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Reducing emissions and creating job opportunities

Nadeem Abdelgawad establishes solar and wind energy in Egypt through cooperation with Germany.

Developing countries like Egypt often face various economic challenges, such as high youth unemployment rates. This is why they mostly focus on improving their economic growth by attracting direct foreign investment, for example. Egypt, for one, cannot tackle the challenges caused by climate change because it lacks the resources to address several problems at the same time. For his project, Nadeem Abdelgawad takes the pragmatic stance of examining the bigger picture of economic hardship in a developing country to tackle climate change issues. Despite having some of the world's best wind resources along the coastlines and some of the highest inland solar radiation anywhere, solar and wind energy only account for less than two percent of Egypt's energy mix. So Nadeem's idea is to create green jobs in the renewable energy sector that push forward climate change mitigation and economic development at the same time.

Overcoming the technical challenges involved in this process requires close cooperation with a major industrial hub and leader in climate protection like Germany. So, Nadeem studies how to persuade German companies to produce in Egypt in order to increase the percentage of local production in these technologies. He aims to draw up a realistic set of policy recommendations to intensify cooperation between German manufacturers of solar and wind technologies and Egyptian policy makers and local energy companies.

Abdelgawad, Nadeem

Degree: Master of Science | **Field:** Economic and Social Policy | **Affiliation at the time of application:** The American University in Cairo, Cairo, Egypt

Host Institution in Germany: Foresight Intelligence GbR, Berlin | **Host:** Dr Johannes Gabriel

Sustainable improvement of ecosystem services

Mahmoud Nady Abdelsabour Mohamed assesses and quantifies the ecosystem services along the River Nile.

The changes caused by global warming have an impact on ecosystem services, which need to become more efficient and more sustainable along the River Nile. Improving the supply chains for ecosystem services would improve the health of populations living within the area.

Mahmoud Nady Abdelsabour Mohamed therefore analyses existing ecosystem services and their supply chains to discover how they fulfil society's demands along the Nile and its wetlands. His aim is to identify disruptions and develop relevant solutions. Mahmoud wants to improve the supply chain to achieve systematic air quality regulation and carbon sequestration. He therefore investigates where the largest supply of sources along the Nile is to be found and where these resources are in greatest demand. For this purpose, he uses advanced models such as ARIES or CRAFTY that allow him to consider different scenarios and thus reveals the impacts of different sets of circumstances. Drawing on relevant literature and case studies from his research, Mahmoud is constructing an empirical database in his project in order to collect as many different impacts on ecosystem services as possible. Furthermore, he collects data and expert opinions on changes in different land management practices as these changes also impact the supply chain. In the long term, his results should improve habitat quality within the area and inform Egyptian environmental assessment as well as a new research track at Egyptian universities.

Abdelsabour Mohamed, Mahmoud Nady

Degree: Master of Science | **Field:** Animal Ecology, Biodiversity, Ecosystem Research | **Affiliation at the time of application:** Beni-Suef University, Faculty of postgraduate Studies for Advanced Sciences, Beni Suef, Egypt

Host Institution in Germany: Rheinische Friedrich-Wilhelms-Universität Bonn, Zentrum für Entwicklungsforschung (ZEF), Bonn | **Host:** Dr Christine Schmitt

Economic agreements to overcome borders

Dr Mona Agha Seyed Jafar Kashfi recommends the transnationalisation of environmental laws for climate change mitigation in sea regions.

Climate change affects ecosystems across national borders. International stretches of water such as the Caspian Sea are especially vulnerable to climate-related environmental impacts, while transboundary solutions are hard to find.
Dr Mona Agha Seyed Jafar Kashfi investigates whether multilateral economic agreements are an appropriate tool to transnationalise laws on climate change. To this end, she examines how principles and standards in these agreements construct transnational environmental laws in sea areas. She identifies drawbacks and limitations and how the process of transnationalising environmental law through multilateral economic agreements could be improved.
Multilateral economic agreements assign the tasks, obligations and risks to public and private partners. The public partners comprise government entities like ministries, departments and municipalities, or state-owned enterprises from countries bordering the sea region. By contrast, the private local or international partners include businesses and investors with technical and financial expertise. In her research project, Mona will also consider non-government and community-based organisations which are often overlooked as important stakeholders.

