



ZEFNEWS

Research, education and policy advice with
the Global South

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LEAD ARTICLE

ENVIRONMENTAL PEACE-BUILDING AND DEVELOPMENT IN COLOMBIA

BILATERAL DOCTORAL STUDIES SUPPORT PROGRAM KICKS OFF WITH WORKSHOP IN BOGOTÁ

Passing the checkpoint at the gate of the National University of Colombia, we already see lively activity on campus and hear the sound of salsa music from afar. Students are on strike due to the difficult financial situation of public universities. Nevertheless, and despite reduced teaching activities, youngsters wait patiently in front of the modern, minimalist-built auditorium Natividad Pinto to register for admission.

It is October 16, 2018 and people from science, politics and civil society backgrounds have come together at the National University in Bogotá for the opening conference of the bilateral Doctoral Studies Support Program (DSSP, website: zef.de/project/DSSP) between ZEF and the Institute for Environmental Studies (IDEA) of the National University.

"We appreciate the bilateral Doctoral Studies Support Program with its interdisciplinary approach to research. It supports sustainable development and peace process in Colombia and also the implementation of the UN's Sustainable Development Goals (SDGs). To understand the environmental dimension of the peace process, international and scientific cooperation such as the DSSP program are needed", says Daniel Alscher, who gives a keynote at the opening workshop on behalf of the German Embassy in Colombia.

The Doctoral Studies Support Program is funded by the German Academic Exchange Service (DAAD) and the Federal Ministry for Economic Cooperation and Development (BMZ). The project in Colombia is part of an international DAAD program promoting the SDGs by establishing bilateral graduate schools: four in Africa, two in Latin America and one in Asia (see DAAD's website bit.ly/2GBC2Vk). Colombia is a show-case country in which struggles over territorial rights, land use and extraction of natural resources have been deeply entrenched with diverse forms of violence. Fifty years of armed conflict in the country have led to the exploitation and destruction of the environment in addition to the expropriation of land and displacement of the rural population. Against the background of the Colombian peace agreement and the professed end to armed conflicts between guerrilla groups and the government in 2016, researchers are now investigating the interrelatedness of sustainable peace, land

rights and environmental issues. The researchers are looking at the options for how to allocate land without invoking conflict, and how to cultivate it in a sustainable way.

"A possible challenge that this program could face is its short project duration. Colombia is very rich and diverse in terms of culture, languages, geographical conditions and biodiversity. It will take time for the Colombian students as well as their international partners to even begin to learn about all the factors contributing to the conflicts," says Tomás Enrique León Sicard, the program coordinator of the DSSP from IDEA.

Lars Gerold, who is responsible for the bilateral SDG graduate programs at DAAD and is attending the kick-off workshop in Bogotá, acknowledges that despite the challenges "ZEF has already achieved a lot by setting up a bilateral SDG Graduate school in Bogotá and by integrating a partner network with Nicaragua, Cuba and Ghana. The new local structures which are being established are meant to facilitate a process of joint knowledge creation. Here, students and scientists from the global South and North are working together to develop solutions for global issues."

Key drivers of the cooperation process are the high motivation and dedication of the doctoral students enrolled in the program. Many of the doctoral students are already working with local projects in conflict areas. Juliana Sabogal, a doctoral student at the National University of Colombia, explains to us that she applies her academic research at the university to her work with local agricultural movements in Pastó where, she relates, "food security is low and people have suffered from the impact of displacement".

Eva Youkhana, who is project leader and program coordinator of the DSSP and acting Director at ZEF, states: "We have set up a mutual digital research database monitored by project staff in Bonn and Bogotá within a short time span. ZEF also supported IDEA with getting their doctoral program accredited. I am confident that the program will have a long-term effect because the students, once graduated, will act as multipliers at the university and throughout the region."

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EDITORIAL: THE ENVIRONMENTAL IMPACT OF THE VIOLENT CONFLICT IN COLOMBIA

Columbia's armed conflict, which began in the 1960s, between different guerrilla groups and consecutive Colombian governments, reveals linkages to historically derived inequalities in access to land and natural resources. These inequalities are related to the expropriation of land, the exploitation and destruction of the environment and the displacement of huge swathes of the rural population. In fact, Colombia is a country rich in natural resources and one of the Earth's five megabiodiversity centers. But today, Colombia faces a historical challenge with the 'post-conflict' (posacuerdo) era. The peace agreement signed between the government and the Fuerzas Armadas Revolucionarias de

Colombia (FARC) gives the country a unique opportunity to end the armed conflict. However, the real challenge lies in achieving a 'sustainable peace', which would need to address issues such as unequal access to land, pluralistic notions of the environment, respective claims for territorial rights and the sustainable use of ecosystems. All these aspects are related to different and competing development models. Whether the Colombian society can jointly find sustainable solutions for using and extracting the common goods will highly depend on solutions that include the rural population in decision-making. These are the issues that ZEF, together with its Colombian partners at the Institute for Environmental Studies at the National University, seeks to address in its bilateral Doctoral Studies Support Program on environmental peace-building and development in Colombia. With the support of the German Academic Exchange Service DAAD, the researchers from Germany and Colombia are exploring how land can be allocated without invoking conflict and how it can be cultivated and used in a sustainable way.



