



## In focus: Governance of natural resources

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## Editorial: Sustainable Development Goals without science?

The debate on sustainable development goals (SDGs) is progressing in the United Nations context. The top goals are “end extreme poverty” and “end hunger” - which is rightly so. In the list of 17 goals currently in circulation, only the last one mentions science. Besides that science should be considered an instrument, not a goal, it is surprising how little a role science is to play in the emerging SDG agenda. In view of the fundamental challenges for human development, sustainable use of natural resources, and protection of nature as well as the ambitious SDGs one wonders about sustainable development without science. Solutions to sustainable development problems are not ready for use on the shelf. The SDGs cannot be achieved without massive innovation – technological and societal – and that depends largely on scientific research and innovation. Emerging economies and low income countries can expect that the science capacities in the richer world are shared a lot more with them while they scale up their own science spending and proceed with science policy reforms.

An SDG science policy agenda of industrialized and emerging economies must be developed in partnership, based on mutual respect, considering global needs, countries’ interests, and comparative advantages. Sustainability requires a long-term perspective and science capacity building must accompany such partnership strategy among nations. Goals are not enough, an implementation concept has to be established - with a strong science base.



*J. von Braun*

Joachim von Braun  
Director of ZEF's Department  
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Change

## Sustainable consumption and the fate of tropical forests: Can trees make us happier?

There is both good and bad news on tropical forests. Some countries, most notably Brazil, have reduced deforestation to historically low levels. But, overall forest loss is still on the rise in the tropical world. Increasing global demand for agricultural land is expected to reinforce pressures on the remaining primary forests, particularly in the southern hemisphere. Two strategies to address these pressures tend to dominate in the forest conservation debate, namely, (1) productivity-enhancing technological innovation in agriculture and (2) improved forest governance. Clearly, technological intensification comes with the potential to reduce the amount of land needed for food production. At tropical forest margins, however, technological change has often boosted demand for land, causing additional forest loss. Effective forest governance thus tends to be a necessary condition for the conservation benefits of technological innovation to materialize on the ground.

It is probably not such a big surprise, after all, that an emerging economy like Brazil has successfully pioneered innovative forest governance schemes. Apart from the political will, effective forest law enforcement hinges on sophisticated land cover monitoring systems and well equipped environmental protection agencies. Even under the optimistic scenario of efficiently functioning forest conservation mechanisms in a new global climate policy deal, millions of hectares of primary forests will be

lost before similarly effective environmental governance mechanisms are in place throughout the tropical world. But, economic tradeoffs vis-à-vis increasing world prices for food, feed, fuel, and fiber are likely to put natural ecosystems up for short-sighted bargains for many years to come.

### Are tropical forests doomed?

Conservation policy research is only beginning to pay attention to a set of relatively recent institutional innovations along major commodity value chains that may pave the way towards complementary consumption or demand-based approaches to tropical forest conservation<sup>1</sup>.

The Brazilian Soy Moratorium is just one of these innovations and was instituted in 2006 by soybean producer organizations following a Greenpeace report linking fast-food products to illegal deforestation for soy-based feed production in Brazil. Its success in curbing Amazon forest loss remains to be proven, but image considerations have

<sup>1</sup> Eric F. Lambin, Patrick Meyfroidt, Ximena Rueda, Allen Blackman, Jan Börner, Paolo Omar Cerutti, Thomas Dietsch, Laura Jungmann, Pénélope Lamarque, Jane Lister, Nathalie F. Walker, Sven Wunder: Effectiveness and synergies of policy instruments for land use governance in tropical regions, in: Global Environmental Change, Volume 28, September 2014, pp. 129-140.



Image considerations have induced powerful industrial companies to adopt credible and costly conservation measures in the Brazilian Amazon.

induced a powerful industry to adopt credible and costly conservation measures, including monitoring and sanctioning mechanisms. Knowledge about value chain linkages and consumer awareness were key drivers of change in this process.

Tracing back global consumption patterns of key agricultural commodities to land use change and ecosystem services loss in the developing world is a major research challenge that is being addressed by increasingly multi-disciplinary research teams in Europe and beyond. But, improving product traceability is not enough in order for demand-based conservation initiatives to thrive. Consumers actually need to use this information and make choices that signal their sustainability preferences to producers and retailers.

