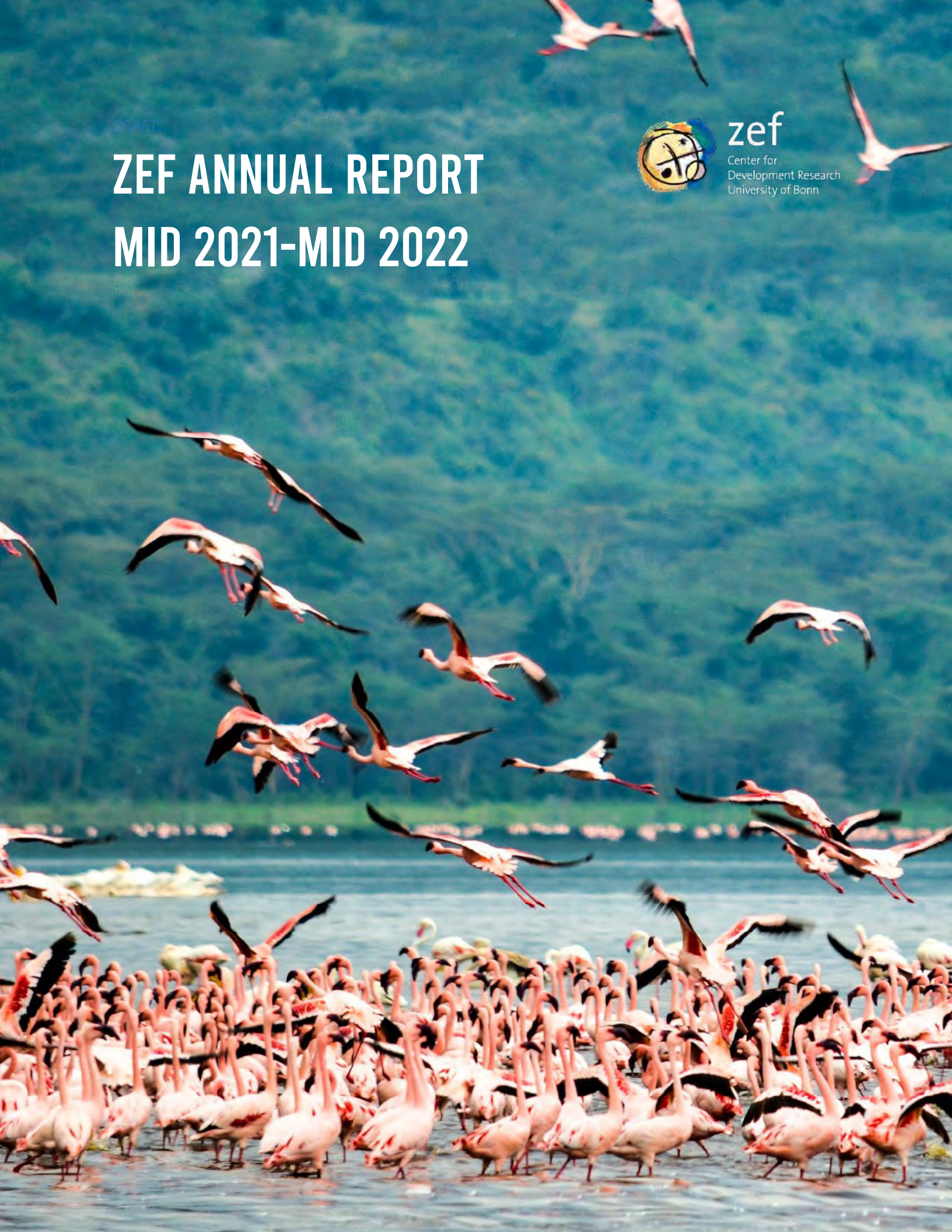


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# ZEF ANNUAL REPORT MID 2021-MID 2022



**zef**  
Center for  
Development Research  
University of Bonn



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# 1 ZEF'S INTERNATIONAL ADVISORY BOARD

## **Professor Mohamed H.A. Hassan**

(Chairman of the Board)  
President - The World Academy of Sciences (TWAS), Trieste, Italy  
President - Sudanese National Academy of Sciences (SNAS), Khartoum, Sudan

## **Professor Bina Agarwal**

Professor of Development Economics and Environment at the University of Manchester, UK; former Director, Institute of Economic Growth, University of Delhi, India

## **Dr. Florence Chenoweth**

Former Agriculture Minister of Liberia, Madison, USA

## **Dr. Christiane Fricke**

Research Organizations, EU, International Cooperation - Ministry of Culture and Science of North Rhine-Westphalia (MKW-NRW), Düsseldorf, Germany

## **Professor Barbara Göbel**

Director, Ibero-American Institute (IAI), Berlin, Germany

## **Dr. Karsten Hess**

Division Global Change - Climate, Biodiversity  
Federal Ministry of Education and Research (BMBF), Bonn, Germany

## **Professor Michael Hoch**

Rector of the University of Bonn, Germany

## **Dr. Wanjiru Kamau-Ruthenberg**

Executive Director Rise, Schmidt Futures, New York, USA

## **Bärbel Kofler**

Parliamentary State Secretary  
Federal Ministry for Economic Cooperation and Development and Development (BMZ), and member of the Federal Parliament, Berlin, Germany

## **Hans Cosmas Ngoteya**

Conservationist and National Geography Explorer and Professional in Wildlife photography and filming, Dar Es Salaam, Tanzania

## **Dr. Michael Rabbow**

Senior Advisor - E&P Focus Africa Consulting GmbH, Hamburg, Germany

## **Maryam Rahmanian**

Independent expert on food systems, with a focus on innovation, biodiversity and agroecology, Tehran, Iran

## **Professor Frances Stewart**

Centre for Research on Inequality, Human Security and Ethnicity (CRISE) University of Oxford, United Kingdom

## **Professor Finn Tarp**

Professor of Development Economics, Department of Economics, University of Copenhagen, Denmark

## **Professor Carolina Vera**

Ministry of Science, Technology and Innovation of Argentina, University of Buenos Aires, Buenos Aires, Argentina

## 2 ZEF'S RESEARCH AGENDA

ZEF's interdisciplinary research themes are based on [ZEF's strategy "Serving in new local and global contexts" \(2021-2030\)](#).

ZEF's research themes under whose umbrella our senior researchers, projects and doctoral researchers operate are:

- 1) [Agriculture, Land use, Climate Change](#)
- 2) [Water resources \(management\)](#)
- 3) [Biodiversity](#)
- 4) [Food and Nutrition](#)
- 5) [Health](#)
- 6) [Gender](#)
- 7) [Migration, Mobility, Urbanization](#)
- 8) [Governance and conflict](#)
- 9) [Markets and services](#)
- 10) [Innovation and science policy](#)

Click on the themes and read more about our research on [ZEF's Website](#).

## 3 ZEF'S RESEARCH

### 3.1 AGRICULTURE, LAND USE, CLIMATE CHANGE

#### INTRODUCTION

Climate change, land use change, and land degradation have substantial impacts on agriculture and sustainable development both individually and in combination. Human activities and underlying socio-economic processes play a key role in shaping the dynamics of these coupled socioecological systems. Climate change, land use change and land degradation often amplify each other, thus, requiring integrated actions to address them across different spatial and temporal scales. ZEF's research on this theme seeks to develop new concepts and groundbreaking methodologies, identify synergies and trade-offs between land use, climate change and their impacts. Key aspects of ZEF's research on agriculture and land use in relation to climate change are working across scales, accounting for social and ecological heterogeneity and distributional effects, integrating inter-sectoral links and spillovers, and deploying novel data combinations as critical ways forward for more comprehensive understanding and appropriate design of sustainability policies.

#### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON AGRICULTURE, LAND USE, CLIMATE CHANGE\*):

- [African Climate and Environment Center - Future African Savannas \(AFAS\)](#)
- [At the Science Policy Interface: LANd Use SYnergies and CONflicts within the framework of the 2030 Agenda \(LANUSYNCON\)](#)
- [Collaboration Initiation Project between Germany and South Korea on the topic: "Hydro-ecological basis and future projections for re- and afforestation efforts under climate change"](#)
- [Researchers back to secondary school – Renewable Energy-powered Water-Energy-Food-Economy Nexus in the Dosso Region in Niger / Part irrigation \(RETO-DOSSO/ Irrigation\)](#)
- [SABio - Transformation and Sustainability Governance of South American Bioeconomies](#)
- [Transitions in Rural-Urban Interfaces: Urbanization, land governance and livelihood in Ethiopia](#)
- [CRC Future Rural Africa](#)

\*) Please note that most ZEF projects have an interdisciplinary set-up and multiple entries are possible.

## PROJECTS HIGHLIGHTS AGRICULTURE, LAND USE, CLIMATE CHANGE:

### AT THE SCIENCE POLICY INTERFACE: LAND USE SYNERGIES AND CONFLICTS WITHIN THE FRAMEWORK OF THE 2030 AGENDA (LANUSYNCON)



[LANUSYNCON](#) conducts research on Agriculture and land use with links to climate change, Biodiversity, Health, Gender, Science Policy.

#### RESEARCH APPROACHES AND METHODS

E.g. dynamic Bayesian network analysis, decision modelling, structured interviews, and GIS analysis.

#### MAIN RESEARCH QUESTIONS

- How are the different SDGs in the context of land use interlinked?
- Which decisions and actions are being discussed to achieve the SDGs and how would they have an impact on conflict and synergies?
- Do science policy interfaces and national policies address the complex interactions between the SDGs?

#### RESEARCH OUTCOME

The research conducted in LANUSYNCON is focusing on interlinkages between SDGs in the land-use context and on how decision-making can utilize synergies and avoid conflicts. We combine case studies on different SDG interactions with research on decision-making and science-policy interactions. By doing so we hope to support coherent land-use decision making in the future.

Over the past year, we specifically looked into the potential benefits from **certification** together with ZEF- colleague [Thomas Dietz](#). We found that certification only provides limited benefits in particular if we look at final outcomes in the social and economic dimension. [Read more about this research on our website here](#).

Another research paper focused for on **gender dimensions** in land use science. It revealed that first authors and senior authors are much more likely to be white and male than black and female. Another study looked into the ZEF doctoral program BIGS-DR and found that female doctoral students are more likely to carry the burden of parenting and household duties while taking, on average, longer to finish their PhD. We would argue that there is a causal relationship. [Read more about this research in the ZEF news here](#) (page 3).

**Project duration:** July 2020 - June 2025

**Project leader:** Jun.-Prof. Lisa Biber-Freudenberger

**Project team** (doctoral researchers): Hannah Nyakio Kamau, Philipo Jacob, Qambemeda Masala Nyanghura, Sara Velander, Fatma Salaheldin Ali, Mahmoud Nady Abdelsabour Mohamed, Niklas Wagner, Vincent Mosesti, Paula Oddone Souza, Sophia Falk

**Project funder:** German Federal Ministry of Education and Research (BMBF)

**Project website:** <https://www.zef.de/lanusyncon.html>

**SDGs (icons):** SDG1 – No Poverty, SDG2 – Zero Hunger, SDG3 – Good Health and Well-being, SDG7 – Affordable and Clean Energy, SDG9 – Industry, Innovation, and Infrastructure, SDG13 – Climate Action, SDG15 – Life on the Land, SDG17 – Partnership for the Goals

**Research countries:** Africa particularly East Africa and Sub-Saharan Africa: Kenya, Tanzania, Egypt, Sudan.

## BLOGS & STORIES

Members of the project team have shared insights from their conference attendances on the [ZEF blog sphere](https://blog.zef.de/?p=7913). In one post, doctoral researchers Niklas Wagner and Sara Velander shared their thoughts and observations on the integration of scientific findings in International Climate Policy from COP 26 in Glasgow, UK 2021 here: <https://blog.zef.de/?p=7913>.



In another blog post, Sara Velander described her experience and takeaways from the 15th Conference of the Parties (COP15) of the UNCCD: <https://blog.zef.de/?p=8117>.

ZEF doctoral researcher Niklas Wagner shared insights from his trip to the ICLEI World Conference: <https://blog.zef.de/?p=8101>

ZEF doctoral researchers Sara Velander and Niklas Wagner wrote about their impressions and observations of the COP 26 in Glasgow, UK: <https://blog.zef.de/?p=7913>





## PUBLICATIONS LANUSYNCON 2020-2022

Biber-Freudenberger, L., Ergeneman, C., Förster, J.J., Dietz, T., Börner, J. 2020. Bioeconomy futures: Expectation patterns of scientists and practitioners on the sustainability of bio-based transformation. *Sustainable Development* 28 (5), 1220-1235.

Nascimento, N., West, T.A.P., Biber-Freudenberger, L., Sousa-Neto, E.R. 2020. A Bayesian network approach to modelling land-use decisions under environmental policy incentives in the Brazilian Amazon, *Journal of Land Use Science* 15 (2-3), 127-141.

Förster, J.J., Downsborough, L., Biber-Freudenberger, L., Mensuro, G.K., Börner, J. 2020 Exploring criteria for transformative policy capacity in the context of South Africa's biodiversity economy, *Policy Sciences* 54, 209-237.

Biber-Freudenberger, L., Ferrara, V., Gibassier D., Glover, J., Grabs, J., Grace, M., Hörmann, S., Targetti, S. 2020. How can environmental regulators support businesses to improve the outcomes of their operations in the food and beverage sector in Europe? Report prepared by an EKLIPSE Working Group UK Centre for Ecology & Hydrology

Guimapi, R.A., Mohamed, S.A., Biber-Freudenberger, L., Mwangi, W., Ekesi, S., Borgemeister, C., Tonnang, H.E.Z., 2020. Decision Support System for Fitting and Mapping Nonlinear Functions with Applications to Insect Pest Management in the Biological Control Context, *Algorithms* 13 (4), 104.

Guimapi, R.A., Mohamed, S.A., Biber-Freudenberger, L., Mwangi, W., Ekesi, S., Borgemeister, C., Tonnang, H.E.Z. 2020. Optimizing spatial positioning of traps in the context of integrated pest management, *Ecological Complexity* 41.

Mponela, P., Shrestha, S., Biber-Freudenberger, L. 2021. Climate change impacts on twenty major crop pests in Central Asia, the Caucasus, and Southeastern Europe, *Food and Agriculture Organization of the United Nations FAO*.

Hermans, K., Berger, E., Biber-Freudenberger, L., Bossenbroek, L., Ebeler, L., Groth, J., Hack, J., Hanspach, J., Hintz, K.S., Kimengsi, J.N., Kwon,

Y.M.C, Oakes, R., Pagona, R., Plieninger, T., Sterly, H., van der Geest, K., van Vliet, J., Wiederkehr C. 2021. Crisis-induced disruptions in place-based social-ecological research – an opportunity for redirection, *GAIA – Ecological Perspectives for Science and Society*.

Kamau, J.W., Schader, C., Biber-Freudenberger, L., Stellmacher, T., Amudavi, D.M., Landert, J., Blockeel, J., Whitney, C., Borgemeister, C. 2021. A holistic sustainability assessment of organic (certified and non-certified) and non-organic smallholder farms in Kenya *Environment, Development and Sustainability* 24, 6984-7021.

Kamau, H.N, Tran, U., Biber-Freudenberger, L. 2021. A long way to go: gender and diversity in land use science, *Journal of Land Use Science* 17:1, 262-280.

Velander, S., Silva Martinelli, F., Idam Sari, D., Ali, F., Biber-Freudenberger, L. 2021. A dichotomy of domestic and academic pathways: challenges of motherhood in an international doctoral program on land science, *Journal of Land Use Science* 17:1, 226-244.

Silva Martinelli, F., Biber-Freudenberger, L., Stein, G., Börner, J. 2022. Will Brazil's push for low-carbon biofuels contribute to achieving the SDGs? A systematic expert-based assessment, *Cleaner Environmental Systems* 5, 100075.

Stark, S., Biber-Freudenberger, L., Dietz, T., Escobar, N., Förster, J.J., Henderson, J., Laibach, N., Börner, J. 2022. Sustainability implications of transformation pathways for the bioeconomy, *Sustainable Production and Consumption* 29, 215-227.

## PUBLICATIONS AGRICULTURE, LAND USE, CLIMATE CHANGE 2022

Andreotti, F., Bazile, D., Biaggi, C., Callo-Concha, D., Jacquet, J., Jemal, O.M., King, O., Mbosso, C., Padulosi, S., Speelman, E., van Noordwijk, M. 2022. When neglected species gain global interest: Lessons learned from quinoa's boom and bust for teff and minor millet. *Global Food Security*, 32:100613. (Open Access) [Further Information](#)

Aura, C. M., Roegner, A., Owiti, H., Birungi, D., Fiorella, K.J., Corman, J., Kayanda, R., Mbullo, P.,



- Nyamweya, C.S., Mchau, G., Daniels, M., Abila, R.O. 2022. Mind the gaps for the best practices: Enhancing the management of Lake Victoria fisheries resources. *Lakes and Reservoirs*, 27:10. (Open Access) [Further Information](#)
- Baumüller, H., Ikpi, U., Jumpah, E.T., Kamau, G.M., Kergna, A.O., Mose, L., Nientao, A., Omari, R., Phillip, D., Salasya, B.D. 2022. Documenting the digital transformation of African agriculture: Use and impact of digital technologies among agricultural intermediaries. [Further Information](#)
- Burbano-Figueroa, O., Sierra-Monroy, A., David-Hinestroza, A., Whitney, C., Borgemeister, C., Luedeling, E. 2022. Farm-Planning under Risk: An Application of Decision Analysis and Portfolio Theory for the Assessment of Crop Diversification Strategies in Horticultural Systems. *Agricultural Systems*, 199: 103409. (Open Access) [Further Information](#)
- Callo-Concha, D., Harou L.I., Krings, L., Ziemacki, J. 2022. The ‘fine balance’ of West African savannah parklands: biomass generation versus firewood consumption. *Journal of Agriculture and Rural Development in the Tropics and Subtropics*, 123:75-85. (Open Access) [Further Information](#)
- Chrisendo, D., H. Siregar, M. Qaim (2022). Oil Palm Cultivation Improves Living Standards and Human Capital Formation in Smallholder Farm Households. *World Development*, Vol. 159, 106034, <https://doi.org/10.1016/j.worlddev.2022.106034>.
- Kieti, J., Waema, T.M., Baumüller, H., Ndemo, E.B., Omwansaa, T.K. 2022. What really impedes the scaling out of digital services for agriculture? A Kenyan users’ perspective. *Smart Agricultural Technology*, 2: 100034. (Open Access) [Further Information](#)
- Kovak, E., Blaustein-Rejto, D., Qaim, M. 2022. Genetically Modified Crops Support Climate Change Mitigation. *Trends in Plant Science*, 27: 627-629. (Open Access) [Further Information](#)
- Krishna. V.V., Keil, A., Jain, M., Zhou, W., Jose, M., Surendran-Padmaja, S., Barba-Escoto, L., Balwinder-Singh., Jat, M.L., Erenstein, O. 2022. Conservation Agriculture Benefits Indian Farmers, but Technology Targeting Needed for Greater Impacts. *Frontiers in Agronomy*, 4:772732. (Open Access) [Further Information](#)
- Martinelli, F. S., Biber-Freudenberger, L., Stein, G., Börner, J. 2022. Will Brazil’s push for low-carbon biofuels contribute to achieving the SDGs? A systematic expert-based assessment. *Cleaner Environmental Systems*, 5: 100075. (Open Access) [Further Information](#)
- Netter, L., Luedeling, E., Whitney, C. 2022. Agroforestry and reforestation with the Gold Standard-Decision Analysis of a voluntary carbon offset label. *Mitigation and Adaptation Strategies for Global Change*, 2(27):17. (Open Access) [Further Information](#), [Review](#)
- Sibhatu K.T., Steinhübel, L., Siregar, H., Qaim, M., Wollni, M. 2022. Spatial Heterogeneity in Smallholder Oil Palm Production. *Forest Policy and Economics*, 139: 102731. [Further Information](#)
- Sili, M., Dürr, H. 2022. Bioeconomic Entrepreneurship and Key Factors of Development: Lessons from Argentina. *Sustainability*, 14 (4): 2447. (Open Access) [Further Information](#)
- Tadesse E.K., Noulèkoun F., Son Y., Khamzina A. 2022. Woody species diversity, structural composition, and human use of church forests in central Ethiopia. *Forest Ecology and Management*, 506: 119991. [Further Information](#)
- Thiam, S., Salas, E.A.L., Houngouè, N.R., Almoradie, A.D.S., Verleysdonk, S., Adoukpe, J.G. 2022. Modelling Land Use and Land Cover in the Transboundary Mono River Catchment of Togo and Benin Using Markov Chain and Stakeholder’s Perspectives. *Sustainability*, 14: 4160. (Open Access) [Further Information](#)
- Tisler, T.R., Teixeira, F.Z., Nóbrega, R.A.A. 2022. Conservation opportunities and challenges in Brazil’s roadless and railroad-less areas. *Science Advances*, 8 (9). (Open Access) [Further Information](#)
- Whitney, C. W., Kuhl, F., Schiffers, K., Luedeling, E. 2022. Assessing agroforestry options for sustainable land use in Germany. In EURAF, 385. Nuoro, Italy, 2022. (Open Access) [Further Information](#)

## PUBLICATIONS 2021 AND OLDER

### ONGOING DOCTORAL THESES ON AGRICULTURE, LAND USE, CLIMATE CHANGE 2022

[Ayah, E.](#) Local Adaptation strategies to mitigate the impact of climate change on food security in semi-arid areas of Ghana.

[Baysal, G.](#) Analyzing the Impact of Land Use/Cover Change on Ecosystem Services. Doctoral Thesis at Faculty of Agriculture, Center for Development Research, University of Bonn.

