Ecosystems, Organismic Interactions

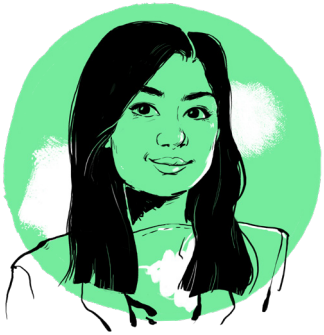
Home Institution: Fisheries Commission, Accra, Ghana | **Host Institution in Germany:** Leibniz-Zentrum für Marine Tropenforschung (ZMT), Bremen | **Host:** Prof. Dr Martin Zimmer

Shamira Yakubu Abdulai wants to investigate the role of mangroves in climate change and further sharpen their role as climate guardians.

Mangrove ecosystems, recognized for their ecological importance, are increasingly vital in climate change discussions. Mangrove ecosystems, widely distributed along tropical and subtropical coastlines, stand at the nexus of ecological importance, climate change resilience, and community livelihoods. These unique coastal habitats, characterized by salt-tolerant trees and shrubs, play a pivotal role in regulating global carbon cycles, preserving biodiversity, and providing essential ecosystem services. Mangrove ecosystems having the ability to sequester carbon, buffer coastlines against storm surges, and nurture diverse marine life. They emerge as key players in climate change resilience.

Shamira Yakubu Adulai's research aims to comprehensively investigate the role of mangroves in climate change mitigation and adaptation, specifically focusing on carbon sequestration, biodiversity conservation, and community resilience. She has identified current knowledge gaps such as the varying carbon sequestration rates across different mangrove ecosystems, the intricate relationship between climate change and biodiversity within them, as well as the effectiveness of community-based strategies in enhancing climate resilience. Her research will adopt a holistic approach encompassing field surveys, remote sensing techniques, ecological monitoring, and community engagement. Her goal is to delve deeper into the role of mangrove ecosystems as climate guardians and assess their potential as adaptive solutions in the face of a changing climate. Shamira will be supported by the Leibniz Centre for Tropical Marine Research in Bremen.

Green hydrogen market in Pakistan: barriers, opportunities, and recommendations for commercialization



Afaf Ali

Degree: Master of Science | Field: Political Science

Home Institution: Renewables First, Islamabad, Pakistan | **Host Institution in Germany:** Öko-Institut e.V., Berlin | **Host:** Dr Roman Mendelevitch

Afaf Ali seeks to find out, how Pakistan could become a key player in the global green hydrogen market.

The Paris Agreement provides for a net-zero pathway to limit the increase in the global average temperature to 1.5 ºC by 2050. A fundamental element in the global shift towards decarbonization and net-zero pathways is developing a hydrogen-based economy. The biggest challenge remains the cost of green hydrogen. Pakistan is positioned geopolitically in a region abundant with renewable energy (Wind + Solar Photovoltaics) potential, particularly in coastal areas. It appears to be well-positioned to produce green hydrogen at low-level cost and become a key player in exporting green hydrogen and Power-to-X globally. The country plans to develop a green hydrogen strategy by 2025 but faces the challenge of overcoming political-economic factors. There is a significant knowledge gap between research, development, implementation, and policymaking. At this point, research can be crucial to identify improvements for a successful integration of green hydrogen.

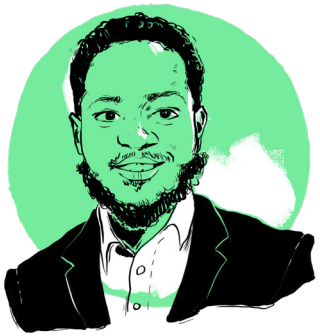
To bridge this gap, Afaf Ali aims to conduct an in-depth study of Pakistan's potential in hydrogen-based economy. The research will analyze the techno-economic viability of green hydrogen and its derivatives in Pakistan in the context of the global green hydrogen landscape. The geopolitical import-export spectrum will play a pivotal role in shaping the dynamics of global trade. Her research will examine the intricate details encompassing both the technological and commercial facets associated with the development and expansion of the green hydrogen market. It will provide key insights into Pakistan's green hydrogen techno-commercial landscape and target policymakers, industry stakeholders, and investors interested in developing a hydrogen ecosystem. Afaf will be supported by Öko-Institut e.V. in Berlin.