Agha Seyed Jafar Kashfi, Dr Mona

Degree: PhD | **Field:** Commercial Law, Trade Law | **Affiliation at the time of application:** Petroleum University of Technology, Law Department, Tehran, Iran

Host Institution in Germany: Martin-Luther-Universität Halle-Wittenberg, Halle | **Host:** Dr Christian Tietje

From conflict resource to sustainability source

Rowan Alumasa Alusiola works on a reforestation programme that is sustainable for communities as well as the environment.

Deforestation and forest degradation account for approximately 17 percent of annual greenhouse gas emissions and are most widely practised in developing countries like Kenya. REDD+ is a programme that organises afforestation and reforestation schemes in such areas in order to compensate for these emissions. The programme aims to establish comprehensively sustainable development. With her project, Rowan Alumasa Alusiola wants to reduce REDD+'s negative impact on local communities that are dependent on the forests where the programme intervenes.
In these regions in Kenya, land tenure is normally not clearly defined, which can lead to conflicts. Carbon traders, for instance, are often able to force local communities to sign away their land rights so they can sell these areas to REDD+ for huge profits.
By re-designing the programme, Rowan wants to prevent people from abandoning their land to make way for reforestation programmes without receiving any financial compensation. Her project aims at establishing REDD+ in a way that benefits rather than harms local communities. She is therefore conducting desktop research on REDD+'s impact on Kenyan communities, on climate and biodiversity as well as on governmental structures. She is also compiling a record of conflicts caused by REDD+. Based on her results, she wants to identify key conflict factors and best practice examples. Finally, Rowan will publish a stakeholder framework and an academic paper that reveal how REDD+ can operate more equitably.

Alusiola, Rowan Alumasa

Degree: Bachelor of Education | **Field:** Basic Forest Research Climatology | **Affiliation at the time of application:** CARE International Kenya, Nairobi, Kenia

Host Institution in Germany: Universität Koblenz-Landau, Institut für Umweltwissenschaften, Landau | **Host:** Prof. Dr Janpeter Schilling

Strengthening small farmers' mental health

Samuel Weniga Anuga investigates how climate change jeopardises smallholders' mental health in Ghana.

Since the IPCC report in 2014, the impact of climate change on human mental health has become a focus of interest. Climate-related disruptions most severely affect vulnerable groups of the population such as smallholders. These events take a significant toll on mental health and well-being.
In Ghana, smallholders appear to be at a higher risk of suffering from extreme weather events due to the environmental challenges they face. The vast landscape of the country is largely an arid zone with severe droughts, and the rising impact of climate change continually exposes smallholders to adverse psychological strain. As more and more cataclysmic environmental events are expected, the impacts of climate change on the mental health of smallholders urgently need to be studied.
Samuel Weniga Anuga aims to reach out to policy makers, health practitioners and small farmers. Comprehensive reports and participatory forums for policy makers will promote collaborative efforts to address climate-induced mental health risks. Based on his results, health practitioners can be trained to understand climate-related mental illnesses and treat them effectively. At local level, farmers will be told about the phenomenon and how they can deal with it in their own language, taking account of their particular socio-cultural environment.

Anuga, Samuel Weniga

Degree: Master of Philosophy | **Field:** Public Health, Health Services Research and Social Medicine | **Affiliation at the time of application:** International Center for Enterprise and Sustainable Development (ICED), Accra, Ghana

Host Institution in Germany: Gottfried Wilhelm Leibniz Universität Hannover, Institut für Umweltökonomik und Welthandel, Hannover | **Host:** Prof. Dr Ulrike Grote

Generating sustainable energy from residual biomass

Dr Kelechi Ezenwa Anyaoha investigates how Nigerian smallholder palm oil processing can increase the use of biomass in heat and power generation.

