ZEF Themes
related ZEFb projects
Researchers working on the themes and the respective projects

Governance and development

Research on governance at the Department of Economic and Technological Change of ZEF focuses on governance aspects of markets, public institutions, governance of natural resources. ZEF governance research has a strong focus on poverty reduction and governance approaches for inclusion, such as gender (see also research on gender and climate change below under the theme "Environmental and Climate Change").

Projects:

Volatility in Commodity Markets, Trade Policy and The Poor

The objectives of a set of projects under this theme is to Investigate the drivers and causes of price volatility, the transmission to regional, national and micro-level, the impact on poor people as well as regulatory instruments to reduce volatility. The research has a strong emphasis on practical advice, including strategies of the G20 as well as the private sector, including finance and banking.
Methodology:
Global market models with biggest supply countries
Early warning system based on statistical analysis of volatility and impact indicators
Econometric analysis and field research

Joachim von Braun, Matthias Kalkuhl, Bernadina Algieri, Ulrich Hiemenz

Doctoral Research Projects:

Mekbib Haile: Analysis of the volatility of international food markets and impacts on resource allocation and on poverty

Lukas Kornher: Food Commodity Storage: Driver and Response to Price Volatility

Christine Waschkeit: A Short-term Food Price Alert System and Potential Responses for Responsible Investment in Agricultural Commodity Futures

Wang Xue: Trade policy and environmental linkage: China

Main Cooperation Partners:
Thomas Heckelei and co-workers (Institute for Food and Resource Economics, University of Bonn)
Maximo Torero and co-workers (IFPRI)
Christian Schlag (House of Finance, Goethe University Frankfurt)
Seid Ali (Ethopian Economic Association)

Main Funding Partners**:**
BMZ, Union Investment, Bayer Crop Science

Publications:
Joachim von Braun and Getaw Tadesse (2012): Global Food Price Volatility and Spikes: An Overview of Costs, Causes and Solutions. ZEF-Discussion Papers on Development Policy, No. 161

Decentralization and poverty reduction (contribution to a research project on fiscal federalism, guided by Ehtisham Ahmad (ZEF/LSE)).
Regina Birner (Uni. Hohenheim), Joachim von Braun

Growth, inequality and poverty analyses and related governance aspects

Doctoral research projects

Yessengali Oskenbayev: Institutions, Fiscal Instruments and Natural Resource Curse In Kazakhstan with Special Reference to Energy and Wheat Sector.

Deden Dinar Iskander : The Carbon Tax Scheme under the Influence of Corruption - Experiment to Learn for Indonesia

Abdul Salam Lodhi: Education, child labor and human capital formation: A study in selected villages of Pakistan

Ben S. Dandi: Economic growth and poverty reduction in Kilimanjaro and Ruvuma regions of Tanzania

Jose Luis Viveros: Opportunity costs of spending on "Opportunidades" Program in Chiapas/ Mexico

Tigabu Degu Getahun: Industrial clustering, growth and poverty reduction in Ethiopia

Xing Ke: Developmental experiments and scaling up – Examples from China's rural reforms

Science Policy, Technology and Innovation

Science policy and innovation are central to development. ZEF research focuses on science policy for enhanced impact in an interdisciplinary approach, bringing together economics, political, social and natural science. National science policy, as well as international science policy for global public goods, are both of high importance and are increasingly linked. The main questions that science policy research at ZEF aims to answer are: What science policy enhances sustainable development and economic growth in emerging economies at different stages of development and how can science investors enhance their impact? The innovation and technology research at ZEF has a main focus on inclusion of the poor and marginalized.

Projects:

Marginality Reduction for Enhanced Investments for and with the Poorest (MARGIP);

and its follow up project:
Assessment and farm household segmentation for inclusive poverty reduction and sustainable productivity growth in agriculture (TIGA)
http://www.zef.de/margip.html

Global efforts to reduce poverty have shown significant effect since the Millennium Development Goals have been declared and set into action in 2000: The number of people living on less than 1$ a day and suffering from hunger worldwide has decreased from 29% in 1990 to 18% in 2004. However, the extreme poor, who live on less than 0.5 $ per day, are mostly excluded from this progress. Millions of people, especially in sub-Saharan Africa and South Asia are currently being marginalized and therewith, the poorest are left behind. ZEF has set up a research program that focuses on marginality and extreme poverty in developing countries. By approaching the persistent problems of extreme poverty through the lens of marginality, features and causes of extreme poverty are put up front, rather than as a secondary step to define potential investment actions. The project is designed as a planning project to prepare for a wider research and action program on marginality in developing countries. The aim of the project is to identify opportunities to help people improve their lives and overcome obstacles by examining how and why poor populations are marginalized—many of whom live in rural areas and work as small scale farmers. One possible way is to attract development investors. If they understand marginality better, poverty reducing investments will be more successful.