Eva Youkhana is
Acting Director of
ZEF's Department for
Political and Cultural
Change

HOW CHANGES IN CLIMATE AND LAND USE AFFECT PEOPLE'S LIVES

ASSESSING ECOSYSTEM SERVICES IN NORTHERN GHANA

Land use and land cover changes are a result of complex human-environmental interactions, which influence the provision of ecosystem services. Many people in low-income countries, especially small-scale farmers, are highly dependent on natural resources and, therefore, rely on the provision of ecosystem services. Pressure on ecosystems due to population growth and climate change, among others, decrease this provision. Furthermore, some ecosystem services might be only seasonally available. Modeling the impact of important driving forces of land use/land cover on ecosystem services can help to determine the consequences of land use/land cover change and to identify key actions to counteract negative impacts.

This study exemplified the assessment of seasonal ecosystem services provision under changes in land use/land cover and climate in the rural agricultural system of the Upper East Region in northern Ghana. The region is characterized by small-scale and rain-fed subsistence agriculture. High population density and high poverty rates, low fertilizer input, heavily weathered soils and weather extremes contribute to land degradation and decreasing yields. A probabilistic model was developed in cooperation with scientists of the West African Science Service Center on Climate Change and Adapted Land Use (WASCAL), local scientists and agricultural extension officers from northern Ghana.

More than 90 researchers were involved in the development, parameterization and validation of the model. WASCAL's scientists identified food from crop production and freshwater provision as key ecosystem services. Subsequent measures that increase ecosystem services provision, especially for food security, were assessed: increased income levels, improved agricultural programs, increased market demand, increased irrigation, reduced soil erosion, and reduced post-harvest loss. In addition to food as a basic energy supply, the provision of vitamin A via crops was considered as an indicator of malnutrition risk.

The results of the study show that during the dry season there is a 75% probability that the food demand in the Upper East Region can be met by the food produced in the previous rainy season – if the food (deducting harvest loss) is consumed in the region. In contrast, during the

subsequent rainy season there is only a 37% probability that food from crops (before the harvest) will be sufficient because production during the dry season is much lower. In none of the scenarios could the vitamin A demand be met by cultivated crops, which indicates a high risk of malnutrition. Flood scenarios with high rainfall and high rainfall intensity show a lower probability of sufficient food provision than drought scenarios with low rainfall and dry spells. In all the tested land-use scenarios, increased income levels, e.g. through livelihood diversification, contribute more to regional food security than other analyzed measures.

The risk of insecure freshwater provision was lower than that of food insecurity: there is a 15% risk of insufficient freshwater provision in the dry season and a 10% risk in the following rainy season. Insufficient freshwater provision is related to limited access rather than to potentially available water (economic water scarcity).

The developed model can be used to support political decision-making on measures for food security, e.g. new agricultural programs. It could also contribute to a forecasting system of how likely food insecurity under specific weather conditions and land pressure might be, so that pro-active measures could be taken in advance.

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WOODEN FERRIES IN ABIDJAN

AN OPPORTUNISTIC MARKET RESPONSE



Five million Abidjanais face transport challenges every day, such as long detours to cross bridges, congestion, high cost and air pollution. The mode share of public road transportation is distributed between mini buses, taxis and buses. No rapid bus transit system is in place, and the construction of an elevated train service connecting the north of Cote d'Ivoire's metropolis with the Atlantic coast is not expected to start before 2022. Development of waterways could help improve the peoples' transport woes.

Boats have been a mode of public transit in Abidjan since 1974 when the Société de Transport Lagunaire introduced waterbuses across the inner city lagoon. Several private companies are competing for new concessions, yet the potential of water transit is much higher. In the past decades, the growing demand for cheap and fast water transit has instigated private investors to establish wooden ferry lines (*pinasses*). The diesel-driven *pinasses* outnumber waterbuses in terms of offered services and passenger volumes, and are especially important to poor urbanites.

After an informal settlement was established on the Adjahui peninsula between the municipalities Koumassi and Port Bouët in 2012, the demand for water transit grew steadily. Many of the new residents depend on crossing the lagoon for their commute between home and work. Eleven new ferry lines were opened by individual private

investors looking for a mid-term investment opportunity for their savings. These *pinasses*, which mainly employ Adjahui residents though often under precarious work conditions, offer an efficient, safe and sustainable transit system with high passenger volumes (> 54,000 travels every day).

Our study within the Waterfront Metropolis Abidjan Project shows that this paratransit system with its *pinasses* has not gained much attention by urbanists and planners yet. The sustainability and popularity that the transit system is enjoying among its users could be improved considerably. Profits are actually large enough to reinvest proceeds into the improvement of services, such as board security, quays, and environment-friendly gears, however such investments are discouraged because contractual periods are unclear.

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BONN ALLIANCE FOR SUSTAINABILITY RESEARCH WANTS TO CREATE NEW OPPORTUNITIES

INTERVIEW WITH JAKOB RHYNER, SCIENTIFIC DIRECTOR OF THE BONN ALLIANCE/ICB

The Bonn Alliance for Sustainability Research was founded in November 2017. It brings together six local institutions: the University of Bonn including ZEF, the Institute for Environment and Human Security of the United Nations University (UNU-EHS), the Bonn International Center for Conversion (BICC), the German Development Institute (DIE), and the Bonn-Rhein-Sieg University of Applied Sciences (H-BRS). Jakob Rhyner, former Director of the UNU-EHS, is the new Scientific Director of the Bonn Alliance/Innovation Campus Bonn (ICB).

How was the Bonn Alliance for Sustainability Research initiated?