[Burbano Figueroa, Oscar Alberto.](#) Yield, productivity and technical gaps that limit the cotton agricultural production system in the Colombian Caribbean. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Chapagain, Dipesh.](#) Spatiotemporal trend and future risks of climatic disaster impacts in Nepal. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Dzudzor, Makafui.](#) Malnutrition and household dietary diversity in urban Ghana: evidence from three cities.

[Figueroa, G.](#) Alternative agriculture and farmers' decision making processes in the context of the "updating of the socio-economic model" in Cuba. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Forkutsa, O.](#) MSc: Assessing soil-borne CO<sub>2</sub> exchange in irrigated cropland of the Aral Sea Basin as affected by soil types and agricultural management; Modeling of soil C and N dynamics of rice-wheat cropping systems under conservation agriculture in. Thesis at ZEF.

[Forneck S.](#) Changing Hgandarome(s) – Development, Local Perceptions and the Social Construction of Belonging in Zangla/India. Doctoral Thesis at The Faculty of Arts, University of Bonn.

[Ghotbi, M.](#) Farm-lands management Implication for soil microbial properties and plants nutrient availability. Doctoral Thesis at Faculty of Agriculture,

Center for Development Research, University of Bonn.

[Isah, Abdulrasheed Abdulkarim.](#) Weather Variability and Market Failures: Implications for Risk Management and Welfare Outcomes of Agrarian Households in Nigeria. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Koo, H.](#) Agricultural land use planning for enhancing ecosystem services using scenario-based assessment: Cases of Bolgatanga and Bongo districts in the Upper East Region, Ghana. Doctoral Thesis at Faculty of Agriculture, Center for Development Research, University of Bonn.

[Meres, Hadush.](#) Water extreme risk modelling and management under the influence of environmental change. Doctoral thesis at Faculty of Mathematics and Natural Sciences, University of Bonn.

[Monteiro Oliveira Junior, V.](#) Electrification of isolated communities in the Brazilian Amazon with renewable energy: social, economical, and environmental factors in the performance of installed systems. Thesis at ZEF.

[Ntrakwah, Y.-M.](#) Assessing the impact of agricultural innovations on smallholder farmers and food security in sub-Saharan Africa. Faculty of Agriculture, University of Bonn.

[Regassa, Mekdim Dereje.](#) Rural-Urban Linkage and Household's Welfare in Sub-Saharan Africa (SSA). Faculty of Agriculture, University of Bonn.

[San, Su Mon.](#) An integrated analysis of managing agricultural encroachment in permanent Forest Estates: A case study in Taungoo District, Myanmar. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[van Luijk, G.](#) Modelling biogeographic impacts of policy-induced land-use changes on ecosystem services in Amazonia. University of Frankfurt, Faculty of Geography, Department of Physical Geography.

[Veridiano, Rizza Karen.](#) Policy, practice and people: towards science-based climate-resilient forest management in the Philippines. Doctoral thesis at Faculty of Agriculture, University of Bonn.

## OUTREACH on AGRICULTURE, LAND USE, CLIMATE CHANGE

ZEF Distinguished Professor [Joachim von Braun](#) gave a presentation at the British Parliament on “[The global food crisis: implications for agriculture in Africa](#)” to the All-Party Parliamentary Group on Agriculture and Food for Development (AgDev) today, Monday, July 18, 2022. The meeting was chaired by [Lord Cameron of Dilligton](#). [[July 18, 2022.](#)]

**New Working Paper 215:** Can the agroprocessing sector create jobs in Africa? Evidence from Ethiopia, Ghana and Tunisia. Authors: Zaneta Kubik, Tigabu Getahun, Rose Omari and Meriem Oueslati Zlaoui. [Read full paper here.](#) [[July 13, 2022.](#)]



ZEF researchers took part in the 15<sup>th</sup> session of the **Conference of the Parties (COP15)** of the United Nations Convention to Combat Desertification ([UNCCD](#)) in Abidjan, Côte d'Ivoire, May 9-20, 2022. ZEF was represented by researchers, students and colleagues from ZEF-projects [AFAS](#), [CABES](#) and [LANUSYNCON](#). The overall theme of COP 15 was '[Land. Life. Legacy: From scarcity to prosperity](#)'. Read the blog post by ZEF/LANUSYNCON doctoral student Sara Velander about her insights into the UNCCD'S Science-Policy Interface (SPI) [here](#). [June 03, 2022.]

**Malnutrition** in developing countries is best addressed by improving access to markets and not by increasing the variety of crops grown on smallholder farms. This is the conclusion of a recent study by the [MwAPATA Institute in Malawi](#) and the University of Bonn in Germany. More variety in animal production, however, does show positive effects. The findings were published in the journal “Lancet Planetary Health”. [[May 10, 2022.](#)]

**Publication (Open Access):** Makaiko G. Khonje, Jacob Ricker-Gilbert, Milu Muyanga, Matin Qaim: Farm-level production diversity and child and adolescent nutrition in rural sub-Saharan Africa: a multicountry, longitudinal study; Lancet Planetary Health, DOI: [https://doi.org/10.1016/S2542-5196\(22\)00071-7](https://doi.org/10.1016/S2542-5196(22)00071-7) Press Release by University of Bonn: [English / German](#)



## 3.2 WATER RESOURCES (MANAGEMENT)

### INTRODUCTION

In many regions of the world, water resources are being overexploited and polluted. In addition, severe floods and droughts are putting food security, the natural environment and people's health at risk. These developments call for a thorough re-thinking of current water management strategies. Especially when we look at future challenges related to climate change and an increasing competition for water resources. ZEF has longstanding experience in water-related research, especially in Central Asia and Africa. ZEF's strength lies in linking different dimensions by applying interdisciplinary approaches and bridging gaps between stakeholders by using transdisciplinary approaches. Moreover, ZEF has a strong international research and stakeholder network. ZEF is also a member in the Bonn Water Network.

### CURRENT OR RECENT ZEF PROJECTS ON WATER RESOURCES (MANAGEMENT)

- [CLIMAFRI - Implementing CLIMate-sensitive Adaptation strategies to reduce Flood Risk in the transboundary Lower Mono River catchment in Togo and Benin](#)
- [Collaboration Initiation Project between Germany and South Korea on the topic: "Hydro-ecological basis and future projections for re- and afforestation efforts under climate change"](#)
- [ERA-SOLMAB - Energy recovery and cleaner groundwater: techno-economic and environmental assessment of municipal solid waste management in the city of Bamako, Mali](#)
- [Cooperation project WASCAL-PAUWES for capacity building](#)
- [WESA: Water and Energy Security for Africa](#)



## PROJECTS HIGHLIGHTS WATER RESOURCES (MANAGEMENT)

### ENERGY RECOVERY AND CLEANER GROUNDWATER: TECHNO-ECONOMIC AND ENVIRONMENTAL ASSESSMENT OF MUNICIPAL SOLID WASTE MANAGEMENT IN THE CITY OF BAMAKO, MALI (ERA-SOLMAB)

#### RESEARCH IN BRIEF

The project conducts research on a number of issues, including (i) localization of landfills and contaminated sites; (ii) modeling of groundwater dynamics and material transport (potential paths between landfills / contaminated sites and groundwater extraction facilities); (iii) development of measures to avoid or reduce the contamination of pollutants into the aquifer; (iv) assessment of existing hazard potentials and identification of possibilities for minimizing the effects on groundwater extraction for drinking water.

#### RESEARCH APPROACHES AND METHODS

Mapping of landfill sites utilizing information gathered on the ground supported by remote sensing techniques, groundwater modeling (simulations with the model FEFLOW) and assessment of hazard potential for groundwater contamination due to landfill sites using DRASTIC model.



**BONN WATER  
NETWORK  
STRENGTHENS**

**COMPETENCES FOR  
SUSTAINABLE WATER SOLUTIONS  
WORLDWIDE**

**Project team:** Christian Borgemeister, Navneet Kumar, Sarah Verleysdonk, Bernhard Tischbein,  
**Project funder:** BMBF (AfResi): BMBF Strengthening Resilience and Structural Development in African Cities and Conurbations  
**Research countries:** Mali

**SDGs (icons)** Health (SDG 6), Water and Sanitation (SDG 6), Make cities and human settlements inclusive, safe, resilient and sustainable (SDG 11) and Ensure sustainable consumption and production patterns (SDG 12)

Seven Bonn-based organizations have been sharing their insights into solutions towards a more water secure world by launching the '**Bonn Water Network (BWN)**' in order to coordinate and intensify their endeavors for sustainable water futures. In the meantime, BWN has been growing and currently consists of eleven renowned institutions with longstanding experience on water and related issues. Its current member are: The Bonn International Centre for Conflict Studies (BICC); Bonn University with its Institute of Geography (GIUB) holding the UNESCO Chair in Human Water Systems, the Center for Development Research (ZEF) and the Institute for Hygiene and Public Health (IHPH); the German Institute of Development and Sustainability ([IDOS](#)); the IUCN Environmental Law Centre; and three Bonn-based UN institutions: the United Nations Institute for Environment and Human Security (UNU-EHS), the Secretariat of the United Nations Convention to Combat Desertification (UNCCD) and the Global Water Operators Partnerships Alliance (UN-Habitat/GWOPA). In addition, Berlin based Water Integrity Network (WIN) and the International Centre for Water Resources and Global Change (ICGWRC) based in Koblenz are partners of the BWN.



## PUBLICATIONS WATER RESOURCES (MANAGEMENT) 2022

Akhtar, F., Borgemeister, C., Tischbein, B., Awan, U.K. 2022. Metrics Assessment and Streamflow Modeling under Changing Climate in a Data-Scarce Heterogeneous Region: A Case Study of the Kabul River Basin. *Water*, 14(11): 1697. (Open Access) [Further Information](#)

Akhtar, F., Nawaz, R. A., Hafeez, M., Awan, U. K., Borgemeister, C., Tischbein, B. 2022. Evaluation of GRACE derived groundwater storage changes in different agro-ecological zones of the Indus Basin. *Hydrology*, 605: 127369. [Further Information](#), [Review](#)

Canon-Barriga, C., Bogardi, J., Tischbein, B. 2022. Prioritizing neighborhoods for intervention to mitigate urban small disasters triggered by rainfall. *Urban Water Journal*. [Further Information](#)

Idrissou, M., Diekkrüger, B., Tischbein, B., Op de Hipt, F., Näschen, K., Poméon, T., Yira, Y., Ibrahim, B. 2022. Modeling the Impact of Climate and Land Use/Land Cover Change on Water Availability in an Inland Valley Catchment in Burkina Faso. *Hydrology*, 9(1),12. (Open Access) [Further Information](#)

Mehmood, Y., Qadar, A., Waheed, A. 2022. Water Contamination, Households' Risk Perceptions, and Averting Behavior: Evidence from the Nullah Lai, Rawalpindi, Pakistan. *Journal of Asian and African Studies*. [Further Information](#)

Meresa, H., Tischbein, B., Mekonnen, T. 2022. Climate change impact on extreme precipitation and peak flood magnitude and frequency: observations from CMIP6 and hydrological models. *Natural Hazards*. [Further Information](#)

Ogbu, K. N., Rakovec, O., Samaniego, L., Okafor, G. C., Tischbein, B., Meresa, H. 2022. Evaluating the skill of the mesoscale Hydrologic Model (mHM) for simulating River Discharge in Sparsely-Gauged Basins in Nigeria. [Further Information](#)

Sajid, I., Tischbein, B., Borgemeister, C., Flörke, M. 2022. Performance Evaluation and Water Availability of Canal Irrigation Scheme in Punjab Pakistan. *Water*, 14 (3): 405. (Open Access) [Further Information](#)

## PUBLICATIONS 2021 AND OLDER ONGOING DOCTORAL THESES WATER RESOURCES (MANAGEMENT) 2022

[Ete, M.](#) An Ethnographic Study of Local Development Brokers in the Arena of Hydropower Development in Arunachal, India. Doctoral Thesis at Center for Development Research, University of Bonn.

[Hashweh, L.](#) The hydrochemistry and hydrogeology of Ewaso Narok wetland in Kenya Modelling of a floodplain in a data-scarce environment. Bonn University/ The Faculty of Mathematics and Natural Sciences.

[Havemann, A.](#) Still living with the floods: Exploring ways of adaptation to climate change in Central Vietnam. Doctoral Thesis at Center for Development Research (ZEF), University of Bonn.

[Hennecke, A.](#) Impact of biofuel production on freshwater resources and greenhouse gas emissions – LCA case studies on selected farming systems in Mexico. Doctoral thesis at ZEF.

[Kanyoka, P.](#) Addressing sectoral water values in an integrated hydro-economic water modeling framework: Olifants river basin. [Download](#) [DOCX | 15.03KB]

[Mehmood, Kashif.](#) Assessment of water allocation using modelling approach considering groundwater dynamics in Irrigated Indus Basin-Pakistan. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Ortega Sandoval, Abby Daniela.](#) Building flood resilient cities through comprehensive Sustainable Urban Drainage Systems (SUDS) planning. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Sabri Hassan, D.](#) Simulating water re-use impacts on soil and groundwater contamination under irrigated agriculture in the Nile Delta in Egypt. Thesis at ZEF.

[Sajid, Imran.](#) Options to improve irrigation efficiency and productivity in Punjab Pakistan. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Voigt, H.](#) Hydrological dimensions of mixed species tree plantations in Khorezm, Uzbekistan. Doctoral Thesis at University of Bonn.

## PUBLISHED DOCTORAL THESES 2021-2022

[Canon Barriga, C.](#) 2022. The Hidden Risk of Conventional Floodplain Mapping: Diagnosis in Cali, Colombia. Dissertation at Faculty of Agriculture, Universität Bonn. University of Bonn

[Further Information](#)

## OUTREACH ON WATER RESOURCES (MANAGEMENT)



New Collaboration Initiation Project between Germany and South Korea on Hydro-ecological basis and future projections for re- and afforestation efforts under climate change. Nine colleagues from and affiliated with ZEF, Germany, and six colleagues from the **Agroforestry Systems and Ecology Lab**, [Korea University, South Korea](#), held a workshop at ZEF in hybrid mode [April 21-22, 2022](#). The workshop was part of an initiative to form an international, interdisciplinary

working group consisting of experts in agroforestry, water resources management, climate change, land degradation, remote sensing and geospatial technologies for analyzing past experiences and informing future Afforestation and reforestation efforts in the changing climate environment. The main cooperation partners for the project are ZEF (University of Bonn) and the Agroforestry Systems and Ecology Lab, Korea University, South Korea. Main funders are the German Research Foundation ([DFG](#)) and the National Research Foundation ([NRF](#)) of Korea.

ZEF senior researcher [Fazlullah Akhtar](#) is a Guest Editor of a Special Issue from the [American Chemical Society's Journal ES&T Water](#) on [Water Challenges and Solution Opportunities in South Asia, a Rapidly Developing Region of the World](#). The Special Issue provides a high-level overview of the water issues faced by South Asia, as well as technological and policy examples of efforts to overcome the regional challenges. Moreover, the Special Issue sets the groundwork for future advancements to maintain water sustainability in this rapidly developing region.



## 3.3 FOOD AND NUTRITION

### INTRODUCTION

Despite much progress in recent decades, food security and nutrition remain one of the world's key challenges. This challenge takes several forms, which are distributed differently across the world: undernourishment, i.e. an insufficient intake of dietary calories; overnutrition, i.e. the excessive intake of dietary calories; and micronutrient deficiencies, i.e. the insufficient intake of vital nutrients such as vitamins, iron, zinc and others. Referred to as the triple burden of malnutrition, these three elements can interact and are recorded typically within national populations, but also within households and even within a single individual. ZEF has a long track record of studies on food and nutrition insecurity, their linkages, drivers and potential solutions, and participated in large international research projects. ZEF research seeks to better understand malnutrition in specific, acute contexts and at various scales, across time, and to support actions toward ending malnutrition globally. Therefore, ZEF's research on food and nutrition security is linked to almost all other themes research schemes, such as agriculture and land use, health, gender, markets and services. Recent ZEF research estimated the costs of ending hunger by 2030 and proposed concrete policy actions.

### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON FOOD AND NUTRITION

- [Dr. Hermann Eiselen Doctoral Program of the fiat panis Foundation](#)
- [Improving dietary quality and livelihoods using farm and wild biodiversity through an integrated community-based approach in Kenya](#)
- [NOURICITY - Partnerships for Healthy Diets and Nutrition in Urban African Food Systems - Evidence and Strategies](#)
- [ProciNut \(Production and Processing of Edible Insects for Improved Nutrition\) - Innovative Approaches to process Local Food in Sub-Saharan Africa and Southeast Asia](#)
- [Scientific Group of the United Nations Food Systems Summit 2021 \(Policy dialogue\)](#)



## POLICY DIALOGUE FOOD AND NUTRITION

### SCIENTIFIC GROUP OF THE UNITED NATIONS FOOD SYSTEMS SUMMIT 2021

In 2021, UN Secretary-General António Guterres convened a Food Systems Summit to raise global awareness and lead global commitments and actions that transform food systems to resolve not only hunger, but to reduce diet-related disease and heal the planet. The Secretary-General called for collective action of all citizens to radically change the way we produce, process, and consume food. He had put in place several structures to support the Summit process, including a Scientific Group.

#### THE SCIENTIFIC GROUP:

- Served as an independent and diverse group of leading researchers and scientists from around the world.
- Was responsible for ensuring the robustness, breadth and independence of the science that underpinned the Summit and its outcomes.
- Informed the Summit's content, recommended outcomes, clarified the level of ambition and commitments that emerged from the Summit.
- Worked closely with other structures for the Food Systems Summit (see Terms of Reference of the Scientific Group and communications with UN leadership see at <https://sc-fss2021.org/about-us/tor-and-letters-un-leadership/>). The Deputy secretary General thanked the Chair of the Group, Joachim von Braun with a letter [https://sc-fss2021.org/wp-content/uploads/2022/01/2021-12-29\\_DSG\\_to\\_Joachim-von-Braun.pdf](https://sc-fss2021.org/wp-content/uploads/2022/01/2021-12-29_DSG_to_Joachim-von-Braun.pdf)
- The Scientific Group served as planned until the end of 2021, and closed down thereafter. Reports of all Scientific Group meetings see at <https://sc-fss2021.org/about-us/scientific-group-meetings/>
- As the UN Secretary General decided on a follow up process to the Summit, we at Center for Development Research (ZEF) at Bonn University, maintain this website and occasionally include new science related food systems information that relate to the Summit follow up.
- A comprehensive publication – the science reader – informed the Summit: [https://sc-fss2021.org/wp-content/uploads/2021/09/ScGroup\\_Reader\\_UNFSS2021.pdf](https://sc-fss2021.org/wp-content/uploads/2021/09/ScGroup_Reader_UNFSS2021.pdf) and is being prepared for publication with Springer Publ. as an open access book in 2022.
- The activities at ZEF for the Scientific Group and facilitating inclusion of partners from the global South were kindly supported by a grant from Federal Ministry of Economic Cooperation and Development (BMZ).

## PROJECTS HIGHLIGHTS FOOD AND NUTRITION:

### PRODUCTION AND PROCESSING OF EDIBLE INSECTS FOR IMPROVED NUTRITION (PROCINUT)



#### SDGs

ProciNut aims to contribute to

**Goal 1.** End poverty in all its forms everywhere by promoting insect production and processing as income generating activity.

**Goal 2.** End hunger, achieve food security and improved nutrition and promote sustainable agriculture by making nutritious insects available as food all year round and by promoting balanced diets including protein rich insects and insect products.

**Goal 5.** Achieve gender equality and empower all women and girls by following a gender sensitive approach in project research and capacity development.

**Goal 8.** Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all by providing highly relevant and locally adapted research results that promote the development of the newly emerging insect sector and ultimately helps creating employment opportunities through innovation.

**Goal 9.** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation by training PhD students within the project on the production and processing of local edible insects.

**Goal 10.** Reduce inequality within and among countries by providing technology options for even remote rural communities for improved nutrition and income generation.

**Goal 11.** Ensure sustainable consumption and production patterns and **Goal 12.** Take urgent action to combat climate change and its impacts\* by providing insects as alternative food option to replace unsustainable meat consumption and hence provide protein rich food with lower greenhouse gas emissions during production.

**Goal 13.** Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss by providing an innovative alternative to the traditional collection of wild insects that often leads to over-exploitation of natural insect resources and biodiversity loss.

**Project duration:** August 2018 - December 2022

**Project team at ZEF:** Simone Kathrin Kriesemer (Project lead and management), Jochen Dürr (value chain analysis), Chama Inson (associated entomologist), Myint Thu Thu Aung (junior researcher)

**Cooperating team:** David Allan (Spectrum, Myanmar), Fanilo Allivenja (University of Antananarivo, Madagascar), Hery Andriamazaoro (FOFIFA, Madagascar), Su Hliang Chein (Spectrum, Myanmar), Aye Aye Myint (Yezin Agricultural University, Myanmar), Ei Phyu (Hla Hla Swe) (Spectrum, Myanmar), Harifetra Rakotoarijaona (University of Antananarivo, Madagascar), Faniry Harinivo Randriamiarana (University of Antananarivo, Madagascar), Narilala Randrianarison (FOFIFA, Madagascar), Christian Ratompoarison (University of Antananarivo, Madagascar), Lala Harivelo Ravaomanarivo (University of Antananarivo, Madagascar), Jessica Razafiarison (University of Antananarivo, Madagascar), Andrianantenaina Razafindrakotomamonjy (University of Antananarivo, Madagascar), Chalut Santivarangkna (Institute of Nutrition, Mahidol University, Thailand), Naw May Khin Thet (Spectrum, Myanmar), Kyi Min Wai (Spectrum, Myanmar).