Future demand for energy in developing countries is set to increase. Nigeria's contribution to greenhouse gas emissions (CO_2, CH_4 and N_2O) from energy production is growing steadily: It is projected that the total CO_2 emissions from Nigeria's energy sector will rise from 108,000 gigagrams in 1995 to 359,000 gigagrams in 2050. One way to reduce emissions is to use bioenergy instead of fossil fuel. Large-scale producers of palm oil in Nigeria make use of palm kernel shell, mesocarp fibre and sometimes empty fruit bunch for heat and power generation. The smallholder sector, however, still relies heavily on diesel power.
In his research project, Kelechi Ezenwa Anyaoha investigates the technical feasibility, environmental impact as well as economic viability of two energy options for Nigerian smallholder palm oil mills: the full biomass option and the diesel power option. In addition to his techno-economic analysis of the two energy options, Kelechi is carrying out a life cycle assessment of the energy options in order to compare the greenhouse gas emissions. Since most of the preliminary studies are focused on large-scale plants with little regard to the local conditions and sustainable supply of feedstock, it is, now, crucial to investigate different energy scenarios at the smallholder level in Nigeria.

Anyaoha, Dr Kelechi Ezenwa

Degree: PhD | **Field:** Agricultural and Food Process Engineering | **Affiliation at the time of application:** Imo State Polytechnic, Umuagwo, Nigeria

Host Institution in Germany: United Nations University, Dresden | **Host:** Dr Lulu Zhang

Improving Bolivia's waste management

Magaly Ines Beltran Sinani strives to reduce Bolivia's greenhouse gas emissions by improving the country's waste management system.

Being a developing country, Bolivia is not in a good position to deal easily with its environmental problems, including waste management. The annual release of methane from Bolivian solid waste disposal sites, for example, accounts for approximately ten percent of annual global greenhouse gas emissions. Moreover, such problematic waste management has a negative impact on the health of Bolivian citizens and adversely affects the country's economy.
Magaly Ines Beltran Sinani is therefore working on two tools for transparent and comprehensive environmental and cost analysis, which should improve the whole waste management system. The first tool is called "life cycle assessment (LCA)" and is one of the most highly developed environmental assessment tools for evaluating the performance of technologies. Magaly uses it to define and analyse the goals, improvements and impacts of existing services in order to develop a cyclical waste management system. The second tool is a "cost analysis (CA)". CA enables the user to predict future costs in order to make existing waste services more economical. Magaly is conducting her case study on La Paz, based on German experience in waste management. In addition to the data obtained from LCA and CA, she interviews directors and technicians involved in the solid waste management of La Paz and the Ministry of the Environment and Water as well as German project partners.

Beltran Sinani, Magaly Ines

Degree: Master of Science | **Field:** Biological Process Engineering | **Affiliation at the time of application:** Plurinational Authority of Mother Earth (APMT), La Paz, Bolivia

Host Institution in Germany: Technische Universität Dresden, Institut für Abfall- und Kreislaufwirtschaft, Pirna | **Host:** Prof. Dr Christina Dornack

Investigating climate change and migration

Natalia Andrea Burgos analyses the relationship between migration and climate change in Colombia.

Colombia has some of the highest rates of lifetime internal migration in South America and these migration movements are increasingly influenced by climate change. Climate disasters endanger populations in certain areas of the country and thus trigger internal migration. Also, Colombia is a destination for political refugees. Migration flows like these make it difficult for the country to plan its development; Natalia Andrea Burgos is helping to find a solution.
For this purpose, she is conducting a case study of the Catatumbo region in Colombia, investigating how the link between climate change and migration influences the region's development and how the situation can be improved. She therefore reviews the relevant scientific literature as well as policy and regulatory documents on the relationship between climate change and migration. Furthermore, she analyses the capacity of different policy frameworks to continue addressing the issue by interviewing key experts, practitioners and local leaders in the Catatumbo region about the concrete interaction between climate change and migration. Natalia also tries to increase the level of government funding available for projects like hers and wants to strengthen partnerships between German and Colombian organisations in order to expand knowledge and develop supportive policy frameworks.

Burgos, Natalia Andrea

Degree: Master of Arts | **Field:** Political Science | **Affiliation at the time of application:** National Planning Department, Bogota, Colombia

Host Institution in Germany: Ecologic Institute: Science and Policy for a Sustainable World, Berlin | **Host:** Katriona McGlade

Achieving climate goals through local action

Emily Montserrat Castro-Prieto wants to ensure that local actors participate in reaching global climate protection targets.