### Sustainable consumption – how?

So called “sustainable consumption” has been a vision of researchers and conservationists for more than a decade, but advocates of “national veggie days” and similar regulatory policy approaches have found it difficult to gain majority support. Psychologists, behavioral economists, and members of the “happiness research” community are increasingly advocating alternative strategies to promote sustainable consumption behavior. One approach called

“nudging” can help to alter undesirable consumption behavior that results from limitations to human cognitive capacity and contribute to closing gaps between actual behavior and accepted social norms. Simply rearranging the placement of food items in supermarkets or providing small incentives may then sometimes be enough to “nudge” consumers towards more sustainable choices and thereby actually make them “happier”. Some research also suggests that environmentally damaging social norms and values can be influenced and eventually changed through “social norm management”, i.e. advertising campaigns or appeals from respected individuals<sup>2</sup>. Clearly, social norms are complex systems and naive manipulation attempts are likely to backfire in unexpected ways. But, with the promise of a greener planet with happier people it is arguably worth investing in more research on “sustainable consumption” as a complementary conservation strategy.

<sup>2</sup> Ann P. Kinzig, Paul R. Ehrlich, Lee J. Alston, Kenneth Arrow, Scott Barrett, Timothy G. Buchman, Gretchen C. Daily, Bruce Levin, Simon Levin, Michael Oppenheimer, Elinor Ostrom and Donald Saari (2013): Social Norms and Global Environmental Challenges: The Complex Interaction of Behaviors, Values, and Policy. In: BioScience 63(3), pp. 164–175.

Jan Börner and Sophie Lian Zhou

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## Some could have it all: Comparing cotton cultivation in Kazakhstan and Uzbekistan

In May 2014, ZEF senior researcher Anastasiya Shtaltovna presented the results of a comparative study on cotton farming and production in Kazakhstan and Uzbekistan at the "Open Society Foundation" in Washington D.C. during a two-day event on 'The social cost of the Uzbek cotton industry'. The study was co-authored by ZEF-director Anna-Katharina Hornidge and sponsored by the Open Society Foundation.



Cotton cultivation could be a lucrative business in Uzbekistan.

### Two countries, two histories with cotton

In fact the countries have a similar history, but after the break-up of the Soviet Union they chose different paths. The main difference between Kazakhstan and Uzbekistan regarding cotton production is its relative importance to each country. In Uzbekistan, cotton is cultivated on up to half of the country's total cropland area and cotton is of immediate strategic importance to the national budget. The country is still one of the world's major cotton exporters, accounting for 11 percent of the world's cotton exports. Kazakhstan benefits from more important sources of rent such as oil and gas. Therefore, only an average of 140,000 ha in five districts of Southern Kazakhstan is allocated annually to the cultivation of cotton. As a consequence, two entirely different policy and farming approaches have been adopted in the two case study countries.

### Role of the state and scope of action for farmers involved in cotton cultivation

The government of Kazakhstan creates advantageous conditions for cotton farmers by offering a range of different subsidies as well as freedom of choice on what to grow to maximize profit. In contrast to this, Uzbek farmers work under a state procurement system that exerts strict state control over the agricultural production system, with only limited opportunities for farmers to make profits. So farmers spend lots of time dealing with state inspections

instead of actually farming. They even have to fight for permission from the state for various kinds of transactions such as obtaining permission to grow crops other than cotton. Ways to obtain cash money and inputs for growing cotton are also different in the two countries: Kazakh farmers have access to funds allocated from a range of banks as well as to their own savings. There are also numerous private input providers, from whom Kazakh farmers can purchase any input they deem necessary. Uzbek farmers have to negotiate with the bank in order to gain permission to decide how to use the money they ostensibly have (i.e. how to invest and operate their farm business). Moreover, in Uzbekistan almost all agricultural service providers are under governmental control, and thus have a monopoly status. Facing these difficulties is a great challenge and rarely overcome by creative initiatives on the part of farmers.