**Project funder:** German Federal Ministry of Food and Agriculture

**Project website:** <https://www.zef.de/project/procinut>

**Research countries** Madagascar, Myanmar, Thailand

## MAIN RESEARCH QUESTIONS

1. Which species are currently collected and produced for household consumption or markets and how are they produced or harvested? What are problems hampering quality etc.?
2. How can the production of edible insects be optimized? To reach better processing and nutritional results  
a. Production constraints; b. Feed; c. Rearing facilities and d. Process management
3. Which species are suitable for mini-farming?
4. What is the nutritional value of commonly collected and/or reared species and their potential to contribute to nutritional demands and needs of local populations?
5. How can edible insects be integrated in local diets? Which dishes are most nutritious and accepted by consumers?
6. How are insects presently processed and preserved? Which are the problems involved? Which alternatives exist?
7. Are there food safety issues related to insect consumption? If yes, can alternative processing practices reduce these issues?
8. How do different processing practices influence nutritional values and shelf-life?
9. Which processing, preservation and storage techniques are feasible for different species and meeting consumer's preferences and market demands?
10. Which channels of dissemination could be used for processed insect food (school meals, etc.)?
11. Which edible insects are currently used in household consumption? How are they prepared? What are limitations to the use of insects in household consumption and how can they be overcome?
12. What do livelihoods of target group households look like and what role edible insects play for them?
13. What are prevailing roles and responsibilities of women and men related to edible insect production/harvesting/processing/marketing?
14. What are current food consumption patterns, especially of edible insects, of the different members in the community and why?
15. What are potential trade-offs for women/men when introducing new production and processing methods?
16. Which are socio-economic benefits of (different) production and processing methods?
17. How do value chains of edible insects function? What is the economic importance of insect value chains in terms of: a. Value addition and employment generation? b. Nutrition and health effects (positive and negative)? c. Participation of women in value chains and how can their control be improved?
18. Which potentials and limitations for regional market development of edible insects exist?
19. What are the constraints of the present institutions to provide client-oriented services and advice to women and men? And how could these be eased?
20. How can a market for processed insect foods and fortified products be established and how can insect foods be made attractive to the young generation?

## MAIN RESULTS

### *Consumer attitudes towards entomophagy in Myanmar*

Myanmar is one of the Southeast Asian countries where eating insects has been practiced for centuries. However, there is a lack of research on consumer perceptions of edible insects in the country, which makes it difficult to increase consumption. A ProciNut study examined customer attitudes towards insect consumption using a binary logistic analysis of data from 863 respondents. **The results show that 73% of the respondents consume insects, but only 41% express a positive attitude towards entomophagy (consumption of insects as food).** Out of 14 independent variables, only five variables, namely consumption, age, region, family size, and disgust, have a significant impact on consumer attitudes

towards entomophagy. With more than 99% of respondents being familiar with edible insects, insect phobia has no discernible influence on attitudes (Aung and Dürr, presented at Tropentag 2021).

### ***The role of trust in consumers' willingness to eat reared crickets in Myanmar***

**Although crickets are a popular food item**, very few farmers produce them and the farming business is not yet thriving like in other countries. This is mainly due to a lack of demand by consumers, who are still used to eat crickets collected in the wild only. Therefore, this study aimed to identify **the effect of the role of trust** on attitudes and willingness to eat reared crickets in Myanmar. For this study, a sample of **224 respondents from Yangon and Mandalay** who had recently eaten wild-harvested crickets was used. Data were collected through telephone interviews. Confirmatory factor analysis was applied for validation and the data were analyzed using structural equation models. **The result showed that trust in cricket producers significantly affects attitude and intention to consume, while trust in retailers showed no significant effect on neither attitude nor willingness to eat farmed crickets.** At the same time, attitude was significantly related to willingness to eat farmed crickets (Aung and Dürr, presented at Tropentag 2021).

A case study was conducted in the rural community of Sandrandahy in the central highlands of Madagascar, where wild-collected entomophagy is a common practice and malnutrition is pervasive. The data was obtained from a household survey in 2020. Using a systematic cluster sampling with probability proportional to size (PPS), a sample of 216 households was randomly selected in 12 out of 38 villages. Descriptive statistics, correlation and regression analysis were used to show the relative importance of insects for local diets and to test different food security hypotheses. **The results show that insects contribute significantly to animal protein consumption, especially during the wet season when other protein sources are scarce.** They are a cheap source of protein, as much appreciated by the rural population as meat. There are no significant differences in the amounts of insects consumed by poorer versus wealthier households or between rural and urban households. Insect consumption levels are strongly related to the time spent on wild collection (Dürr and Ratompoarison, 2021).

Another study, based on the same household survey, examines insect consumption behavior in Sandrandahy. Several linear regressions were used to determine factors that explain the differences in the amounts of insects consumed between local consumers. **The time households spend harvesting insects, a variable which has not been accounted for in any of the other literature sources, is the most important factor explaining the amount of insects consumed.** Given the results, we attempted to explain why socioeconomic factors and most product-related attitude factors play no role in predicting insect consumption patterns in rural Madagascar (Meysing et al. 2021).

### ***Production of yellow mealworms (*Tenebrio molitor*) (Coleoptera: Tenebrionidae) for food and feed in Myanmar***

In this study, wheat bran, wheat bran with Chinese cabbage, rice bran with Chinese cabbage, and rice bran were used to assess growth performance of *T. molitor* larvae. The performance of mealworms which were fed with different diets was measured. Among the feeds, mealworm larvae fed wheat bran with Chinese cabbage and rice bran with Chinese cabbage showed the heavier larval weight than only wheat bran and rice bran. According to this experiment, **mealworm larvae fed wheat bran supplemented with Chinese cabbage showed improved growth rate and increased production efficiency.** However, economic studies of costs and benefits are still pending. This is interesting since rice is locally available while wheat bran is imported (Myint and Htut, presented at Tropentag 2021).



### ***Sustainable production of yellow mealworm for protein food using low-value agricultural by-products***

The aim of this research is to assess the growth of the yellow mealworm (*Tenebrio molitor* L.) reared with 4 different vegetable and bran-based feed mixtures. The feed mixtures were rice bran, rice bran mixed with Chinese cabbage, wheat bran and wheat bran mixed with Chinese cabbage. The worm grew healthily and had a life cycle of about 5-5.5 months. Adult larvae fed rice bran mixed with Chinese cabbage showed a significantly shorter larval instar duration than larvae fed rice bran, wheat bran mixed with Chinese cabbage, and wheat bran. The survival rate of the yellow mealworm was not significantly different (between 53 and 76%), and the adult larva fed rice bran mixed with Chinese cabbage and rice bran (71 g/tray) and wheat bran (80 g/tray) had similar yields per rearing tray, but had a lower yield than wheat bran mixed with Chinese cabbage (131 g/tray). The estimated production costs of the fresh worm larvae are between 4,070 and 6,742 EUR per ton (Santivarangkna et al. in preparation)

### ***Fermentation of salted crickets and processing into "Nga Pi" and drying of silkworms with the addition of salt***

The fermentation of crickets or edible insects is not very well documented but has a huge potential in Southeast Asian countries, as fermented shrimp paste and sauces are traditionally used to flavor dishes. The products from previous laboratory tests with dried and salted crickets were further processed by fermentation. Drying silkworms with salt can be recommended as a simple method that can reduce microbiological risk. The salt can limit the growth of microorganisms that can occur during sun drying when temperature and heat cannot be controlled (Santivarangkna, in preparation) well.

## **MADAGASCAR:**

### ***Nutritional profile of *Nomadacris septemfasciata* and its prospective use to combat malnutrition in Madagascar***

The red migratory locust (*Nomadacris septemfasciata*) is a species found in abundance in the highlands of Madagascar during the hot and humid season. The aim of this study was to examine the nutrient composition of migratory red locust and to discuss its potential use to improve nutrition. Analysis shows that the protein content of *N. septemfasciata* is the highest among the Orthoptera orders at 77.46% of dry matter. The locust contains all essential amino acids with a good amino acid score according to FAO / WHO / UNU recommendations, with the exception of methionine. The high tryptophan content of 6.17 g / 100 g protein allows this insect to be used as a supplement to foods containing limited amino acid, such as rice and tubers, both staple foods in Madagascar. The lipid fraction represents 8.46% of the dry matter with 14 fatty acids and the dominance of palmitic acid with 23.4%, arachidic acid with 14.9% and 10.8%  $\alpha$ -linolenic acid. *N. septemfasciata* powder contains a good omega-3 content of 10.8 g / 100 g fat, content similar to cod liver oil, fish oil and walnut oil. The content of iron ( $9.99 \pm 1.00$  mg / 100 g) and zinc ( $21.16 \pm 1.90$  g / 100 g) makes the insect a potential source of minerals that can be used to fortify food (RATOMPOARISON et al., presented at Tropentag 2021).

## ***Small-scale farming of edible *Gryllus bimaculatus* in Madagascar for healthy and sustainable dietary protein***

The aim of the study was to optimize the housing for the production of the two-spotted cricket *Gryllus bimaculatus*, which occurs naturally in the region. Six rearing rooms (2 m × 2.50 m × 2.45 m) were built with double wall structures. This construction made it possible to control the temperature and relative air to stabilize internal humidity and to minimize the temperature variation between day and night that are characteristic of tropical climates. The reared crickets were fed various feeds such as ready-made poultry feed and vegetable waste from the kitchen. The climatic conditions of the room during the experiment were  $28 \pm 2$  °C for the temperature and  $82 \pm 10\%$  relative humidity. From the 200 larvae in the first instar at the beginning we received 130 to 132 adults with a development time of 30 to 43 days. The average fresh weight of an adult cricket was between 1.06 and 1.50 grams. Conclusion: The room offers optimal climatic parameters for rearing and a successful production. The survival rate of the larvae was 66%. Both the development time to adult animals and their fresh weight are comparable with previous laboratory results. The produced crickets were eaten immediately after cooking or dried and powdered (Razafindrakotomamonjy et al., presented at Tropentag 2021).



### **PUBLICATIONS PROCINUT PROJECT 2021-2022**

Meysing, A., Forneck, S., Razafindrakotomamonjy, A., Dürr, J. 2021 Why socio-economic and attitudinal factors cannot predict entomophagy in rural areas of Madagascar. Journal of Insects as Food and Feed, [DOI: 10.3920/JIFF2021.0086](https://doi.org/10.3920/JIFF2021.0086)

Dürr, J., Ratompoarison, C. 2021. The contribution of edible insects to food and nutrition security in the central highlands of Madagascar. Foods. 10(12):2978. <https://doi.org/10.3390/foods10122978>

### **Conference contributions (oral presentations and posters):**

Aung MTT and J Dürr. Role of Trust in Consumer's Willingness to Eat Reared Crickets in Myanmar, presented virtually at Tropentag 2021.

Aung MTT and J Dürr. Consumers' attitude towards entomophagy in Myanmar, presented virtually at the 2nd International Agrobiodiversity Congress, 15-18 November 2021.

RATOMPOARISON, Christian, Felamboahangy RASOARAHONA, Jean RASOARAHONA, Nutritional profile of *Nomadacris septemfasciata* and its perspective to fight against malnutrition in Madagascar, oral presentation at Tropentag 2021

Razafindrakotomamonjy Andrianantenaina and Lala Harivelo RAVAOMANARIVO, Mini-Rearing of Edible

*Gryllus bimaculatus* at Farmers' Level in Madagascar to Have Healthy and Sustainable Protein. Poster presentation at Tropentag 2021.

Myint, AA and Htut, T 2021. Production of Yellow Meal Worm (*Tenebrio molitor*) (Coleoptera: Tenebrionidae) for Food and Feed in Myanmar. Poster presentation at Tropentag 2021.

Allan, David 2021. Insect Market Assessment and Development Activities in Myanmar. Presented at the AFFIA Insects as Food & Feed in Asia Conference, 16.-18. June 2021.

### **PUBLICATIONS FOOD AND NUTRITION 2022**

Debela, B.L., A. Ruml, M. Qaim (2022). Effects of Contract Farming on Diets and Nutrition in Ghana. *Applied Economic Perspectives and Policy*, Vol. 44, No. 2, pp. 911-929, <http://doi.org/10.1002/aepp.13204>.

Hinrichsen, E., Walakira, J.K., Langi, S., Ibrahim, N.A., Tarus, V., Badmus, O., Baumüller, H. 2022. Prospects for Aquaculture Development in Africa: A review of past performance to assess future potential. [Further Information](#)

Khonje, M.G., Ricker-Gilbert, J., Muyanga, M., Qaim, M. 2022. Farm-Level Production Diversity and Child and Adolescent Nutrition in Rural Sub-Saharan Africa: A Multicountry, Longitudinal Study. *Lancet*

Planetary Health, 6(5): e391-e399. (Open Access) [Further Information](#)

Parlasca, M.C., Qaim M. 2022. Meat Consumption and Sustainability. Annual Review of Resource Economics, 14. (Open Access) [Further Information](#)

Yamaguchi, M., Praditsorn P., Purnamasari S.D., Sranacharoenpong K., Arai Y., Sundermeir S.M., Gittelsohn J., Hadi H., Nishi N. 2022. Measures of perceived neighborhood food environments and dietary habits: a systematic review of methods and associations. Nutrients, 14 (9). [Further Information](#)

## PUBLICATIONS 2021 AND OLDER

### ONGOING DOCTORAL THESES FOOD AND NUTRITION 2022

[Bueno Rezende de Castro, André](#). The role of transaction costs in strengthening agricultural market linkages to achieve higher welfare in Tanzania.

[Castillo Lopez, Daiana](#). Food sovereignty and (post) conflict in the rural Colombia: The case of Tenza Valley. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Herrera Martinez, Rodolfo](#). Remittances, CCTs and children's human capital. Doctoral thesis at Faculty of Agriculture, University of Bonn.

## OUTREACH ON FOOD AND NUTRITION



Press Release by University of Bonn in [English / German](#)

April 24, 2022. A study by ZEF researchers indicates benefits of reducing global meat consumption by 75%. The authors say that if our planet Earth is to continue feeding us in the future, rich countries must significantly reduce their meat consumption - ideally by at least 75 percent. This is the conclusion of a new study by the University of Bonn. The study reviews the current state of research on various aspects of meat consumption. In

addition to the effects on the environment and climate, these include health and economic effects. A conclusion of the researchers: Eating meat in small amounts can be quite sustainable. The results were published in the journal Annual Review of Resource Economics.

**Publication (Open Access):** Martin C. Parlasca and Martin Qaim: Meat consumption and sustainability; Annual Review of Resource Economics, <https://doi.org/10.1146/annurev-resource-111820-032340>

## 3.4 HEALTH

### INTRODUCTION

A healthy population is a prerequisite for development, as only healthy societies can be productive and innovative. Societies undergo a so-called epidemiological transition, which entails a shifting burden of disease from infectious diseases to non-communicable diseases (NCDs). As a result, many countries are facing a double burden of disease, meaning that infectious diseases are still highly prevalent while NCDs are rapidly expanding. It is, therefore, necessary to promote health and prevent diseases, by employing both pathogenic and salutogenic approaches to health. On the one hand, understanding and tackling the social (and economic) determinants of health and on the other hand building surveillance, diagnostic and treatment capacities. At ZEF, integrated (and interdisciplinary) health approaches, such as the One Health approach, are being utilized to understand the complexities of health and disease at the interface between humans, animals and the environment. Particularly our shared environment is understood as health determinant as well as a place of intervention.

### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON HEALTH:

- [One Health and Urban Transformation – identifying risks and developing sustainable solutions](#)
- [At the Science Policy Interface: LANd Use SYnergies and CONflicts within the framework of the 2030 Agenda \(LANUSYNCON\)](#)
- [NOURICITY - Partnerships for Healthy Diets and Nutrition in Urban African Food Systems - Evidence and Strategies](#)

## PROJECTS HIGHLIGHTS HEALTH

### ONE HEALTH AND URBAN TRANSFORMATION



#### RESEARCH IN BRIEF

The NRW Forschungskolleg One Health and Urban Transformation – identifying risks and developing sustainable solutions is a transdisciplinary graduate school seeking integrated interventions to attain optimal health for humans, animals, plants and the environment. Research is conducted by doctoral researchers / PhD candidates.

#### RESEARCH CONSORTIUM/PARTNERS

One Health and Urban Transformation graduate school is hosted by ZEF and run in cooperation with multiple institutes of the University of Bonn (i.e. the Faculty of Medicine and its Universitätskliniken Bonn UKB, the Faculty of Mathematics and Natural Sciences and Its Geographical Institute, the Faculties of Arts and of Agriculture), the University of Applied Science Bonn Rhein-Sieg (HBRS) and its [International Centre for Sustainable Development](#) IZNE, the [United Nations University - Institute for Environment and Human Security](#) (UNU-EHS), University of Muenster and its Institute for Political Science, as well as the Institute of Statistical, Social and Economic Research (ISSER) at the University Ghana, and the University São Paulo (USP).

#### RESEARCH APPROACH

The transdisciplinary One Health approach is applied in the context of four different metropolitan areas (the Ruhr Metropolis (Germany); Ahmedabad (India), Accra (Ghana), and São Paulo (Brazil)). The overall goal is to develop solutions to the complex problems of the 21st century, focusing on the practical implementation of research results.

#### ONE HEALTH STUDENTS

Our students are: Anna Brückner (2017), Jéssica Felappi (2017), Berenice Fischer (2017), Juliana Gellert Paris (2017), Krupali Patel (2017), Ana Maria Perez Arredondo (2017), William Isidorio (2018), Joannishka Dsani (2020), Maria Luisa Espinel Ramos (2020), Manuel Glass (2020), Jaqueline Hildebrandt (2020), Abraham Kidane (2020), Janosch Klemm (2020), Atefeh Movassagh (2020), Akwasi Owusu Sarpong (2020), Kalpana Pachillu (2020), Eliana Lins Morandi (2020), Sanjana Rajasekar (2020), Niklas Wagner (2020). In April 2021 the second phase of the Forschungskolleg “One Health and Urban Transformation” started,

**Project time line:** 2021-2024 (second phase)

**Project leader:** Christian Borgemeister

**Project coordinator:** Ana Maria Perez Arredondo

**Project Team:** Max Voit and Friederike Ahrens

**Project funder:** Ministerium für Kultur und Wissenschaft des Landes Nordrhein-Westfalen / Ministry of Culture and Science of the State of North Rhine-Westphalia with the program NRW Forschungskolleg (<https://www.mkw.nrw/hochschule-und-forschung/foerderungen/nrw-forschungskollegs>)

**Project countries:** Brazil, Ghana, Germany, India

**Project website:** <https://www.zef.de/onehealth.html>





with 12 students from seven countries (Germany, Colombia, Ghana, Ethiopia, Brazil, India, and Iran). Meanwhile, seven students from Phase 1 are close to finishing their doctoral studies. In this overlapping period, the total number of One Health students at ZEF is 19 from eight countries.

*One Health students batch 2*

## ACTIVITIES

30.Sept.2021: Proposal presentations | 11.Nov.2021: World One Health Day celebrations at ZEF | 08.Dec.2021: Get together all students and supervisors and poster presentations of the research proposals | Jan 2022: Stakeholders' engagement in India | Feb 2022: Stakeholders' engagement in Ghana | Apr 2022: Stakeholders' engagement in Germany | Apr 2022: Stakeholders' engagement in Brazil | 14.June.2022: seminar on tools for data collection | July 2022: Start of data collection activities in India | 4.August.2022: Seminar on Native Intelligence in information gathering | August 2022: Start of data collection activities in Ghana.



*From left to right: Jaqueline Hildebrandt, Ana Maria Perez Arredondo, Prof. Peter Quartey, Joannishka Dsani, Akwasi Owusu Sarpong, and Abraham Kidane at One Health Stakeholder Workshop in Accra, Ghana (February 2022)*

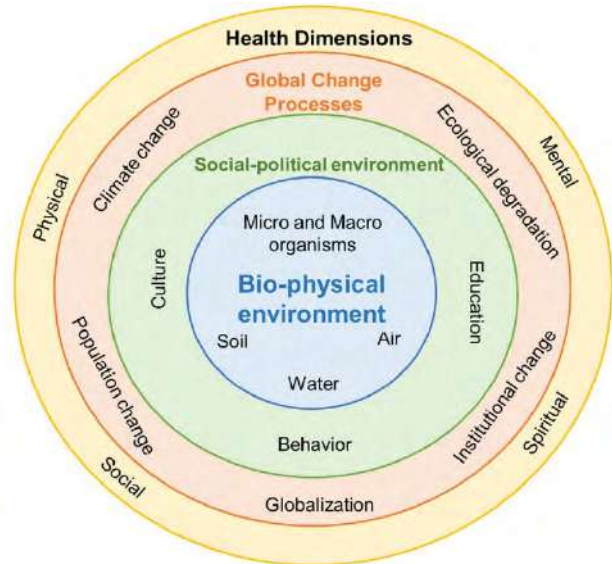
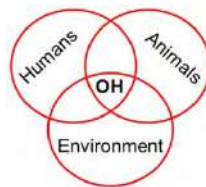
## CONTEXT

The Forschungskolleg "One Health and Urban Transformation" was initiated in 2016, with the goal to address issues affecting the health of humans, animals and their shared environment in the context of urban transformation. The research undertaken by the doctoral students is targeted to develop evidence-based implementation strategies for One Health and to critically evaluate existing approaches. In addition to the development of implementation strategies, it is also highly relevant to investigate concrete health challenges in an integrative way to demonstrate, in a scientific way, the added value of a One Health approach. Challenges can be zoonotic disease outbreaks, the increasing development of antibiotic resistance, the health implications of agricultural production and food chains, and the way how different urban developments are affecting biodiversity and ecosystem health.

## OUTCOME

The creation of different frameworks for research and practice to provide a unified One Health perspective for the Forschungskolleg and align the research problems under one umbrella to communicate with practitioners. Below are the Framework for Research in One Health and Urban Transformation, and the Framework for operationalizing One Health.

After evaluating the results of Phase 1, the work of the doctoral students of Phase 2 is targeted to evaluate One Health implementation strategies, the linkages between food systems and health, and different aspects of urban health.