Mexican government is structured on several different levels, which makes it difficult to implement a nationwide policy to achieve global climate targets. National government depends on local governments to act because they are responsible for implementing many of the mitigation actions and adaptation measures. Emily Montserrat Castro-Prieto's aim is to improve cooperation between national and regional governments to overcome the gap between national goals and local action arising from insufficient information sharing. Although the country has agreed on Nationally Determined Contributions, their implementation has not yet been systematised. The national government is therefore developing tracking and evaluation systems in order to register climate actions, including those taking place at local level. For her project, Emily is elaborating evaluation designs that help record subnational mitigation actions within these systems and improve the coherence of actions on climate protection at national level. She is drawing on German experience and studying and comparing German and Mexican climate protection policies and evaluation instruments. Furthermore, Emily documents the process of her project in webinars, one pagers, reports and presentations in order to reach stakeholders who might want to use the results of her analysis for their work.

Castro-Prieto, Emily Montserrat

Degree: Master of Arts | **Field:** Political Science | **Affiliation at the time of application:** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Mexico City, Mexico

Host Institution in Germany: Öko-Institut e.V., Berlin | **Host:** Jakob Graichen

Financing climate protection in Mexico

Melissa Cuevas Flores aims to raise awareness for the need to invest in climate protection in order to prevent its effects.

Due to its location between two oceans and its diverse topography, Mexico is a country that is frequently affected by climate hazards. Socio-economic factors like high poverty levels increase the country's vulnerability to such catastrophes because, for instance, poor residential areas are more prone to destruction.
As rebuilding such destroyed areas is financially more costly than investing in prevention, Melissa Cuevas Flores is examining different funding schemes to increase adaptation investments. In recent years, the average annual costs associated with climate change have grown significantly and, with predictions of frequent and severe weather events, are expected to continue increasing. However, there are political and institutional barriers that hinder investment in preventive measures. Melissa thus examines existing strategies to find out how adaptation investments could be increased. Initially, she is therefore identifying the major barriers to climate change adaptation funding. By reviewing the relevant literature, she then tries to pinpoint criteria to evaluate the suitability of different financing mechanisms. She also collects information about existing innovative mechanisms like climate funds and bonds in Mexico and Germany in order to identify suitable methods. Based on her literature review and expert interviews, she then chooses the most appropriate mechanisms and conducts in-depth analyses on them. For this purpose, a feasibility study and a risk assessment will be performed, along with a stakeholder analysis and an operative requirement check. Finally, she intends to identify potential ways to increase the funding for climate change prevention measures in Mexico.

Cuevas Flores, Melissa

Degree: Master of Science | **Field:** Economic and Social Policy | **Affiliation at the time of application:** Eco Valores, Mexico City, Mexico

Host Institution in Germany: Adelphi, Berlin | **Host:** Cosima Stahr

Predicting extreme weather events to save lives

Shingirai Shepard Nangombe works on improving the predictions of meteorological extremes in Southern Africa and Zimbabwe.

In Southern Africa, temperatures are rising faster than the global average. Extreme weather events in this region are therefore increasing and intensifying. Economically developing regions are more vulnerable to such events while disasters are harder to manage with their existing adaptation and mitigation techniques. Being able to attribute and predict meteorological extremes is thus very important for Southern Africa and, especially, Zimbabwe.
Shingirai Shepard Nangombe uses high-resolution regional climate models to identify extreme weather hotspots where disasters occur with greater frequency and severity in order to pinpoint areas where more resources need to be channeled.
To make his predictions more accurate, he combines simulations and projections from the Africa sub-group of the Coordinated Regional Downscaling Experiment framework using reanalysis data from the European Centre for Medium-Range Weather Forecasts. He aims to identify precursor conditions of extreme meteorological events so that he can provide communities and decision makers with early and accurate information about impending extreme weather. Shingirai will help to develop robust mitigation and adaptation strategies based on efficient early warning systems. These should help to prevent damage to to infrastructure and population from extreme weather events.

Nangombe, Dr Shingirai Shepard

Degree: PhD | **Field:** Atmospheric Science | **Affiliation at the time of application:** Government of Zimbabwe Meteorological Services Department, Harare, Zimbabwe

Host Institution in Germany: Deutscher Wetterdienst (DWD), Niederlassung Potsdam, Stahnsdorf | **Host:** Prof. Dr Gerhard Adrian

Transforming energy supply and security

Minh Anh Nguyen creates a vision of how to minimise the environmental impact of Vietnam's fast-growing energy sector.