It began a few years ago when I was still at the United Nations University (UNU), with a bilateral conversation with Michael Hoch, who had just been elected as the new Rector of the University of Bonn. We discussed the cooperation between our institutions and with other partners in Bonn, and agreed that it was very fruitful, but we both had the feeling that there was space for further development. While the Rector wanted to cooperate more closely with the UN, I thought that the diverse institutions in Bonn's sustainability landscape were doing a great job in their respective domains, but that a couple of overarching research questions were being given little or no priority. Then the Rector proposed that we should look for a format that would link our agendas. Rather than simply a new institute, it should be an opportunity for the existing institutes to get together and for the university to cooperate with the UN. We presented a rough framework to the International Council of the City of Bonn ("Beirat Internationales Bonn") which was received very well, and we were asked to work out more details. A representative from the state of North Rhine-Westphalia (NRW) was attending the meeting in Bonn and he invited us to present our ideas in Düsseldorf.

What are the Alliance's goals and target groups?

The goal of the Bonn Alliance is to improve and intensify cooperation on cross-cutting issues related to sustainability research. The major project is the establishment of the Innovation Campus Bonn (ICB). The Bonn Alliance is the supporting structure; and new partners can join the ICB on a project-wise basis. We want the ICB to be a very dynamic, vivid organization. The most important thing is that people and institutions feel invited to engage in joint projects on sustainability. We are already in contact with several partners beyond the Bonn Alliance partner institutes.

Alliance, ICB – who is who?

The Alliance with its six partner institutions is the carrier or umbrella organization for the ICB. While this



"core" Alliance will probably be a rather stable group with perhaps occasionally a new member – the ICB should be very flexible to allow other partners to easily join projects. If we grow and can eventually acquire the funding to move into the former children's hospital [of the University of Bonn, editor's note], as the Bonner General Anzeiger has already mentioned, the ICB will even have a "home". But the ICB does not intend to encapsulate itself in those four walls; it remains a camp with its doors wide open. The essence is the campus idea. People and organizations should feel invited even if they don't belong to the Bonn Alliance group.

There are already many networks and overarching projects such as the Sustainable Development Solutions Network (SDSN), etc. How does the Bonn Alliance differ from these?

Yes, there is an almost infinite number of networks and we have also thought about this. The Bonn Alliance is, as its name says, an Alliance between research institutions in Bonn. This does not exclude, of course, cooperation on other levels and goes hand in hand with international outreach, because the Bonn Alliance partners are all very well-positioned internationally.

You were the head of UNU-EHS in Bonn for eight years. Why is this new task interesting to you? What do you look forward to and where do you see challenges?

It's interesting to me because within Bonn we have an environment with great research, education and policy consultation institutions – consisting of the six Bonn Alliance partners and various other international institutions all engaging in sustainable development work. My impression was that many cross-sectional projects are not really aligned with the Sustainable Development Goals (SDGs) agenda. The Bonn Alliance and the ICB offer the opportunity to bring in this focus. The second important driver for me was the current dynamism and enthusiasm at the University of Bonn. I have changed positions several times in my professional life, but most of the time I have trans-

ferred to a running organization. Here I have the opportunity to build something from scratch, and I'm looking forward to that challenge.

What does sustainability mean in the context of this Alliance?

A good question. Probably the most comprehensive description of the current understanding of sustainability is the Agenda 2030, with its 17 Sustainable Development Goals, underpinned by 169 targets and more than 200 indicators. The SDGs are a great achievement – it is almost a miracle that they exist at all. For me, they play a role similar to that of the human rights convention, meaning that they represent a great consensus among different stakeholders. Even if they are never totally fulfilled, they still exert political pressure. As such, the SDGs are incredibly valuable to me. Having said this, as a scientist I maintain a friendly critical distance from them. The notion of sustainability has changed with time, and there is no reason to assume that it will not continue to do so. Moreover, there are good reasons to be critical of the SDGs, as are my Alliance colleagues at BICC. So, there is a lot of interesting food for thought and material for research. For example, what could, and should an Agenda 2050 look like?

The Alliance partners strive for synergy effects in the three overarching thematic areas mobility/migration, bioeconomy and digitalization/artificial intelligence. What will this cooperation look like?

To answer this question, I'll give an example of how our cooperation looks like within our first joint project which is called "Digitainable". It aims at investigating the impact of digitalization on sustainable development. This will be tricky, because digitalization as such does not directly appear in the Agenda 2030. Digitalization simply had no advocate when the SDGs were being negotiated. However, there are indirect links. For example, one of the indicators in the Agenda 2030 is people's access to mobile telephony. Coming back to your previous question, this shows the dynamic nature of the notions of sustainability: this indicator could not have been on the agenda 40 years ago, since there was no mobile telephony. And I believe that if we write an Agenda 2050 in 20 years, there will also be something like a human right of access to robotic services. Considerations like this will be a core theme of this research project: what hypotheses can be put forward about how a sustainability agenda could look like in 30 years or so. We are jointly approaching such future-oriented questions to strengthen the role of science in the discourse on sustainable development.

We are currently looking for two post-docs for this project, but the two post-docs alone will not have all the knowledge, experience and expertise needed to work on the project. The important thing is that we need the help

of all Alliance partners. In practice, we have to make sure that researchers, for example at ZEF, who are asked for input are certain that they're not just providing expertise, but will also get the credit for being part of the project, e.g. in the form of (joint) publications. The input which partners provide should lead to opportunities for joint papers from the outset, because research papers are the currency of science.

What would you expect from ZEF?