## PUBLICATIONS ONE HEALTH PROJECT

Perez Arredondo, A. M. (2022). Practice-Collaborations Addressing One Health and Urban Transformation. A Case Study. *The European Journal of Development Research*, 1-12.

Minetto Gellert Paris, J., Falkenberg, T., Nöthlings, U., Heinzl, C., Borgemeister, C., & Escobar, N. (2022). Changing dietary patterns is necessary to improve the sustainability of Western diets from a One Health perspective. *Science of the Total Environment*, 811, 151437.

Ntajal, J., Höllermann, B., Falkenberg, T., Kistemann, T., & Evers, M. (2022). Water and Health Nexus—Land Use Dynamics, Flooding, and Water-Borne Diseases in the Odaw River Basin, Ghana. *Water*, 14(3), 461.

Schmiege, D., Falkenberg, T., Moebus, S., Kistemann, T., & Evers, M. (2022). Associations between socio-spatially different urban areas and knowledge, attitudes, practices and antibiotic use: A cross-sectional study in the Ruhr Metropolis, Germany. *PLoS one*, 17(3), e0265204

Felappi, J. F., Bedin, L. M., Terlau, W., & Kötter, T. (2022). Psychometric properties of two psychological restoration scales: translation, adaptation and validity evidences of the Brazilian versions (Propiedades psicométricas de dos escalas de restauración psicológica: traducción, adaptación y validez de las versiones brasileñas). *PsyEcology*, 13(1), 50-74.

Swoboda, P., Döring, T. F., & Hamer, M. (2022). Remineralizing soils? The agricultural usage of silicate rock powders: A review. *Science of The Total Environment*, 807, 150976.

Brückner, A., Falkenberg, T., Kasturirangan, U., & Kistemann, T. (2021). Photovoice for enhanced healthy blue space research: an example of use from urban India. *Cities & Health*, 1-14.

Yasobant, S., Bruchhausen, W., Saxena, D., & Falkenberg, T. (2021). Systemic factors for enhancing intersectoral collaboration for the operationalization of One Health: a case study in India. *Health research policy and systems*, 19(1), 1-14.

Yasobant, S., Bruchhausen, W., Saxena, D., Memon, F. Z., & Falkenberg, T. (2021). Health System Contact and Awareness of Zoonotic Diseases: Can it Serve as

One Health Entry Point in the Urban Community of Ahmedabad, India?. *The Yale Journal of Biology and Medicine*, 94(2), 259.

Yasobant, S., Bruchhausen, W., Saxena, D., Memon, F. Z., & Falkenberg, T. (2021). Who could be One Health Activist at the community level?: A case for India. *Human Resources for Health*, 19(1), 1-11.

Perez Arredondo, A. M., Yasobant, S., Bruchhausen, W., Bender, K., & Falkenberg, T. (2021). Intersectoral collaboration shaping One Health in the policy agenda: A comparative analysis of Ghana and India. *One Health*, 13, 100272.

Rajkhowa, P., M. Qaim (2022). Mobile Phones, Women's Physical Mobility, and Contraceptive Use in India. *Social Science & Medicine*, Vol. 305, 115074, <https://doi.org/10.1016/j.socscimed.2022.115074>.

Schmiege, D., Zacharias, N., Sib, E., Falkenberg, T., Moebus, S., Evers, M., & Kistemann, T. (2021). Prevalence of multidrug-resistant and extended-spectrum beta-lactamase-producing *Escherichia coli* in urban community wastewater. *Science of The Total Environment*, 785, 147269.

Swoboda, P., Hamer, M., Stotter, M., Döring, T. F., & Trimborn, M. (2021). Effects of Rock Powder Additions to Cattle Slurry on Ammonia and Greenhouse Gas Emissions. *Atmosphere*, 12(12), 1652.

Savi, M. K., Callo-Concha, D., Tonnang, H. E., & Borgemeister, C. (2021). Emerging properties of malaria transmission and persistence in urban Accra, Ghana: evidence from a participatory system approach. *Malaria journal*, 20(1), 1-10.

## DOCTORAL THESES ONE HEALTH PROJECT

Ntajal, J. (2022). Linking land use dynamics, surface water systems, and human health risks in Ghana (Doctoral dissertation, Universitäts-und Landesbibliothek Bonn).

Swoboda, P. (2022). Remineralizing soils? The agricultural usage of silicate rock powders in the context of One Health (Doctoral dissertation, Universitäts-und Landesbibliothek Bonn).

Savi, M. K. (2022). Modeling the spatial and temporal heterogeneity in malaria transmission and control in urban Ghana (Doctoral dissertation, Universitäts-und Landesbibliothek Bonn).

Schmiege, D. (2022). Geographical perspective on antibiotic resistance in a metropolitan sewershed (Doctoral dissertation, Universitäts-und Landesbibliothek Bonn).

## **PUBLICATIONS (ONE) HEALTH 2022**

Brueckner, A., Falkenberg, T., Heinzl, C., Kistemann, T. 2022. The regeneration of urban blue spaces: A public health intervention? Reviewing the evidence. *Frontiers in Public Health*. (Open Access) [Further Information](#)

Felappi, J., Bedin, L., Terlau, W., Kötter, T. 2022. Psychometric properties of two psychological restoration scales: translation, adaptation and validity evidences of the Brazilian versions. *PsyEcology*, 13 (1): 50-74. [Further Information](#)

Khonje, M.G., J. Ricker-Gilbert, M. Muyanga, M. Qaim. 2022. Farm-Level Production Diversity and Child and Adolescent Nutrition in Rural Sub-Saharan Africa: A Multicountry, Longitudinal Study. *Lancet Planetary Health*, 6(5):e391-e399. (Open Access) [Further Information](#)

Metchanun, N., Borgemeister, C., Amzati, G., von Braun, J., Nikolov, M., Selvaraj, P., Gerardin, J. 2022. Modeling impact and cost-effectiveness of driving-Y gene drives for malaria elimination in the Democratic Republic of the Congo. 15 (1), 15 (1): 132-148. (Open Access) [Further Information](#)

Ntajal, J., Höllermann, B., Falkenberg, T., Kistemann, T., Evers, M. 2022. Water and Health Nexus—Land Use Dynamics, Flooding, and Water-Borne Diseases in the Odaw River Basin, Ghana. *Water*, 14 (3): 461. (Open Access) [Further Information](#)

## **PUBLICATIONS 2021 AND OLDER**

### **ONGOING DOCTORAL THESES ON HEALTH 2022**

[Amondo, E.](#) Climate Variability and Health Adaptation: Effects on Human Health Outcomes, Food security and Welfare.

[Fischer, Silvia Berenice.](#) Risk and vulnerability to extreme weather events: the case of urban and peri-urban agriculture in São Paulo city. Doctoral thesis at One Health Graduate School.

[Guanti Lasso, M.M.](#) Rethinking the issue: Primary and Secondary Prevention of HIV and AIDS in Panama Using the Structural Vulnerability Approach, the case of the Panmanian Indigenous Groups Ngäbe and Buglé.

[Guerrero Florez, Milena.](#) Integrative analysis of children undernourishment and infection by *Cryptosporidium*. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Kumar, Vivek.](#) Spatio-temporal assessment and mapping of health risk due to climatic and non-climatic factors in Patna, India. Doctoral thesis within the One Health Graduate School.

[Manzanero, Veronica.](#) Enhancing Huanglongbing (Citrus Greening) Disease Management in Belize: Preliminary Assessment of the response of 8 Scion/Rootstock Combinations for HLB Tolerance & Assessment of the Current HLB Status and Impact of HLB in Belize. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Mc Bain, F.](#) Can improved water-sanitation conditions together with health insurance effectively reduce poverty?. Doctoral Thesis at Center for Development Research (ZEF), University of Bonn.

[Minetto Gellert Paris, Juliana.](#) Working title "Impacts of dietary choices on the health of humans, animals, and environment in the Ruhr Metropolis, Germany". One Health Graduate school.

[Osman, Tasneem.](#) Biology and ecology of arboviral disease vectors: Evidence from Kenya.

[Patel, Krupali.](#) Investigating the epidemiological determinants & transmission pathways of AMR focusing on MRSA among urban livestock keepers' community in Ahmedabad, Gujarat, India. Doctoral thesis within the One Health Graduate School.

[Perez Arrendondo, Ana Maria.](#) Role of social networks insuring health: the case of urban poor communities in Accra. Doctoral thesis within the One Health Graduate School at ZEF at Bonn University.

[Radermacher, R.](#) Strengthening Micro Health Insurance Units for the Poor in India. Thesis at ZEF.

[Sangalang Ocampo, S.](#) Environmental health in schools in Manila, Philippines: assessing the impact of exposures to indoor air quality and water, sanitation, and hygiene on children's health, nutrition, and



education outcomes. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Savi, Merveille Koissi.](#) Host-Vector-Parasite System Dynamics Analysis for Enhancing Malaria Control in Accra. Doctoral thesis within the One Health

Graduate School at Faculty of Agriculture, University of Bonn.

[Schmiege, Dennis.](#) Socio-spatial variation of antibiotic resistance in an urban sewershed in the Ruhr Metropolis, Germany. Doctoral thesis within the One Health Graduate School.

## OUTREACH ON HEALTH



### Factors to consider when weighing the health benefits and sustainability of a diet

January 27, 2022. Healio: "Factors to consider when weighing the health benefits and sustainability of a diet". Interview with Juliana Minetto Gellert Paris (Junior Researcher), Link [here](#)

## BLOG ENTRIES

Following the science at COP26: Insights and Observations on the Integration of Scientific Findings in International Climate Policy (Niklas Wagner) <https://blog.zef.de/?p=7913>

The Importance of Knowledge Platforms for Sustainable Cities (Niklas Wagner) <https://blog.zef.de/?p=8101>





## 3.5 MARKETS AND PUBLIC SERVICES

### INTRODUCTION

This research theme focuses in an inclusive way on the developmental roles of markets and the political, infrastructure, and institutional constraints on access to public services by the rural and urban poor. Access to markets is a major precondition for farmers and rural landless people to overcome subsistence and to enhance their individual economic situation, making them more resilient to fluctuating boundary conditions as induced by global and national changes, for instance under international trade and investment arrangements and related regulatory regimes. The development of markets is partly related to the expansion of public services, as the latter often serve as a precondition for people to participate in markets. Among public services, particular attention is given to information, education, social transfers, insurance, and health systems.

### CURRENT OR RECENT ZEF PROJECTS ON MARKETS AND PUBLIC SERVICES

- [Analysis and Implementation of Measures to Reduce Price Volatility in National and International Markets for Improved Food Security in Developing Countries](#)
- [Seaport efficiency, trade policy, and agricultural export capacity](#)

## PROJECTS HIGHLIGHTS MARKETS AND PUBLIC SERVICES

### ANALYSIS AND IMPLEMENTATION OF MEASURES TO REDUCE PRICE VOLATILITY IN NATIONAL AND INTERNATIONAL MARKETS FOR IMPROVED FOOD SECURITY IN DEVELOPING COUNTRIES



This research project focuses on the developmental roles of markets and the political, infrastructure, and institutional constraints on access to public services by the rural and urban poor. The projects bring together partners from Africa, South Asia and other low and middle-income regions to generate research-based policy advice on issues related to agricultural and infrastructural investments, international and regional trade and trade agreements, national food and agricultural policy with the aim to reduce global hunger and to develop and stabilize food markets. The research project will be extended until 2024.

**Project time line:** Aug 2011 – Dec 2014: Volatility in Commodity Markets, Trade Policy and the Poor (Phase 1)  
Apr 2015 – Dec 2021: Analysis and Implementation of Measures to Reduce Price Volatility in National and International Markets for Improved Food Security in Developing Countries (Phase 2)  
Jan 2022 – Dec 2024: Extension of Phase 2

**Project team:** [Joachim von Braun](#) (project director), [Lukas Kornher](#) (project coordinator), [Bernadina Algeri](#), [Annet Adong](#), [Muhammed Usman](#), [Sundus Saleemi](#), Gazali Issahaku

**Project coordination and contact:** Lukas Kornher.  
<https://bit.ly/KornherZEF>

**Project funded by:** Federal Ministry for Economic Cooperation and Development (BMZ).

More info on **project website:**  
<https://www.zef.de/volatility.html>.

**Publications** on the topic: <https://bit.ly/ZEFPubVolatility>

#### SPECIFICALLY, THE PROJECT AIMS AT:

1. Analyzing international and national market risks, such as the Covid-19 pandemic and the Ukraine war, for poverty and food and nutrition security and highlighting investment options to improving well-being in low- and middle-income countries;
2. Analyzing welfare implications of international trade agreements (AfCFTA, EU-Africa) and providing policy recommendation on how to design trade agreements to promote agricultural development in Africa and to improve market access for African agricultural exporters and to the EU;
3. Providing evidence-based empirical research from case studies in Africa and South Asia on how markets can improve food and nutrition security and how policies can address market imperfections.

## RESEARCH OUTCOMES IN 2021/2022

1. Research and policy advise on the implications of the Covid-19 pandemic and global food crisis on LMICs, including Policy Briefs and [wide media outreach](#). ZEF Policy Briefs: <https://bit.ly/ZEF-PB>
2. Participation in research projects Africa and India: Experiences with Transformation of Food and Agriculture and Opportunities for learning and collaboration. Policy Brief: <https://research4agrinnovation.org/publication/pb30/>  
Workshop Event: <https://bit.ly/3TCKLBX>
3. Scientific research on international trade, food security, sustainable intensification, and development aid presented at international academic conferences and published in peer-reviewed journals.

## RESEARCH IN BRIEF

Food markets and trade (interrelations with Food and Nutrition Security). All PhD students affiliated have completed their drafts and wait for defense.

## PROJECTS HIGHLIGHTS MARKETS AND PUBLIC SERVICES: FOODCOST

A new EC-Horizon funded research program was approved, building on research done in the Volatility project (see entry above). The program is called "FoodCost".

### OBJECTIVES

Ensuring sustainable food systems requires vastly reducing its environmental and health costs while making healthy and sustainable food affordable to all. In current food systems many of the costs of harmful foods and benefits of healthful foods are externalized, i.e. are not reflected in market prices and therefore not taken into account in the decision- making process of actors in food value chains.

Solving the externality problems means to determine current costs of externalities and redefine food prices (true pricing) to internalize them in daily practice. Policy makers, businesses and other actors in the food system lack sufficient information and knowledge to internalize externalities to achieve a sustainable food system.

FOODCoST responds to this challenge by designing a roadmap for effective and sustainable strategies to assess and internalise food externalities. FOODCoST provides approaches and databases to measure and value positive and negative externalities, proposing a game-changing and harmonized approach to calculate the value of climate, biodiversity, environmental, social and health externalities along the food value chain based on economic cost principles. FOODCoST provides an analytical toolbox to experiment, analyze, and navigate the internalization of externalities through policies and business strategies providing tools and guidance to policy makers and businesses to assess the sustainability impact of their internalization actions.

FOODCoST emphasizes the diversity of challenges of true pricing in different value chains and countries and regions, and co-creates, tests and validates the valuation and internalization approaches in 11 diverse

case studies enabling to test, validate and enrich the approaches in order to transit towards a sustainable food system. Joachim von Braun serves as overall science advisor of the project and ZEF engages with a set of case studies on value chains in East Africa, guided by ZEF senior researcher Lukas Kornher.



## **PUBLICATIONS ON MARKETS AND SERVICES 2022**

Parlasca, M., C. Johnen, M. Qaim. 2022. Use of Mobile Financial Services Among Farmers in Africa: Insights from Kenya. *Global Food Security*, 32: 100590. (Open Access) [Further Information](#)

Rajkhowa, P., Kornher, L. 2022. COVID-19 and distortions in urban food market in India. *Indian Economic Review*. (Open Access) [Further Information](#)

Rajkhowa, P., M. Qaim (2022). Mobile Phones, Off-Farm Employment, and Household Income in Rural India. *Journal of Agricultural Economics*, Vol. 73, No. 3, pp. 789-805, <https://doi.org/10.1111/1477-9552.12480>.

Ruml, A., Ragasa, C., Qaim, M. 2022. Contract Farming, Contract Design, and Smallholder Livelihoods. *Australian Journal of Agricultural and*

*Resource Economics*, 66: 24-43. (Open Access)

[Further Information](#)

## **PUBLICATIONS 2021 AND OLDER**

### **ONGOING DOCTORAL THESES ON MARKETS AND SERVICES 2022**

[Pratama, Arif Budy.](#) The pursuit of smartness - An ethnographic study understanding the dynamic of smart city development project in the Magelang municipality, Indonesia. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Rodriguez-Camayo, Fernando.](#) How can food security and resilience to climate change of smallholders be addressed in specialty coffee value chains? The case of the dry corridor in Honduras. *Agriculture*.

[Thu Thu Aung, Myint.](#) Entomophagy in Myanmar: Factors affecting consumption of edible insects as food. Doctoral thesis at Faculty of Agriculture, University of Bonn.

## 3.6 INNOVATION AND SCIENCE POLICY

### INTRODUCTION

Innovations can have different facets, ranging from technical and institutional innovations to societal innovations such as new governance structures or incentive schemes. Research on processes leading to the generation, local contextualization, implementation and adoption of innovations is key to developing policy recommendations. This is closely linked to the other research areas but in particular provides application-oriented tools and approaches for the ,real-life'-situations of practitioners, policy-makers or potential end-users. It comprises research on the perception of new societal and ecological challenges across different stakeholder groups, on information and communication technology utilization, and on effective awareness raising and capacity building to foster the implementation of promising innovations in societies.

### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON INNOVATION AND SCIENCE POLICY

- [PARI - Program of Accompanying Research for Agricultural Innovation](#)
- [STRIVE – Sustainable TRade and InnoVation transfer in the bioEconomy: From National Strategies to Global Sustainable Development Goals](#)
- [At the Science Policy Interface: LANd Use SYnergies and CONflicts within the framework of the 2030 Agenda \(LANUSYNCON\)](#)
- [SABio - Transformation and Sustainability Governance of South American Bioeconomies](#)
- The [Malabo Montpellier Panel](#)



## PROJECTS HIGHLIGHTS INNOVATION AND SCIENCE POLICY

### PROGRAM OF ACCOMPANYING RESEARCH FOR AGRICULTURAL INNOVATION (PARI)



#### CONTEXT

The Program of Accompanying Research for Agricultural Innovation (PARI) brings together partners from Africa, India and Germany to contribute to sustainable agricultural growth, food systems transformation and food and nutrition security in Africa and India. To this end, PARI pursues the following strategies:

1. Analysis of the potential and impact of innovations (which innovations to invest in, where and for whom – considering women, youth, small-scale producers),
2. Identification and assessment of supportive measures to strengthen framework- and policy conditions for the generation and dissemination of promising innovations in food systems and rural areas, and
3. Engaging food, nutrition, agriculture and rural areas' science partners and policy makers to inform reforms and investment decisions that can improve job creation and food and nutrition security.

#### SDGs

The project relates mainly to SDG2, but also SDG 5, 7, 8, 9, 12, 13 and 17

#### RESEARCH

- What are the main research questions you / your project is addressing?
- What have you achieved in terms of results so far?
- What do you consider the most important / relevant aspects of your research?

#### **Work Package 1: Innovation investments to improve the productivity and resilience of agricultural and food systems**

- **Sustainability / climate change adaptation:** Ahead of COP-26 of the UN Climate Change Convention in Glasgow, PARI released a number of studies on the interlinkages between climate change, rural development and food security in Africa, prepared by researchers from West Africa and the Sahel region. A compendium of papers explored possible impacts of climate change on food security in West Africa. The authors warn that West Africa is one of the regions in the world that are most vulnerable to climate change impacts. However, there are numerous innovative solutions for climate change adaptation and mitigation currently being tested and deployed in the

**Project timeline:** 2019-2024 (second phase)  
**Project leader:** Joachim von Braun and Heike Baumüller  
**Project Team:** <https://research4agrinnovation.org/partner/>  
**Project funder:** Federal Ministry for Economic Cooperation and Development (BMZ)  
**Project countries:** Africa, India  
**Project website:** <https://research4agrinnovation.org/>  
**Researchers:** <https://research4agrinnovation.org/partner/#team>

region. A series of country case studies from the Sahel region also highlights promising solutions at the nexus of land, water, energy and climate change that could enable sustainable and inclusive rural development in the Sahel.

- **Agroforestry:** Research evaluated the role of agroforestry in promoting rural livelihoods and sustainable development in Africa. Restoring degraded agroforestry areas could provide significant economic returns of US\$ 3-15 for each dollar invested into agroforestry re-establishment over a period of 30 years. The highest return activities are the restoration of degraded agroforestry in croplands. To increase low adoption rates of agroforestry practices in African, capacity building, better access to finance, and research into agroforestry options is required.
- **Mechanization:** Research assessed opportunities and constraints of local manufacturing of agricultural machinery in Africa. Local manufacturers are highly motivated and have some comparative advantages. To support the growth of the sector, measures to improve access to capital, machinery, raw materials and electricity, as well as common standards and certification mechanisms are needed. Targeted measures are also required to support women who are seriously under-represented in this sector. Skill gaps emerged as another key obstacle to the development, manufacture and use of agricultural machinery. A review of training institutes shows that agricultural mechanization-related training in Africa is negligible, underfunded and still provided predominantly by government.
- **Inputs:** Research explored options for scaling input use in Africa. One study highlights the potential of decentralized seed services to improve access to quality seed for smallholder farmers. Uganda and Tanzania, for instance, have seen the numbers and interactions of players in the seed systems increase substantially as a result of decentralization efforts. Crop insurance could play a role in de-risking farmers' investments in seeds and other inputs. A study concludes that uptake can be encouraged, inter alia, by improving the quality and design of insurance products, raising awareness and increasing government support for a stable and efficient insurance market.
- **Digitalization:** Research investigated the state and drivers of digitalization in African agriculture. Surveys in Kenya, Nigeria, Ghana and Mali show that digital technologies and in particular mobile phones are widely used among agricultural intermediaries, including input and output dealers and extension agents. Adoption of digital agricultural (D4Ag) services remains very limited, however. A survey of potential users of digital platforms to aggregate D4Ag services in Kenya finds that such platforms could facilitate uptake if they made D4Ag services easier to locate and use, guaranteed quality and reliability, enabled access for those who are less digitally skilled, and covered a broad range of actors and activities along the value chain.
- **Aquaculture:** Research assessed the development of African countries' aquaculture sectors across a range of national-level indicators. Supporting the sustainable expansion of aquaculture production will require strengthening policy frameworks, empowering women in aquaculture production and taking measures to reduce environmental impacts and mitigate and adapt to climate change. Particular attention should be paid to engaging and building the capacities of small-scale actors in this sector to contribute to food security, employment and income generation.
- **Socio-economic aspects of animal husbandry:** Research explored the potential of innovations to promote livestock sector development in Africa. A review of digital livestock tools in India and Kenya suggests that digital tools provide many new options to address constraints to livestock development. Another study shows that neglected livestock species offer important opportunities in terms of their nutritional importance, high economic gross returns, environmental

sustainability, and importance for women's empowerment. Production challenges, related e.g. to feed and nutrition, and institutional gaps remain to be addressed, however.

