

Zentrum für Entwicklungsforschung
Center for Development Research

Universität Bonn

ZEF Bonn



Annual Report 2002/2003



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ZEF's International Advisory Board

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Dr. Margarita Marino de Botero	National Fund for Science and Technology, Colombia (vice-chair)
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Members of ZEF's International Advisory Board in July 2002.

Water: reporting globally, researching locally



Klaus Töpfer
Chairman of the Advisory Board,
Executive Director of the United Nations Environment Programme (UNEP)

On the occasion of the "International Year of Freshwater", the United Nations published its first "World Water Development Report" in 2003. This report can be seen as a further step in the consultation process over global concern on freshwater resources that has been going on for four decades. The "World Water Development Report" offers a unique overview of the current worldwide challenges and opportunities that water-related issues pose to humankind. In addition to sketching out trends, the report focuses on concrete cases and facts. Furthermore, it explains the complex correlations between the various factors and actors that are playing a role, thus enabling the readers to identify and understand the underlying problems and giving them an impression of possible solutions as well.

The Report appeals to all relevant societal actors and stakeholders to take global responsibility for their actions and combine efforts in order to engender sustainable development. Thus, one of the "10 challenges" it identifies is dedicated to the role of science and knowledge: "There is a marked lack of indigenous knowledge and expertise relevant to local problems and an equal lack of appropriate research on lower-income country problems. (...) Research on effective institutional structures and management techniques for lower-income countries is badly needed". The Report also criticizes that "privatisation is focusing research more on industrial requirements than basic holistic research".

The research work ZEF is doing on water-related issues tackles precisely these issues. First of all, ZEF is an independent research institute that raises funds for its specific projects based on its own agenda. Secondly, in the framework of the projects ZEF plays a major role in, interdisciplinary research is being carried out involving and bringing together people, research and knowledge from different scientific fields. Finally, collaboration with local staff is a key element of the research set-up since it not only involves the indispensable knowledge and expertise of researchers but simultaneously invests in their educational and professional future. This kind of knowledge transfer and cooperation represents an investment which ensures that research being done now has a long-term effect.

The research approach of the ZEF-led projects follows a cross-cutting pattern, as will be shown in this Annual Report. The "GLOWA Volta Project", sponsored by the German Federal Ministry of Education and Research (BMBF) and the Ministry of Science and Education of North Rhine-Westphalia, is a good example. This project is being carried out in the Volta River Basin in Ghana and Burkina Faso. It combines research on atmosphere, land use and water use with research on technical integration and decision support, thus crossing the boundaries of individual scientific disciplines. Not only does the project bridge a gap between meteorology and hydrology, it also tackles issues such as water legislation and interventions by international donor agencies with respect to public institutions dealing with water management in different political settings.

The outcome of such practically oriented research and analysis is meant to find its way into decision-making processes at a policy level. Thus, research at ZEF plays the role it has been assigned in the "World Water Development Report".

Klaus Töpfer

Introduction



Paul Vlek



Klaus Frohberg



Tobias Debiel

The past year was eventful for ZEF. Within a two-month period, two of the directors of ZEF took up their new positions in the USA. Joachim von Braun assumed the position of Director General of the International Food Policy Research Institute (IFPRI) in Washington D.C. and was granted a leave of absence for the coming five years. Andreas Wimmer moved to Los Angeles and became a professor at the University of California, Los Angeles (UCLA). We wish to express our sincere thanks to both colleagues for the outstanding efforts they have put into the establishment of ZEF. We wish them the best of success in their new positions and hope that we will maintain close contact in the future.

ZEF was fortunate to be able to convince Klaus Frohberg to take over his duties in the Department of Technological and Economic Change as a successor of Joachim von Braun. Thomas Bierschenk from the University of Mainz was willing to take over temporarily as an interim Director of the Department of Cultural and Political Change from October 1, 2002 until March 2003, so that the transition in ZEF has been with few, if any, interruptions. Since April 2003, Tobias Debiel has been acting Director of the same Department.

This year also saw the establishment of the International Project Office of the Global Water System Project (GWaSP), sponsored by the International Geosphere-Biosphere Programme (IGBP), the International Human Dimensions Programme on Global Environmental Change (IHDP), whose secretariat is already located in Bonn, the World Climate Research Programme (WCRP) and Diversitas, the research programme on biodiversity. With funding from the German Federal (BMBF) as well as the North Rhine-Westphalian Ministries of Education and Research, the office will coordinate worldwide efforts in research on understanding the water cycle and the ways and means in which it is influenced by human activity. The office will strengthen the Bonn/Cologne region in its role as a center of excellence in water-related research. It will

provide an excellent context for the German funded Global Change and Water Availability (Glowa) Projects, two of which are already being coordinated within the region. The Glowa Volta Project, coordinated by ZEF, has been granted a three-year extension by the BMBF and will expand into Burkina Faso. We are also strengthening our collaboration with the "Deutsches Zentrum für Luft- und Raumfahrt" (DLR) on this project.

Moreover, it was gratifying to note that the long-term cooperation with the Embrapa Amazonia Oriental on fire-free utilization of the secondary forest region around Belém was given recognition by the Brazilian ministry of the environment, which awarded our counterparts the first "Chico Mendes Prize" for environmental research. The BMBF, which has sponsored this research over more than a decade, has taken great pride in this recognition and has resolved to stay involved in the region. Finally, the results of a ZEF-led field study in India on the impact of genetically modified crops evoked a worldwide media response.

ZEF has also strengthened its role as a policy-consultancy institution, having been appointed as a research consultant in the preparation of the official action plan on civilian crisis prevention by the German Foreign Office. This is an outcome of ZEF-organized workshops and events, like those on Afghanistan this year, which attracted a wide range of experts and representatives from non-governmental organizations, government, science, and media as well.

ZEF is facing the future with optimism. The University of Bonn and the BMBF have taken note of the excellent evaluation of ZEF, which was carried out last year, and have agreed to continue to support it for an additional six years. A new evaluation is foreseen for 2008. We wish to thank all our dedicated co-workers for the long hours they have invested into our institution and in the wellbeing of those that are most needy. ■

Chapter 1. ZEF's research agenda: a contribution to sustainable development

"Today's world has greater resources and know-how than ever before to tackle the challenges of (...) disease, low productivity, lack of clean energy and lack of basic services such as clean water, (...) schools and health care. The issue is how best to apply these resources and know-how to benefit the poorest people."