Climate-induced human mobility and psychological resilience in Ghana

Darius Saviour Ankamah

Degree: Bachelor of Science | Field: Human geography

Home Institution: Alliance for Youth in Climate Change Action – AYCCA, Wa, Ghana | **Host Institution in Germany:** German Institute of Development and Sustainability (IDOS), Bonn | **Host:** Dr Susan Ekoh



Darius Saviour Ankamah wants to achieve a deep understanding of psychological effects and coping strategies caused by climate-induced human mobility.

As climate-related events intensify, understanding their socio-psychological impacts becomes more and more important. Climate-induced human mobility is often characterized by psychological distress, identity shifts, and feelings of vulnerability – psychological impacts which are often overlooked. The concept of "ecological grief" highlights the emotional strain, but nuances in the experiences of identity shifts and coping mechanisms remain relatively unexplored. The process of human mobility often leads to the reshaping of self-identities. It is unknown how persistent such identity shifts are over time and how they intersect with psychological resilience. There is a need for a nuanced understanding of how different coping strategies operate within specific cultural and societal contexts, as well as of the ways in which communities come together to provide emotional, social, and material support for psychological distress.

Darius Saviour Ankamah aims to illuminate this gap. In a first step, he plans to analyze the situation and background, including the existing legal frameworks regulating climate change, as well as ongoing challenges and progress made in Ghana in the field. Then, he will use oral history and action research. His focus group will be consisting of 150 families in Keta, Ghana, who are affected by the impacts of climate-induced human mobility. By dissecting coping mechanisms, and community dynamics, Darius hopes to contribute to fostering resilience and adaptation strategies for climate-induced human mobility. This understanding is crucial for sustainable support and integration and contributes to a holistic response to the challenges. Darius will be supported by the German Institute of Development and Sustainability in Bonn.

Urban vacant land as driver for climate adaptation and biodiversity

Prof. Carlos Manuel Calzadilla Guerra

Degree: Master of Science | Field: Urban Planning and Development, Landscape, Traffic, and Infrastructure Planning

Home Institution: Escuela de Arquitectura, Universidad Catolica Andres Bello, Caracas, Venezuela |
Host Institution in Germany: Ecologic Institute, Berlin |
Host: Ewa Iwaszuk

Carlos Manuel Calzadilla Guerra seeks to develop guidelines to repurpose urban vacant land to boost biodiversity and mitigate climate change.

Latin American cities are facing the effects of climate change in increasing social inequality and disparity. Urban vacant land is to be found in most of these cities in a significant part of the region. This term applies to unused or abandoned urban land and urban wild green spaces regardless of its ownership, except for protected land and green infrastructure. Urban vacant land can be repurposed, and if it is done correctly, it has the potential to improve the cities' capacities to address climate and society related challenges. Studies have shown that repurposed urban vacant land worldwide can help mitigate climate change by enhancing green infrastructure and ecosystem services. It also aids climate adaptation and resilience by controlling the heat island effect managing stormwater, conserves and improves biodiversity in ecosystems through new habitats, reconnects citizens with nature, serves community needs and contributes to community development.

Carlos Manuel aims to develop guidelines and policy instruments that effectively address urban vacant land as an opportunity for climate change adaptation or mitigation. Furthermore, biodiversity can be increased by the implementation of nature-based solutions, e.g. riverbank parks, coastline parks, urban canopies, retention ponds or bioswales. This might help to tackle some of the challenges that Latin American cities are facing, and the results have the potential to be transferable to other Latin American cities. Carlos will be supported by the Ecologic Institute in Berlin.

Plastic credits as a tool to finance the abatement of the plastic pollution crisis

Raghuvir Raghav Das

Degree: Master in Public Policy | Field: Economic Policy, Applied Economics

Home Institution: South Pole, Gurugram, India |
Host Institution in Germany: Wuppertal Institut für Klima, Umwelt, Energie gGmbH, Wuppertal |
Host: Dr Imke Schmidt, Prof. Dr Henning Wilts

Raghuvir Raghav seeks to study plastic credits in the global South and how this tool could create new opportunities for financing the fight against plastic pollution.