## **Work Package 2: Employment and income opportunities in rural areas, especially for youth and women**

- **Income and employment:** Research in India assessed the impact of the Covid-19 pandemic on migrant workers. After returning to their home villages, migrants' household income fell by 85 percent during June-August 2020. With the revival of economic activities post-lockdown, 64 percent of migrants had returned to the destination areas by February 2021, where they earned 8 percent less compared to pre-lockdown levels. Among the migrants who remained in their villages, household income was 82 percent lower than prior to the lockdown. Most of the government support measures barely reached migrant workers.
- **Youth engagement:** Research assessed the factors that influence youth participation in farming and other agribusiness. A survey of young agripreneurs in Benin, Ethiopia, Senegal and Tunisia finds that better access to raw materials, land, capital, machines and training as well as better linkages with customers would encourage youth to engage in agribusiness. Research in Zambia and Kenya also shows that the dichotomy between "farm-based" and "off-farm based" development pathways makes little sense from the perspective of the youth who prefer to pursue mixed livelihood strategies. Moreover, male youth are more likely to envision farming than female youth. This reflects their parents' aspirations and is reinforced by the patriarchal system of land inheritance.
- **Capacity building and education:** Through its partnership with the African Economic Research Consortium (AERC), PARI aims at enhancing the capacities for economic policy research and graduate training in sub-Saharan Africa. Overall, 15 master students and 5 PhD students are being funded. The research outputs were presented and discussed at a series of virtual seminars in 2021.

## **Work Package 3: Engaging with food and agriculture policy making to enhance food and nutrition security**

- To better understand the factors that drive agricultural growth and nutrition outcomes, PARI research compared the agricultural change trajectories of Indian states and African countries. The research shows that the drivers of agricultural growth differed between the regions: Agricultural intensification was the main driver of India while many African countries made use of agricultural area expansion to increase output. Gains in productivity and progress in structural transformation, rather than pure intensification, proved essential to achieve sustained impacts on food and nutrition security. In addition, nutrition outcomes are driven by synergies with related sectors, such as water and sanitation as well as women's education.

## PUBLICATIONS

Zakari Seybou Abdourahamane, Issa Garba, Aboubakr Gambo Boukary, Alisher Mirzabaev (2022) Spatiotemporal characterization of agricultural drought in the Sahel region using a composite drought index, *Journal of Arid Environments*, Volume 204, 104789, <https://doi.org/10.1016/j.jaridenv.2022.104789>.

John Kieti, Timothy Mwololo Waema, Heike Baumüller, Elijah Bitange Ndemo, Tonny Kerage Omwansa (2022) What really impedes the scaling out of digital services for agriculture? A Kenyan users' perspective, *Smart Agricultural Technology*, Volume 2, 100034, <https://doi.org/10.1016/j.atech.2022.100034>.

Climate change and food security in West Africa. 2021. Edited by Ahmadou Aly Mbaye, Joachim von Braun, Alisher Mirzabaev and Fatou Gueye. Selected papers presented at the Conference on Climate Change and Food Security in West Africa, jointly organized by the Center for Development Research (ZEF) at the University of Bonn, and the WASCAL Climate Change Economics Graduate Studies Program, hosted by the University Cheikh Anta Diop of Dakar on 17-18 November 2019.\*)

[\*] Ahead of COP-26 of the UN Climate Change Convention in Glasgow, PARI published a compendium of research papers prepared by West African scientists on the **interlinkages between climate change and food security in West Africa**. The research papers, prepared by both experienced researchers and many highly promising early career climate change scientists from the region, focus not only on climate change impacts, but even more also on innovative and cutting-edge solutions and insights for climate change adaptation and mitigation. The authors warn that West Africa is one of the regions in the world that are most vulnerable to climate change impacts. However, there are numerous innovative solutions for climate change adaptation and mitigation currently being tested and deployed in the region. Crucially, the region now possesses a strong cadre of young climate change researchers who can contribute to the climate resilient development in West Africa. The report calls on the international community to expand and strengthen scientific collaborations and development cooperation on climate change with the region.]

## OUTREACH

### **Virtual Event on 26 November 26, 2021 on Africa and India – Experiences with transformation of food and agriculture and opportunities for learning and collaboration**

This virtual event was organized by ICRIER, FARA and ZEF to discuss opportunities for fostering India-Africa learning and collaboration to promote food and nutrition security in the two global regions. Specifically, the workshop focused on innovations and conducive framework conditions to (1) scale promising innovations that increase productivity and domestic food supplies, (2) strengthen the resilience of national and regional food systems, and (3) ensure that policies and investments to improve food and nutrition security contribute to employment and income generation. **Close to 300 participants joined the event overall, half of them dialing in from Africa and a quarter from India.**



From top left: Joachim von Braun, Ashok Gulati, P.K. Joshi, Assefa Admassie, Oluwole Fatunbi, Yemi Akinbamiyo



We have recently re-launched the website of the **Program of Accompanying Research for Agricultural Innovation (PARI)**! Exciting new features include:

- A redesign of the homepage to highlight recent publications and upcoming events
- Integration of the Twitter feed on the homepage to provide more frequent updates on our activities ([@PARI\\_ZEF](https://twitter.com/PARI_ZEF))
- Optimization of the site for mobile phones to cater in particular for our African and Indian audiences
- An improved search filter to make PARI publications of interest easier to find ([research4agrinnovation.org/publications](http://research4agrinnovation.org/publications))
- An interactive map to easily access all PARI publications related to specific African countries and India ([research4agrinnovation.org/pari\\_countries](http://research4agrinnovation.org/pari_countries))



**SDGs:** SDG2. PARI contributes to sustainable agricultural growth and food and nutrition security in Africa and India, as well as to the development of the agri-food sector in Africa and India through the identification, assessment and up-scaling of innovations.



## PROJECTS HIGHLIGHTS INNOVATION AND SCIENCE POLICY

### THE MALABO-MONTPPELLIER PANEL (WITH ZEF COOPERATION)

The Malabo Montpellier Panel is a group of international agriculture experts who guide policy choices that accelerate progress towards food security and improved nutrition in Africa. It provides high-quality research to equip decision makers to effectively implement policies and programs that benefit smallholder farmers. One of the partner offices of the Panel is at ZEF.

The Malabo Declaration, adopted by 54 African governments in 2014, commits signatory countries to halve the number of people in poverty by 2025 through inclusive agricultural growth that creates job opportunities for young people and women.

The annual Malabo Montpellier Forum convenes decision makers to assess strategies for meeting global agriculture and food security goals. Dialogue between the Panel, key stakeholders, NGOs and the private sector promotes the sharing of research across borders.

The Panel produces accessible and readable research reports for senior policy makers and key stakeholders, providing expert knowledge and guidance for policy - based on literature analysis, scientific evidence and practical experience. The Panel's emphasis on evidence-based analysis, mutual learning and exchange at the highest level of policy, positions it as a crucial actor in support of agricultural transformation and economic development in Africa.

The Panel publishes technical reports and briefing papers, participates in international conferences and workshops and convenes the Malabo Montpellier Forum facilitating dialogue and knowledge sharing.

The Malabo Montpellier Panel is hosted by AKADEMIYA2063, the ZEF at University of Bonn and Imperial College London. AKADEMIYA2063 is headquartered in Kigali, Rwanda with a regional office in Dakar, Senegal. The program is supported by the Federal Ministry for Economic Cooperation and Development (BMZ), African Development Bank, and other development partners





## PUBLICATIONS

In 2021, the Malabo Montpellier Panel produced two studies in cooperation with ZEF:

### PUBLICATIONS ON INNOVATION AND SCIENCE POLICY 2022

Gallant, K. F. 2022. Social Media as the Spatiotemporally Unconfined Cult of the Dead. In: Saša Bosančić, Reiner Keller (eds.): Diskurse, Dispositive und Subjektivitäten. Springer. 155-171. (Open Access) [Further Information](#)

Luedeling, E., Schiffers, K., Whitney, C. 2022. Supporting Agroforestry Innovations with Holistic, Decision-Focused Modeling: Case Studies. In Proceedings of the 5th World Congress on Agroforestry 2022. Quebec, Canada: Université Laval, 2022. [https://conferium.com/Clients/226\\_web/index.lasso#](https://conferium.com/Clients/226_web/index.lasso#). (Open Access)

Parlasca, M., Johnen, C., Qaim, M., 2022. Use of Mobile Financial Services Among Farmers in Africa: Insights from Kenya. *Global Food Security*, 32: 100590. (Open Access) [Further Information](#)

Rajkhowa, P., M. Qaim (2022). Mobile Phones, Off-Farm Employment, and Household Income in Rural India. *Journal of Agricultural Economics*, Vol. 73, No. 3, pp. 789-805, <https://doi.org/10.1111/1477-9552.12480>.

Rajkhowa, P., M. Qaim (2022). Mobile Phones, Women's Physical Mobility, and Contraceptive Use in India. *Social Science & Medicine*, Vol. 305, 115074, <https://doi.org/10.1016/j.socscimed.2022.115074>.

### PUBLICATIONS 2021 AND OLDER

#### ONGOING DOCTORAL THESES ON INNOVATION AND SCIENCE POLICY 2022

[Annan, A.](#) Promoting quality in agricultural value chains; a means for quality control or resource capture? A study of the cocoa and Shea value chains in Ghana. Doctoral thesis at Faculty of Arts, University of Bonn.

[Dzhakypbekova, K.](#) Ex-ante analysis of the innovations in the walnut-fruit forests in Kyrgyzstan. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Feryandi, F.T.H.](#) Proposed aquatic land cadastral system to secure land tenure in the coastline area of Kepulauan Riau Province, Indonesia.

[Martini, L.](#) Creative city and knowledge community: Their interplay in human development in Bandung, Indonesia. Faculty of Arts, University of Bonn.

[Morsy, Nourhan.](#) Disaster risk governance approach: Mapping the knowledge gap between drought trends and policies in Africa.

[Quiros Garzon, M.](#) Economic analysis of institutional arrangements for rural innovation.

## 3.7 MIGRATION, MOBILITY AND URBANIZATION

### INTRODUCTION

Mobility has many different facets, ranging from geographic, social, and economic to cognitive forms of mobility. Their complex determinants and consequences are studied as key elements for sustainable development. Mobile societies are quicker in adapting to changes but not necessarily in a beneficial and sustainable way. Migration is becoming an ever more relevant challenge, strongly affecting rural as well as urban and peri-urban societies. The number of refugees is increasing due to political and global change, violent conflicts, unsuitable living conditions and rampant food insecurity. Within-country migration is one of the key determinants of urbanization, and growing urban and peri-urban areas with steadily increasing numbers of inhabitants are facing tremendous challenges. ZEF hosts the working group "ZEF in the City". Its members contribute to the ZEF research theme "Mobility, migration and urbanization".

### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON MIGRATION, MOBILITY AND URBANIZATION

- [Transitions in Rural-Urban Interfaces: Urbanization, land governance and livelihood in Ethiopia](#)

## PROJECTS HIGHLIGHTS MIGRATION, MOBILITY AND URBANIZATION

### TRANSITIONS IN RURAL-URBAN INTERFACES: URBANIZATION, LAND GOVERNANCE AND LIVELIHOOD IN ETHIOPIA

#### RESEARCH IN BRIEF

This project looks into urbanization; rural-urban fringes/interfaces; land use and livelihood transition in Ethiopia. Studying land use and livelihood transitions in rural-urban interfaces becomes a major concern in

development sciences. Currently, middle-sized cities are places where land governance and livelihood changes are taking place very fast, often faster than in the bigger cities. This research investigates transitions in land governance and livelihoods in rural-urban interfaces in Ethiopia with the city of Hawassa as a case study. The study understands transition as a multi-level governance process. It takes place in three interconnected levels: niche, socio-technical regime, and socio-technical landscape. The study analyzes how urbanization impacts on smallholder farmers' livelihoods in rural-urban interfaces in Hawassa.

**Project timeline:** February 2021 – January 2023

**Project funder:** German Research Foundation (DFG)

**Project countries:** Ethiopia

**Project leader:** Girma Kelboro Mensuro

#### METHODOLOGY

Mixed methods approach will be applied for data collection and analysis. The first phase of the research consists of qualitative data collection through transect walk, mapping, free listing, preference ranking, focus group discussion, and participant observation. This will be followed by the second phase in which quantitative data is collected through semi-structured and structured interviews. Finally, interviews with experts in government organizations and NGOs will conclude the data collection. Analysis of qualitative data will be carried out with the help of ATLAS-ti, whereas quantitative data will be analyzed using SPSS and STATA.



#### PUBLICATIONS ON MIGRATION, MOBILITY AND URBANIZATION 2022

Rezende de Castro, A., Ortega Sandoval, A. D., Odamtten, G. 2022. Up around the bend? How transport poverty can lead to social exclusion in a low-income community in Lagos, Nigeria. *Journal of Transport Geography*, 102:103388. [Further Information](#)

Mashingaidze, M. and Youkhana, E. 2022. The multi-situatedness of biographical narratives: contributions to critical migration research. [ZEF Working Paper Series 216](#).

#### PUBLICATIONS 2021 AND OLDER

##### ONGOING DOCTORAL THESES ON MIGRATION, MOBILITY AND URBANIZATION

[Adebo, Hiwot Wolde](#). Navigating through the Roughness: Ethiopian Migrants' Lived Experiences and Migration Decision Making in South Africa. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Geiger, Franziska](#). Co-creation of Resilient Living Spaces? Opportunities and Challenges for Female Refugees During Covid-19 in Bonn Bad Godesberg. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Martin Espinosa, Mayra Alejandra](#). Growing digitalization during the COVID-19 Crisis: the case of Colombian Non-Governmental Organizations (NGOs). Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Zhang, L.](#) Rural Hukou Residents' Mobility for Employment in China. Doctoral thesis at University of Bonn.

## **OUTREACH on MIGRATION, MOBILITY AND URBANIZATION**



June 24, 2022. Up around the bend? How transport poverty can lead to social exclusion in a low-income community in Lagos, Nigeria. Research paper by ZEF Junior Researchers André Bueno Rezende de Castro, Abby Daniela Ortega Sandoval, Genevieve Odamtten. Journal of Transport Geography Volume 102, June 2022, 103388. [Click here to read full paper](#)



## 3.8 GENDER

### ZEF'S GENDER GROUP

ZEF's Gender Group was established in early 2020 by a group of senior and junior researchers at ZEF with expertise in gender analysis from different academic disciplines. The group shares the interest and commitment to advance a gender-sensitive agenda in development research. Gender inequalities deter human development in multiple areas such as education, employment opportunities, health, and environmental sustainability. Moreover, gender-based discrimination intersects with other types of discrimination; for example, those based on ethnicity or migrant status. In the end, they all result in systematic patterns of subjugation and suffering for millions of human beings. Sustainable development cannot therefore be pursued, let alone achieved, without a rigorous gender perspective in all research and development work. Past and present ZEF research projects have looked at gender differentiations in education, migration, income generation and climate change adaptation, among others. ZEF has committed to making gender-sensitive research more systematic through, for example, its ZEF Gender Group and regular events. Other recent actions include the increased visibility of gender implications in research in the Ethical Clearance document and the increasing inclusion of gender perspectives and intersectional analysis in doctoral/junior research projects.

The ZEF Gender Group (ZEF GG), established in early 2020, constitutes a space for sharing knowledge(s) and discussing proposed and ongoing research on a variety of disciplines from gender and feminist perspectives. ZEF GG's researchers convene monthly meetings to share their insights, experiences and work. Over the course of the past two years, we have discussed a wide range of topics in these meetings, such as *Engendering Research*, *Feminist Perspectives from the Global North*, *Feminist Perspectives from the Global South*, *Arab Feminisms*, *Gender and Climate Change*, *Female Labour Force Participation*, *Women's Empowerment*, *Masculinities* and *Gendered Impacts of Agricultural Commercialisation*.

Since its inception, the ZEF GG has expanded the number of its members and the sphere of its activities. **Around 30 junior and senior researchers are now part of the Group.** In addition to discussing gender-related research at ZEF, the Group's monthly meetings have welcomed guest speakers from universities in Latin America, South Asia and Africa, who have been offering different perspectives, e.g. on *Gender-Based Violence*, *Barriers to Women's Participation in the Formal Workforce* and *Women in Agricultural Value Chains in Africa*. **The ZEF GG also hosted a special lecture by the General Director of UN Women, Bettina Metz.**

Another event was held on November 25, 2021 to mark the United Nations International Day for the Elimination of Violence against Women. Based on case studies, four experts from science and practice from Asia, Africa, Latin America and Europe showed how gender-based violence affects rural development beyond the direct impacts on health and well-being and presented pathways for change. See our [blog post](#) on "Why rural development cannot happen whilst Gender-based violence remains endemic across the world" for more details on lessons learned.

On June 7, 2022, the ZEF GG celebrated World Environment Day 2022 with panelists from India, Colombia, Cameroon and Germany, who shared their particular experiences and perceptions of progress and setbacks in terms of making "One Earth" possible without gender-based discrimination.

The ZEF GG offered a two-day workshop for the wider ZEF research community on “**Gender in ZEF: sharing concepts and insights in development research**” in May 2021. Besides the rich exchange on theoretical approaches and methodologies, several senior and junior researchers discussed best practices and gaps to consolidate gender-sensitive research at ZEF. Based on these discussions and subsequent interviews and questionnaires, a report on “Gender in ZEF. A report on gender-sensitive research at ZEF” was published, summarizing ZEF’s progress in recent years. The report shows that ZEF's three departments run a considerable number of projects with a gender focus. The report also highlights the need to take a gender perspective throughout the research cycle in a consistent way; to look critically at development research projects from the perspective of (gender) inequalities; to develop and apply gender-sensitive methodologies; to develop a participatory gender policy; and to **discuss gender research in a multi- and interdisciplinary manner**.

Besides organizing monthly meetings, special events and writing reports, the ZEF GG supports the consolidation of gender-related awareness and capacities in development research. **Members of the GG coordination team are involved in the inter- and disciplinary teaching program for doctoral candidates at ZEF** and, e.g., give courses introducing gender and development as an area of scientific inquiry. This includes tracing its origin, evolution and contestations and the key themes that have emerged from the body of knowledge generated by the field. Moreover, these courses familiarize doctoral candidates with suitable methods for undertaking gender research in various disciplines.

The ZEF GG also interacts with the **University of Bonn** by providing courses on gender at the Faculty of Arts and by regular exchange with the Equal Opportunity and Diversity Unit, among others. By strengthening gender-sensitive research at ZEF and promoting interdisciplinary collaboration on gender issues among ZEF researchers, **the Gender Group aims at contributing to both ZEF’s Strategy 2021-2030 and the University of Bonn’s efforts for conducting excellent research**.

The ZEF Gender Group is a self-organized group of senior and junior researchers from all three departments of ZEF. It was initiated by two senior researchers, Dennis L. Avilés Irahola and Tina Beuchelt and has currently four co-coordinators, including two newcomers, Eva Youkhana and Sundus Saleemi.

Please visit us at <https://www.zef.de/gender-group.html>



## PUBLICATIONS ON GENDER 2022

Debela, B.L., Ruml, A., Qaim, M. 2022. Effects of Contract Farming on Diets and Nutrition in Ghana. *Applied Economic Perspectives and Policy*, 44: 911-929. (Open Access) [Further Information](#)

Mehraban, N., Debela, B.L., Kalsum, U., Qaim, M. 2022. What About Her? Oil Palm Cultivation and Intra-Household Gender Roles. *Food Policy*, 110: 102276. (Open Access) [Further Information](#)

Ndunda, E., Mkutu, K. 2022. Exploring Local Peacebuilding Potentials in Northwestern Kenya: The Case of West Pokot. In: Ohta, I., F. B. Nyamnjoh and M. Matsuda (eds.): *African Potentials: Bricolage*,

*Incompleteness and Lifeness*. Kyoto University. 119-137.

Rajkhowa, P., Qaim, M. 2022. Mobile phones, women's physical mobility, and contraceptive use in India. *Social Science & Medicine*, 305. (Open Access) [Further Information](#)

Velander, S., Silva Martinelli, F., Sari, D. I., Ali, F., Biber-Freudenberger, L. 2022. A dichotomy of domestic and academic pathways: Challenges of motherhood in an international doctoral program on land science. *Journal of Land Use Science*. (Open Access) [Further Information](#)

## **PUBLICATIONS 2021 AND OLDER** **ONGOING DOCTORAL THESES ON GENDER**

[Al Munaied, Dima](#). Participation of Syrian women in civil society organizations following the Syrian conflict: Investigating participation in Turkey and Lebanon. Doctoral thesis at University of Bonn.