'Millennium Development Goals of the United Nations'
(UNDP, Report on Human Development 2003).

The 18 'Millennium Development Goals' were formulated and adopted by the United Nations in the 'UN Millennium Declaration' of 2000 in a bid to set the agenda for development issues by defining the major challenges of the new millennium. This agenda suggests itself as a guide for development-related research as well.

UNDP focuses its Report on a number of structural constraints that impede rapid and positive human development. It shows potential policy responses to these constraints as being essential for countries to break out of their poverty traps. These possible responses include issues that are directly related to ZEF's research agenda, such as:

- ▶ increasing the productivity of small farmers in unfavorable environments (...), since 70% of the world's poorest people live in rural areas and depend on agriculture,
- ▶ ensuring environmental sustainability (...) so that development results in improvements of a lasting nature,
- ▶ promoting democratic governance and human rights to remove discrimination, secure social justice and further the well-being of all people, and
- ▶ investing ambitiously and at an early stage in basic education and health (...).

Environmental sustainability

In one of the 18 Millennium Development Goals, the Report identifies public policies that are required to ensure environmental sustainability and reverse the loss of environmental resources. It points out that environmental management cannot be treated separately from other development concerns. So, improving environmental management with a view to benefiting poor people requires policy and institutional changes that cut across sectors and lie mostly outside the control of environmental institutions – including changes in governance, domestic economic and social policies and international policies as well.

Demanding role of science and technology

The UNDP further states in its Report on Human Development that 'improving technologies for environmental problems will require dramatically reorienting research and development policies'.

By considering and integrating more facts and facets, not only has the basis for policy-making become broader and more complex, but the demands and expectations of the role and responsibility of science and technology have grown enormously as well.

The role of scientific institutes like ZEF is to contribute to an understanding of this complex natural world and its processes and interactions, and to convey this knowledge into political processes at all levels.

To meet these growing expectations, ZEF is following an integrated approach that is reflected in all its cross-cutting, interdisciplinary projects. ZEF's major large-scale projects are located in Brazil, Uzbekistan, Ethiopia and Ghana/Burkina Faso. In its scientific research, ZEF combines natural and social sciences by not merely limiting its research to hydrology, agronomy or ecology, the preservation of biodiversity and natural resource management but including socio-economic and political/institutional components in the research scope of the projects as well. Thus, ZEF's research typically does not end with the publication of scientific results, but with an assessment of how and under what conditions the research results can be implemented in local circumstances.

Not only is the development of technologies to meet environmental challenges essential, but ways to make these technologies available to people who need them most have to be sought as well. So, close cooperation with the local counterparts is indispensable. Thus, collaborating with local scientific and other partners as well as involving local stakeholders and policy makers plays a major role in setting up and carrying out all ZEF projects.

Institutional analysis

Since many of the environmental problems are grounded in institutional failures and poor governance, ZEF dedicates an important part of its research to the analysis of relevant institutions and the question of governance. Our report gives examples of this aspect in the GLOWA Volta and Uzbekistan projects as well as in a case study in South Africa. ZEF also strives to contribute to policy-making on environmental issues by initiating a policy dialogue with local, national and international stakeholders. This is especially crucial to environmental management, since local stakeholders lack sufficient information and opportunities to participate in decision-making and



weak monitoring and enforcement of environmental standards are often the cause of failures to implement environmental policies.

Decentralization

According to the UNDP Report, 'decentralization can bring significant improvements where it has worked'. It continues by stating: 'Political reforms, such as decentralizing budgets and responsibilities for the delivery of basic services, put decision-making closer to the people and reinforce popular pressure for implementing the Goals.' Examples of related research can be found in this report in the Chapter 'Economics of natural resource management', which deals with the question of decentralization, participation and devolution of rights and responsibilities for natural resource management to local communities, for example in India.

Basic health services

One of the major research focuses of ZEF is on tackling poverty by enhancing the human capital of the poor through providing efficient and accessible education and health services. One example is a recently completed study on the positive role that community health insurance can play in improving the health status of the rural population and generating sustainable resources for the national health sector in Ethiopia.

The conservation of critical ecosystems

The UNDP Report on Human Development 2003 states that more than 60% of terrestrial species are found in 25 eco-regions on just over one percent of Earth's land surface. These biodiversity hotspots face extreme threats that have already caused a 70% loss of their original vegetation. In order to be able to conserve as much of these areas as possible, it is necessary for the world's governments, scientists and other key stakeholders to cooperate on common goals. "Conservation efforts are most effective when constructed by experts from a wide array of disciplines, in consultation with local residents," the UNDP Report concludes. ZEF contributes to the increasing efforts to conserve critical ecosystems, for example in its projects in Brazil, Ethiopia and India.

Capacity building

In all its projects, ZEF involves and trains local experts and staff, since an investment in human development and awareness building offers definite environmental benefits in the long run. The long-term commitment of ZEF's projects ensures such benefits.

But ZEF also contributes to human capacity building in the developing countries, an indispensable prerequisite for a sustainable global future, via its unique International Doctoral Studies Program.

ZEF aims to be closely aligned with the development agenda of the UN agencies. This report intends to reflect how well we are meeting that goal. ■



ZEF's research methods

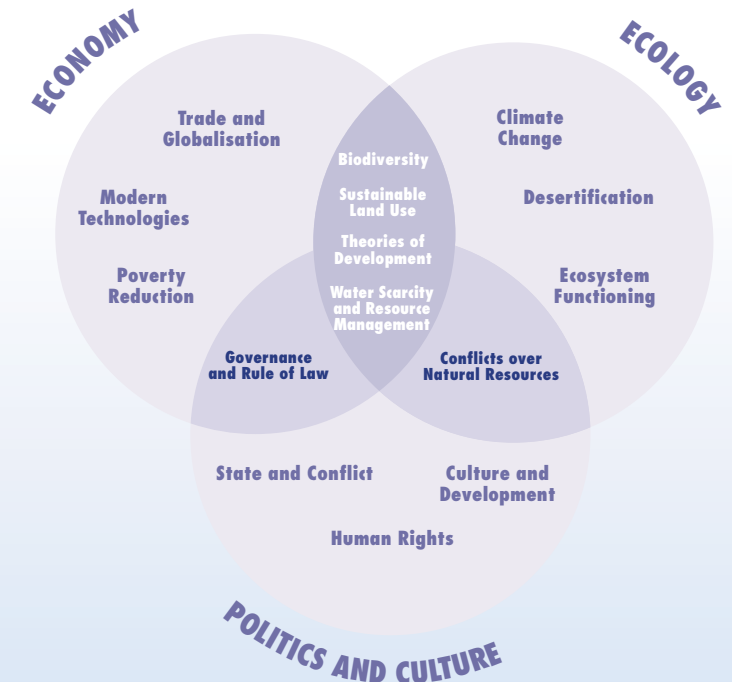
ZEF's research activities have been designed along three core areas: economic development and technological change, ecology and natural resource management, and political and cultural change. Research in the Economics and Technological Change Department deals with issues like poverty reduction, human resources, and public goods; trade and aid policies, macroeconomic issues, decentralization; and technologies for development and efficiency in resource utilization. The principal areas of focus of the department of Ecology and Natural Resource Management are atmosphere and water management; sustainable land use systems; and ecosystems and their functions in a development context. The third department, Political and Cultural Change, researches on democratization and the rule of law; state building and violent conflicts; human rights and development; and culture, knowledge and development.