Since Vietnam is expected to have limited domestic coal or gas resources in the coming years and its renewable energies are still at an early stage of development, the Vietnamese economy depends heavily on the import of fossil fuel. In the last 25 years, energy demand has increased almost twice as fast as the gross domestic product. Consequently, Vietnam's Nationally Determined Contributions (NDC) focus on energy-related mitigation efforts, as negotiated under the United Nations Framework Convention on Climate Change.
In order for the process of prioritising the NDC to be effective, Minh Anh Nguyen claims that climate protection must be seen as transformational change. This term reflects the insight that in complex, sluggish systems sustainable development requires fundamental change. As a scholar of economic and social policy, Minh identifies the transformational impacts, potentials and barriers of climate change mitigation in Vietnam. In her research project at her host institution, the Institute for Advanced Sustainability Studies, she is implementing a comprehensive, in-depth analysis of projected impacts on different (transformative) development strategies. Based on her results, she will recommend several options for the development of the energy sector. She plans to carry out online surveys with stakeholders, key informant interviews and a quality impact assessment that will culminate in a sound strategy for future investment. As a final step, Minh will communicate her recommendations to funding providers and decision makers.

Nguyen, Minh Anh

Degree: Master of Arts | **Field:** Economic and Social Policy | **Affiliation at the time of application:** Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Hanoi, Vietnam

Host Institution in Germany: Institute for Advanced Sustainability Studies e.V. (IASS), Potsdam | **Host:** Dr Sebastian Helgenberger

Creating sustainable concrete

Morteza Nikravan works on improving concrete with regard to different sustainability factors.

Recent studies have calculated that the production of building materials like concrete, which contains cement, could account for 7-10 percent of global CO_2 emissions in 2020. Nevertheless, rapid urban expansion in developing countries increases the demand for cement. Consequently, building materials need to be improved in order to expand residential areas in a climate friendly way. One of the promising alternatives are alkali-activated cements and concretes (AACC).
Morteza Nikravan wants to highlight the critical factors in using AACC from cradle to building site and thus has to take different sustainability factors into account. Firstly, CO_2 is emitted during the production of AACC, so it is important to reduce these emissions to help protect the climate. Secondly, the durability of a material is an important factor in its sustainability, which might be influenced by the impacts of climate change as well. Thirdly, economic factors define the usability of a mixture. To find the optimum composition of AACC, many different types of alkali-activated materials can be used as binders. In a number of countries, a variety of mixtures has therefore been developed and used in buildings, pavements and roads. This has motivated Morteza to test the sustainability of these various materials under different conditions. To evaluate the mixtures he employs life cycle assessment to assess environmental impacts like global warming, acid rain, freshwater and seawater. Based on his results, Morteza will be able to identify mixtures that have the best durability for future building projects as well as the best mechanical, economic and environmental properties.

Nikravan, Morteza

Degree: Master of Science | **Field:** Construction Material Sciences, Chemistry, Physics | **Affiliation at the time of application:** Amirkabir University of Technology, Office of Sustainability, Tehran, Iran

Host Institution in Germany: Technische Universität Berlin, Institut für Bauingenieurwesen, Berlin | **Host:** Prof. Dr Dietmar Stephan

Preventing monsoon catastrophes in the Sahel

Arreyndip Nkongho Ayuketang estimates how a sudden monsoon onset in the Sahel region could affect agriculture.

About 70 percent of Sahel's population is actively engaged in agriculture. Global warming has a major impact on agricultural activities and therefore the whole economy of this region. Seven out of 21 current state-of-the-art climate models project the sudden onset of a summer monsoon season in the Sahel zone. This climate-driven phenomenon is related to increasing oceanic moisture and rising sea surface temperatures in the tropical Atlantic and the Mediterranean.
Arreyndip Nkongho Ayuketang investigates the effects of such a sudden monsoon onset on the agricultural productivity of the Sahel region by using the Lund-Potsdam-Jena Dynamic Global Vegetation Model. This vegetation dynamics model considers biochemical and biophysical interactions between ecosystems and the atmosphere against the backdrop of crop production and agropastoralism as the main economic activities in the Sahel zone. Arreyndip then explores the consequences for the African and global economic structure. He therefore applies the agent-based economic model Acclimate, a tool to analyse economic losses in the global supply chain caused by natural hazards. In case of a monsoon onset in the Sahel zone, Arreyndip's findings may contribute to preventing damage to many settlements.