[Gella, A.A.](#) Gender and gender (in)equality in small holder farming in Ethiopia. Doctoral thesis at ZEF.

[Maddah, H.](#) Women Household Heads in Iran: A Discourse Analysis.

[Rosales Salgado, Maryoriet Nicole](#). The Stay-at-Home Paradox; Survivor narratives of Domestic Violence in Urban Honduras during the COVID-19 Pandemic. Doctoral thesis at Faculty of Philosophy, University of Bonn.

## **OUTREACH ON GENDER**



June 15, 2022 Event on [10 Years of Women's Empowerment in Agriculture Index: A Conversation with Agnes Quisumbing \(IFPRI\)](#)

June 7, 2022. [Event on Only One Earth: Perspectives on the Interlinkages between Gender and Environment](#)

May 04, 2022. ZEF senior researcher [Amy Faye](#) was selected for the [AWARD-ICWAE Mentoring Program](#) from a large pool of women agricultural economists in the Global South. The joint Mentoring Program of African Women in Agricultural Research and Development ([AWARD](#)) and the International Committee of Women in Agricultural Economics ([ICWAE](#), a committee in the International Association of Agricultural Economists [IAAE](#)) aims to leverage the role and contribution of women in the agricultural economics profession through various opportunities for personal and professional growth.

## 3.9 BIODIVERSITY

### INTRODUCTION

The global biodiversity crisis is linked to sustainable development in many ways. Biodiversity and functional ecosystems do not only have a high intrinsic value, but nature also provides indispensable ecosystem services to support human livelihood. A large proportion of the global human population depends directly or indirectly on healthy ecosystems, and minimizing trade-offs between biodiversity conservation and human development is thus one of the major challenges ahead. To address these challenges, science-policy-practice interfaces bodies such as IPBES play a crucial role as they help translate scientific evidence into policy options. At ZEF, several research projects and doctoral theses focus on the interconnectedness between biodiversity and sustainable human development, such as WABES, LANUSYNCON and AFAS. All these initiatives strive for the valuation and higher recognition of biodiversity and endorse the importance of implementing measures for its conservation as a precondition for achieving the UN Sustainable Development Goals.

### CURRENT OR RECENT ZEF RESEARCH PROJECTS ON BIODIVERSITY

- [CABES - Capacity Development for Biodiversity and Ecosystem Services Experts in West, Central & East Africa](#)
- [WABES - Supporting IPBES capacity building in West Africa](#)

## PROJECTS HIGHLIGHTS BIODIVERSITY

### CABES - CAPACITY DEVELOPMENT FOR BIODIVERSITY AND ECOSYSTEM SERVICES EXPERTS IN WEST, CENTRAL & EAST AFRICA



**Project duration:** 2019-2024

**Project leader:** Henning Sommer

**Project team:** <https://www.cabes.online/about/meet-the-team/>

**Project funder:** International Climate Initiative (IKI) of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV)

**Project countries:** Africa, India

**Project website:** [www.cabes.online](http://www.cabes.online)

#### RESEARCH IN BRIEF

CABES is a joint international research and capacity development project coordinated at ZEF. It aims to develop and strengthen the capacity of professionals in biodiversity-related fields in West, Central, and East Africa to engage in the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES, [www.ipbes.net](http://www.ipbes.net)). CABES brings together government representatives, researchers and practitioners working in the fields of biodiversity and ecosystems services, as well as indigenous and local knowledge-holders, with a view to building a network of science-policy platforms for implementing policy decisions for biodiversity conservation. Ultimately, the project will provide capacity development to 38+ countries across the African continent. CABES builds and expands on the WABES project for West Africa, [www.wabes.net](http://www.wabes.net).

#### STUDENTS AND ACTIVITIES

CABES has been establishing a Master of Science (MSc) program on “Science-Policy-Practice Interfaces on Biodiversity, Ecosystem Services and Climate Change - SPIBES”, a two-year interdisciplinary program designed to provide students with extensive, high-quality understanding, knowledge and skills required to participate actively in science-policy interfaces such as IPBES and accelerate the achievement of UN sustainable development goals (SDGs) in Africa. Currently, 23 students are enrolled in our SPIBES MSc Programme through the CABES project from across Africa. Lectures are set to start on September 15, 2022 in Abidjan, Côte d’Ivoire.

The SPIBES will be hosted by three universities across Africa: **University Félix Houphouët-Boigny (UFHB) in Abidjan, Côte d’Ivoire, University of Lubumbashi, Democratic Republic Congo and the Horn of Africa Regional Environment Centre and Network - Addis Ababa University (HoA-REC&N-AAU)**. The SPIBES program is dedicated to scientists interested in sustainable biodiversity and ecosystem services management through science-based policy and decision-making.



Through our workshops and networking events, CABES is promoting knowledge exchanges and collaboration while raising awareness of IPBES, its work programs and assessments. The following events were organized in 2022:

May 13, 2022: At the fifteenth session of the Conference of the Parties (COP15) of the United Nations Convention to Combat Desertification (UNCCD) in Abidjan, Cote d'Ivoire, CABES hosted a side event on "**Managing Science-Policy-Practice Interfaces in the Context of Land, Life, and Climate Change Legacy: Examples from Africa**" at the Africa Pavilion of the African Development Bank (AfDB) in collaboration with the DAAD-funded African Climate and Environment Centre - Future African Savannas (AFAS) and the LANd Use SYnergies and CONflicts within the framework of the 2030 Agenda (LANUSYNCON) projects, The COP15 event provided an opportunity to connect with stakeholders, exchange on the Rio conventions and introduce the CABES capacity building initiatives.



May 14, 2022: CABES together with LANUSYNCON and AFAS project team, participated at the UNCCD COP 15 Science Day, where they jointly presented on '**Capacity Development and Youth Engagement on Land and Biodiversity at the Science-Policy-Practice Interfaces**'.

May 16-17, 2022: CABES jointly organised a stakeholder workshop with AFAS on: "**Co-designing Science-Policy-Practice Interfaces (SPPIs) for Climate Change, Biodiversity, and Ecosystem Services: WABES/CABES and AFAS Project**" at the Africa Center of Excellence on Climate Change, Biodiversity and Sustainable Agriculture (CEA-CCBAD) at the Université Félix Houphouet-Boigny in Abidjan, Côte d'Ivoire.



July 2-9, 2022: CABES participated as observer in the Ninth Session of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (#IPBES9 Plenary) in Bonn, Germany.

July 2, 2022: CABES presented the project and its aims and goals during the IPBES stakeholder day to participants from all over the world.

*CABES at IPBES9 Stakeholder Day July 2, 2022*



CABES project team at IPBES9

July 2, 2022: CABES organized a networking event to introduce the project to African stakeholders attending the Ninth Session of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (#IPBES9 Plenary) at the Center for Development Research (ZEF), Bonn. Over 70 stakeholders from more than 20 African countries attended the event, which allowed for information sharing and networking with IPBES-9 participants.



## PUBLICATIONS (WABES)

**A handbook to establish Science-Policy Interfaces on Biodiversity Conservation: Lessons learnt and inspiring/good practises from the West Africa Biodiversity and Ecosystem Services (WABES) Project** (under review; final version will be published on the project website).

## POLICY IMPACT FROM THE WABES PROJECT

‘Assessing Oasis Ecosystem Services in the Drylands: the Case of the Wadi Oases of Agadez (North Niger) West Africa’ was the focus of the MSc. research of a SPIBES scholar\* from Niger from the 2017/18 (first) batch of the SPIBES MSc program. He delivered a brief summary of the scientific findings of his work to the Ministry of Environment, his internship institution, in accordance with the SPIBES internship cum thesis structure. The results of his work are currently been used as a baseline document for the creation of a National Strategy and Action Plan for the Integrated Management of Oasis Ecosystems in the country, and he was nominated as part of the team. This is within the framework of a UNEP-funded project on ‘Integrated Management of Oasis Ecosystem

North Niger (IMOENN)’, which is also known in French as ‘Strategie Nationale et Plan d’Actions de la Gestion Integree des Ecosystemes Oasiens (PGIEO)’. Additionally, he was selected as part of the delegates representing Niger at the 15th UNCCD COP in Abidjan.

*\*The SPIBES scholar from Niger is Oumarou Hassane Yacoudinma.*

## PUBLICATIONS ON BIODIVERSITY (2022)

Hicks, G, J.K. Dickens, C. Torres, E. Walker, S. D. Ríos, L. Doldan, I. Torre, A.J. Lesterhuis, H. Del Castillo, O. Rodríguez, and P. Smith. 2022. The avifauna of the Paraguayan Department of Ñeembucú. Boletín del Museo Nacional de Historia Natural del Paraguay, 26: 1 - 54. [Further Information](#)

Tadesse E.K., Noulèkoun F., Son Y., Khamzina A. 2022. Woody species diversity, structural composition, and human use of church forests in central Ethiopia. Forest Ecology and Management, 506: 119991. [Further Information](#)

Tisler, T.R., F.Z. Teixeira and R.A.A. Nóbrega. 2022. Conservation opportunities and challenges in Brazil’s roadless and railroad-less areas. Science Advances, 8 (9). (Open Access) [Further Information](#)

## PUBLICATIONS 2021 AND OLDER

### **ONGOING DOCTORAL THESES ON BIODIVERSITY**

[Dickens, JK.](#) Developing an Avian Index of Lowland Tropical Forest Health for South & Central America with Remote Sensing and Crowdsourced Bird Data Applications.

[Felappi, Jessica Francine.](#) Reconciling mental health promotion and wildlife conservation in a megacity: the importance of urban parks' qualities. Doctoral thesis within the One Health Graduate School at ZEF.

[Gandarillas Rodriguez, Vanessa.](#) Developing biodiversity indicators for impact assessment - The case of Hydropower in the Bolivian Amazon.

[Moret, N.](#) Status of biodiversity as an indicator of ecosystem resilience in West Africa. Doctoral thesis at University of Bonn.

[Oluoch, Wyclife Agumba.](#) Availability and Sustainable Harvesting of Wild Edible Plants in Turkana County, Kenya. Doctoral thesis at Faculty of Agriculture, University of Bonn.

[Wu, C.](#) Transformation and Transformability of human and societal Use of Marine Natural Resource: The Case of Small Islands in Southern Penghu Archipelago, Taiwan.

### **OUTREACH ON BIODIVERSITY**



#### [July 5, 2022 | Biodiversity and people in the Anthropocene.](#)

Bonn University's Transdisciplinary Research Area "Innovation and Technology for Sustainable Futures" (TRA6) held its Distinguished Lecturers Series "Innovation Pathways to Sustainability" with Prof. Katrin Böhning-Gaese, director of the Senckenberg Biodiversity and Climate Research Centre and professor at

Goethe University Frankfurt. Prof Böhning-Gaese was awarded the German Environmental Award 2021. The lecture was co-organized with ZEF.

## 3.10 GOVERNANCE AND CONFLICT

### INTRODUCTION

Collective decision-making and governance as well as the absence of appropriate governance structures have a tremendous impact on development processes. The assessment of centralized as well as decentralized, functional, organizational and segmentary forms of governance arrangements is pivotal in addressing the challenges of natural resources management, including the prevention and management of conflicts. Moreover, inequality is a major concern calling for inclusive development approaches. The sustainable use and management of natural resources are the major linking elements between this and the other research areas.

### CURRENT OR RECENT ZEF-PROJECTS ON GOVERNANCE AND CONFLICT

- [ColPaMon within the Doctoral Studies Support Program \(DSSP\) on Environmental peace-building and development in Colombia](#)
- [STRIVE – Sustainable TRade and InnoVation transfer in the bioEconomy: From National Strategies to Global Sustainable Development Goals](#)



## PROJECTS HIGHLIGHTS GOVERNANCE AND CONFLICT

### MONITORING BIODIVERSITY LOSS: COLPAMON

The Institute for Environmental Studies (IDEA) of the National University of Colombia in Bogotá, Colombia and ZEF, together with the Latin American Institute of the Free University of Berlin set up a research project on **“Participatory monitoring of biodiversity loss in Colombia: Alternatives for understanding and resolving environmental conflicts” (ColPaMon)**. In this context, the partner institutes will work with academic and non-academic experts on alternative solutions for pressing environmental problems and violent conflicts in Colombia. The first phase of ColPaMon is being funded by the Federal German Ministry of Education and Research (BMBF).

Read more about the research activities within [ColPaMon here](#)



#### PUBLICATIONS ON GOVERNANCE AND CONFLICT 2022

Avilés Irahola, D., Mora-Motta A., Barbosa Pereira, A., Bharati, L., Biber-Freudenberger, L., Petersheim, C., Quispe-Zuniga, M.R., Schmitt, C. B., and Youkhana, E. 2022. Integrating scientific and local knowledge to address environmental conflicts: the role of academia. *Human Ecology Journal*. [Further information](#).

Callo-Concha, D., E. Lagneaux, R. Zenteno, O. Frör. 2022. Assessing householder social-ecological resilience in transboundary conditions: The case of the MAP region in southwestern Amazonia. (Misc. 213) 37 (Open Access). [Further Information](#)

Ndunda, E. and K. Mkutu. 2022. Exploring Local Peacebuilding Potentials in Northwestern Kenya: The Case of West Pokot. In: Ohta, I., F. B. Nyamnjoh and M. Matsuda (eds.): *African Potentials: Bricolage, Incompleteness and Lifeness*. Kyoto University. 119-137. [Further Information](#)

Tabuti, John R. S., Whitney Cory W., David Mfitumukiza, Anke Barahukwa, Derik Kisegu, and Fatuma Mutesi. 2022. Charcoal and wood extraction are threats to Luwero Uganda's agroforestry systems. Tabuti, John R. S., Whitney Cory W., David Mfitumukiza, Anke Barahukwa, Derik Kisegu, and Fatuma Mutesi. “Charcoal and Wood Extraction Are Threats to Luwero Uganda’s Agroforestry Systems.”

Quebec, Canada, 2022. (Open Access) [Further Information](#)

#### PUBLICATIONS 2021 AND OLDER ONGOING DOCTORAL THESES ON GOVERNANCE AND CONFLICT

[Agyepong, Edna](#). Land scarcity and societal transformation around Ghana's Bui Dam: Poly-rational social constructions and access in contested spaces. Doctoral thesis at Faculty of Mathematics and Natural Resources, University of Bonn.

[Barbosa Pereira, A.](#) Legal fields under dispute in mining related conflicts: implications to legal theory and social sciences. Doctoral thesis at University of Bonn.

[Cormeño, H.](#) (in progress) Access to the city: urban assemblages and resulting processes of social inclusion and exclusion in Amritsar and Lahore. Doctoral Thesis at Faculty of Arts, Center for Development Research, University of Bonn. [Download](#) [GIF | 15.18KB]

[Chinchilla Salcedo, Gina María](#). Building resilient communities after the conflict in Colombia: narratives, memories, and identity. Doctoral thesis at University of Bonn. [Download](#) [GIF | 15.18KB]

[Hojiev, K.](#) Conflicts in Fergana Valley: Identity and Social Dynamics along Kyrgyzstan and Tajikistan borders. Doctoral Thesis at Faculty of Arts, University of Bonn.



[Min Jung Cho.](#) Research and its governance in the health research system of Uzbekistan.

[Mumbi Ndunda, Elizabeth.](#) Contribution of Multi-stakeholder initiatives and collective action in conflict management among pastoral communities in Northern Kenya. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Oginni, Oyewole S.](#) Humanitarian urbanism: Navigating everyday life in overlapping displacement context in the border cities of the Lake Chad Basin Region. Doctoral thesis at Faculty of Philosophy, University of Bonn.

[Shagdarsuren, O.](#) Extra-legality and Policy Implications in the Mining Sector of Mongolia. Doctoral Thesis at University of Bonn.

## 4 WAR ON UKRAINE AND ITS IMPACT ON THE GLOBAL SOUTH

### THE WAR AGAINST UKRAINE AND ITS IMPACT ON THE GLOBAL SOUTH

ZEF's research and education focus is on economic, social and ecological development in the Global South. Our contribution to the public discourse therefore mainly relates to the impacts of the war on Ukraine on people and countries in Asia, Africa and Latin America.

#### POLICY DIALOGUE

[Germany's Parliamentary Committee on Food and Agriculture held a public hearing on Monday, May 16, 2022](#), to discuss a motion from the CDU/CSU parliamentary group on securing global food supplies, entitled: "Helping Ukraine now and in the future, securing food supplies in the world and making European and German agriculture crisis-proof" (BT-Drs. 20/1336). ZEF-director Matin Qaim was invited as one of six experts to give a statement.

#### MEDIA: INTERVIEWS, QUOTES, ARTICLES (IN REVERSE CHRONOLOGICAL ORDER)

- <https://www.riffreporter.de/de/gesellschaft/interview-matin-qaim-krieg-klima-corona-hunger>
- *Mangel und Visionen*  
Zeitgeist, 10.08.2022, Quotes by Prof. Christian Borgemeister and Prof. Matin Qaim, see link [here](#)
- *Der Tag vom 27.07. 2022 - Ukraine will mit ersten Getreideausfuhren beginnen*  
Deutsche Welle, 27.07.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *Wheat prices surge after Russian attack on Odesa - Warning climate change may lower global GDP by 18%*  
Deutsche Welle, 27.07.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *Ukraine-Krieg: Wie Spekulanten Getreidepreise hochtreiben*  
Hamburger Abendblatt, 17.06.2022, Interview with Dr. Lukas Kornher, see link [here](#)
- *Weizen als Waffe: Wie Putin Afrika aushungert*  
F.A.Z. Podcast with Prof. Matin Qaim, 14.06.2022, see link [here](#)
- *Ernährungskrise: Gentechnik statt Bio*  
Article by Prof. Matin in "Der Pragmaticus" (in German in Austrian media outlet), see link [here](#).
- *Lage der Nation (in German)* Audio podcast including interview on Ukraine and global food crisis with Prof. Matin Qaim, 09.06.2022, [link here](#).
- *Matin Qaim: "Wir sind schon in einer akuten Hungerkrise"*  
radioeins (rbb), Podcast "wach & wichtig", 07.06.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *Markus Lanz: Warum Wladimir Putin vom Elend in Afrika profitiert*  
Berliner Zeitung, 25.05.2022, Quotes from talkshow "Markus Lanz" by Prof. Matin Qaim, see link [here](#)
- *"Markus Lanz": Ökonom kritisiert Putins Plünderung von Getreidelagern*  
Watson, 25.05.2022, Quotes from talkshow "Markus Lanz" by Prof. Matin Qaim, see link [here](#)
- *"Markus Lanz". Expertin zeichnet düstere Prognose für Europa*  
WAZ, 25.05.2022, Quotes from talkshow "Markus Lanz" by Prof. Matin Qaim, see link [here](#)
- *Prof. Matin Qaim in ZDF talkshow "Markus Lanz" on the impact of the war against Ukraine on the world food situation*  
Markus Lanz (ZDF), 24.05.2022, see link [here](#)

- *Agrarökonom Matin Qaim über weltweite Weizenknappheit: „Putin will Staaten gefügig machen“*  
Tagesspiegel, 24.05.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *Wenn wir neue Technologien der Pflanzzüchtung nicht nutzen, werden wir das Ziel der global nachhaltigen Ernährungssicherung nicht erreichen*  
Hypothese: Podcast, University of Bonn, 22.05.2022, Podcast with Prof. Matin Qaim, see link [here](#)
- *Der Krieg auf den Tellern: Die Ukraine und die weltweite Ernährungskrise*  
Deutschlandfunk, 18.05.2022, Discussion with Prof. Matin Qaim, see link [here](#)
- *Public hearing by German Federal Parliamentary Committee on Food and Agriculture*  
16.05.2022, Expert statement by Prof. Matin Qaim, see link [here](#) (statement on video: 00:52:29 - 01:06:15)
- *Experte: In Krisenzeiten Lebensmittel-Spekulation einschränken*  
MDR, 15.05.2022, Interview with Dr. Lukas Kornher, see link [here](#)
- *EU sucht nach neuen Exportwegen für Getreide aus der Ukraine*  
Deutschlandfunk, 14.05.2022, Quote by Prof. Matin Qaim, see link [here](#)
- *Der Wirtschaftspodcast - #Ukraine 3: Die Kornkammer.*  
Econtribute, University of Bonn, 12.05.2022. Interview (in German) with Prof. Matin Qaim, see link [here](#)
- *'Betting on Hunger': Market Speculation Is Contributing to Global Food Insecurity*  
The Wire, 06.05.2022, Quotes by Dr. Lukas Kornher, see link [here](#)
- *Hunger als Investment*  
Der Spiegel, 06.05.2022, Quotes by Dr. Lukas Kornher, see link [here](#)
- *"Lebensmittelversorgung: Umweltschutz und Produktivität verbinden"*  
top agrar, 22.04.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *"Hunger und soziale Unruhen - was der Ukraine-Krieg für Afrika bedeutet"*  
manager magazin, 22.04.2022, Quotes from Interview with Prof. Matin Qaim, see link [here](#)
- *"Krieg führt zu Weizen-Knappheit"*  
aktiv, 09.04.2022, Quotes from Interview with Prof. Matin Qaim, see link [here](#)
- *"Agrar- und Ernährungspolitik - Wie gelingt der Umbau des Ernährungssystems?"*  
agrarheute, 08.04.2022, Quotes from Interview with Prof. Matin Qaim, see link [here](#)
- *"Kein Brot für die Welt"*  
radioeins (rbb), Podcast "wach & wichtig", 30.03.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *"Kriegswirtschaft statt Klimaschutz"*  
Bayern 2, 30.03.2022. Interview with Prof. Matin Qaim, see link [here](#)
- *"Weniger Getreide aus der Ukraine und Russland - Wie Fleischverzicht gegen den Hunger in der Welt hilft"*  
Deutschlandfunk Nova, 30.03.2022. Interview with Prof. Matin Qaim, see link [here](#)
- *"Global Solutions Summit"*  
Radioeins Rbb, 28.03.2022. Gesprächsrunde mit Prof. Joachim von Braun, see link [here](#)
- *Agrarökonom: "Lebensmittelpreise hoch wie seit 50 Jahren nicht mehr"*  
DerStandard, 25.03.2022. Interview with Prof. Matin Qaim, see link [here](#)
- *"Im schlimmsten Fall bis zu 100 Millionen mehr Hungernde"*  
Manager Magazin, 23.03.2022. Interview with Prof. Matin Qaim, see link [here](#).
- *Steigende Getreidepreise: "Im schlimmsten Fall bis zu 100 Millionen Hungernde mehr"*  
Die Welt, 23.03.2022. Interview with Prof. Matin Qaim, see link [here](#).
- *Getreidemarkt und Ukraine-Krieg: Weniger Weizen für Tierfutter, Biogas und Biosprit*  
Deutschlandfunk (national radiobroadcast) 22.03.2022. Interview with Prof. Matin Qaim, see link [here](#).
- *Steigende Lebensmittelpreise: Welche Produkte jetzt teurer werden*  
Redaktionsnetzwerk Deutschland (RND), 21.03.2022. Quotes from interview with Prof. Matin Qaim, see link [here](#).
- *Kritik an Lebensmitteln im Tank wächst*  
Tagesspiegel, 21.03.2022. Quotes from interview with Prof. Matin Qaim, see link [here](#).