However, ZEF recognizes that development is rarely constrained by a single problem within a single discipline. It is therefore developing research programs on cross-cutting themes of central importance for the developing world. These programs build on the methods and analytical styles of the disciplinary research activities. The research links and integrates knowledge and capacities from two or three of ZEF's departments. Since so many development issues cut across disciplinary fields, these cross-cutting research themes form a major part of ZEF's research activities. ZEF's potential for addressing these themes from an integrated perspective represents one of its major competitive advantages. Our strategic goal is

to move the core research activities in the direction of the crosscutting themes (see figure).

Therefore ZEF has established major cross-cutting research programs, some of them comprising several projects, where knowledge and input of several disciplines is needed in order to address the major research questions. The integration of bodies of knowledge traditionally defined by disciplines is not an easy process, especially if the effort is more than just an additive exercise. ZEF therefore constantly searches for new theories and methodologies that allow for trans-disciplinary integration in development research and that help to overcome problems of interdisciplinary communication.

However, ZEF does not intend to arrive at a situation where all its research activities are developed around cross-cutting themes of a trans-disciplinary nature. There are topics of highest relevance where cross-disciplinarity does not make much sense. Therefore we aim to develop the integrated research programs on the basis of solid, disciplinary rigorous research experiences. Thus the three circles are not meant to melt completely one day. In the process of identifying promising new research, ZEF listens carefully to its partners and receives guidance from its International Advisory Board. To maintain research quality, guiding criteria for ZEF's research are research excellence, strategic relevance, thematic coherence, and efficiency. The Center undergoes an external review process, following the German Science Council guidelines, approximately once every five years, the first one having been conducted in 2002. ■



Water Use, Land Use and Atmosphere:

The GLOWA Volta Project

Overview of activities

The watershed of the Volta River is one of the poorest areas of Africa, shared by six riparian countries. Precipitation in the region varies considerably, and there are periodic droughts. Water demand for the domestic, agricultural, mining and industrial sectors as well as for hydropower is increasing dramatically. Competing demands by the riparian countries and by intra-national user groups may lead to conflicts at local, national and/or international level. Improved access to potable water and agricultural production in the West African savanna depends on the development of (near) surface water resources and their effective use. However, large-scale water development programs will have an impact on the availability of downstream water resources, in particular on those of Lake Volta on which the urban population of Ghana depends for power generation. Unpredictable rainfall is a major factor in the economic feasibility of hydraulic development schemes. Any water resource management strategy will have to be based on a thorough understanding of this variability. The project concentrates on Ghana and Burkina Faso, which cover 85% of the surface area and 90% of the inhabitants of the complete basin.

The GLOWA Volta project aims at the development of a scientifically sound Decision Support System (DSS) for the assessment, sustainable use and development of water resources in the Volta Basin. The analysis of the physical and economic determinants of the hydrologic cycle and of the conditions of effective resource management is instrumental. The modeling integration of climatic, ecological and socio-economic influencing factors and correlations within the hydro-

logical cycle is a highly demanding scientific task. The project has a projected life-span of eight years. This relatively long involvement allows the team to develop a DSS that is more than a set of analytical tools and computer models but rather a true system complete with an educated user group, operational observation network, and clear feeds into decision-making at national and local levels.

Review of the project's progress

The project started in May 2000 and consists of two phases of three years and a final phase of two years. In 2002, the first phase underwent external review and the proposal for the second phase was submitted for funding. Both the work done in the first phase and the plans for the next phase met with positive response from the scientific review panel, which will allow us to expand our activities in the coming years. The first phase external review was based on an extensive report and presentations at the GLOWA status conference that was held in Munich in May 2002. The status conference brought together all five GLOWA projects (Elbe, Danube, Drâa/Ouémé, Jordan, and Volta), international scientists, and water policy-makers. Both the report and presentations are available on the project web-site (www.glowa-volta.de).

The scientific progress made within the project in 2002 can be divided into three parts. First, the status conference induced a consolidation of our integrative concepts. In the first phase, we developed and introduced innovative methodologies that allow scientists from (very) different disciplines to exchange useful information. The second integrative method-

ology concerned the development of the so-called Common Sampling Frame that provided a consistent way to collect socio-economic and environmental data. Because one sampling frame was used for all data gathering, the statistical representativeness of each data point is clear and complete cross-referencing between different data types is easy. The third methodology was the development of a water-use optimization model that allows for the incorporation of hydrological, economic and institutional information. Although the model is not yet complete, its principal functionality has been proven. An important side-effect of this modeling activity was that it stimulated discussions between scientists of different disciplinary background and pointed to gaps in our present knowledge.

Capacity building

Another important part of the scientific progress made in 2002 consisted of the collection of datasets by the PhD students in the project. These datasets will eventually provide the scientific basis of the integrated DSS. The scientists covered a very broad array of topics including assessment of the quantity and quality of drinking water, parameterizations of economic and meteorological models, observations of organizations surrounding water resource management, ground truthing of remote sensing data, etc. For a complete summary, we would again invite the reader to visit our web-site. Perhaps the most important reason why there can be no substitute for PhD students is that as young researchers, they will be the main human resources to carry out the DSS and ensure its constant evolution.

Policy dialogue

The inception of our policy dialogue should be mentioned as third important step forward within the project. In July 2002, the first policy workshop took place in Accra. It was organized in close cooperation with our partners, the Council for Scientific and Industrial Research (CSIR) and the Institute of Statistical, Social and Economic Research (ISSER). The well-attended workshop was opened by both the Minister for Food and Agriculture and the Minister for Public Works and Housing of Ghana. Be-



Children's share of work.