Plastic waste is found everywhere from the deepest ocean depths to the highest mountain ranges and creates not only a pollution issue, but also a public policy issue. Plastic credits can be an important tool: plastic polluters pay to compensate for the pollution caused by their plastic footprint by purchasing plastic credits for financing the collection or recycling of plastic waste. Although they have a very visible effect on plastic waste, they are still regarded as limited in their ability to generate the large-scale funding that is needed to significantly impact waste management systems in countries such as India. In addition, they can lack true circularity, leading to billions worth of materials leaving the economy in the form of carbon emissions.

Raghuvir Raghav Das aims to study the acceptance of plastic credits in the global South as a viable tool for the financing of plastic waste management. He wants to focus on points of criticism, e.g. the risk of greenwashing, lacking traceability and trust issues in the crediting process. Hence, Raghuvir aims to understand the factors which contribute to these trust issues as well as the robustness of plastic credits for all stakeholders including buyers, suppliers and beneficiaries. Raghuvir wants to determine if plastic credits can be applied as an Internationally Transferred Mitigation Outcome under Paris Agreement Article 6 framework. Also, he seeks to evaluate if they can create new opportunities for alternative financing in India and the global South for social inclusion of informal waste workers, environmental pollution abatement and waste management infrastructure. Raghuvir will be supported by the Wuppertal Institut für Klima, Umwelt, Energie in Wuppertal.

The impact of climate change on Indian Himalayan peatlands

Samrat Deb

Degree: Master of Science | Field: Ecology and Biodiversity of Plants and Ecosystems

Home Institution: The Climate Group, New Delhi, India | **Host Institution in Germany:** Institute of Botany and Landscape Ecology, Universität Greifswald, Greifswald | **Host:** Prof. Dr Gerald Jurasinski

Samrat Deb aims to assess the extent of peatland distribution in the Indian Himalayans and investigate how changing climatic conditions are affecting these ecosystems.

Peatlands only cover approximately 3% of the Earth's land area, yet they store twice as much carbon as all the world's forests combined. Globally distributed, peatlands are characterized by waterlogged conditions that impede the decomposition of organic matter. This results in the accumulation of peat – a carbon-rich organic material. This exceptional carbon sequestration potential positions peatlands as integral players in mitigating climate change. However, this is increasingly threatened by climate change. Rising temperatures, altered precipitation patterns, and increased frequency of extreme weather events are disrupting the delicate balance of these ecosystems. Especially thawing permafrost is a looming threat as it accelerates the release of stored carbon, further contributing to greenhouse gas emissions. Indian peatlands are an underexplored domain, especially when it comes to specific flora and fauna and their ecological interactions.

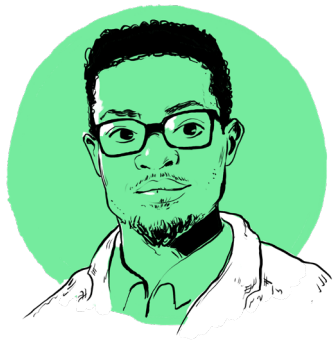
Samrat Deb plans to investigate how changing climatic conditions are affecting peatland ecosystems. He wants to map peatlands in the Himalayan region, using remote sensing analysis as well as ground truthing to estimate the extent of peatland distribution. Then, he intends to examine the impact of climate change by using climate change models to simulate potential impacts and to project future scenarios, to anticipate challenges and guide the development of effective adaptation strategies. This way, he aims to compile a comprehensive peatland database and achieve a quantification of predicted impact of climate change on Indian Himalayan peatlands, to make the development of effective conservation strategies possible. Samrat's research will be supported by the Institute of Botany and Landscape Ecology of Universität Greifswald.

Sustainable agriculture in Burkina Faso and community-centric practices

Wenmanegda Elie 2E Jumeau Dipama

Degree: Bachelor of Science | Field: Agricultural Economics, Agricultural Policy, Agricultural Sociology

Home Institution: Green Field Consortium, Ouagadougou, Burkina Faso | **Host Institution in Germany:** Centre for Rural Development, Humboldt-Universität, Berlin | **Host:** Dr Silke Stöber



Wenmanegda Elie 2E Jumeau Dipama seeks to implement measures to enhance sustainable agriculture in Burkina Faso.