### Main research findings and recommendations

A joint workshop for Uzbek and Kazakh cotton-growing farmers was organized to exchange their experiences. One of the results was a cost-benefit analysis of cotton growing. It shows that although the average yield in Uzbekistan is higher than in Kazakhstan, the cotton production in Uzbekistan is unprofitable for the average farmer as it leads to a loss of roughly 585 USD/ha. In Kazakhstan, cotton is a profitable venture, with average earnings of around 1,500 USD/ha (including state subsidies for cotton growing) per farmer. The Uzbek farmers developed three scenarios for improving their cotton production system: (1) under a capitalistic market system (2) under an improved state procurement system and (3) under a cooperative farming system. Based on these scenarios, the following recommendations were made: state intervention in farmers' business must be reduced to a minimum; prices for cotton must be increased and transparency strengthened; access to cash and profit has to be guaranteed; the tax system for Uzbek farmers has to be simplified; there is a need for alternative agricultural service providers; agricultural producers have to be developed to become entrepreneurs; land rights have to be assured; favorable conditions should be created in which different models of cotton growing can co-exist, similar to the experience in neighboring Kazakhstan.

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## Organic farming in Bhutan: a way of life but also hard work for happiness

Practicing organic farming is a main component of the "Gross National Happiness" strategy in Bhutan. Sonam Tashi, an agricultural scientist and doctoral student at ZEF, carries out a feasibility study of his home country's plans to have a 100%-based agriculture by 2020. He compares the performance of organic and conventional farming.

"Organic farming is increasingly being promoted worldwide as a better alternative to conventional farming in terms of producing healthy food and alleviating poverty. It is also considered more sustainable because it causes relatively less environmental damage", tells Sonam Tashi. For his feasibility study, he looks into factors such as yield, soil nutrient status, cost-benefits and socio-economics and analyzes support provisions, including policies to achieve the country's ambitious goal of being fully organic by 2020. "By looking into the constraints prevalent in Bhutan and into the increasing influence of conventional farming, I analyze how and to what technological, management and social extent organic farming can meet the expectations", he explains.

### Organic farming: challenges and constraints

"Organic farming, though theoretically based on the principles of low-cost and low-input such as fertilizers, also has its price", says Mr. Tashi. "First of all, organic farming is mainly a small-scale business, which means farmers generally have less yield and produce to sell. Furthermore, this type of farming is labor-intensive, especially if you keep in mind that Bhutan consists of up to 70% of forests – spread over hills and mountains. The government has



Practicing organic agriculture is a labor-intensive endeavor.

stipulated that this level of forest cover has to be maintained. Fifty-one percent of our land is so-called protected area. So, you have many regulations to stick to as a farmer, which limits your options. Most farming areas are surrounded by forests, full of wildlife, which poses further challenges. Finally, to be competitive on the international markets for organic products, you have to certify and label them, which is a complicated and above all expensive process to follow".

### Solutions: preliminary insights

Although Mr. Tashi has not come up with final conclusions yet, he definitely sees a need for more support for Bhutan's farmers. "Bhutan may be statistically one of the happiest countries in the world, but it does not belong to the monetarily richest ones", he says. "Our main sources of income consist of exports of hydropower, tourism, construction and agriculture. Bhutan has no seaside and therefore no ports, so exports costs via air are too high. In addition to financial support, farmers need to be trained to succeed in organic farming methods. We actually do receive support, e.g. from the Vandana Shiva Foundation in India, which has extended its training programs for organic farmers in India to Bhutan. We also receive help from Japan in developing and improving agricultural technologies. But still, as an academic I think more needs to be done to make the whole endeavor a success story", Mr. Tashi concludes.

His Majesty the King of Bhutan awarded Sonam Tashi with the National Order of Merit for academic excellence in 2012. He is one of the few academic experts working on organic farming in his country.

Sonam Tashi is a junior researcher at ZEF. Mr. Tashi's research is funded by BMZ via the German Academic Exchange Service (DAAD) and Foundation fiat panis. He spoke about his research with ZEF news editor Alma van der Veen.  
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## From maximizing to optimizing resources use: lowering fertilizer input in China

In many of the world's agricultural regions, high yield levels are achieved through an enormous input of chemicals. Nitrogen (N) fertilizer application in China is a typical example: more than 30 percent of the global N fertilizers are applied in China on only 7 percent of the world's arable land. China's farmers tend to apply on average 30 to 60 percent more than the knowledge-based optimum rate of mineral nitrogen fertilizers.

Fertilizers are cheap and easy to obtain in China. However, because of over-application, only 18 to 35 percent of the Nitrogen is absorbed by the crops. Large amounts of the non-used fertilizers end up in aquatic ecosystems, driven by surface and subsurface water dynamics. As negative consequences, these ecosystems are impacted by eutrophication and pollution, leading to their malfunctioning and health problems among human beings. Therefore, we urgently need alternative strategies to raise agricultural productivity, lower the pressure on ecosystems, reduce negative health impacts and in turn enhance the sustainability of agricultural production. These strategies are to be based on optimizing the input-output processes and considering the environmental impacts instead of only focusing on maximizing agricultural yield.