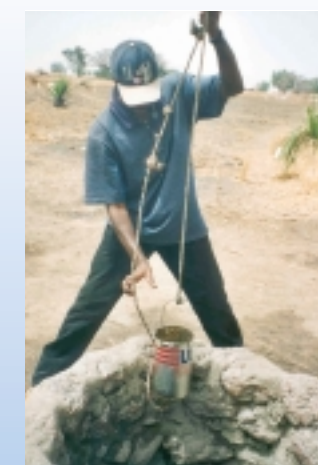
sides an introduction of the research undertaken in the GLOWA Volta project to administrators and engineers from many different ministries and service departments, the workshop served as a forum to set the priorities for the second phase of the project. One instrument that will help to keep this policy dialogue alive is a newsletter aimed at decision-makers in the region the first issue of which appeared in 2002. Finally, as part of this dialogue process, GLOWA Volta scientists participated actively in initiating a pilot project of the Water Resource Commission in Ghana's Upper East Region in November 2002.

Institutional analysis

For the development of total water demand projections data on the sectoral demands and use of water at the micro- and macro-level need to be matched with information about the performance and effectiveness of various kinds of institutions and policies. Institutional development is a difficult and slow process especially in resource poor environments. As such, institutions are a major or, even, the chief constraint on optimized water management. For example, if economics and hydrology are taken into account only, irrigation development appears to be very feasible in the Volta Basin. Yet, we see relatively little of it. This is mainly due to lack of locally effective institutions that would initiate and reproduce irrigation development. For our decision support, knowledge of these constraints is essen-



Household water collection remains a burden in West Africa.



Project's title:
»GLOWA Volta: Sustainable water use under changing land use, rainfall reliability and water demands in the Volta Basin«

Research fields:
Global change, water and land use

Number of staff involved: 10

Scientific partners:

- ▶ IMK-IFU
- ▶ Meteorology Wageningen
- ▶ Tropical Hygiene Heidelberg
- ▶ Remote Sensing Department, Würzburg
- ▶ Savanna Agricultural Research Institute, Ghana
- ▶ Water Research Institute, Ghana
- ▶ Institute of Statistical, Social and Economic Research, Ghana



- ▶ Meteorological Services Department, Ghana
- ▶ Soil Research Institute, Ghana
- ▶ Institute de l'Environnement et de

- Recherches Agricoles, Burkina Faso
- ▶ International Water Management Institute, Subregional Office, Ghana

Funding partners:

- ▶ Federal Ministry of Education and Research (BMBF)
- ▶ Ministry for Schools, Science and Research of North Rhine-Westphalia

Other research (projects) linked to this project:

- ▶ BIOTA W2
- ▶ VinVal
- ▶ ADAPT

Duration:

- ▶ Phase I: 2000-2003
- ▶ Phase II: 2003-2006 (approved)
- ▶ Phase III: 2006-2008 (to be approved)

Small scale irrigation is expanding rapidly.



tial in order to prevent unrealistic predictions and recommendations.

So far, institutions' performance has been analyzed with regard to several sectors and several political-administrative levels. At the local level, research in Ghana and Burkina Faso is producing comparative case studies of conflicts among user groups around reservoirs and about the local management of irrigation systems. These studies are related to institutional studies at the national level. Here the major actors and competing sectors of water utilization were first analyzed for Ghana, focusing on the formal range of tasks and constraints of the central national coordinating institution, the Water Resources Commission (WRC). The actors of the "institutional landscape" are now being identified in Burkina Faso as well. In addition, institutional "action arenas" in Accra and Ouagadougou are being analyzed. In-depth studies on intra- and inter-institutional communication are concentrating on particular focal institutions, in particular the national bodies created to coordinate the allocation and integrated management of water resources: in Ghana, again, the WRC, in Burkina Faso the Conseil National de l'Eau. Official laws and policies tend to face problems of implementation and enforcement. In general, traditional, local, or even regional authorities see no need to comply with water resource management rules drafted by the government bodies. Depending on the perspective, this is due to a lack of capacity and resources on the executive

side as well as to problems of legitimacy. It is important to take account of the fact that in both countries different normative systems co-exist or compete with each other; person groups and organizations draw on several repertoires of regulations (laws, customs) or implicit norms to guide their decisions about the appropriation, allocation and use of water resources (legal pluralism). In what way is policy-making related to "political will" and/or to strategies of fundraising? With respect to policy-making and to the legislative and executive processes, we also have to consider the interventions by government agencies, multilateral donors and NGOs. For example, there are disagreements about appropriate modes of private sector participation in regard to the management of water resources both within as well as between the organizations driving water sector development processes. Both at the local and the national levels, different types of private sector participation will have to be analyzed in the course of the second project phase.

The international context

At the international level, the Volta Basin with six riparian countries offers a particularly fruitful field of study. The scope for potential conflicts is large, comprising intersectoral issues such as the transnational allocation of water for hydropower generation or irrigation and ecological issues like the spread of water-borne diseases and aquatic weeds. Moreover, current problem analyses address upstream activities of pollution, over-exploitation of groundwater and surface water, evaporation from reservoir systems constructed with large surface areas, and deforestation and land clearing.

So far, no international convention has been agreed on, although negotiations about joint management of water resources have been going on since 1996 and recently gained momentum in the context of the Johannesburg and Kyoto Conferences. The international process, which comprises research, development and mediation approaches, is driven by several – in part externally supported – initiatives which deserve closer study. ■



Women are particularly involved in water use issues.



Land and Water Management

Building a future for the Aral Sea Basin

In Soviet times, vast desert areas in the Aral Sea Basin were transformed into artificially irrigated agricultural land in order to produce cotton. As a result, large amounts of river water were withdrawn from the tributaries of the Aral Sea. Today, very little water reaches the Aral Sea, and what was once the fourth largest sweet water lake of the world now occupies an area just a fifth of its original size. The transformation of the whole region has entailed a plethora of ecological problems that are strongly affecting the livelihood of the local population.