We have already gotten a lot! I already have two office rooms here and the physical presence and daily interaction are, of course, important. What I particularly hope for from our cooperation with ZEF is its contribution to the bioeconomy research priority. This is a genuine ZEF topic – but of course also a topic of the University's Faculty of Agriculture where I am anchored with my professorship. I would like to sit down with my colleagues at the directorial level and see how we can work on the subject of bioeconomy in a constellation of mutual gain. We should not do something that ZEF could have done on its own anyway. Rather we should tackle certain new issues where cooperation with the UNU, with the DIE, etc. will bear fruit. Bioeconomy comprises one third of the Alliance's or ICB's agenda and is very much connected to the issue of digitalization. The opportunity for collaboration between the PhenoRob [robotics and phenotyping for sustainable crop production, editor's note] excellence cluster of the University's Agricultural Faculty, ZEF and the Bonn Alliance would facilitate exploration of research dimensions beyond the technical aspects.

A final say?

I'm very much looking forward to the coming months and years. My colleagues and I really want to try hard to ensure that the Bonn Alliance/ICB is considered as an additional opportunity. We want to offer a platform for synergies and cooperation, and for projects the Bonn Alliance and other partners would not be able to carry out on their own.

Mr. Rhyner, thank you for the interview.

Alma van der Veen and Andreas Haller (both ZEF) talked with Jakob Rhyner. You can also read the interview on www.zef.de/media-center.

More Information on:
www.bonn-alliance.uni-bonn.de/en

MY INTERDISCIPLINARY RESEARCH BACKGROUND ENABLES ME TO UNDERSTAND THE DIFFERENT PERSPECTIVES ON KEY POLICY ISSUES

INTERVIEW WITH ILDEPHONSE MUSAFIRI, ZEF ALUMNUS, NOW POLICY ADVISOR IN RWANDA

Ildephonse Musafiri is an economist from Rwanda. He did his doctoral research at ZEF from 2011 to 2014 and received a PhD for his dissertation on "The Determinants of Long-term growth in Smallholder Agriculture in Rwanda". He currently serves as Head of the Strategy and Policy Unit (SPU) at the Office of the President of Rwanda, Paul Kagame.



What is your current position at the President's Office and how did you get appointed?

About one and a half years after I finished my studies at ZEF I was teaching at the University of Rwanda when the government approached me and proposed that I take a senior position in the central government. In June 2016 I was appointed as Deputy Head of the Strategy and Policy Unit in charge of the Economic Cluster at the President's Office. After two years, I was promoted to Head of the Unit. The Strategy and Policy Unit highlights issues in the government and follows-up on the President's priorities. We aim at identifying the best strategies to implement his visions. We also monitor and follow-up on cabinet actions and any other tasks directly assigned by the Head of State or the Director of Cabinet.

Which are the most important challenges for Rwanda today?

I think the challenges we face in Rwanda are similar to those of other developing countries. Rwanda's main challenge is to boost its economic growth and human capital formation. Our people do not have sufficient advanced skills to cope with the current reality and pace of globalization. They need to be educated and trained. In addition, we have problems in the healthcare sector. We have to increase the number of health facilities and develop our human capacities to improve medical treatment. Human capital development is also reflected in productivity: people are not able to contribute to the maximum. Improved feeding practices and medical treatment in early childhood are urgent issues. We have therefore established a childhood development program which aims at taking care of children from the start, including nourishment and maternal health.

And what about socio-economic challenges and agricultural issues?

Rwanda's agriculture is mostly small-scale and subsistence orientated, so most farmers just eat what they pro-

duce and do not have a surplus to sell to the market. We have to develop an agricultural sector which is more market-oriented. We are trying to attract the private sector to invest in agriculture and to introduce insurance schemes for providing protection from shocks. Because agricultural production heavily depends on the weather we are trying to find an alternative to purely rain-fed agriculture. Irrigation can help people to produce at a larger scale. Investment in post-harvest management, value addition and agricultural research and development will also be instrumental to bring our agriculture to the next level.

Rwanda is a landlocked country and trade is an important question. Your President has taken a leading role in implementing the African Continental Free Trade Area (AfCFTA). Do you think there is a chance to have free trade in Africa? How can Rwanda benefit from the AfCFTA?

Last year, when our President was the chairman of the African Union, we signed the agreement in Kigali for the African Continental Free Trade Area. We considered that at least 22 countries have to ratify the agreement for it to become implementable. Some countries are still in the process of ratifying, and the chances are high that we'll soon reach the required number of countries, and then the Area will become effective. For the first time since the inception of the African Union a continental free trade zone has become tangible.

The starting point of the whole process was the ridiculous situation that trade taxes or import and export duties within Africa were higher than with Europe or other countries. If the Free Trade Area is created, this would more than double our area's trade traffic. If we have a 50 percent increase in trade, every country benefits, especially Rwanda because, as you said, we are a landlocked country.

We have some success stories within the East African region, where we have already established a free-trade and free-movement of people community with our neighbors Kenya, Tanzania, Uganda and Burundi. We want to expand this to the whole of Africa, which is a huge market of more than 1 billion people. Imagine one market and all people trading with each other. My personal view is that Africa has definitely woken up.

So what is Rwanda's main economic problem now?

One major problem for Rwanda's economy is the trade imbalance. We import more goods than we export. Yet, being landlocked complicates the situation. That is why we introduced policies like Made in Rwanda'. We want to make sure we create incentives for manufacturers to produce in Rwanda so that we can increase our export revenues. The problem is the low level of private-sector activities, which is not only a problem for business investment, but also results in slow job creation. The AfCFTA

will hopefully attract the private sector to invest in every way it wants, with the opportunity to sell its products where it wants and to produce wherever it wants, given the conditions of the markets they find in each country. Employment generation through trade will tackle our high rate of unemployment. That's why we need a better economic infrastructure to attract investors.

What is Rwanda's Vision 2020 and how did it contribute to the development of the country?