Nkongho Ayuketang, Arreyndip

Degree: Master of Science | **Field:** Statistical Physics, Soft Matter, Biological Physics, Nonlinear Dynamics | **Affiliation at the time of application:** Saint Jerome Catholic University, Institute of Douala, Douala, Cameroon

Host Institution in Germany: Potsdam-Institut für Klimafolgenforschung (PIK), Potsdam | **Host:** Prof. Dr Anders Levermann

Improving water resources for local societies

Dr Azamat Osmonov analyses the impact of climate change on glaciers and river flows affecting use by local communities.

The main source of water for local communities in the Central Asian lowlands are the Tien Shan high-altitude glaciers which feed the region's rivers with melting glacier water. Glaciers, however, are retreating as a result of climate change which may lead to a future decrease in river flow and thus a shortage of water for local communities' everyday use.
Dr Azamat Osmonov wants to calculate the dimensions of a future decrease in glacier water and find solutions for local societies. He investigates glacier development and its impact on the Yssyk-Kul Basin. Generally, the eastern part of the basin has enough water resources for the population, whereas western and northern parts suffer from a lack of water. Azamat therefore suggests transporting water from the Chu River to the western part of the basin instead of using underground water in order not to disrupt the region's overall water balance. Moreover, Azamat needs to analyse a complex system of water flows because natural water distribution is uneven due to its dependence on the seasons and weather. He thus categorises rivers according to their usual volume of water combined with the individual months with maximum water supply. The data he has collected on glacier sizes and distribution since 2018 will help to model future climate change impacts. In order to implement these models, he draws on data going back to 1970, predicting climate change trends and their impacts on river flows and water resource distribution in the Yssyk-Kul Basin. Azamat's findings will enable him to make recommendations to local communities on how to use river water efficiently. In the best case, his recommendations would lead to a general improvement in the region's economic situation.

Osmonov, Dr Azamat

Degree: PhD | **Field:** Remote Sensing | **Affiliation at the time of application:** Central-Asian Institute for Applied Geosciences (CAIAG), Bishkek, Kyrgyzstan

Host Institution in Germany: Humboldt-Universität zu Berlin, Geographisches Institut, Berlin | **Host:** Prof. Dr Christoph Schneider

Establishing renewable mini-grids

Charles Kofi Owusu assesses the potential of renewable mini-grids in Ghana based on sustainability and economic efficiency.

Renewable mini-grids hold enormous potential for the African energy sector as they could enhance overall energy access and facilitate the use of sustainable energy sources. Establishing a system of renewable isolated mini-grids, however, entails high investment costs, which challenge most African countries like Ghana.
Charles Kofi Owusu wants to find a way of financing the establishment of renewable mini-grids. Donors and governments are unable to invest the estimated 20 billion dollars per year that would be required for nationwide installation in Ghana. Charles therefore plans to promote the benefits of sustainable mini-grid installations in order to attract private investors. Currently, they have little appetite to participate in the sustainable energy sector due to the lack of regulatory guidelines and risk-limitation policies, which makes investments highly unattractive.
What is required is evidence of successful coordination between government policy and private capital as well as proof of the efficiency and commercial viability of totally transforming the rural energy sector. Charles therefore examines households' willingness to pay for renewable energy, the economic impacts of different clean mini-grid models and the link between existing off-grid models and low carbon development. He uses the information he gathers to develop and propose business models and policies for a financially stable and ecologically sustainable mini-grid system.

Owusu, Charles Kofi

Degree: Master of Arts | **Field:** Empirical Social Research | **Affiliation at the time of application:** Kumasi Institute of Technology, Energy and Environment (KITE), Accra, Ghana

Host Institution in Germany: Technische Universität Dresden, Fakultät Wirtschaftswissenschaften, Dresden | **Host:** Prof. Dr Artem Korzhenevych

Involving local voices to achieve climate justice

Maria Angelica Prada Uribe compares environmental participation mechanisms in Latin America.