Burkina Faso faces challenges from climate change, threatening its rich agricultural heritage. To mitigate the effects of climate change, it is necessary to implement resilient agriculture to counter climate impacts on productivity. To adopt sustainable agriculture measures widely, it is important to develop community-based education. Also, it is essential to promote awareness with regard to carbon offset. Wenmanegda Elie 2E Jumeau Dipama's project advocates for sustainable practices like agroforestry, water-saving techniques, and resilient agriculture. He hopes to help increase the adoption of sustainable agriculture in Burkina Faso, improving crop yields and income. Another outcome he aims to achieve is to enhance awareness of carbon offsetting in agriculture and encourage environmentally conscious practices. The improvement of health and biodiversity of terrestrial ecosystems through agroforestry should be achieved as well.

To achieve these goals, Wenmanegda wants to introduce localized training, linking agriculture practices to carbon reduction. Therefore, he targets collaborations with both Greening Africa Together and Seminar für Ländliche Entwicklung at Humboldt University in Berlin, who support his research. Greening Africa Together is an international association fostering partnerships for climate change and sustainable development, for whom he has coordinated several pilot projects in Burkina Faso in the past. Through this partnership, Wenmanegda aims to conduct specialized training sessions for local trainers and empower them to communicate the benefits of climate-resilient agriculture. By this train-the-trainer-program the realization of a multiplier effect is intended to promote sustainable agriculture.

Towards a better reality: Addressing climate change through sustainable waste management in Uganda's cities

Brenda Komugisha

Degree: Master of Science | Field: Architecture, Building and Construction History, Building Research, Resource, Economics in Civil Engineering

Home Institution: Office of the Prime Minister, Kampala, Uganda | **Host Institution in Germany:** Institute of Waste Management and Circular Economy, Technische Universität Dresden, Pirna |
Host: Prof. Dr Christina Dornack

Brenda Komugisha aims to apply Germany's best practices to improve waste management in Ugandan cities.

Uganda's rapid urbanization, population growth and struggles with waste management have resulted in water and air pollution, traffic congestion, flooding, and health related problems in cities such as Kampala. Only about 40 to 50 % of waste is collected and transported to an authorized landfill site, which lacks proper sanitary conditions and has reached its maximum capacity. The remaining 60 to 50 % of generated waste is not taken care of and has led to poor sanitation, increased pollution, soil degradation, and frequent blockage of sewers, resulting in floods. Additionally, waste is a direct contributor of greenhouse gases such as carbon dioxide, methane and nitrous oxide, which lead to global warming. Waste management has a variety of impacts related to climate change, one of the most pressing global challenges of our time, which requires national and international cooperation to mitigate its effects and improve sustainability.

Brenda Komugisha's research aims to improve waste management practices in Uganda's cities, by utilizing Germany's expertise in waste management. Learning from successful waste management practices in Germany and applying this knowledge in Uganda, she aims to develop sustainable solutions and to contribute to the global effort to combat climate change, protect ecosystems, and promote sustainable development. This includes interviews and surveys with waste management experts and officials in Germany to understand best practices, analysis of waste management documents in Germany and Uganda, as well as telephone interviews and email surveys with stakeholders in Uganda to understand the current practices and challenges. Brenda will be supported by the Institute of Waste Management and Circular Economy in Pirna, a branch of Technische Universität Dresden.

Giving plastic pollution a purpose

Thaiane Fatima Maciel dos Santos

Degree: Bachelor of Science | Field: Urban Planning and Development, Landscape, Traffic, and Infrastructure Planning

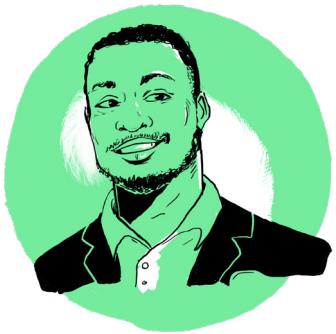
Home Institution: Canal Novo Mundo, Rio de Janeiro, Brazil | **Host Institution in Germany:** natureplus e.V., Neckargemünd | **Host:** Tilmann Kramolisch

Thaiane Fatima Maciel dos Santos' goal is to reduce single-use plastic, promote recycling and the circular economy, and raise consumer awareness of plastic usage.