The Amu Darya River is the largest and last of the Aral Sea's tributaries. The inhabitants of Karakalpakstan and Khorezm, two regions on the lower reaches of this river, suffer most from the accumulated effects of low water availability, soil degradation and salinization, due to many years of over-utilization of irrigation water. The local production systems are based on large monocultures and heavy inputs of fertilizer, pesticide and water. The extensive irrigation systems providing the water are expensive to maintain, and up to 70% of the water is lost in them. The state order on crops, which is imposed in centralized government structures, still secures the predominance of cotton production and impedes the transition to a market economy, which further hampers progress. In its present state, agricultural production is ecologically and economically unsustainable, while wages in agriculture are among the lowest in the region.

Project setting

To address this setting, ZEF started a research project in Uzbekistan in March 2002. The temporary project offices were set up on the campus of the State University of Urgench (UrSU). Urgench is the capital of the Khorezm district in Uzbekistan, situated in the middle of an "oasis" of 630,000 hectares of irrigated land. The project receives its main funding from the German Federal Ministry of Education and Research (BMBF) and additional funds from the Ministry for Schools and Higher Education of the Land of North Rhine-Westphalia and the German Academic Exchange Service (DAAD). One important scientific German partner in this project is the German Remote Sensing Data Center (Deutsches Fernerkundungsdatenzentrum DFD) of the DLR (Deutsche Luft- und Raumfahrt). The chief scientific partners in Uzbekistan are the UrSU and the Tashkent Institute for Irrigation and Agricultural Mechanization Engineers (TIAME), and UNESCO provides logistic support for the project. In Uzbekistan, the project has the full backing of the Ministry for Agriculture and Water Resources. These three partners signed a plan of operation in January 2002.

Interdisciplinary approach

The project developed by ZEF is based on the hypothesis that, far from being of purely agricultural nature, the complex situation in

Project's title:

"Economic and ecological restructuring of land and water use in the Khorezm Region of Uzbekistan: A pilot project in development research".

Research fields:

Water Scarcity and Resource Management, Desertification

Number of staff involved:

In Germany: 7 staff members and 10 PhD students at ZEF in Bonn, 3 staff members at DFD-DLR in Oberpfaffenhofen

In Uzbekistan: 17 staff members; 3 Uzbek PhD students at Uzbek universities, and 10 Uzbek students participating in a MSc Program in Tashkent. One Uzbek student finished her MSc degree at Bonn University.

Scientific partners:

- ▶ United Nations Educational, Scientific and Cultural Organization (UNESCO)
- ▶ German Remote Sensing Data Center (Deutsches Fernerkundungsdaten-

zentrum DFD) of the DLR (Deutsche Luft- und Raumfahrt)

- ▶ State University of Urgench (UrSU) Tashkent Institute for Irrigation and Agricultural Mechanization Engineers (TIAME) Ministry for Agriculture and Water Resources of the Government of Uzbekistan
- ▶ State Design Institute for Irrigation and Drainage Systems of Uzbekistan (Uzgiplomeliiovodhos)



- ▶ The Scientific Research Institute "SANIIRI" named after V.D.Zhurin
- ▶ Khorezm Regional Department of Agriculture and Water Resources (Oblselvodka)
- ▶ State Scientific Research Institute of Soil and Agrochemistry of Uzbekistan
- ▶ Institute for Hygiene and Public Health of the University of Bonn
- ▶ German Agro Action (Deutsche Welthunger Hilfe), Bonn

Funding partners

- ▶ German Federal Ministry of Education and Research (BMBF)
- ▶ Ministry for Schools and Higher Education of the Land of North Rhine-Westphalia
- ▶ German Academic Exchange Service (DAAD)

Duration:

The first phase of this long-term project planned for 10 years started in November 2001 and ends in December 2003.

the Aral Sea Basin is also a result of economic policy and administrative measures and therefore can only be handled by a truly interdisciplinary approach.

In the agricultural domain, alternatives have to be found for a production system that is still characterized by prevailing cotton monocultures, inefficient irrigation systems, and the lack of ecological sustainability. The economic analysis of the status quo must lay the groundwork for solutions dealing with the still prevailing centralized planning, and with the strong "path dependency" on existing irrigation infrastructure, under which changes of the system would require immense investments. The legal-administrative studies concentrate on the analysis of the institutions and interest groups involved in the decision-making process regarding the allocation of agricultural resources and of water, the situation of ownership and user rights, and the local population's perception of water and land use practices. These studies will allow an assessment of the institutional and political consequences of different agro-economic proposals and the legal, political, and institutional feasibility of the different options.

This is why the ZEF project is divided into three large disciplinary domains and further sub-divided into ten different thematic "modules", each of them consisting of several work packages of a size suitable to be carried out by a PhD, MSc or a consultant. This corresponds to the first two phases (see table below) of the project, which deal with data mining (the assessment of the vast but often unreliable existing official data on land and water) and with field studies aimed at analyzing the processes and interrelationships. At the end of these two phases, the disciplinary "bits" will be integrated into one unified concept of restructuring land use. This will then be tested in practice in a pilot-farm scheme under real conditions, but free from all hampering state impositions. During the last project phase, this concept is going to be implemented on a larger scale after final adjustments have been made taking into account the lessons learnt from the pilot farms.

First steps: from science toward development options

The preliminary results available after only one year of activities are promising and indicative of the project's relevance to the development of sustainable land use options. The scientific,

multi-disciplinary approach has already led to different practical inputs for later implementation in the region. A study on mapping groundwater salinity, which is based on data from the 1900 measuring wells sustained by the Uzbek government during the last decades, revealed a high spatial heterogeneity of groundwater salinity (Figure UZ-2). This shows that site-specific water resource management is clearly needed. Another PhD study linking soil salinity to environmental parameters shows the potential for developing easy-to-use soil salinity indicators that can be used by the farmers for decisions about where to plant which crops. This approach is being further refined into an agricultural planning system in a third study in which land cover in the Khorezm region is classified, based on remote sensing of the leaf area index. Later this data set will be elaborated into a forecast system to help farmers plan their cropping decisions on the basis of expected water availability. Using the first ever collected accurate measurements of water inputs and losses in and from single fields in this region, a group of scientists are modeling water use efficiency. First results confirm that the high groundwater table contributes largely to the water need of the crops. This study will later allow an optimization of irrigation practices.

First steps towards the diversification of crops, and hence, land and water use, are being taken in the project's studies on growth parameters of native tree species and their suitability for growing under drought and on highly saline soil. In 2002, small trials were carried out in which growth characteristics and susceptibility to pests were established for several tree species. A new, larger trial was started in early 2003 in which various water-saving irrigation methods are being tested on the most promising tree species. This is combined with the application of water-retaining hydrogels. Based on aerial photography, a PhD student is screening different tree species and mapping the existing tree resources (forest patches and shelterbelts) in Khorezm.