People should understand where the country stands today. We formed the Vision 2020 plan in the year 2000. People were thinking about what we wanted to achieve in 20 years from then, where we wanted to be. Vision 2020 had six pillars. Pillar one was good governance and a capable state. The second pillar was human resources development and a knowledge-based economy. The third was private sector development. Fourth was about infrastructure, the fifth about agricultural transformation, and the sixth was regional integration. We also had some cross-cutting issues such as gender, youth, information and communication technologies, and environment. Some things went well and others have only half worked.

But my country is only 25 years old. Over 25 years we've made tremendous progress and seen great achievements. We have strong institutions, we have good governance in Rwanda, and we've managed to achieve universal primary education. We have worked against gender disparity all over the country. We have a number of women in parliament and in the cabinet. So this has been very successful. Above all, we've managed to sustain an average economic growth rate above 7% over the past two decades and have halved absolute poverty.

Rwanda has gained international attention by successfully banning all plastic bags...

Yes. This is our initiative. Europe and other countries try to follow us in banning all plastic bags. We achieved it

although people didn't believe that it would be possible. Protecting the environment was also embedded in Vision 2020.

So what comes after Vision 2020?

Now we are thinking of Vision 2050 with even stronger ambitions. We have the first National Strategy for Transformation (NST1) which is a seven-year program from 2018 to 2024. What we want to do in this program is to get right all the fundamentals in health, education, agriculture, urbanization, trade and regional integration, competitiveness and enterprise development as well as accountable and capable institutions. The present goal is to reach at least \$4000 of GDP per capita by 2035 – that would make Rwanda an upper middle income country – and to become a high-income country by 2050. We think big to fulfill our development vision. The country is moving with the times and now we have to make sure we take off and maybe one day become like Germany.

We guess your work as a researcher and teacher is much different from that of an advisor at the policy level. How do you benefit from your research background in your position?

As Head of the Strategy and Policy Unit I advise across economic, social and governance matters. I found that multidisciplinary thinking, which is of course one of ZEF's core ideas, is an important requirement for this kind of high-level policy advisory work. Having an interdisciplinary research background has shaped me a lot and enabled me to understand the different perspectives on key policy issues. So certainly as a researcher one can understand processes, facilitate and use evidence in policy formulation, and convince people of the relevance of evidenced policy making. However, above all the learning attitude matters in bridging the gap between academic theory and practice. In this kind of job, I take advantage to learn from others with more experience. Particularly, I have a wonderful boss, the President, and a smart and experienced Director of Cabinet who makes my job enjoyable.

Mr. Musafiri, thank you for the interview.



Rice field in Rwanda
(Photo: Pixabay)

The interview was conducted by Lukas Kornher and Alma van der Veen (both ZEF) and has been shortened for print. You can read the full interview on www.zef.de/media-center

CHILD LABOR AND THE ARRIVAL OF REFUGEES

EVIDENCE FROM TANZANIA



Refugee children from Burundi in Tanzania

(Photo: Burundi crisis: fleeing the violence, (CC) Anouk Delafortrie/EU/ECHO, <https://flic.kr/p/MzT87M>)

About one million refugees moved to Tanzania between 1993 and 1998 due to the violent civil conflicts that raged in Burundi and Rwanda in 1993-1994 causing hundreds of thousands of casualties in just a few months. To develop appropriate policies to ensure children's human capital development and hence the future economic development of the recipient community, an understanding of the impairment of the young generation during and in the aftermath of a humanitarian crisis is essential.

Child labor is a main obstacle for human capital accumulation in Tanzania. It leads to low school enrollment, because children who work have less time to attend class. So how does a large and unexpected influx of refugees affect children in host communities? A large influx of refugees can have an impact on the availability of infrastructure such as schools, on agricultural productivity and on household wealth which, in turn, has an impact on children's time allocation. We took a closer look at Kagera, an agricultural region in northwestern Tanzania bordering Rwanda and Burundi.

The findings suggest that in the short-run (1991-1994) the increase in the intensity of the refugee influx led to a

higher number of unskilled workers. Because more people became available to cultivate land at cheaper wages this led to an immediate increase in household welfare. Higher agricultural productivity and aid provision for the refugee communities contributed to the reduction of child labor in the agricultural sector.

However the findings show the opposite effect ten years after the arrival of the refugees: household welfare decreased in the areas most affected by the refugee arrival and the incidence of child labor increased in the agricultural sector. An explanation for this result is that in areas of high refugee intensity the early increase in agricultural productivity could not compensate for the growing agricultural demand, resulting in a sharp increase in prices from 1991 to 2004 that left households worse off.

School enrollment was negatively affected in the short run. Evidence from the field suggests that some schools which hosted refugees were damaged. Furthermore, both children and parents decided not to go or send children to school as they had the alternative option to earn money in refugee camps by undertaking small tasks such as collection of firewood.

The study findings suggest that in rural areas where children are more involved in farm work, micro-finance programs or government interventions that aim to increase agricultural productivity are particularly important. They can prevent the involvement of children in work activities when household income drops making subsistence agriculture a priority. Moreover, when dealing with humanitarian crises such as the resettlement of war refugees in low-income areas, it is important to also attend to the needs of local communities who themselves face a short-term shock that untreated, might have lasting impacts.