China's farmers apply up to 60 percent more than the knowledge-based optimum rate of mineral nitrogen fertilizers.



### Objectives

This doctoral research conducted at ZEF looks at the N pollution from an interdisciplinary perspective. Overuse of N fertilizer is due to a mixture of reasons related to local social and natural conditions which currently are not well understood. This research therefore aims at: (i) Quantifying the N losses from maize-wheat rotation systems under local climate conditions and land use practices. For this, we use modeling approaches in combination with field experiments. (ii) Developing strategies to save nitrogen. Therefore, we did tests with reduced and split N fertilizer application in combination with replacing fallow periods by N-catching

crops such as cowpea (in the transition period between summer and winter cropping). (iii) Identifying the social-economic factors contributing to the excessive application of N fertilizers.

### Research methods applied

We carried out field experiments with two different field management systems: N catch cropping and fallow. We used four different nitrogen fertilizer application rates. We also calibrated and validated models for simulating water and nutrient dynamics. Based on these models, we estimated N losses and provided optimized fertilizer application strategies and land use options. In addition, we conducted household surveys at basin scale to acquire the necessary social-economic data.

### Preliminary findings

The rate of applied mineral nitrogen can be reduced if we replace the fallow land in the transition period (autumn) with a cowpea cover crop. This also minimizes the nitrate leaching losses that are typical in the maize-wheat rotation system. Combining an N catch crop with reduced mineral N fertilizer rates significantly decreases the N losses from farmland, without sacrificing the yield.

The implementation of this combined strategy needs to be embedded in approaches to raise awareness among farmers regarding better fertilizer and land management options. They could then see the advantages and possible benefits for the agricultural production system and the environment. These options are to be complemented by modifying the easy and low-cost availability of mineral N fertilizers.

### Funding

This doctoral research is funded by the BMBF/IPSWaT. The field research was supported by the Foundation fiat panis and Hubei University.

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## How models can support sustainable management of groundwater resources in Gaza

The Gaza Strip has been in dramatic turmoil over the past months. Apart from its involvement in the armed conflict, there are a bunch of long-term issues affecting the region. Water scarcity is one of them: Gaza faces serious challenges with regard to the sustainability of its water resources. In addition to the lack of water quantity, mainly a consequence of its semi-arid climate, overall water quality is poor. The Gaza aquifer is polluted with high levels of nitrates and chlorides and the Wadi (valley) Gaza with the sewage from towns and camps. This poses a threat to the sustainability of the entire water system in the Gaza Strip.

Therewith, Gaza is a typical example of a coastal region under pressure of climate and land use changes. Additional challenges result from a high population density; a dependency on surface and subsurface runoff mainly generated outside the Gaza Strip; and a high demand for water for agriculture and industry. Thus, proper development planning is urgently needed to solve these problems and to ensure a sustainable water environment in the future. In order to do so, it is essential to improve the information base and provide appropriate management indicators. This doctoral research conducted at ZEF aims to contribute to this effort by evaluating the quantitative impacts of human activities on water resources.

### Objectives

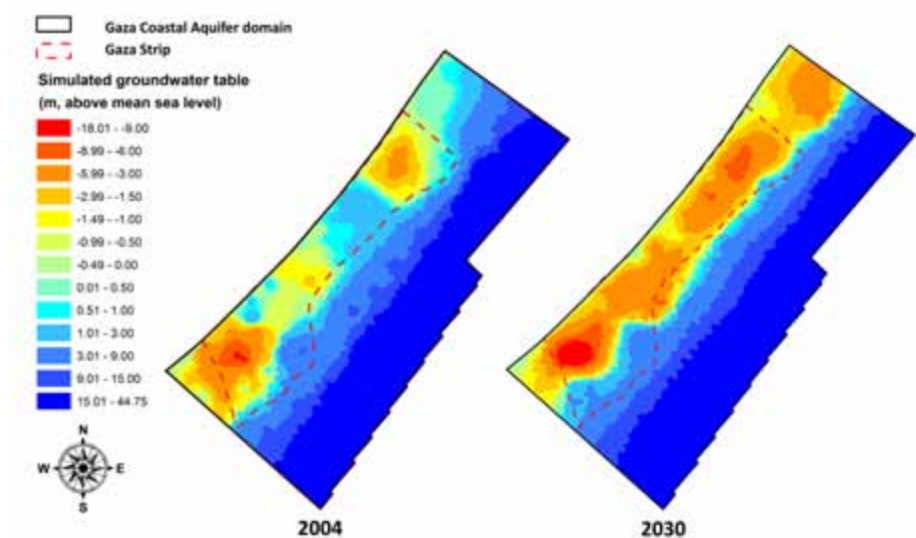
The main goal of this research is to provide decision-makers with tools for the sustainable development planning of water resources in Gaza. The research simulates in an integrated way the water resources system, including surface and groundwater.