Another study is devoted to the suitability of conservation agriculture techniques and the farmers' perception of it in the region. This is the first project to establish research fields in Khorezm on tillage-free land preparation and in combination with mulch, and to introduce the bed-and-furrow system as an alternative to the current practice of flood irrigation. Since one goal of tree plantations and of conservation agriculture is to improve the ecological capacity of soils and to maintain

soil fertility, initial studies on the effects that these practices could have on soil organic matter have also been started. Another research group, consisting exclusively of Uzbek researchers, is studying which technologies are needed to adopt fish farming in small ponds as an option to use marginal land and create additional income for farmers, thus increasing the potential for diversifying farming operations.

Economic aspects

A research group of five economists are analyzing the economic aspects relevant to develop options for land use change in this project. In one study, farms in the Khorezm region are being analyzed from a financial point of view, based on an extensive farm survey conducted in 2002/03. This will help optimize effects of changes in the system in order to generate higher farm revenues and, at the same time, to maintain ecological sustainability. With the goal of examining the country-wide effects of alternative forms of resource use in the Uzbek agriculture, an economy-wide general equilibrium model with a specific focus on water and land has been compiled. In order to address the potential friction between up- and downstream resource users, an economic river basin model of the Amu Darya is being designed as well. In a third thematic area, the socio-economic and environmental aspects affecting the health situation of the local population are being analyzed. At the same time, an epidemiological study is being carried out by the Institute for Hygiene and Public Health of the University of Bonn. This study is connecting data on access to drinking water and sewage systems by the rural population to those on water-borne bacterial diseases. One first result of this latter study is that reporting of incidences of Hepatitis A to the local govern-

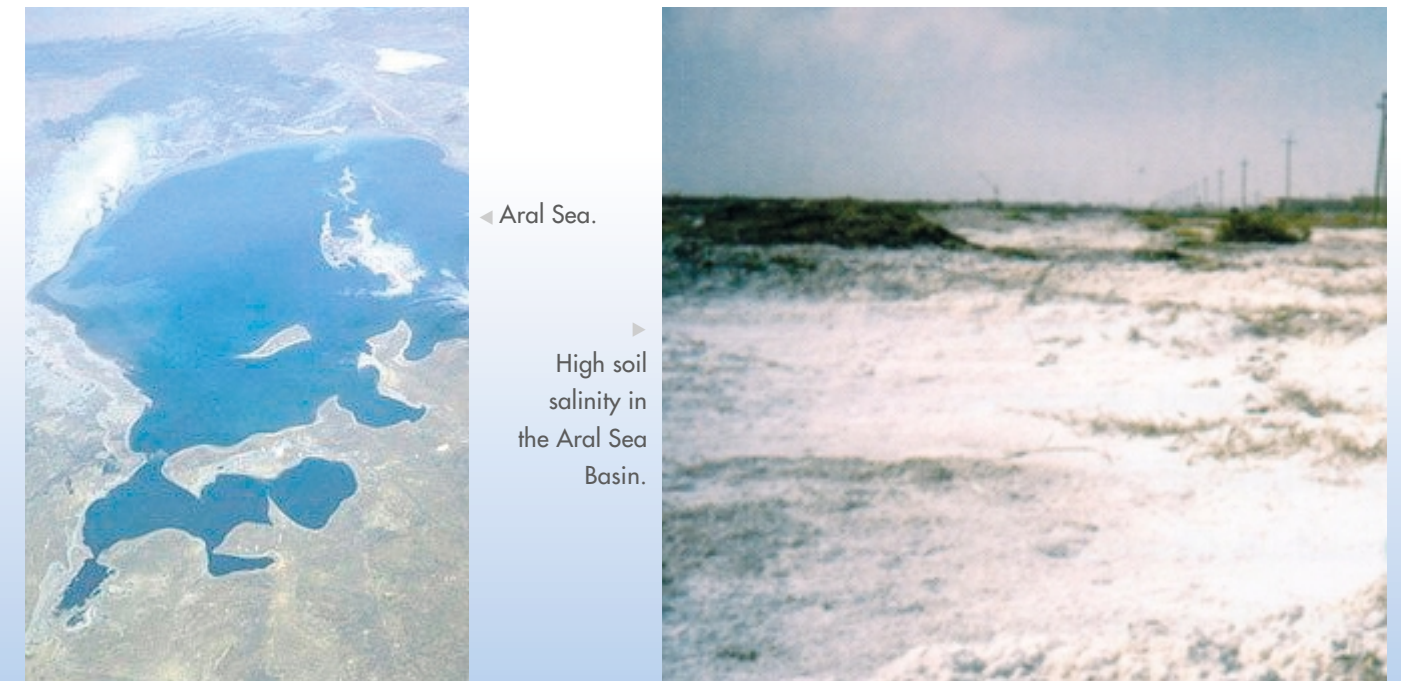
ment authorities has been diminishing constantly during the last years, falsely indicating a lower infection rate in spite of the drop in drinking-water quality after the collapse of the Soviet Union.

Legal-administrative component

The legal-administrative component of the project, headed by ZEF's Research Department on Political and Cultural Change, examines the role of the institutions involved, the processes of decision-making, and local people's perceptions of the decision-making process and their strategies to obtain what they need. A MSc study carried out in 2002 looked into the problems faced by the water user associations that have been introduced recently as an alternative to the state-organized distribution of irrigation water. This preliminary investigation indicated that many problems are still unsolved in these organizations. They will be addressed in a follow-up PhD study that started in 2003. Also in 2002, a ZEF consultant investigated the decision-making process within those authorities that are responsible for water distribution at regional and local level. A PhD study that was initiated in early 2003 will look at decision-making processes in the context of the current land reform processes. ZEF scientists are also preparing an analysis of environmental legislation in Uzbekistan that is to result in an annotated volume of the respective laws. A lawyer who is also a member of the parliamentary committee on environmental issues is investigating how and to what extent land-use practices are being limited by environmental standards. In a pilot study, an external consultant has investigated how farmers set their priorities and which possible barriers to adopting new technologies exist. For example, the issues of 'soil quality', 'wa-

2001-2003	Inventory; establishment of central data bases
2004-2006	Field trials for process understanding, development of a Decision Support System (DSS)
2007-2010	Testing of the concept for the restructuring of the land use on pilot farms
2011-2012	Adaptation of concept and implementation in the region (Khorezm-wide)

Figure UZ-1: The different phases in ZEF's Khorezm project



Cotton monocultures.