Plastic debris is currently the most abundant type of litter in the ocean, constituting 80 % of all marine debris. This leads to environmental challenges, as well as health risks. Plastic pollution has far-reaching impacts on the environment, human health, and marine ecosystems. Efforts intended to tackle the plastic pollution problem are either focused on using less, recycling plastic in products, or collecting plastic. The increasing plastic waste pollution has made plastic recycling a crucial step towards sustainable development. Especially in developing countries such as Brazil, innovative ways to recycle plastic can create job opportunities and address water-related negative impacts resulting from climate change, such as droughts or floods.

As part of the circular economy vision, Thaiane Fatima Maciel dos Santos' project aims at local communities to combine strategies and work towards a closed loop of plastic production, consumption and recycling: Volunteers and locals could collect plastic as a part of a reward system. The plastic would then be sorted and transported to recycling plants where it would be made into fibers. New products could be manufactured such as a range of products that solve water related problems and have an impact on water ecosystems. Alternatively, various models for recycling collected waste could be explored, focusing on oceanic or inland environments with significant, consistent plastic inflows. The project potentially targets both production and lifecycle disposal and could be added to address the design of reusable and recyclable products and materials in the tentative agreement. This way, Brazil can reduce its reliance on virgin plastic, create jobs, and promote sustainability. Thaiane's project will be supported by Natureplus e.V. in Neckargemünd.

Enhancing mobility as climate mitigation strategy



Manuel Nii Martey Mensah

Degree: Master of Philosophy | Field: Urban Planning and Development, Landscape, Traffic, and Infrastructure Planning

Home Institution: National Road Safety Authority, Cape Coast, Ghana | **Host Institution in Germany:** University of Kassel | **Host:** Prof. Dr Angela Francke

Manuel Nii Martey Mensah's goal is to draw insights from comparing measures for sustainable mobility at the University of Kassel and the University of Cape Coast.

In dealing with the threats of CO2 emissions, walking, cycling, and micromobility are at the frontier of promoting and improving social, environmental, and economic sustainability, and enhancing the quality of life. While net zero carbon emissions are a goal for some countries, Africa is developing a road infrastructure that prioritizes cars. Against this background, the government of Ghana on 1st February 2024, began the implementation of the Emission Levy Act 2023. It imposes an annual emission levy on vehicles to promote the adoption of environmental-friendly technology and green energy contributing to enhanced environmental management including the control of air and water pollution.

In contrast to the national level, universities are often role models of sustainable development. Manuel Nii Martey Mensah aims to compare two university cities, Cape Coast in Ghana, and Kassel in Germany, due to their similar cultural and educational significance and recent joint efforts. Manuel strives to assess the measures the universities have each taken to promote sustainable mobility and transfer insights from Kassel to Ghana. He seeks to investigate the level of readiness of members of the University of Cape Coast to adopt eco-friendly options for commuting, and which measures could be used to upscale eco-mobility from being a campus concept to an urban concept. To achieve this, he will use an embedded mixed methodology approach, combining both qualitative and quantitative methods. Of course, Manuel will be supported by the University of Kassel in Kassel.

Balancing the tradeoffs between energy transition and economic development in Africa

David Omata

Degree: Master of Science | Field: Statistics and Econometrics

Home Institution: The Nigerian Economic Summit Group, Abuja, Nigeria | **Host Institution in Germany:** Africa Policy Research Institute, Berlin | **Host:** Dr Grace Mbungu

David Omata aims to offer practical policy solutions for African countries pursuing economic growth while achieving clean energy and climate goals.