### Methodology

The research approach consists of three major steps: (1) coupling of models for surface water (SWAT), groundwater (MODFLOW) and matter dynamics (MT3DMS package) to quantify surface-groundwater and quantity-quality interactions; (2) developing a new concept for a sustainability index and a spatial sustainability index for the water environment of the Gaza Strip; and (3) carrying out a multidimensional analysis of the urbanization and water environment of the Gaza Strip under consideration of available development planning alternatives (urbanization in terms of wastewater, land use, seawater intrusion, storm water harvesting, sewage system performance).

### Preliminary findings

Expanding urban areas affect the water system in a twofold way: they lower the groundwater recharge and enhance the runoff of surface water. This impact of urban area expansion was quantified using SWAT simulations. We developed an urban-surface runoff index (USI) and an urban-percolation index (UPI) to conduct a micro-level evaluation of different expected urban change scenarios in the sub-basins. These indices reflect the percentage of change in surface runoff (USI) or in percolation (UPI) caused by a presumed 1% increase in urban area at



Expected development of groundwater table in the Gaza Strip. Source: Tamer Eshtawi

sub-basin level. The global urban-surface runoff index (GUSI) and the global urban-percolation index (GUPI) were derived to measure the influence of urban expansion on the macro level, the Gaza coastal aquifer.

### From ideas to implementation

Based on our simulation models and measurements, we assessed the potential future impact of urban expansion on the groundwater table level in the region. We detected and quantified a significant decline in groundwater levels. We also identified areas sensitive to further lowering of recharge and/or rising groundwater withdrawals. As a means to combat these trends, we highly recommend increasing the recharge and reuse of treated wastewater and decreasing groundwater depletion caused by storm water harvesting and/or desalination. This information can help decision-makers to frame planning and coordination activities aimed at water resources sustainability.

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# Viewpoint

Interview with Anna-Katharina Hornidge, new Director and Professor of ZEF's Department of Political and Cultural Change as of August 1, 2014



## "I can build on a very strong team"

**You have been appointed Director at ZEF for the next three years. What are your ideas on the concept of development?**

Development is always considered as a form of 'positive' change. However, defining development depends on who is assessing what is positive. Currently, we have a strong focus on (economic) growth. But there are also divergent definitions, for example focusing on human well-being or happiness, as employed in Bhutan. Definitions of 'development' by state organizations probably differ from those made by subsistence farmers, international donors and development organizations or people who are supposed 'to be developed'. The variety of definitions also means that actions are guided by a multitude of views on development. Here, development acts as a so-called boundary concept. It is obvious that development can never be a linear process, but rather interlinks many different processes. It is therefore an open concept and platform that can bring very different actors together.

**You wrote your doctoral thesis in 2007 on the Knowledge Society, comparing Singapore and Germany, and your habilitation this year was about "discourses of knowledge". Why this fascination with knowledge?**

'Knowledge' is an open concept – similar to 'development'. 'Knowledge' as a research theme links very different topics and disciplines relevant to development research and therewith to ZEF. In my work, I adopt

Berger/ Luckmann's definition of knowledge. The authors consider everything to be knowledge that is regarded as such in and by society. They also differentiate what kind of value is attached to which type of knowledge, and whether this is considered worth fostering. So knowledge can comprise stocks of high-level technological expertise but also farmer-driven ideas on development expressing how they perceive their future and how their actions are guided by this perception. This is where it becomes very relevant to development research.