Building up infrastructure for research and education

The project has been refurbishing an old office building donated by UrSU with funds of BMBF and ZEF into a building offering a modern laboratory, an office space and teaching facilities for about 30 scientists while at the same time maintaining a traditional architectural vista. The building is to be inaugurated in June 2003. Most recently, a UNESCO-funded virtual laboratory has been set up at the University of Urgench that will establish a direct link between this project and other research groups dealing with large, so-called "terminal" lakes (Dead Sea, Lake Tchad). The project maintains a guesthouse as well, offering optimal conditions for visiting scientists and junior researchers during their stay under the sometimes harsh local conditions.

A GIS ("Geographical Information System") laboratory was installed in Urgench and became fully operational in September 2002 as a service component for the program as a whole. Activities focus on integrating data available in Uzbekistan and data produced by fieldwork into one database and on making these data available to all project collaborators. To this end, a computerized database has been established that will provide the basis for developing a concept for an effective and sustainable restructuring of the landscape in the Khorezm Province, and for outlining suggestions for the necessary administrative and legal-administrative reorganization.

ter quality', 'financial resources' and 'timing of irrigation' were all of key importance to the farmers interviewed. The results of these studies are highly relevant to other parts of the project, such as the question of how to introduce tree fallow and fish farming, as well as how to improve irrigation and tillage practices.

Although the program has only been implemented recently, first findings have been presented at international conferences in Uzbekistan, the USA and Russia.

Economic and Ecological Restructuring of Land and Water Use in the Khorezm Region (Uzbekistan): Research "Modules"

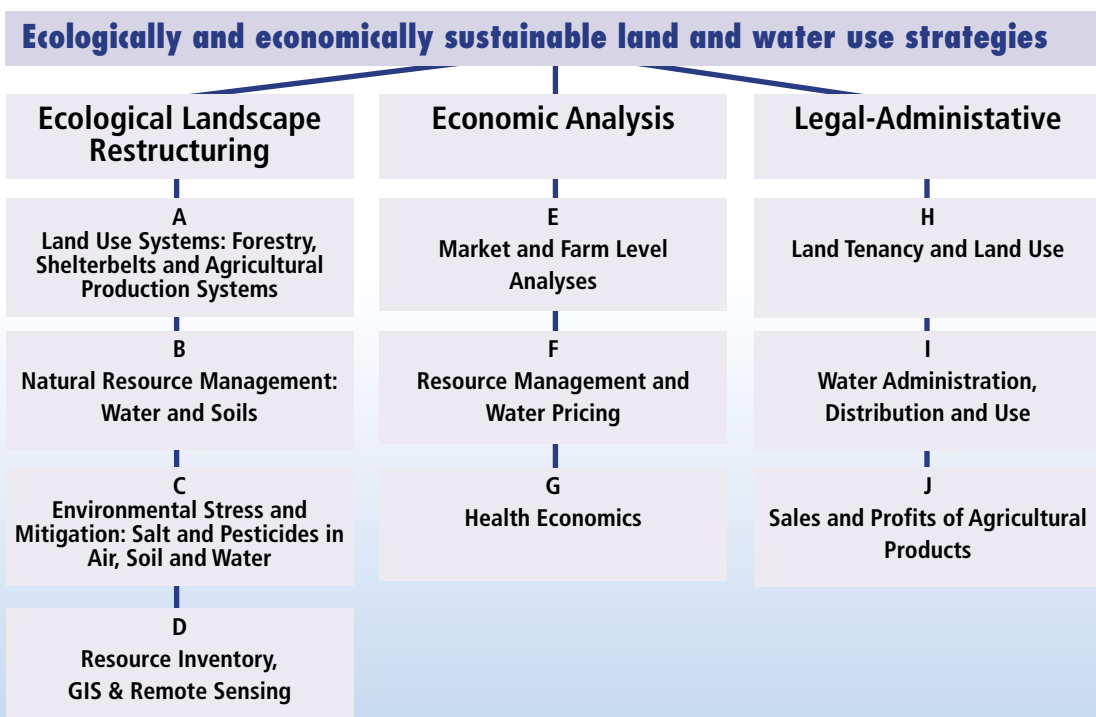


Figure UZ-2: The different disciplinary domains and thematic modules of ZEF's project in Uzbekistan.

Capacity building: support to young Uzbek scientists

One of the main aims of the project is to provide opportunities for capacity building for young Uzbek (and non-Uzbek) scientists. Not only is this in line with ZEF's mandate for teaching, but it is also pursued against the background that countries in Central Asia urgently need a stock of young, western-trained scientists who are able to cope with the upcoming development problems of these young, fast-growing nations. In its first year, the ZEF project is already accommodating ten Uzbek and three European PhD students, most of them at ZEF's Doctoral Program in Bonn, and others at renowned Uzbek universities in Tashkent. In order to upgrade the regional human capacity that is in competition with better-trained students from the capital Tashkent, the project has set up a MSc Program in which ten bachelors from the University of Urgench have been sent to the Tashkent University for Irrigation and Agricultural Mechanization (TIAME) for a Masters program. A few Master students have been accepted by ARTS, a Master Program at the University of Bonn ("Agricultural Science and Resource Management in the Tropics and Subtropics"). ZEF is currently preparing a project proposal to secure funding for the second phase. ■