Main Cooperation Partners: BRAC in Bangladesh, Bangladesh Institute for Development Studies (BIDS), Ethiopian Economic Association (EEA), Environment and Coffee Forest Forum (ECFF, Ethiopia)

Main Funding Partner: Bill & Melinda Gates Foundation

Publications:

- ZEF Working Paper No. 80, 2011. Innovative business approaches for the reduction of extreme poverty and marginality? Heike Baumüller, Christine Ladenburger, Joachim von Braun.
- ZEF Working Paper No. 77, 2011. Marginality: Addressing the root causes of extreme poverty. Franz W. Gatzweiler, Heike Baumüller, Christine Ladenburger, Joachim von Braun.

Franz Gatzweiler, Joachim von Braun

Doctoral research projects:

Christine Ladenburger: The private sector and the marginalized poor - assessment of the role that business can play in reducing extreme poverty and marginality in rural Ethiopia

Heike Baumüller: Assessing the role of mobile phones in facilitating private sector provision of pro-poor goods and services in lagging regions

Inga Korte: Marginality and community development in Afghanistan

Saiful Islam: Assessing sustainable intensification options in rice production and poverty reduction – Bangladesh and West Bengal

Valerie Graw: Hotspots of marginality and land degradation

Margarita Quiros Garzon: Access to information, technology adoption and rural innovation: public-private partnerships and Farmer Field Schools

Science Policy for Food Security

As a component of the collaborative project “Exploring the future of global food and nutrition security”, with acronym “FoodSecure” (more see below), ZEF is – among other themes - responsible

for tasks to describe and evaluate science and technology policies and priority setting in the context of FNS and more generally of sustainable and green growth strategies, nationally in developing countries and in relation to the international science system.
Nicolas Gerber, Joachim von Braun

Bioeconomy and the NEXUS among water, energy, food security
ZEF engages in research that addresses the emerging mega-sector of the bioeconomy – understood as the aggregate of all industrial and economic sectors and their associated services which produce, process or in any way use biological resources (plants, animals, micro-organisms). The bioeconomy is a knowledge-intensive economic sector, gaining a strong economic and political momentum in Germany, Europe and internationally over the past years. Interlinked value chains (e.g. food production, biomass energy generation, biomass use in the chemistry and construction industry etc.) are a central feature of the bioeconomy. ZEF research aims at making bioeconomy knowledge available to developing countries and to explore new comparative advantages and sustainable solutions to accelerated demand for biomass in a post-fossil fuel age. Related to this is new science to improve the nexus among water, energy and food security and to reduce waste in value chains. Further, the development of the bioeconomy is expected to play an increasing role in addressing some of the challenges faced by the international society, while offering prospects of economic growth. Some of these challenges are:

- Growing population and higher living standards, leading to increased demand for food, animal feed, fibre for clothing, material for housing, water, energy, health services, etc.
- Declining resources - e.g. degraded ecosystems and loss of ecosystem services, including land degradation and unsustainable ocean fisheries, declining biodiversity – due to unsustainable management practices, and
- The effects of climate change on the declining resources as well as the effect of current resource use and management on climate change.

Nicolas Gerber, Joachim von Braun

Doctoral research projects

Rahyla Rahmat: Global Value Chain and Science Policy Analysis for Sustainable Palm Oil Industry in Malaysia

Ildephonse Musafiri: Long term rural growth in Rwanda

Water resources

In ZEF's trans-disciplinary water resource research, the economics and technological research components focus on efficiency, sustainability, and equity aspects.

Projects:

Integrated Water Resources Management (IWRM) in South Africa

Daniel Tsegai, Anik Bhaduri

Analysis of global virtual water flows Using Multi-Region Input Output Tables

The problem of water shortage affects 40% of the global population. This is threatening the economy of many river basins, and thus drawing countries that share these basins into possible water conflicts. Given these circumstances, the relevant question is whether virtual water trade be considered as a

feasible demand management instrument in mitigating water scarcity? A tool that is applied to the assessment of carbon embodied in international trade is multi-region input-output (MRIO) analysis. This work is therefore concerned with the quantification of global virtual water flows, using MRIO tables at high country and sector detail.