**Your geographical research focus has shifted in the course of the past academic years from South East Asia to Central Asia. Was this shift coincidence or a deliberate choice?**

Originally I studied Southeast Asian Studies, and hold a master's degree in Indonesian language. I am convinced that qualitative and quantitative ethnographic research requires local language skills and cultural expertise. Yet, at the same time, we need strong conceptual and methodological groundings for conducting social science research. Moving from Southeast Asia to parts of Central Asia implied that I could gain experience in project coordination and management. First, I coordinated the social science side of a BMBF-funded and ZEF-led project in Uzbekistan, then I led two smaller projects in Tajikistan and became involved in and coordinated the Crossroads Asia competence network. In each of these projects I collected new experiences at additional research sites, in local settings and with regard to scientific project management.

**What are your plans, what will be your focal points, your goals for the coming three years?**

I can build on a very strong team at ZEF's Department of Political and Cultural Change. We have our core themes and have been working on several world regions, thus acquiring substantial expertise over the past years. Yet, what I would like us to do in the coming three years is to enhance the interaction between the



research fields and themes we conduct. We can do this by putting our current implicit focus on different change processes into a joint frame. We work on environmental change processes such as climate change in Western Africa and Southeast Asia, as well on socio-economic processes in Central Asia and the Caucasus. It all comes down to processes of change: we see that people mobilize different types of knowledge, develop their own ideas and innovations in creative manners in order to cope, adapt and live with these challenges and the changes they experience. So we will continue working on the local level, as well as conducting ethnographic research. But we will also include quantitative social science research and qualitative contributions using, for example, multi-agent based models in our interdisciplinary projects with the economic and natural sciences at ZEF.

**What is the specific contribution of the social sciences to ZEF's research agenda?**

Within the interdisciplinary teams at ZEF, I see it as one of the tasks of the social sciences to encourage and ensure continuous processes of reflection on research ethics, on the way we build and foster research cooperation, how we plan and implement research. Yet, within our own social science research, it is our task to use the locally collected, empirical research material in order to abstract from it and develop non-western, empirically-based mid-range concepts along Robert Merton's middle-range theories. Together with our local partners, we want to contribute to conceptual as well as methodological debates and to reducing the continuing western/northern bias of the social sciences as practiced in the epistemic centers of the world. This is what we can offer. We have the empirical material and the analytic capacities. So let's take this further.

*The interview was conducted by Alma van der Veen*

# Facts & news

**Paul Walker spoke at ZEF**

Paul F. Walker, Director, Environmental Security and Sustainability, Green Cross International and Laureate of the Right Livelihood Award 2013, gave a lecture on the abolition of chemical weapons at ZEF, April 9, 2014. You can watch the lecture here: <http://youtu.be/noWGnCV1WY4>



**"Independent media in a time of war"**

Amy Goodman gave a talk on "Independent media in a time of war" on June 30. About 200 guests attended. The event was organized by the Right Livelihood Campus Bonn at ZEF. [http://youtu.be/phE\\_I6Q5hFM](http://youtu.be/phE_I6Q5hFM)

**Right Livelihood Campus Bonn becomes RLC Global Secretariat**



In May 2014, RLC's headquarters for global research and education, the Global Secretariat, moved officially from Penang, Malaysia, to Bonn. The opening ceremony of the RLC Global Secretariat was held in the Old City Hall of Bonn on Monday, May 26, 2014.

**Joachim von Braun is "Bonn International Ambassador"**

Joachim von Braun was appointed by Bonn's Lord Mayor Jürgen Nimptsch to serve as a "Bonn International Ambassador". The role of Bonn International Ambassadors is to strengthen international relations for the City of Bonn.

**Pakistani students visit ZEF**

About 40 Pakistani students aged between 17 and 22 visited ZEF in July this year. The students were the 'exam toppers' for the whole of Pakistan in various topics and at various levels (school and university undergraduate).

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Watch the full interview on our youtube channel:  
<http://www.youtube.com/watch?v=SF8PrKRk7TA>

# Doctoral @ ZEF theses

## The private sector and the marginalized poor – opportunities to reduce poverty and marginality in rural Ethiopia

This research looks at marginality and extreme poverty in rural Ethiopia and tries to identify opportunities for the private sector to contribute to poverty reduction – as a business case. For this purpose, marginality hotspots were identified and the agricultural input sector analyzed in order to assess investment opportunities that benefit the marginalized poor. The study is part of the MARGIP research program at ZEF, which is funded by the Bill & Melinda Gates Foundation.