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FOOD SECURITY ON CERTIFIED SUGAR CANE PLANTATIONS

EXPERIENCES FROM GUATEMALA AND BOLIVIA



Sugar cane fields in Guatemala
(Photo: Tina Beuchelt)

The project "Implementation of food security criteria within biomass sustainability standards" (FSS | Project) is a collaboration between ZEF, Welthungerhilfe and WWF. Its team members visited several sugar cane plantations and processing mills in Guatemala and Bolivia. All the plantations were sustainably certified and implementing the criteria of the International Sustainability and Carbon Certification (ISCC). One key driver for the farms to enroll in the certification program is to gain access to European markets, especially for bioethanol. However, most sustainability standards do not yet address the topic of food security in a way that it can be measured and verified 'in the field'. In other words, while the type and amount of pesticide applications are checked, there is no knowledge and control of whether workers and farmers suffer hunger, are malnourished or food secure. Another ignored question is if, how and to what extent certified farming practices have an impact on the food security situation of surrounding communities. To tackle these questions ZEF has developed a set of food security criteria which can be integrated into sustainability standards for any crop production. The FSS I Project tests these criteria in Asia, Africa and Latin-America and therewith supports sustainability standards with the implementation of food security criteria.

The trip to Guatemala and Bolivia

The project team visited a large sugar mill in Guatemala and another one in Bolivia. While in Guatemala the mill had its own large plantation with over 50000ha, in Bolivia several plantations ranging from 800ha to 13000ha had supply contracts with the mill. In Guatemala, roughly half of the sugar cane harvest was mechanized, in Bolivia practically everything was mechanized. We interviewed workers on all the plantations about their food security situation, labor rights, payments, and so on. We then discussed

about our experiences and put our open questions on the table in stakeholder workshops attended by participants from government departments, sugar cane mills, NGOs and researchers.

Food security: shifting attention to an ignored problem

The stakeholders were open to talk about food security and our questions aroused interest and raised awareness on the issue. Plantation workers were generally food secure but told us they suffered from food insecurity outside the harvest season. Temporary contracts are very common for plantation work and income opportunities elsewhere are rare. The situation was much worse in Guatemala than in Bolivia. Solutions like farm diversification or social procurement were discussed and partly tested by the plantation owners. The stakeholders pointed out the benefits and challenges of sugar cane production for the region but also explained that the market demand for certified products is still limited. This reduces the incentives to improve labor aspects, like workers' safety, and environmental issues, and also reveals the weak role that governments at all levels play. It was emphasized that sustainability certification does contribute to an improvement in the living and working conditions on plantations. Our food security criteria are a welcomed complementary set and feasible to be implemented in a plantation setting.

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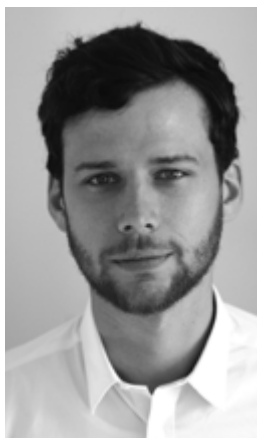


DOCTORAL THESES @ ZEF

NUTRITION SECURITY AND DIETARY PREFERENCES IN INDIA

INTERVIEW WITH TILL LUDWIG, DOCTORAL RESEARCHER @ ZEF

Prior to joining ZEF for his doctoral research Till Ludwig worked at GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit). He received a scholarship within ZEF's Food Price Volatility Project to conduct his research on food and nutrition security in India. Since January 2019 he has been a ZEF senior researcher with ZEF's PARI (Program of Accompanying Research for Agricultural Innovation) project.



What is your personal motivation for your doctoral research on food and nutrition security in India? And why did you decide to apply with your project at ZEF?

Before pursuing my PhD, I was coordinating a GIZ project on nutrition-sensitive agriculture in Bangladesh. Food and nutrition security has always been an urgent issue in South Asia, where hundreds of millions of people are suffering from malnutrition and its consequences. The interdisciplinary approach to utilize nutrition-sensitive synergies was just starting to get prioritized by the development

agencies such as the Gates Foundation, the United States Agency for International Development (USAID) and the German Federal Ministry for Economic Cooperation and Development (BMZ). I was very intrigued by the potential of this approach, though a rigorous assessment of the applied approach was yet largely missing in research. I decided to study this applied research while also improving my own methodological skills. Within Germany, ZEF has a unique institutional set-up and it was a great opportunity for me to work with Professor von Braun on my research ideas.

Your research focuses on dietary consumption choices as effects of food production, markets and preferences. Could you elaborate how the production, distribution and consumption of food are interrelated with individual preferences in regard to your research hypothesis? What are the main conclusions of your research?

Food and nutrition insecurity is often seen as an individual access problem. I work in rural areas of India, where many malnourished households are earning their income through agricultural activities. Access is accordingly provided either through income generation or own production of foods. I test these linkages and find positive effects. Naturally, richer households can afford more and mostly also more diverse foods. Also, production of foods either in fields or in homestead gardens can contribute to a higher food and nutrition security. However, markets tend to have a stronger effect. Better and more diverse diets can be achieved when market places allow people to sell their own produce and purchase an array of diverse foods. I found this effect to be significant not only at the household-level but also at the district-level.

But the challenging question is that even if all characteristics are equal and access to foods is a given, why are some individuals more food secure than others? Thus, the second part of my doctoral research is looking into how economic preferences shape dietary choices. Individuals seldom act as a utility maximizing, super rational agent. Risk preferences, patience or altruism influence our behavior. Research on food and nutrition security has vastly ignored this. I benefited very much from a research stay at the University of California in Berkeley to develop the theoretical frame for linking behavioral economics and food choices. I played hypothetical games with the respondents in rural India to elicit their preferences. The empirical analysis confirmed the initial intuition: preferences influence consumption choices. Risk preference tends to have a positive effect on dietary decisions. More importantly, altruistic behavior particularly of the household head, tends to improve the food and nutrition security within the household. I am most excited about these results from my PhD research.