Team Members: Manfred Lenzen (University of Sydney), Joachim von Braun, Anik Bhaduri and Maksud Bekchanov

Doctoral research projects

Maksud Bekchanov: Issues of Efficient Water Management in the Aral Sea Basin, Central Asia

Land use and food security

In the long run, food security depends on natural resources and sustainable innovations. Among the natural resource base particularly neglected until recently is sustainable land and soil management. Whilst water, climate/air and biodiversity have received much coverage in the various global assessments of natural resources, evaluations of the state of the world's land resources and of the human impacts of changes in the quality of our global land resources are lagging. ZEF has a longstanding emphasis on soil and land, and has recently added a strong emphasis on the economics of land degradation. Land prices are rapidly increasing world-wide due to increased land scarcity and raising output prices that stimulate demand for the land resources. These changes have far reaching impacts on land rights and institutions. Poor land users tend to lose out in the competition.

Projects

Economics of Land Degradation (ELD)

Land degradation, desertification and drought pose a global problem for a growing number of people in all climate zones. According to data of the United Nations Convention to Combat Desertification (UNCCD) over 250 million people are directly affected by desertification and around 40 percent of global agricultural land has been degraded in the past half-century by erosion, salinization, compaction, nutrient depletion, pollution and urbanization. Land degradation in a context of continuing population growth has also far-reaching consequences for food security worldwide.
A joint research team of ZEF and IFPRI (International Food Policy Research Institute) have conducted a study about the state of knowledge on the economics of LD. In this project they analyzed how the effects of land and soil degradation and drought can be assessed in terms of human costs. They also delivered an overview of actions that can be taken against land degradation and their respective costs and benefits.
A number of country studies show sustainable land management practices to be cost-effective and which institutional and policy actions are required to support such practices.
The extent of degraded and degrading areas adversely impacts on large numbers of people and leads to significant social and economic costs, thus raising the questions: In which way is it worth taking action against land degradation? Where and when should action take place, and what are costs related to certain actions? For policy makers, the crucial information that is yet missing is an evaluation of the social and economic costs linked to the current and future status of land degradation. For instance: what are the costs of land degradation worldwide in terms of food production and food and nutrition security? How effective and costly are sustainable land management strategies? What are the off-site costs of land degradation due to the siltation of water ways, or to the health impacts of airborne soil particulates? How do all these costs impact the economy as a whole through multiplier effects?
In a book co-authored by researchers at ZEF and at IFPRI (Nkonya et al. 2011), the authors propose a conceptual framework that allows comparing the costs of action against land degradation versus the

costs of inaction.

Nicolas Gerber, Joachim von Braun, Alisher Mirzabaev

Doctoral projects:

Philipp Baumgartner: Impact of large-scale agro-investments in East Africa on poverty reduction and rural transformation

Elias Kuusaana: Land markets und policy in Africa

Yang Haoran: Land rental market and rural economic growth: evidence from southwest China

Main Cooperation Partners: IFPRI, CGIAR, UNCCD
Main funding partner: German Ministry for Economic Cooperation and Development (BMZ).
Publications:
Nkonya E., Gerber N, Baumgartner P, von Braun J, De Pinto A, Graw V, Kato E, Kloos J, Walter T (2011) The Economics of Land Degradation: toward an integrated global assessment, Frankfurt a.M., Peter Lang

Food and Nutrition Security (FoodSecure)

ZEF is one of the leading partners in a research consortium to carry out a European Commission-funded project within its Seventh Framework Programme. The project title is "Exploring the future of global food and nutrition security", with acronym FoodSecure. Submitted in response to the EC-FP7 call entitled "Economic, social and political conditions for satisfying the world food needs", the project aims at improving the resilience of the global food system, by providing a means to mitigate risks and uncertainties in the world food system caused by economic and climatic shocks, while providing for sustainable economic growth. The food system is analyzed in relationship to the ecosystem, energy, and financial markets, all of which are potential sources of shocks that can disrupt the food system. In addition, it is examined in light of fundamental societal trends and changing attitudes toward food consumption and production. ZEF is responsible for the overall scientific coordination of the project, as well as for the delivery of several research outputs. Notably, researchers at ZEF have as tasks
- to describe and assess research and innovations products and institutions of relevance to food and nutrition security (FNS),
- to evaluate science and technology policies and priority setting in the context of FNS and more generally of sustainable and green growth strategies, nationally in developing countries and in relation to the international science system, as well as
- to analyze the relationship between FNS, land use and the exploitation of natural resources such as soils, water and ecosystems.
- to lead the consortium's work in the short term forecasting of price volatility risks and its impacts on FNS. This will require to decompose the shares of the different drivers of food price volatility, and to identify the policy interventions acting as solutions to (and sometimes drivers of) of food price volatility.
- In conjunction with more general agricultural and trade models used and developed in the project, the research shall identify appropriate responses to food price changes and their impacts on FNS, including institutional and policy responses and the use of emergency food stocks.