- *Putins Weizen-Krieg und Deutschlands Entscheidung*  
Welt, 19.03.2022. Interview with Prof. Matin Qaim, see link [here](#)
- *Global food prices had already hit record high. Then Russia invaded Ukraine*  
Euronews, 17.03.2022. Interview with Prof. Matin Qaim, see link [here](#)
- *Der Krieg in der Kornkammer*  
General-Anzeiger, 16.03.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *"5 reasons war in Ukraine is a gut punch to the global food system"*  
POLITICO.eu, 15.03.2022. Interview with ZEF-Director [Prof. Matin Qaim](#). Link [here](#).
- *„Der Krieg wird im schlimmsten Fall 100 Millionen Menschen in den Hunger treiben“*  
FAZ.net, 13.03.2022. Interview with ZEF-Director [Prof. Matin Qaim](#). Link [here](#).
- *Erst der Krieg, dann die Hungersnot?*  
Deutschlandfunk, 12.03.2022. Interview with ZEF-Director [Prof. Matin Qaim](#). Link [here](#)
- *"Steigende Weizenpreise - Der Ukraine-Krieg verschärft die Hungerkrise"*  
Deutschlandfunk, 12.03.2022. Interview mit Prof. Matin Qaim, s. <https://www.deutschlandfunkkultur.de/weizen-ukraine-russland-ernaehrung-100.html>
- *„Weniger Fleisch, weniger Biokraftstoffe Wie man der Lebensmittelknappheit durch den Ukraine-Krieg begegnen könnte“*. Mdr Wissen, 11.03.2022. Interview mit Prof. Matin Qaim. s. <https://www.mdr.de/wissen/ukraine-krieg-steigende-lebensmittelpreise-welthunger100.html>
- *Krieg in der Ukraine könnte Millionen Menschen in den Hunger treiben*  
Weltkirche, 11.03.2022, Interview with Prof. Matin Qaim, see link [here](#)
- *Brot und Kriege*  
Die Zeit, 11.03.2022, Interview with Prof. Joachim von Braun, see link [here](#)
- *„Stromausfall in Tschernobyl, Salatbuffet für Seekühe und das andere Fleisch“*.  
Greenpeace Magazin 10.03.2022: Quotation ZEF-Director [Prof. Matin Qaim](#). Link [here](#)
- *"Weizenexport: Hat der Krieg in der Ukraine Auswirkungen auf die Ernährungssicherheit in der Welt?"*  
Redaktionsnetzwerk Deutschland (RND), 10.03.2022: Interviews with ZEF-Director Prof. Matin Qaim and ZEF Jun.-Prof. [Lisa Biber-Freudenberger](#), s. link [here](#).
- *Ist die Ernährungssicherung in Gefahr?*  
Deutschlandfunk (Radio), 10.03.2022: Interview with Prof. Joachim von Braun, s. link [here](#).
- *Ernährungssicherheit: Was der Ukraine-Krieg für die Landwirtschaft bedeutet*  
Deutschlandfunk, 10.03.2022: Interview with Prof. Matin Qaim, s. link [here](#).
- *Massiver Einbruch des Getreidemarkts befürchtet: Ukraine-Krieg könnte Millionen hungern lassen*  
10.03.2022, Quotes by Prof. Matin Qaim for Tagesspiegel, see link [here](#)
- *The war in Ukraine and its impact on world food prices*. RTL Nachtjournal Sendung vom 08.03.2022 Folge 46 (Minute 14): Interview with ZEF-Director Prof. Matin Qaim, see link [here](#).
- *Putins Krieg könnte Millionen Menschen in den Hunger treiben*. Article and interview with Prof. Matin Qaim for Neues Ruhrwort on March 9, 2022, see link [here](#).
- *Ernährungskrise durch Ukraine-Krieg*. Article and interview with Prof. Matin Qaim for Deutsche Welle Wirtschaft on March 8, 2022, see link: <https://p.dw.com/p/48Akh>
- *„Die globale Ernährungskrise verschärft sich – und bringt Inflation und Hunger“*. Interview with ZEF-Director Prof. Dr. Matin Qaim im Handelsblatt 18.02.2022, see link [here](#)

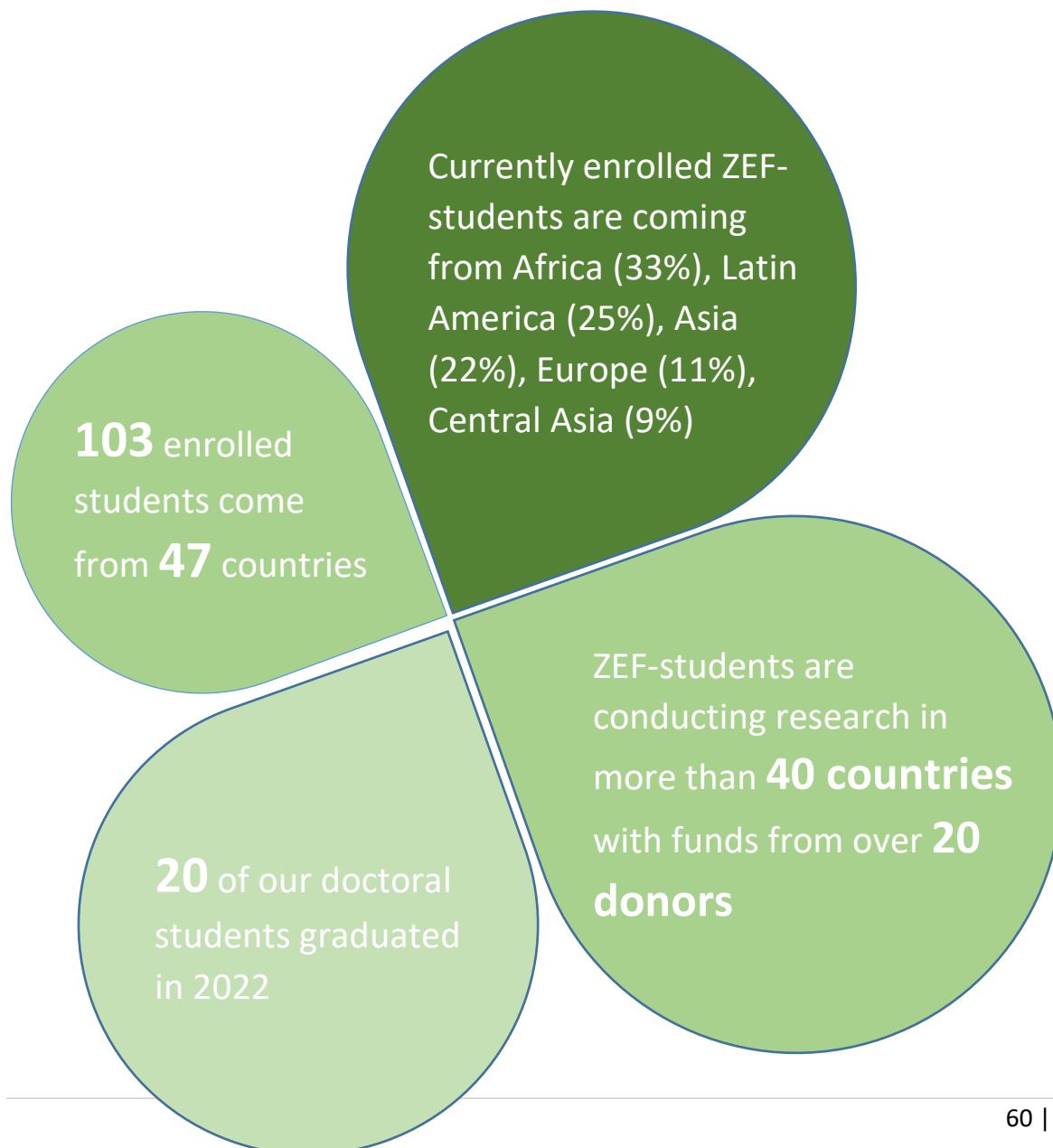
## 5 GRADUATE SCHOOL AND ZEF CAPACITY DEVELOPMENT

### 5.1 GRADUATE SCHOOL BIGS-DR



#### INTRODUCTION

The Bonn International Graduate School for Development Research (BIGS-DR) is a **structured doctoral program** at the Center for Development Research (ZEF). We are part of the international graduate programs at the University of Bonn that maintains the highest level of academic quality and doctoral training. BIGS-DR enables doctoral studies in **development research** with attractive international collaborations and a tailored qualification program.





DOCTORAL DEGREES 2022			
Annie Stephanie	Nana	Cameroon	Heavy metal contamination in urban agriculture and human health risk in Yaounde, Cameroon
Edna	Agyepong	Ghana	Displacement, 'land scarcity', and processes of societal transformation: Social constructions and dynamics of 'land access' around Ghana's Bui Dam
Shaibu	Mellon Bedi	Ghana	Disseminating sustainable intensification practices: Empirical evidence from Ghana
Joshua	Ntajal	Ghana	"Linking land-use dynamics, surface water systems, and human health risks in Ghana".
Philipp	Swoboda	Austria	Remineralizing soils? The agricultural usage of silicate rock powders in the context of One Health
Adjoa Tsetsewa	Annan	Ghana	Enhancing Quality in Cocoa Production; a Study of the Cocoa Sector of Ghana
Stephanie	Sangalang Ocampo	Philippines	Improving children's environmental health in Metro Manila, Philippines, through a school water, sanitation, and hygiene intervention
Mekdim Dereje	Regassa	Ethiopia	Patterns of Urbanization and Economic Development: Evidence from Household Surveys in Ethiopia.
Merveille Koissi	Savi	Benin	Modeling the spatial and temporal heterogeneity in malaria transmission and control in urban Ghana
Dennis	Schmiege	Germany	Geographical perspective on antibiotic resistance in a metropolitan sewershed
Cesar	Canon Barriga	Colombia	The hidden risk of conventional floodplain mapping: Diagnosis in Cali, Colombia
Madiha	Hussain	Pakistan	Challenges and opportunities for the inclusion of women in politics in Pakistan. A case of women and men career politicians in the Pakistan Thereek Insaf political party (PTI)
Oscar	Burbano-Figueroa	Colombia	Yield, productivity and technical gaps that limit the cotton agricultural production system in the Colombian Caribbean
Alejandro	Mora Motta	Colombia	The (un)making of an extractivist logging enclave: Fundamental human needs and tree plantations in southern Chile
John	Ndungu	Kenya	Sustainability performance of organic and conventional farming systems in Kenya: Murang'a, Kirinyaga and Machakos Counties
Elizabeth	Ekren	USA	Agency, opportunity structure and empowerment in everyday refugee life: Enduring and overcoming challenges of daily living in Cologne refugee shelters
Pallavi	Rajkhowa	India	Personalized digital extension services, electronic marketplaces, and mobile phones: Implications of digital technology on rural development in India
Fuad	Hassan	Bangladesh	Interlinkage between food prices and agricultural wages and implications for farm mechanization in Bangladesh
Alfariany Milati	Fatimah	Indonesia	Intergenerational Mobility and the Children of Migrants in Indonesia
Arslan	Waheed	Pakistan	Development Discourses and Urban Poor: A Comparative Case Study of Slums of Islamabad and Brasilia

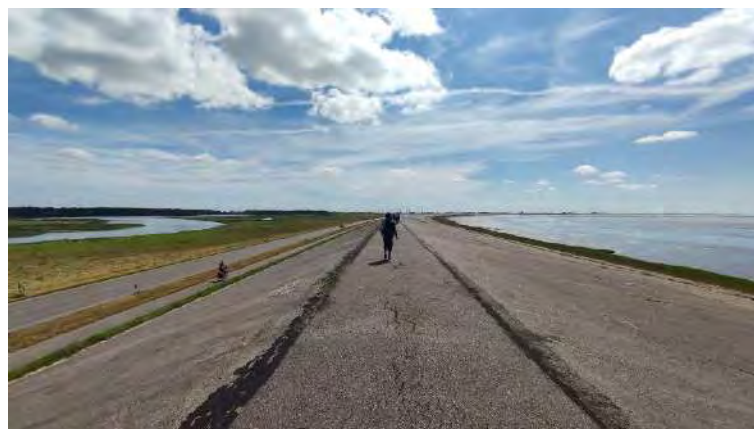


## GROWING EAST: PARTNERSHIP WITH THE UNIVERSITY OF TOKYO

ZEF and the University of Tokyo will strengthen and expand their longstanding partnership, especially with the [International Program in Agricultural Development Studies \(IPADS\)](#) of the Graduate School of Agricultural and Life Sciences, by adding the [Graduate School of Frontier Science](#) as a cooperation partner. Thus, the bilateral collaboration continues and grows with new staff and a mix of online and face-to-face academic exchange. The institutes and their universities in Tokyo and Bonn are committed to enhancing and growing the collaboration, which will be formalized with an updated Memorandum of Understanding. The Rector of Bonn University, Professor Michael Hoch, will sign this document on his trip to Japan in 2023. The cooperation started in 2016 and was initiated by Prof. Kensuke Okada (University Tokyo), Prof. Christian Borgemeister, Dr. Manfred Denich, and Dr. Günther Manske (ZEF) who both retired in recent months. Since 2022, the project has been managed by Dr. Silke Tönsjost (BIGS-DR), Max Voit (BIGS-DR), Dr. Isimemen Osemwegie, Dr. Juliet Kamau.

## SIMULTANEOUS FIELD TRIPS TO HOKKAIDO AND SCHLESWIG- HOLSTEIN

A highlight of the ongoing partnership in 2022 were the simultaneous but separate excursions to Schleswig-Holstein (Germany) and Hokkaido (Japan) in August 2022.



As part of the partnership-program between ZEF and the [IPADS](#), two groups of doctoral students went on simultaneous field trips to look into the issue of “**Conservation of Coastal Ecosystems – Linkages between Agriculture and Marine Environment**” in August 2022. Whereas the Bonn-based ZEF-students examined conservation strategies in the Wadden Sea National Park in Schleswig-Holstein, located in Germany’s utmost north, the parallel excursion of Tokyo-based IPADS-students focused on seaweed bed restoration in Hokkaido in northern Japan. ZEF-students shared their experiences and insights in two blog posts.

**Read blog part 1 here:** [Doctoral researchers look into conservation of coastal ecosystems in Germany’s north – ZEF Researchers' blog](#)

**Blog part 2:** [Doctoral researchers look into conservation of coastal ecosystems in Germany’s north – ZEF Researchers' blog](#)

After their respective excursions, the students met online and took part in lectures by Prof. Yamamoto, Dr. Juliet Wanjiku Kamau, and Dr. Isimemen Osemwegie. In online-plenary sessions, the students shared their findings and experience of engaging with local stakeholders on site.

## **GUEST LECTURE AND WORK VISIT BY PROFESSOR HIROE ISHIHARA**

The first guest lecture in person at ZEF from a partner from Tokyo took place in July of 2022. Our guest was Prof. Dr. Hiroe Ishihara, a professor at the Graduate School for Frontier Sciences, University of Tokyo. In her lecture, Prof. Ishihara posed the question: [“Can certification schemes alone achieve sea-food security?”](#) When she was asked about her initial approaches to securing the marine environment, she highlighted the importance of a good relationship between the government and locals. “When the government is weak, the communities do not have any rights either. They don't want to manage the seafood stocks because they do not know what will happen in the future”. According to Prof. Ishihara, the foundation lies in proper management. I would sort out what kinds of cases are working well and which are not. In those areas, which are not doing well, I would exert more governmental control or apply a market-based approach. But in those communities that are doing well, I would continue to work with the current management system.” Read the full interview with Prof. Hiroe Ishihara [on our website here](#).

Prof. Ishihara was with IPADS and has now joined the [Graduate School of Frontier Sciences](#), an interdisciplinary study program on sustainability for international students at the master and graduate levels. She will continue to participate in the ongoing collaboration and will bring her graduate school as a new partner on board. The second guest lecture will take place in December of 2022 when Prof. Mitsuo Yamamoto is scheduled to visit Bonn. He will introduce an overview of his research on reducing marine plastic litter using agricultural wastes in Africa.



## GIVING BACK: ZEF-ALUMNI



Alumni or advanced students offer about four Online-Workshops per year for current students. In October 2021 our alumna **Dr. rer. nat. Olabisi Obaitor** (Humboldt Universität Berlin, batch 2015) lectured on concepts of slums and urbanization in Africa. BIGS-DR students learned different approaches with examples and limitations of each approach. In the practical part, BIGS-DR students learned how to apply a random forest algorithm to predict slum locations in Lagos, Nigeria.

Our alumnus **Dr. Koissi Savi** (Harvard T.H. Chan School of Public Health, batch 2017) offered an Online-Workshop on “Mathematical biology with application in R” in January 2022. The participants learned about mechanistic models in biology and the dynamics of the population including exponential growth and logistic growth.

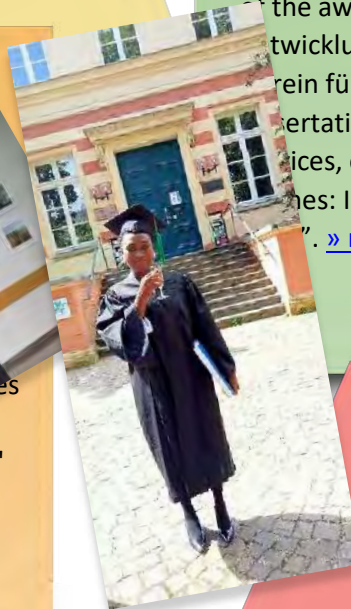
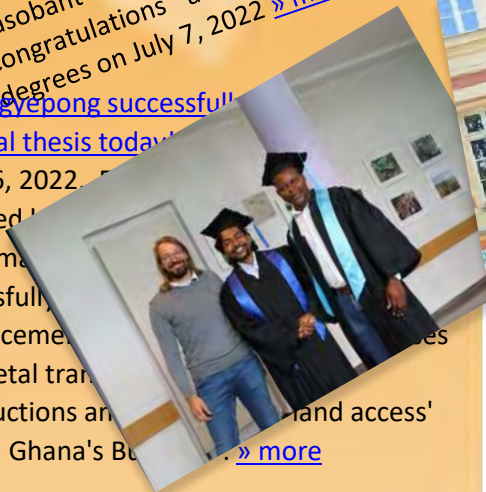


## BIGS-DR NEWS

[After-defense celebration for Dr. Joshua Ntajal and Dr. Yasobant Sandul](#)  
July 07, 2022. After having defended their doctoral theses in Covid-19-induced digital mode, two of our former BIGS-DR and One Health students, Joshua Ntajal (Ghana) and Yasobant Sandul (India) received in-person congratulations at ZEF on their doctoral degrees on July 7, 2022. [» more](#)

[Edna Agyepong successfully defended her doctoral thesis today](#)

May 16, 2022. Edna Agyepong successfully defended her doctoral thesis on “Displacement and the construction of societal transformation: Implications for rural development in Ghana’s Brong Ahafo region”. [» more](#)



[Pallavi Rajkhowa received second prize of KfW award for her doctoral dissertation](#)

June 09, 2022. ZEF Senior Researcher Pallavi Rajkhowa from India received the second prize of the award “Förderpreis für praxisrelevante Entwicklungsforschung” by the KfW and the Verein für Socialpolitik for her doctoral dissertation on “Personalized digital extension services, electronic marketplace, and mobile phones: Implications for rural development in India”. [» more](#)





[ZEF blog: Could the Ukrainian war spark another revolution in Egypt?](#)  
March 21, 2022. Blog post by Ahmed Abdalla, doctoral researcher at ZEF and the Right Livelihood Campus Bonn » [more](#)



[Shaibu Mellon Bedi is Dr. Bedi now!](#)  
May 12, 2022. ZEF doctoral researcher Shaibu Mellon Bedi successfully defended his doctoral thesis on May 9, 2022 » [more](#)

[ZEF junior researcher Hina Amber from Pakistan selected for grant by IGC of the London School of Economics and Political Science.](#)  
February 10, 2022. International Growth Centre supports "valuable contribution". » [more](#)



[Portrait and interview: "Friends of ZEF" Prize co-winner Powell Mponela](#)  
May 18, 2022. Dr. Powell Mponela from Malawi tells about his pathway to science. » [more](#)

## 5.2 CAPACITY DEVELOPMENT WITH LATIN AMERICA

### THE DOCTORAL STUDIES SUPPORT PROGRAM (DSSP) ON ENVIRONMENTAL PEACE AND DEVELOPMENT IN COLOMBIA



The program focuses on territorial rights, land use, access to and the extraction of natural resources to understand long-standing political and social conflicts and inequalities in Colombia.