### Marginality in Ethiopia

The research analyzed the role that the private sector can play in reducing poverty and marginality in Ethiopia by providing improved agricultural inputs, especially seeds, to marginalized poor farmers. Using Geographic Information System (GIS) software, a marginality map of Ethiopia was created by overlaying seven indicators capturing different aspects of marginality. Results showed that marginality is a severe and widespread problem in Ethiopia with more than 40 million people being severely marginalized.

### Opportunities for the private sector to contribute to the reduction of poverty and marginality

Against the background of an enormous shortage of improved seed in the country, an institutional analysis of the seed market was carried out to understand the frictions in this market and to assess possibilities for the private sector to contribute to the reduction of poverty and marginality through adequate investment. An analysis of more than 60 expert interviews carried out in Ethiopia showed that the market for seeds of major crops is highly regulated by the government, with institutions favoring public companies. One implication of this system is that all seed is distributed via one channel, which, amongst other implications, causes a lack of agro-dealers and implies a lack of traceability of the seed and, thus, insufficient accountability and incentives to improve on quality for seed producers.

### Necessary institutional changes to motivate investments

Several institutional changes are necessary to motivate private companies to invest in agricultural input markets and to cater to the marginalized poor. For seed companies, access to breeder seed, the assignment of more land and the availability of plant breeders are crucial elements. Moreover, access to finance at reasonable cost, especially with lower collateral requirements, is essential to expand operations. Successful role models, support from other



Private companies can contribute to reducing poverty in Ethiopia.

stakeholders and successes with investment incentive schemes in other sectors in Ethiopia could encourage the government to gradually liberalize the market. However, when the government surrenders control of seed distribution, it must be ensured that the marginalized poor too have access to improved inputs.

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## Excellence from Ghana: two young graduate students about their research and the benefits of exchange programs

Hamdiyah Alhassan and Theodora Asiamah are doctoral students enrolled in the Ghanaian-German Center for Development Studies at the University of Ghana, which is jointly run by ZEF and the Institute of Statistical Social and Economic Research (ISSER) in Accra.

### Hamdiyah, can you tell us something about your research topic?

I am conducting research on solid waste management in the Tamale Metropolitan Assembly in Ghana. In this region especially, there is a problem with the way waste is disposed on landfill sites. The people cannot accumulate or assimilate the amount of waste that is produced, and there are difficulties with transporting the waste to the landfill sites.

### What could be solutions in your view?

There are different ways to reduce waste or to reuse it through recycling. It could be done with economic incentives as a motivation for people to separate the waste at source or to minimize production. Most of the produced waste is organic. If we are able to separate it at source, we can use the material to produce compost, which will in the long run help to reduce urban food insecurity. With plastic, there could also be a system of supermarkets paying their customers a small amount of money when they return their used plastic or water sachets. Lastly, we need to change people's attitude towards the environment. Accra is full of people disposing their waste indiscriminately into water courses, with bad consequences for human health. When the environment is clean, the people will be healthier, and in the end it will be better for the economy.

### Theodora, what is your research about?

I am conducting my PhD on demand for savings and insurance services by poor urban households in the Greater Accra Region of Ghana. In Ghana, the financial services for this group are very poor. People with low incomes have problems obtaining loans and credits and there is a supply constraint. We have to think about a framework for providers of micro insurances for savings and lands.

### Do you have any experience in the banking sector?

I previously worked for two banks. When I was working in Ashaiman, which is a poor community in Ghana's capital Accra, I realized that most people are marginalized from mainstream banking activities. The banks don't have matching products, although they seem to be open for everybody. But most of the marginalized don't understand the forms, the procedures; they don't fit in. This problem

motivated me to do research in that area. The providers are not focusing on poor and low income people. This makes rational economic sense because you want to invest more where your returns are high and less where your returns are low. But for the people it is a big issue. They cannot save their money and they keep it at home with a high risk of losing it. So they get poorer. The same applies to insurance companies, which favor salaried workers and the high net-worth population. The demand and the willingness to engage in insurance are there, so why don't they reach out to the poor? I think we have to look at the transaction costs in reaching the poor and how to reduce transaction costs and enhance outreach through policies.

### Both of you spent two months at ZEF for research. What were your experiences?

**Theodora:** I got a lot of useful contributions from ZEF researchers during the proposal workshop. It made me shift the focus of my research, looking more into the supply side literature. This way, the problem of access to savings and insurance is easier to solve because there is the need for savings and insurances, but the demand, the willingness to pay for it, is very low. I think with my experience I will come up with something new. I also found a lot of literature that will be useful for my research work.