The majority of legal scholarship on climate change focuses on top-down legal instruments to enforce climate protection. The Global North primarily addresses climate-related environmental issues by adopting scientific and technical solutions directed at reducing greenhouse gas emissions. Meanwhile, local experience of climate change adaptation or mitigation in the Global South is not taken into account.
Maria Angelica Prada Uribe emphasizes the importance of bottom-up approaches to mitigate climate change. She analyses social movements' legal mobilisation for climate justice in Colombia, Guatemala and Ecuador. In her research project, she examines environmental rights in their cultural context using a comparative methodological framework. Firstly, she strives to understand how grassroot movements in Latin America mobilise national and international institutions for climate protection, demanding extensive participation in environmental and development related issues. These bottom-up forms of mobilisation oppose deforestation and extractivism, which refers to extracting natural resources like metals from the earth for commercial purposes. Opposition takes the form of popular consultations and other constitutional mechanisms. By reviewing national and international legal instruments, Maria thus strives to help clarify the legal framework and content of the human right to environmental participation in Latin America.

Prada Uribe, Maria Angelica

Degree: Bachelor of Arts | **Field:** International Public Law | **Affiliation at the time of application:** Universidad del Rosario, Bogota, Colombia

Host Institution in Germany: Max-Planck-Institut für ethnologische Forschung, Halle (Saale) | **Host:** Prof. Dr Dirk Hanschel

Preparing burgeoning cities for natural disasters

Vinod Ramanarayanan aims to improve climate-driven disaster preparedness in urban areas of India.

Some 377 million people in India live in densely populated and increasingly vulnerable areas. Projections suggest that by 2031, the urban population will increase to 600 million. This semi-planned process takes little account of disaster risks caused by extreme natural events, which often destroy critical infrastructure, disrupt services and have a detrimental long-term impact on socio-economic development. A better understanding of physical and social infrastructure in cities is, therefore, a key element in improving the quality of life for their citizens.
Vinod Ramanarayanan investigates the impact of natural disasters on urban infrastructure. Moreover, he examines how the quality of life and the local economy are connected to urban infrastructure preparedness and resilience. This detailed analysis of urban systems facilitates a better understanding, comparison and contextualisation of protective interventions. One approach is to learn from disaster control interventions in Germany. By identifying key characteristics of successful interventions, Vinod may succeed in formulating well-founded recommendations for public-private participation or physical infrastructure investments to prepare urban areas for future disasters.

Ramanarayanan, Vinod

Degree: Master of Science | **Field:** Urban Planning and Development, Landscape, Traffic, and Infrastructure Planning | **Affiliation at the time of application:** Civic Fulcrum, Chennai, India

Host Institution in Germany: Beuth Hochschule für Technik Berlin, Fernstudieninstitut, Berlin | **Host:** Prof. Dr Florian Schindler

Working on rainforest protection through global funding

Artur Sgambatti Monteiro analyses the international financial support for local conservation projects in the Brazilian Amazon.

Approximately 60 percent of Brazil is covered by the Amazon rainforest which contains the biggest river basin on Earth and rich biodiversity. It is also home to more than 300 different ethnic groups. Consequently, there is a need for a strong national commitment to climate change mitigation allied to locally based initiatives. Meanwhile, the newly elected government has begun to change the Brazilian position on the development of the Amazon, seeking to drive mining and agriculture in the region.
Artur Sgambatti Monteiro scrutinises how the shift in government policy impacts international financial agreements and thereby tries to foster innovative local projects in the Amazon region. On the one hand, he examines the interaction between the Brazilian government's climate change policy and foreign investments in rainforest conservation. On the other, he takes a closer look at the effectiveness, efficiency and sustainability of local projects in reducing deforestation and how they depend on funding from abroad. Artur mainly aims to evaluate projects by the most important investor in Amazon conservation in Brazil, the Amazon Fund, that works together directly with local initiatives and other national environmental funds. His research will culminate in sound recommendations for stakeholders on coping with future challenges.

Sgambatti Monteiro, Artur

Degree: Master of Arts | **Field:** Foreign Policy and International Systems | **Affiliation at the time of application:** Fundacao Vitoria Amazonica (FVA), Manaus, Brazil

Host Institution in Germany: Institute for Advanced Sustainability Studies e.V. (IASS), Potsdam | **Host:** Dr Maria Cecilia Oliveira