**Project duration:** 2021 – 2025 (second phase)  
**Project leader:** Eva Youkhana  
**Project team:** <https://dssp-colombia.org/about/team/>  
**Project funder:** German Academic Exchange Service (DAAD)  
**Project countries:** Colombia  
**Project website:** <https://dssp-colombia.org/>

#### SDG GRADUATE SCHOOLS (BMZ VIA DAAD)

The whole program line seeks to contribute to the Sustainable Development Goals (SDG) of the United Nations. Thus, partnerships between higher education institutions in Germany and developing countries are supported in order to establish SDG Graduate Schools in developing countries. In the case of DSSP, we want to contribute to the selected SDGs 4 (quality education), 11 (sustainable cities and communities), 15 (life on land) and 16 (peace and justice and strong institutions). Therefore, we address themes like the relationship between conflict and environment and its manifestations, rural development models and their actors, access to land, local knowledge and education. We try to integrate more students, actors and communities from outside the Colombian capital Bogotá and pay attention to gender balance among the scholarship holders (SDG 4). Historical perspectives that relate to colonial legacies and perceptions of colonialism by affected indigenous, Afro-Colombian and peasant communities will accompany our contribution to SDG 11 and SDG 16. The dialogue between academic and non-academic actors and the involvement of actors from policy and practice in the planning and implementation of DSSP's research projects is indispensable for our work. Unsustainable land management, diverse and competing agrarian production systems, and the handling of environmental questions related to development interventions and extractive activities are at the center stage of the conflict in Colombia. With our embedded and contextualized research program we can contribute to SDG 15 and empower communities to more sustainably manage land in the longer term.

#### STUDENTS AND ACTIVITIES

30 doctoral students from Colombia (23), Cuba (5) and Nicaragua (2) since the start of the program in 2016.



Several workshops and field trips were carried out in 2022, specifically focusing on PARTICIPATORY MONITORING OF BIODIVERSITY LOSS IN COLOMBIA. Read more about this research in [ZEF news no. 44](#) (page 4) and [ZEF news no. 45](#) (page 7).

## 5.3 CAPACITY DEVELOPMENT WITH AFRICA

ZEF is running **around 10 larger research and capacity development projects in West Africa** (some covering East Africa as well), including Niger. All ZEF-related projects in the region have a few features in common:

1. Entry point is the management of water and/or energy.
2. Bio-physical management issues are embedded in an inter- and/or transdisciplinary way in socio-economical, institutional and environmental contexts. Thus, the projects attempt to provide technically efficient, economically feasible, socio-culturally adapted and environmentally sustainable concepts.
3. Research components are complemented by capacity-developing as well as capacity-strengthening components, and
4. Intensive cooperation with local partner institutions is key to all projects.

### STRATEGIES TO IMPROVE LIVELIHOODS AND STABILIZE SYSTEMS

By applying this basic project design ZEF's research projects support the SDGs (i.e. 2, 3, 6, 7, 13) and provide research-based findings, which can be used for **strengthening sustainable resources management and thus achieving food security under increasingly difficult conditions**. At the same time, **capacity-building projects enable students, scientists, and development practitioners from government agencies and civil society to acquire the required technical, scientific and professional skills to plan, manage and implement the transition envisioned**. They thereby contribute to improving livelihoods and stabilizing agricultural, socio-economic and environmental systems that are currently fragile in West Africa.

### KEY PARTNER: ABDOU MOUMOUNI UNIVERSITY IN NIAMEY

The Abdou Moumouni University in Niamey (UAM) **has become ZEF's major partner in several research projects focusing on the Energy-Water-Food Nexus in Niger**. Among them are the '**West-African Science Service Centre on Climate Change and Adapted Land Use (WASCAL)**' and the '**Climate Information for Integrated Renewable Electricity Generation (CIREG)**'. Both projects are funded by [BMBF](#).

The Graduate Studies Program on Climate Change and Energy of **WASCAL** (10 Doctoral and six Master programs in 12 West African countries) at UAM is training the next generation of professionals as agents of change for mastering the region's challenges. Besides, [CIREG](#) is a cooperation project between scientists from West African and European institutions, as well as stakeholders and decision-makers in the region. CIREG has been informing on options to unfold the huge potential for generating renewable energy in West Africa. For this purpose, it has been utilizing complementarities between renewable energy approaches and the advancement of the energy-water-food nexus, ranging from small-scale (e.g. hybrid wind- and solar-systems to match energy supply and demand) to large-scale options (e.g. combining wind and solar energy to help avoid potential regional conflicts e.g. those created by the Grand Renaissance Dam in Ethiopia). Co-designed research layout, application of advanced modeling tools and in-depth case studies enable CIREG to deliver energy and climate services relevant for stakeholders from the local to the regional level.



## FURTHER CAPACITY DEVELOPMENT PROJECTS IN WEST AFRICA



Another successful example of ZEF's collaboration with partners in Niger and Ghana is the '**West African Center for Sustainable Rural Transformation (WAC-SRT)**', which is funded by the Federal Foreign Ministry through the DAAD. The Center has run research and teaching programs since 2017, thereby substantially enhancing teaching and research infrastructure (developing new curricula, providing stipends for students) at the **Abdou Moumouni University** in Niger. To train current and future resource persons **the program is fostering knowledge-generation and -dissemination to support rural transformation towards climate-smart land**

**use, renewable energy generation, and improved livelihoods.** For that purpose, WAC-SRT is combining, in a transdisciplinary way, technological tools, managerial approaches, adapted business models and administrative arrangements focusing on decentral, locally adapted and water-energy-food nexus-aware solutions.

ZEF's focus in the project '**Risk Assessment and Adaptation Strategies for Sustainable Urban Resource Supply in Sub-Saharan Africa (RARSUS)**', was to conceive options for managing floods in urban settings and therewith deriving strategies to support small-scale irrigation in peri-urban sites with Niamey as a typical study region. ZEF's contribution to '**Researchers back to secondary school – Renewable Energy-powered Water-Energy-Food-Economy Nexus in the Dosso Region in Niger (RETO-DOSSO)**' consisted in combining solar-powered pumping, water storage facilities, advanced irrigation techniques and appropriate irrigation-scheduling tools for enhancing efficiency and productivity of small-scale irrigation systems.

## RESEARCH ON GREAT GREEN WALL IN THE SAHEL

ZEF-researchers explored costs and benefits of the Sahel Great Green Wall as a continent-wide intervention for reducing land degradation and sustaining the agricultural potential in the region (**The Economics of the Sahel Great Green Wall**).



## **AFRICAN CLIMATE AND ENVIRONMENT CENTER – FUTURE AFRICAN SAVANNAS (AFAS)**

AFAS has been funded since May 2021 within the DAAD-programme Global Centres for Climate and Environment with means of the Federal Foreign Office. The project initiative stems from the urgent need to develop sound and robust evidence-based and science-backed strategies to preserve and protect the fragile environments of the West and East African savannas against the combined threats of extensive and diverse land use and rapid climate change. The mainly virtual operating Center will conduct research, science communication and action in regard to (i) a more secure natural resource base that would create a less vulnerable basis for livelihoods, economic growth and climate resilience, (ii) improved investments in locally acceptable nature-based solutions with opportunities for inclusive economic growth, and (iii) maximizing the positive contributions of other sectors to the conservation and sustainable use of biodiversity. It thereby aims to address societal needs and business opportunities and to develop both social-ecological resilience and human capacities to overcome the barriers to the implementation of innovative approaches on climate change adaptation and biodiversity conservation and to produce scientific outcomes that are relevant to policy and practice and implementable for the public and private sectors.

**Partner countries:** Ivory Coast and Kenya

**Partners:** Université Félix Houphouët-Boigny, Ivory Coast; University of Nairobi, Kenya, and University of Cologne, Germany.

### **ACTIVITIES 2021/2022**

- Virtual kick-off workshop (February 2022).
- 20 masters, 3 PhD and staff recruited (2021).
- On-going hybrid training of students at University of Nairobi (UoN) and Université Félix Houphouët-Boigny (UFHB) in Abidjan, Côte d'Ivoire.
- Training of trainers' workshop.
- Stakeholder workshop 'Workshop: Co-designing Science Policy Practice Interfaces for climate change, biodiversity and ecosystem services: WABES, CABES and AFAS Projects' held at the African Center of Excellence on Climate Change, Biodiversity and Sustainable Agriculture (CEA-CCBAD), UFHB at in Abidjan, Côte d'Ivoire (In person) May 16-17, 2022.
- Side event during the United Nations Convention to Combat Desertification fifteenth session of the Conference of the Parties (UNCCD, COP15) held in Abidjan, Côte d'Ivoire, May 9-20, 2022 as specified below. Topic: Managing Science-Policy-Practice Interfaces in the context of Land, Life, and Climate Change Legacy: Examples from Africa, in collaboration with CABES and LANUSYNCON.
- Summer School held at the Universities of Bonn and Cologne, August-September 2022
- Participation of the AFAS students and staff at the German Academic Exchange Service (DAAD) Conference for the Global Centres and the Humboldt Research Hubs held in Berlin on September 6-7 2022.



*Photos: AFAS students during the AFAS Summer School in Germany (Bonn, Berlin) in August-September 2022*



## **SOUTH-SOUTH COOPERATION**

As part of its project set-up, ZEF has been fostering South-South cooperation. An example is the cooperation between WASCAL and the Pan African University / Institute of Water and Energy Sciences (PAUWES) with ZEF as a facilitator. Through this set-up, research results can be disseminated and long-term impact achieved, thus contributing and working towards sustainable development in Niger and the region.

## **OUTREACH CAPACITY DEVELOPMENT IN AFRICA**

The **Climate and Sustainable Development Actions Club (CSDAC)** was founded in 2018 by ten master students from Ghana, Niger and Benin. All students were part of the ZEF-led Capacity Development project **West African Center for Sustainable Rural Transformation (WAC-SRT)**, which is one of 12 **DAAD African Centers of Excellence**. ZEF has been running another DAAD African Excellence Center, the

Ghanaian-German Center for Development Studies since 2008. To finance their extracurricular activities, the Climate and Sustainable Development Actions Club members have been engaging in successful fund-raising activities, bringing them several grants.



### Here is (part of) their story

Today, the Club has around **50 active members**. It has become a regional network of young professionals and students contributing to the climate change discourse and offering solutions at many levels. At the core of **CSDAC's activities have been strong commitment to enhancing local communities' capacities and practices towards achieving the SDGs and the African Union Agenda 2063**. This applies especially to issues such as environmental protection, gender equality as well as climate-change resilience, adaptation, and mitigation.

### What actions do the students undertake?

The Club's members have been very active in using social media for promoting their work. Social media, especially Facebook, are playing a key role in communications among the youth in urban and semi-urban areas in West Africa. **During the COVID-19 pandemic the Club members ran several in-person and digital awareness-raising and information campaigns**, e.g. on how to prevent contracting the SARS-CoV-2 virus. They informed on the importance of applying personal hygiene practices, observing social distancing rules, wearing masks and using hand sanitizers. These campaigns were reaching out far beyond the Club's climate-change related mandate. This shows the dedication and motivation of the students to improve the living conditions of local communities by amplifying the impact of what they are learning at university and during their studies. **All actions and videos can be watched on CSDAC's Facebook page.**

### Supporting local and regional capacities with concrete actions and impact

**In May 2020 the CSDAC was one of 25 award-winning initiatives granted funding by The Youth Challenge Fund of Plan International West and Central Africa.** More than 1,300 applications from 14 countries had been submitted. The CSDAC students received the grant for their project **"Entrepreneurship and Empowerment of Nigerien Youth in the face of Covid-19"**. This project aimed at helping young Nigeriens, especially women, cope with some of the effects of the pandemic which hit them hardest, i.e. rising unemployment rates and increasing economic vulnerability. By training young people on installing, deploying and repairing solar systems for irrigation purposes, the CSDAC has strengthened their practical skills and enhanced their opportunities in the job market. Besides, the **CSDAC's actions contributed to setting up sustainable and clean energy systems in Niger.**

### Successful fundraising: Granted grant after grant!

CSDAC members have also applied for and acquired a grant by the **CoLab program of the French National Research Institute for Sustainable Development**. Due to this grant they were able to develop an app (see youtube video here: **WOHEVER**) which aims to enhance medical care during pregnancy and thereby reduce child and maternal mortality rates. The development and implementation of this app has given the students an enormous exposure, also in Nigerien Media outlets.

### Grant for training 17 women for 17 SDGs



In December 2021, the CSDAC students were awarded another grant by Plan International West and Central Africa. The new project plans to build human capacities in advocacy and digital campaigning: **17 Nigerien girl-leaders will receive training on how to best disseminate and promote the 17 SDGs in French and two local Nigerien languages on social media channels.** The project was officially launched at the Abdou Moumouni University of Niamey in Niger's capital Niamey on February 21, 2022. Read the full blog post about this event here: <https://blog.zef.de/?p=7975>



## 6 OUTREACH AND (SOCIAL) MEDIA (SELECTION)

### [Befeuert Finanzspekulation mit Lebensmitteln die globale Ernährungskrise?](#)

August 25, 2022. Article by Dr. Lukas Kornher in Welternährung. Das Fachjournal der Welthungerhilfe » [more](#)

### [Agrarökonom Qaim, Uni Bonn-Leichte Entspannung bei globalen Lebensmittelpreisen](#)

August 23, 2022. Interview with Prof. Matin Qaim for Deutschlandfunk » [more](#)

### [Recent floodings in Afghanistan](#)

August 23, 2022. Interview with Dr. Fazlullah Akhtar for Shamshad Intl. TV (Pashto) » [more](#)

### [How much meat can we eat — sustainably?](#)

August 18, 2022. Quotes by Prof. Matin Qaim for Knowable Magazine » [more](#)

### [Mit Eigenanbau gegen den Hunger](#)

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### [Inflation: Agrar-Rohstoffe trotz Preissenkung vergleichsweise teuer](#)

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### [Joachim von Braun on an 'IP for Food'](#)

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### [Dispute over water between Iran and Afghanistan](#)

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### [Vegane Landwirtschaft und Welternährung: Nachhaltige Landwirtschaft](#)

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### [Het eerste graanschip heeft de Zwarte Zee verlaten. Wat betekent dat voor de miljoenen mensen die honger lijden?](#)

August 04, 2022. Quote by Dr. Lukas Kornher for Trouw » [more](#)

### [Fleisch essen ist ungesund für Mensch und Planet – jedenfalls im jetzigen Umfang](#)

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### [How sustainable are fake meats?](#)

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### [Unser irrationaler Umgang mit der Grünen Gentechnik](#)

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### [Welthunger-Index 2021 - Wie der Hunger in der Welt bekämpft werden könnte](#)

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### [Bessere Ernten trotz Trockenheit - Wie Afrikas Landwirtschaft krisenfester werden kann](#)

July 12, 2022. Interview with Prof. Christian Borgemeister and Prof. Matin Qaim for Deutschlandfunk » [more](#)

### [Der Biosprit soll aus dem Tank](#)

July 08, 2022. Article in FAZ with quotes from Prof. Matin Qaim » [more](#)

### [Viel Arbeit für weniger Ernte](#)

July 07, 2022. Quote by Prof. Matin Qaim for Heidenheimer Zeitung » [more](#)

### [Vom Arme-Leute-Essen zum Superfood: Wie umgehen mit dem Quinoa-Boom?](#)

July 06, 2022. Article by Daniel Callo Concha in Welternährung. Das Fachjournal der Welthungerhilfe » [more](#)

### [Welt ohne Hunger? Was dann?](#)

June 30, 2022. Interview with Prof. Matin Qaim for tagesschau » [more](#)

### [Is it from inflation to Putinflation?](#)

June 24, 2022. Interview with Prof. Matin Qaim for Arirang TV » [more](#)

### [Weniger Bio, mehr Gentechnik? Europas Landwirte auf Spurensuche](#)



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#### [Da geht einer steil](#)

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#### [Umwelt ist kein Anreiz für Kauf von Fleischersatzprodukten](#)

May 03, 2022. Reference to study by Prof. Matin Qaim and Dr. Martin Parlasca in Land & Forst [» more](#)

#### [Wer Tiere liebt, sollte sie essen? Ein „groteskes Argument“, ärgern sich Tierschützer:innen](#)

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[To Conserve the Environment, Meat Intake Must Be Reduced by at Least 75% According to Experts](#)

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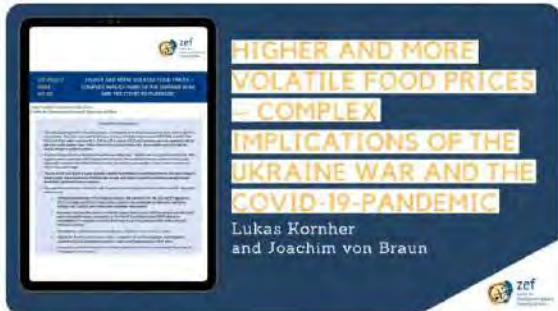


# SOCIAL MEDIA (EXCERPTS)



Russia's military attack on #Ukraine further drives up food prices. Together the two countries account for 20% of global maize exports and 30% of global wheat exports. Read more on this in the latest ZEF Policy Brief by Lukas Kornher & @joachimvonbraun [bit.ly/ZEF-PB38](https://bit.ly/ZEF-PB38)

Die weitere Inkulturnahme von Naturflächen ist „eine der Hauptquellen für Treibhausgasemissionen im Bereich Landwirtschaft“. Diese Emissionen könnten durch den Einsatz von Gentechnik reduziert werden. So @MatinQaim in einem Podcast von @NDRInfo Mehr dazu [bit.ly/QaimNDR](https://bit.ly/QaimNDR)



Rheinische Friedrich-Wilhelms-Universität Bonn



The latest #FeedPodcast episode features @joachimvonbraun who talks about his experience as Chair of @sc\_fss2021, what he sees as the successes of the 2021 UN Food Systems Summit, & what work remains to be done.

[tabledebates.org/podcast/episod...](https://tabledebates.org/podcast/episod...)  
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Gepostet von Silja Mertens · 19. Mai

Congratulations! 🎉  
Powell Mponela (Malawi) and Marwa Shumo (Oman) have been awarded the "Friends of ZEF" Prize for the best doctoral theses written at ZEF 2018-2020. Read more about the Prize and selection procedure here.

Read the interview with Powell Mponela [https://bit.ly/ZEF\\_Mponela](https://bit.ly/ZEF_Mponela).  
The photos in this post were taken during research Powell conducted in Malawi on his doctoral research on "Options for sustainable intensification in maize mixed farming systems: Explorative ex-ante assessment using multi-agent system simulation" [https://bit.ly/ZEF\\_Mponela\\_Thesis](https://bit.ly/ZEF_Mponela_Thesis)

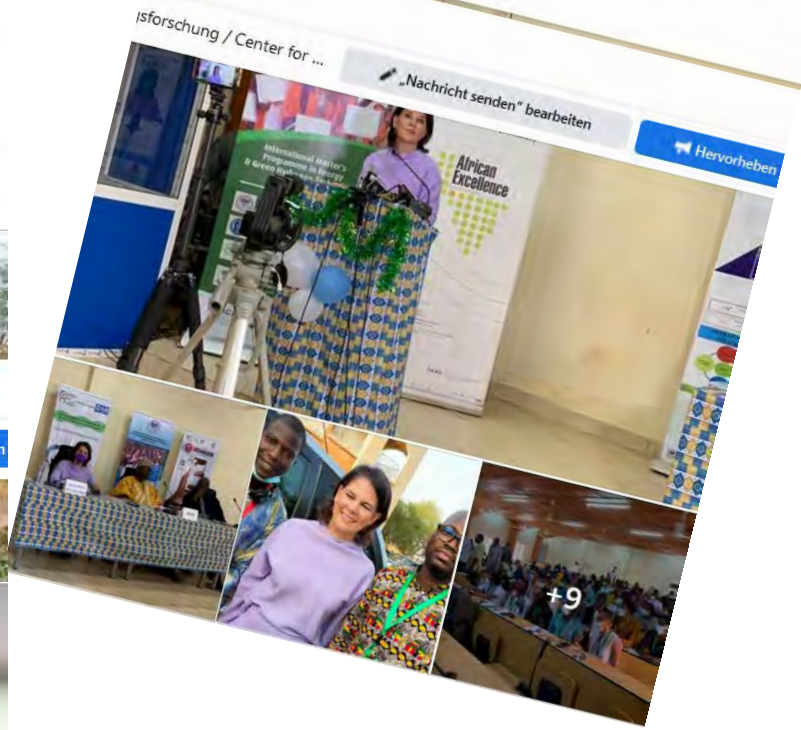
Read more about Marwa Shumo's doctoral research at ZEF [https://bit.ly/ZEF\\_Shumo](https://bit.ly/ZEF_Shumo)



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Zentrum für Entwicklungsforschung / Center for Development Research (ZEF)  
Gepostet von Silja Mertens · 14. April  
Yesterday, 13 April 2022, Germany's Federal Minister of Foreign Affairs, Ms. **Annalena Baerbock**, paid a visit to the **Université Abdou Moumouni de Niamey (UAM)** in Niamey, Niger.  
She was introduced to different research and capacity-building cooperation projects, such as the ZEF-led and **DAAD**-funded project **West African Centre for Sustainable Rural Transformation (WAC-SRT)**.  
**Segbedji Geraldo Favi**, co-founder of the **Climate and Sustainable Development Actions Club (CSDAC)** and WAC-SRT alumnus, presented CSDAC and its work to the Minister.  
Read more [https://bit.ly/ZEF\\_Baerbock\\_Niger](https://bit.ly/ZEF_Baerbock_Niger)  
Photos by David Agbo, Abdou Moumouni University



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