For your research you spent some time in India. Could you tell us about your time in the field? What were the main challenges, obstacles, but also striking experiences, surprising encounters?

Initially I was supposed to collect the data in Bangladesh. Due to the terrorist attacks in July 2016 and the security concerns I had to quickly shift the focus to East India. Eventually, the research in India turned out to be a great and successful opportunity, but it required much more preparatory work as I had to find local research partners, create a network and prepare the logistics in an environment that was unknown to me. Once I could finally start the data collection in January 2017, it was very challenging for me to solve all the small problems that occurred. I covered about 120 villages and each village is a small microcosm of power structures, cultural specificities and own priorities. Each time I had to figure out who was the influential person, whose backing was needed, potential politicians that wanted to be informed and – in some cases



Photos: Till Ludwig

– security concerns that needed to be dealt with for the safety of my enumerators. Being a foreigner sometimes posed problems, particularly in politically sensitive areas. Luckily, I received very good support by the University of Kolkata and the local NGOs I was partnering with. GIZ and Welthungerhilfe also helped a lot.

In your abstract you write: "The results can guide interventions that aim for improving the nutrition of vulnerable groups." Has your research yielded any results yet on how the situation of the poor could be relieved? Are there specific policies you would advise the governments and policy-makers of India to implement?

For project delivery by local NGOs or development agencies, it is of utmost importance to identify the vulnerable villages and households. India has a very scattered rural area, hunger pockets exist next to well-nourished areas. The data collection helped the local NGOs, Welthungerhilfe and GIZ to target the households in need and to monitor their activities. Each PhD research can help to add a little piece to the understanding of which mechanisms are effective in solving a certain problem. In this sense, in line with existing literature I could show that diversified production, market integration and certain preferences are good drivers for dietary diversification, which is a basic necessity for micronutrient nutrition. In any case, I believe that intersectoral cooperation and the consideration of the complex environment has to be the starting point for policy and program initiatives to sustainably tackle food and nutrition insecurity. The time of uni-dimensional policy approaches is definitely over.

You are an ambitious photographer and you have contributed to the ZEF photo exhibition "Inside India". As we live in a very visual culture, what could be the role of photography in research and beyond? What role does photography play for you and your research?

I would argue that visual influence is not culturally specific, but that almost every individual is emotionally most affected by images. We are facing the problem of graphical overconsumption. It is hard to avoid the flood of visual narcissism and voyeurism. Often this is an escape from reality. I believe that a documentary approach of photography that reflects real life in an aesthetically pleasing yet honest way can oppose the gimmicky social media approach. This helps people to better understand the situations in parts of the world they have never visited, and as such it helps to put my research results into perspective.

Thank you for the interview.

The interview was conducted by Andreas Haller (ZEF). Read the interview online: zef.de/stories-docprogr/dietary-preferences-and-food-security-in-india.html

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ANTIMICROBIAL RESISTANCE: A THREAT TO SUSTAINABLE DEVELOPMENT

RESEARCH AT THE ONE HEALTH AND URBAN TRANSFORMATION GRADUATE SCHOOL INVESTIGATES CAUSES AND COUNTER ACTION



Team of One Health Students at the World Health Summit

Growing antimicrobial resistance has been called "the greatest threat to sustainable development" by the World Health Organization. There is wide agreement that the root causes of the rise in resistance is the overuse of antimicrobials in agriculture, as well as in veterinary and human medicine.

Growing antimicrobial resistance is the topic of one of four research clusters at the graduate school One Health and Urban Transformation, coordinated by ZEF.

Currently, 13 doctoral students conduct their research in four geographical regions: the Ruhr Metropolis (Germany), São Paulo (Brazil), Accra (Ghana), and Ahmedabad (India). Having joined the program in July 2017, the students completed their coursework at the Bonn International Graduate School for Development Research (BIGS-DR), and participated in the One Health seminar series.

Three One Health doctoral students are examining the spread of antimicrobial resistance from different perspectives in three of the four research regions. In the Ruhr Metropolis, the determinants of antibiotic use in the outpatient sector and the spread of antimicrobial resistance through wastewater are being analyzed. In São Paulo, the influence of diet on resistance genes in the human gut biome is being investigated, as the food chain represents a potential dissemination pathway. In this study it is hypothesized that meat-based diets lead to higher quantities of resistance genes in the gut compared to plant-based diets. In Ahmedabad the spread of antimicrobial resistance between animals, humans and the environment is being investigated. The study explores the transmission of antimicrobial resistance from cows to humans, consider-

ing three pathways: direct contact, via shared surfaces and via milk products.

Besides the issue of antimicrobial resistance the graduate school investigates food systems, urban green-blue infrastructure, and 'one health' governance. The 'one health'-concept adopts an integrative perspective on health, recognizing the interconnections between human, animal and environmental health as environmental, social and economic systems that interact with and shape one another. Investigating these interactions in the context of urban transformation forms the basis for developing sustainable solutions that maximize synergistic effects, minimize trade-offs and mitigate health risks.

The One Health graduate school aims at recommending holistic policy approaches. Therefore, transdisciplinarity is of utmost importance. Prior to conducting research, workshops are organized in each location to facilitate transdisciplinary collaboration, establish direct communications with relevant stakeholders, and to ensure the local relevance and practical implementation of the research results.