Nicolas Gerber, Joachim von Braun

Main Cooperation Partners:

LEI-WUR, IFPRI, INRA, KU Leuven, CCAP, IAE, IHEID, IIASA, EC JRC, PBL, Prospex, SAU, URoma3, IDDRI, EEPRI, EMBRAPA, CIRAD
Project Homepage:**www.foodsecure.eu**

Doctoral research projects:

Aziz Karimov: Analysis of Production Efficiency and the Policy Impacts on Farmers' Production and Resource Use in Uzbekistan

Evita Pangaribowo: Food Demand Analysis of Indonesian Households: evidence from the Indonesia Family Life Survey

Beatrice Muriithi: Pathways for commercialization of smallholder horticultural farming in rural Kenya: Poverty reduction, food security, gender and private food safety standards linkages.

Renewable Energy

Research on renewable energy at ZEF is planned to be scaled up especially in the area of biomass based energy use efficiency and sustainability. This focus is chosen, because of the large share of biomass-based energy among primary energy supply in many low-income countries, where biomass still covers up to 60 or 70% of primary energy. Also, the link to development constraints, i.e. people's time (especially women's time) and health are strong.

Doctoral research projects:

Dawit Guta: Role of Biomass-based Energy Sources on Energy Security and Rural Livelihood: Evidences from Central Ethiopia

Environmental change and climate change

Climate Change, Land and Water

The Department of Economic and Technological Change of ZEF actively participates in the West African Science Service Center on Climate Change and Adapted Land Use – project (WASCAL).
- Farmers´ priorities and perceptions of climate change and the evaluation of local adaptation strategies. Main focus is on
- analyses of adaptation opportunities,
- Income from Carbon Markets
- Modeling of climate, land water relationships.
Website: http://www.wascal.org/

Marc Müller, Tobias Wünscher

Doctoral research projects

Alisher Mirzabaev: Climate Change in Central Asia: Economic Impacts and Adaptation Options in Agriculture

Justice Tambo: Household and community risks under climate change in West Africa

Muntaha Rakib: Women and assets in the context of climate risks - Bangladesh

Marther Ngigi: Women and assets in the context of climate risks - Kenya

Biodiversity and forest conservation

Conservation Auctions: Application and Challenges in Developing Countries
Tobias Wünscher

Doctoral Research projects

Mercelyn Khalumba: Participatory Implementation of Experimental Extraction and Conservation Performance Schemes for Sustainable Use of Forest Products from Kakamega Forest, Kenya

Lucie Andeltova: Risk in Conservation Auctions for Performance-Based Payments for Environmental Services and the Implications on Cost-Effectiveness and Opportunity Cost: Experiments in Rural Kenya

Tania Osejo: Effects of REDD policy on reduction of CO^2 emissions and poverty alleviation

Utkur Djanibekov: Economics of Afforestation of Degraded Croplands under CDM in Uzbekistan

Institutions for Sustainable Land Use, Forestry and Biodiversity

The role of institutions for forest resource and livelihood management in East African forest landscapes
http://www.iflea.org

Franz Gatzweiler

Mobility and migration

Migration and Human Capital

A broad range of issues in human capital formation and endogenous determinants and developmental impacts of migration are addressed at ZEF.
Oded Stark
Publications: see ZEF Discussion Papers series

Doctoral research projects

Yi Zhang : Impacts of Rural-urban Migration on Demographic Transition, Agricultural Productivity and Human Capital Investment in China's Rural Areas

Health and Sanitation

ZEF research on health and sanitation is trans-disciplinary and its economics components focus on public health spending, health insurance innovations, and the economics of linkages between health, sanitation and agriculture.

Projects

Guiding pro-pure investments in the nexus among domestic water quality and quantity, sanitation and hygiene (project in planning stage)

Daniel Tsegai, Joachim von Braun, with S. Saravanan, and B. Tischbein

Agriculture- environment-health-linkages in Uganda

Daniel Tsegai (cooperation with IFPRI)

Doctoral Research Projects:

Liu Dan: China´s Rural Health Care System

Michael Simon: Resource Allocation for Health in Tanzania - Determinants and Policy Implications

Florence McBain: Health insurance for the poor