There have been many innovations in renewable energy, which promote energy transition. However, achieving clean energy and climate protection goals is being hindered by the drive to promote economic activities. Thus, the expansion of industry and economy could jeopardize attempts to transition to more economical and sustainable energy sources. The African continent is particularly susceptible to these tradeoffs due to its heterogeneous socioeconomic environments. Africa is especially vulnerable to climate change making it even more necessary to coordinate economic growth with environmental practices and energy production/consumption. Various efforts have been made to investigate the complication of simultaneously achieving the sustainable development goals, including some specific studies that analyze the relationship between energy and environment and the sustainable development goals in regard to affordable and clean energy, decent work and economic growth and climate action.

David Omata's study aims to add to the corpus of knowledge by providing essential practical steps and valuable policy recommendations for African countries facing these tradeoffs. He wants to achieve a detailed knowledge between the above-mentioned sustainable development goals in Africa, incorporating global best practices. He also seeks to compose a policy framework tailored to the unique African challenges and opportunities, as well as recommendations to guide the different stakeholders. David's study will be supported by the Africa Policy Research Institute in Berlin.

Decarbonizing Brazilian public transport

Gabriel Pabst da Silva

Degree: Master of Science | Field: Energy Process Engineering

Home Institution: Rio de Janeiro City Hall, Rio de Janeiro, Brazil | **Host Institution in Germany:** Technische Universität Berlin | **Host:** Prof. Dr Hans Liudger Dienel

Gabriel Pabst da Silva wants to develop a public policy proposal to guide and accelerate the launch of electrified buses in Brazil's public transport system.

To combat climate change and achieve clean public transport, several goals were established in the 2030 Agenda for Sustainable Development. This can be understood as a challenge to implement clean transport, as it contributes to the reduction of pollution and greenhouse gases from the transport sector. The electrification of vehicles is considered to be the most suitable technical and economic solution to mitigate and avoid emissions. Brazil is the largest exporter of buses to Latin America. However, Brazilian public policies targeting the electrification of Brazilian buses encounter several obstacles such as Brazil's low financing capacity, higher acquisition costs, electric charging infrastructure costs and training costs for qualified personnel.

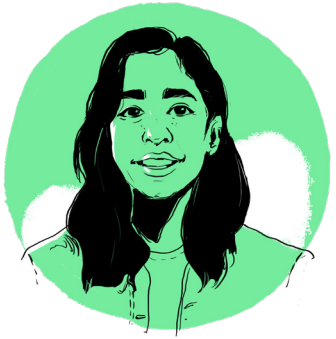
While significant greenhouse gas emissions could be avoided, government agencies still need to identify steps for implementation, including business models, GDP and employment impacts, contracting modalities and required mineral resources for electric buses and batteries. Hence, Gabriel Pabst da Silva's research project aims to develop a public policy proposal to guide and accelerate the implementation of electric buses by the Brazilian government. He seeks to consider the complexity of the Brazilian transport system as well as the country's social-economic particularities, e.g. power generation and transmission capacity for the bus system fleets and the impacts on employment and income rates. To achieve this, Gabriel intends to systemize and analyze consumption profile data of the Brazilian public urban road transport system in order to build forecast models. Gabriel hopes that German experiences will contribute towards achieving the research results. He will be supported by Technische Universität in Berlin.

When opportunity knocks: Integrating climate action in urban mobility planning

Rocio Patricia Ruelas Fimbres

Degree: Bachelor of Science | Field: Traffic and Transport in General

Home Institution: International Council for Local Environmental Initiatives (ICLEI) Mexico, Mexico City, Mexico | **Host Institution in Germany:** Wuppertal Institut für Klima, Umwelt, Energie gGmbH, Research Division Energy, Transport and Climate Policy, Berlin |
Host: Prof. Dr Oliver Lah



Rocio Patricia Ruelas Fimbres seeks to investigate climate related measures in urban mobility strategies to develop a recommendation document with key practices.

Public transport is often viewed as a one-size-fits-all solution for climate change in thriving cities. Successful transport systems play a crucial role in any emission reduction strategy. However, cities and regions commonly incorporate low-carbon transportation into their climate action planning without fully understanding that mobility systems worldwide are struggling with critical challenges related to infrastructure, governance, funding shortfalls, and more. German cities have taken the lead by linking transport transition and energy transition to advance the sustainable mobility and transport agenda. Strengthening the resilience of public transport systems to global socio-economic challenges, especially under climatic conditions, can contribute significantly to decarbonization.