**Hamdiyah:** I enjoyed similar benefits. I have had access to plenty of research articles and literature that I would not have had in Ghana. This has helped me to improve my research. And the visit changed my view towards the attitude of lecturers to students. Here, they listen more to ideas and shape interests, something that I will take back to Ghana. I received good feedback here at ZEF, found a lot of literature and got support from a researcher who works in the same field. She gave me materials and books and showed me various ways to go on with my research.

### What are the benefits of the cooperation between ISSER and ZEF - in your opinion?

**Hamdiyah:** We are both married and have children. In Ghana, PhD studies usually last up to six years, with a longer period of travel outside of Ghana. This would be impossible for us. But with this cooperation, the supervisors are motivated and available to help us to finish on time. Besides, by coming to Germany I had access to plenty of literature. I have gained international work exposure and received input from different areas. Within two months, I gained a lot. So when I go back to Ghana, I will be able to continue my research and be with my family, children, and my husband.



### Hamdiyah Alhassan and Theodora Asiamah

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## Doctoral field research in Ethiopia: how aspirations can boost ways out of poverty



**In your research, you correlate individual aspirations and poverty. Can you tell us more about this concept?**

The concept of aspirations was originally developed and is being widely used in psychology, sociology and related fields. Economic sciences used to be mainly based on quantitative methods and on

the assumption that people behave rationally. This, of course, affects their decision-making accordingly. But there are phenomena that cannot be explained by rational behavior alone. In Ethiopia, where about 80% of the population lives from agriculture, the use of agricultural technologies is still low. This is the case despite long years of efforts by the government and other actors, including foreign aid and investment programs, to promote the use of improved agricultural technologies and practices. To understand and explain this situation, we have to look at the individual level – meaning at the aspirations and expectations of farmers. This approach is quite new for classical economics.

**So how did you apply this approach during your field research?**

To find out why the adoption of agricultural technologies in Ethiopia is so low, I conducted surveys among farmers at three study sites. One of Ethiopia's main crops is widely grown at each site: maize, wheat or teff. Around 390 households (approximately 700 individuals) participated in the surveys. The households I interviewed had already previously participated in a baseline survey with follow-up surveys by a local organization. Thus, I could build on these data to collect enough information to set up a so-called aspiration index, consisting of information about wealth, income, social status and education. During the surveys I asked the farmers about their aspirations and expectations and other behavioral indicators on top of agricultural and basic socio-economic indicators.

**You focused especially on education as an indicator for aspirations. Don't all parents want their children to go to university?**

Not necessarily. Aspirations are rather context-driven. So your social network and environment (so-called reference groups) also determine what you expect to achieve in your life and that of your children. We speak of aspiration window, gap and failure. The window is about your cognitive world, the gap is about the space between what you have and what you strive for. If the gap is too small, there is not

much incentive. If it is too big, it might stifle any initiative since people feel discouraged. In this case we see failure or lack of effort. But, I think we can influence and change people's behavior positively. IFPRI researchers did an experiment by showing different movies with exemplary stories to three groups of farmers. One movie told a story of a farmer with similar circumstances to the watching group who developed himself, clearly a showcase role model. The second group watched an entertainment movie and the third group was a control group and did not watch anything. The interviews conducted after watching the movies clearly showed that the first group was the only one motivated to change things in their lives and take opportunities when given – such as credits for productive purposes or investments.

**What can you reveal about your outcome so far?**

I am yet to analyze the data I have collected. But my literature review shows that higher aspirations and expectations lead to a higher effort to improve one's outcomes and, of course, the other way around. I am testing this theory in terms of investment in agricultural technologies and innovations by farmers. Ethiopia is not an easy case – literature suggests that its people tend to be a bit fatalistic. Experience in the country has shown that agricultural development is not only a matter of resources and technology. We have to understand what factors influence a farmer's decision-making so things can be changed and improved. This is what I can contribute as a researcher – advising policy makers and other stakeholders in my country. In the context of my research, I think the government has started following this innovative approach. For example, on multiple occasions it has awarded medals to "successful" farmers in a televised ceremony – the effect of which may boost the aspirations of other farmers.

Daniel Ayalew Mekonnen started his doctoral research at ZEF in 2012 and conducted his field research in Ethiopia in 2014. Contact: [dameko@uni-bonn.de](mailto:dameko@uni-bonn.de)

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