The One Health and Urban Transformation graduate school is funded by the Ministry of Culture and Science of the State North Rhine-Westphalia and is jointly operated by ZEF, the University of Applied Sciences Bonn Rhein-Sieg (H-BRS), and the United Nations University's Institute for Environment and Human Security (UNU-EHS). The graduate school builds on ZEF's established collaborations in the research locations, partnering with the University São Paulo (USP), the Institute for Statistical, Social and Economic Research at the University of Ghana (ISSER), and the Indian Institute of Public Health in Gandhinagar (IIPH-G).
Website: zef.de/onehealth.html

About the author



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Cows living in close proximity to humans in Ahmedabad, India (Photo: Timo Falkenberg)

Facts & news

RIGHT LIVELIHOOD COLLEGE ALUMNI MET IN MUMBAI



Excursion to Ghar Bachao Ghar Banao Andolan
(Photos: Tiemo Pokraka)

The Right Livelihood College (RLC), which has one of its nine campuses and its global secretariat based at ZEF, organized its first regional alumni workshop at the Centre for Livelihoods and Social Innovation, Tata Institute of Social Sciences in Mumbai, India, from October 4 to 6, 2018. Twenty-three RLC alumni, development researchers and practitioners from South East Asia and South Asia met to discuss a number of transdisciplinary research projects on local livelihoods, development work and civil society engagement.

Nepalese economist and entrepreneur Shrikrishna Upadhyay, Laureate of the 'Alternative Nobel Prize' (Right Livelihood Award), presented a regional action plan for sustainable livelihoods in South Asia. Abdul Shaban (Deputy Director of Tata Institute of Social Sciences), Swati Banerjee (RLC Mumbai Coordinator), and Victor

Karunan (Chulalongkorn University, Bangkok) gave keynote speeches.

The workshop included visits to two civil society initiatives in Mumbai. The first, Ghar Bachao Ghar Banao Andolan, is a project against eviction in Mumbai's *slums*. It is part of the National Alliance of People's Movements, an 'Alternative Nobel Prize'-awarded initiative, and research partner of ZEF's PhD student Amit Kumar. The second visit was to UDDAN, a field action initiative of Tata Institute of Social Sciences at the vicinity of the Deonar dumping ground, the largest and oldest waste dumping ground in India. The project helps women in creating attractive products by upcycling and recycling waste materials.

The RLC Campus Bonn is one of ZEF's capacity building programs. The alumni project, involving more than 200 alumni in Asia, Africa, and Latin America, was established by RLC in 2018. It is supported by the German Academic Exchange Service (DAAD) with funding from the Federal Ministry for Economic Cooperation and Development (BMZ).



Panel at the RLC Alumni Workshop
(from left to right: Victor Karunan, Shrikrishna Upadhyay, Abdul Shaban, Swati Banerjee)

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Facts & news



ZEF supports alumni network of DAAD Excellence Centers

ZEF is partner and co-founder of one of the German Academic Exchange Service's (DAAD) African Excellence Centres, which is the Ghanaian German Centre for Development Studies. It is run in cooperation with the Institute of the Institute of Statistical, Social and Economic Research (ISSER) of the University of Ghana and funded by DAAD. Over the past years, alumni of the in total six DAAD African Centres of Excellence have initiated meetings to enhance networking and exchange. ZEF has been supporting this effort. This year, from February 18-22, ZEF was facilitating the second alumni steering committee meeting in Bonn attended by ten alumni from six African countries hosting Excellence Centres (Ghana, Cameroon, Kenya, Namibia, Zimbabwe and Uganda).

Publications

Have a look at our latest publications [available online at www.zef.de/publications]:

Irit Egvaen and Estelle Gnankon Kabran. Ferry transportation in Abidjan: Establishment, operation and sustainability of a paratransit system (ZEF Working Paper No. 179). Bonn 2019. [Online at https://www.zef.de/uploads/tx_zefnews/ZEF_WP_179.pdf]

Anil Gupta et al. Honey Bee Network in Africa: Co-creating a Grassroots Innovation Ecosystem in Africa (ZEF Working Paper No. 178). Bonn 2019. [Online at https://www.zef.de/uploads/tx_zefportal/Publications/ZEF_WP_178.pdf]

Alisher Mirzabaev et al. Transboundary Water Resources for People and Nature: Challenges and Opportunities in the Olifants River Basin (ZEF Working Paper No. 177). Bonn 2019. [Online at https://www.zef.de/uploads/tx_zefportal/Publications/ZEF_WP_177.pdf]

Jan Thoelen and Thomas Daum. How to Keep Tractors Running in Africa? (PARI Policy Brief No. 13). Bonn 2019. [Online at <https://research4agrinnovation.org/publication/pb-13/>]

Tina Beuchelt and Sarah Nischalke. Adding a gender lens in quantitative development research on food and non-food biomass production: A guide for sex-disaggregated data collection. (ZEF Working Paper 170). Bonn 2018. [Online at https://www.zef.de/uploads/tx_zefportal/Publications/ZEF_WP_170_web.pdf]



Experts present and discuss report on mechanization and its role in Africa's agricultural development

Around 200 visitors attended the presentation and discussion of the report "Mechanized" in German language in the premises of the Federal Ministry for Economic Cooperation and Development (BMZ) in Berlin on February 20, 2019. The event was organized by the German International Cooperation (GIZ) on behalf of BMZ.

"Mechanized" has been published by the Malabo Montpellier Panel [see mamopanel.org]. Experts discussing on a panel were Gunther Beger (BMZ), Ousmane Badiane (Co-Chair Malabo Panel and IFPRI Director for Africa), Frank Nordmann (Grimme agricultural machines), Jehiel Oliver (Hello Tractor), Jochen Moniger (Welthungerhilfe), and Joachim von Braun (Co-Chair Malabo Montpellier Panel and ZEF-Director).

Read the full news report on zef.de [bit.ly/2VsToLU].

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