The focus of Rocio Patricia Ruelas Fimbres' research is to investigate whether subnational authorities have overlooked or incorporated climate-related measures in their urban mobility strategies. She aims to equip decision-makers with tools to accelerate the shift from planning to implementing low-carbon transport systems. By assessing Latin American cities, her research will identify where climate action efforts in public transport are focused and analyze their impact on greenhouse gas emissions. She will explore barriers to this transition and compile key practices and findings into a comprehensive recommendation document. Rocio will be supported by the Research Division of the Wuppertal Institut für Klima, Umwelt, Energie in Berlin.

How to effectively integrate climate change adaptation policy in emissions trading systems

Maria del Pilar Salazar Vargas

Degree: Master of Science | Field: Economic Policy, Applied Economics

Home Institution: Global Green Growth Institute, Mexico City, Mexico | **Host Institution in Germany:** International Carbon Action Partnership, Berlin |
Host: Stefano De Clara

Maria del Pilar Salazar Vargas' research aims to address emission trading systems and their further development to enhance their use in financing climate change adaptation.

The losses and damage caused by climate change are increasing and are unequally distributed among the most vulnerable communities. Climate finance must increase at least five-fold annually, as quickly as possible, to avoid the worst impacts of climate change. To reduce these gaps, governments need to guarantee finance streams for climate adaptation, which requires looking beyond the traditional sources of financing. Innovative financial mechanisms can unlock investment. There are various market instruments supporting the development of climate actions, with relevant results in mitigation but limited scope in other matters, such as adaptation. Current negotiations for putting into operation Article 6 of the Paris Agreement, highlight the role that carbon markets could play in supporting developing countries particularly vulnerable to the adverse effects of climate change. Carbon pricing instruments would represent a relevant mechanism to contribute both to the mitigation agenda and to several socioecological co-benefits across multiple outcomes, mainly through offsetting guidelines and carbon revenue use.

Maria del Pilar Salazar Vargas' research focuses on the design aspects and innovations of emission trading systems and how they could be further developed to improve their contribution to financing climate change adaptation. She seeks to assess the overall functionality of emissions trading systems and to propose potential guidelines to strengthen their role in the adaptation agenda. She will use both quantitative methods, such as bibliometric analysis, and qualitative approaches, such as interviews and expert surveys. Maria del Pilar will be supported by the International Carbon Action Partnership in Berlin.

Conservation and restoration of coastal mangroves for climate change adaptation in Cameroon

Dr Yollande Tankeu Meli

Degree: PhD | Field: Economic Policy, Applied Economics

Home Institution: Nkafu Policy Institute, Yaounde, Cameroon | **Host Institution in Germany:** Leibniz Centre for Tropical Marine Research, Bremen |
Host: Prof. Dr Achim Schlüter

Yollande Tankeu Meli aims to develop a blue justice conservation and restoration plan for mangroves in Cameroon that considers fairness to the communities and climate change impacts equally.

Mangrove ecosystems are worldwide threatened by anthropogenic activities such as deforestation, land use change, water pollution, and climate change. This has led to a rapid decline in mangrove cover and quality, the loss of valuable ecosystem services and increased climate vulnerability. Mangroves provide shoreline stabilization, fisheries, habitat for biodiversity and sequester significant amounts of carbon. Climate change is expected to exacerbate the impacts of sea level rise, erosion, and saltwater intrusion with devastating effects on coastal communities. Cameroon has a long coastline, and mangroves are already at risk with an estimated loss of approximately 1% per year. The sustainable use of marine environments for economic purposes is called blue economy, which is often criticized for prioritizing exploitation over sustainability. Blue justice wants to address social injustices within the blue economy, such as the displacement of local users, fishermen, and indigenous peoples. This can be extended to mangrove conservation. Hence, applying a blue justice approach is crucial to addressing the challenges and ensuring fairness for affected communities.

Dr Yollande Tankeu Meli seeks to assess the current state of coastal mangroves in Cameroon and identify areas that are most vulnerable to climate change. Her study aims to evaluate the population's awareness of the ecosystem role of coastal mangroves, provide a comprehensive understanding of the role that mangroves can play in climate change adaptation in Cameroon and develop a conservation and restoration plan that takes the needs of local communities and the impacts of climate change into account. The results of her study will influence policy and decision-making. Yollande will be supported by the Leibniz Centre for Tropical Marine Research in Bremen.

Enhancing sustainable climate action in Freetown

Davephine Tholley

Degree: Master of Science | Field: Urban Planning and Development, Landscape, Traffic, and Infrastructure Planning

Home Institution: Freetown City Council, Freetown, Sierra Leone | **Host Institution in Germany:** Creative Climate Cities, Berlin | **Host:** Dr Nadine Kuhla von Bergmann

Davephine Tholley focuses on nature-based and gender-sensitive approaches when it comes to enhancing the sustainable climate action in Freetown.

Sierra Leone faces the complex challenges of climate change impacts and gender inequalities. Freetown is experiencing increasing temperatures, deforestation, and societal intricacies associated with urbanization. Compared to other parts of Sierra Leone, Freetown has a particularly high risk of heat stress. This is due to the urban heat island impact which is also increased by deforestation, ground sealing and emissions. Climate change affects men and women differently due to gender disparities. Women are at a heightened risk of physical, sexual, and domestic violence after climate-related disasters. Women's social inequalities such as lower incomes and limited opportunities contribute to their reduced capacity to adapt and mitigate, making them the most vulnerable group to climate change. Despite these challenges, there is an opportunity for climate action to be inclusive at both national and local levels.

Davephine Tholley aims to explore nature-based solutions in German cities and customize them to seek mitigation of climate impacts in Freetown. Especially the creation of effective cooling strategies within Freetown is important, as the city is struggling with urban heat. Her focus is nonetheless to integrate gender considerations into these strategies, as it is imperative to ensure an equitable distribution of benefits, considering the particular vulnerability of women and girls in the face of climate change. Davephine thinks that climate action should be human-centered and female-led and prioritize the well-being of people alongside environmental concerns. Davephine will be supported by Creative Climate Cities in Berlin.

Tackling the unregulated recycling of lead-acid batteries in India as a social justice issue

Anuradha Varanasi

Degree: Master of Arts | Field: Journalism and Communication Science

Home Institution: Freelance Journalist, Mumbai, India | **Host Institution in Germany:** Öko-Institut e.V., Freiburg | **Host:** Andreas Manhart

Anuradha Varanasi hopes to foster a circular economy for lead-acid batteries and raise awareness among industry leaders and policymakers in India and Europe.

In 2023, global lead battery production rose due to an increased demand for conventional cars and electric vehicles. India, with over 2.4 million battery-powered e-rickshaws growing by 11,000 monthly, uses at least 40,000 tons of lead-acid batteries annually. These batteries, with a lifespan of 6-8 months, often end up in the unregulated recycling sector. Despite advances in lithium-ion technology, lead-acid batteries remain popular due to their low installation costs. Informal backyard smelters, recycling up to 90% of these batteries, severely pollute nearby communities, exposing residents to lead poisoning. Of the 800 million children worldwide with elevated blood lead levels, 275 million live in India.

Anuradha Varanasi aims to examine the association between higher demands for energy storage and electric vehicles and localized spikes in lead poisoning. First, she will focus on the state of Bihar, which has only four authorized battery recyclers, and visit the most lead-contaminated sites with the highest number of illegal recyclers. Second, she will focus on Uttar Pradesh state and scrutinize how e-rickshaws are contributing to localized spikes in lead poisoning. Anuradha's goal is to extensively document in which specific way backyard lead battery recycling is the worst global chemical polluter. She also wants to explore what is preventing them from modernizing and becoming a part of the formal economy. She seeks to address the worldwide issues and the global lead battery landscape, including German car producers. Anuradha will be supported by the Öko-Institut in Freiburg, which took part in the initiatives that worked towards upgrading the used lead-acid battery recycling industry in Germany.

Imprint:

© Alexander von Humboldt Foundation
Responsible for the content: Dr Judith Schildt and Int'l Climate Protection Fellows
Typesetting and printing: Kulturidee GmbH