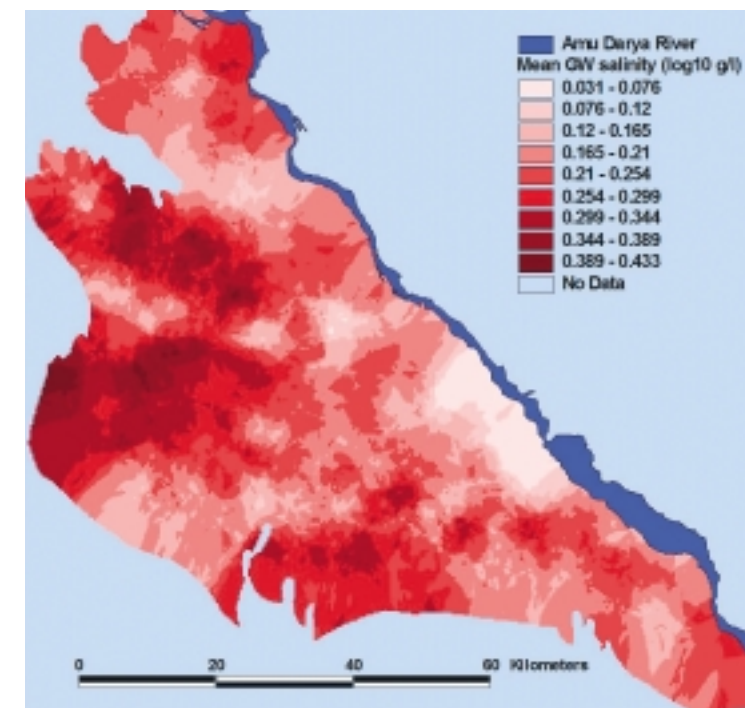


Figure UZ-3: Spatial heterogeneity in average groundwater salinity throughout irrigated land in the Khorezm district of Uzbekistan (Ibrakhimov et al.).



Inauguration of Project Building in Urgench, May 28 2003

The new project building was inaugurated in attendance of the Rector of Urgench State University, the German Ambassador in Tashkent, the Deputy Governor of Khorezm Province, representatives of the Uzbek Ministry for Agriculture and Water Resources and ZEF staff. The importance of this project to the local development and human in the inauguration speeches capacity building was stressed. Representatives of the local media covered the colorful event.

Dancers from Urgench University at the inauguration ceremony.

Sustainable Land Use

Soil Management in the Eastern Amazon

Over the last decades, awareness of the need for sustainable development has been growing worldwide. The concept of sustainable development, which can be interpreted as economic development that is consistent with long-term stable environmental quality and resource availability, also formed the underlying notion for a research project conducted by ZEF and its partners in the Eastern Amazon. The Bragantina region (east of the city of Belém), where primary forest has been replaced entirely by agricultural land and fallow vegetation, is predominately utilized by smallholders. Today however, increasing soil degradation is threatening the sustainability of a system that used to offer livelihoods to thousands of families for more than a century. This situation is caused mainly by the shortening of fallow periods, which is an integral part of the prevailing slash-and-burn system. Fallows are shortened primarily to support a rural population that increased by almost 50 percent in the last two decades. The long settlement history of the Bragantina region turns it into a unique research area for the Amazon region, which might, to some extent, serve as a model for more recently opened frontier areas. As such, important insights for technology and policy options can be derived.

Chico Mendes Environment Prize for 'Tipitamba'

"Tipitamba" ("a field that used to be" in the Tiryó Indian language) is the name of a research project that tackles ecological and socio-economic questions related to sustainability of the small farmers' land use system in the Bragantina region. The project is being conducted jointly by ZEF, Embrapa Amazônia Oriental and the Federal University of Pará in Belém under the research program "Studies on Human Impact on Forests and Floodplains in the Tropics" (SHIFT), financed by the German Federal Ministry of Education and Research (BMBF) and the Brazilian Council for Scientific and Technological Development (CNPq).

In December 2002, the "Tipitamba" project was awarded the Chico Mendes Environment Prize by the Brazilian government in recognition of its importance and promising solutions for agricultural and environmental issues in the Eastern Amazon. The prize, which was awarded for the first time, is named after the Amazonian environmentalist Chico Mendes, who was murdered in 1998.

The agro-ecological based research of "Tipitamba", which is now in its third and final project phase of implementation-

oriented research, has developed technological alternatives to the traditional slash-and-burn practice.

This practice causes major ecological problems to the system because biomass and nutrients are lost in the fire. Newly developed technologies include a tractor-driven bush chopper, which replaces slash-burning. It chops the bush fallow and simultaneously spreads the chips over the field as mulch. The resulting mulch layer recovers nutrients and organic matter that would otherwise be lost in the fire, and it conserves soil moisture. Matching fertilizer recommendations have been developed for the mulched fields as well, and improved low-input crop varieties have been screened under mulch conditions. Thanks to the mulching technology, the cropping period and the sequence of crops planted can be changed, and the cropping calendar can be altered because land preparation is now detached from the dry season. These modifications enable farmers to manage their land more flexibly in terms of agronomic optimization, labor allocation, and market demands. Apart from the mulching technology, a fallow enrichment technology has been developed and tested that includes the utilization of indigenous or exotic fast-growing tree species to increase biomass production in a shortened fallow period. The combination of mulching technology and enrichment planting offers a potential for sustainable resource use and contributes to securing environmental sustainability.



Farmers in the Eastern Amazonian Bragantina Zone.

out up to the end of 2004. More specifically, this research component will evaluate

- (1) the potential impact of adopting fire-free technologies on smallholders' production, consumption and marketing decisions,
- (2) the feedback effects of altered decisions on local markets and
- (3) the impact of the diffusion of new technologies on society as a whole.

Conceptually and methodologically, the project started with an investigation of private costs and benefits of different smallholder systems with and without the application of the new technologies. The relatively high costs of the mulching technology initially suggested limited potential for adoption by smallholders. But it turned out that this depends largely on smallholders' circumstances, their resource endowment, their access to capital, labor and product markets, their risk behavior, or their preference to substitute human capital for physical

Impact of socio-economic factors

The socio-economic consequences of the new technologies for smallholders on the one hand and society on the other are analyzed in a second research sub-project that is being carried



Traditional fallow management with fire.

EASTERN AMAZON PROJECTS

Project's title:
 "Secondary forests and fallow vegetation in the agricultural landscape of the Eastern Amazon Region – function and management".

Research fields:
 Biodiversity, Sustainable Land Use, Conflicts over Natural Resources, Ecosystem Functioning

Number of staff involved:
 8 (only ZEF staff members)

- Scientific partners:**
- ▶ Embrapa Amazônia Oriental, Belém – PA, Brazil
 - ▶ Institute for Agricultural Engineering, University of Göttingen, Germany

- Funding partners:**
- ▶ German Federal Ministry of Education and Research (BMBF)
 - ▶ Brazilian National Research Council (CNPq)

Duration: 1999 - 2003



Project's title:
 "Smallholders in the Amazon: Interaction between ecosystem and social system in the use and protection of tropical forests"

Research fields:
 Biodiversity, Sustainable Land Use, Conflicts over Natural Resources, Ecosystem Functioning

Number of staff involved:
 6 (only ZEF staff members)

- Scientific partners:**
- ▶ Núcleo de Altos Estudos Amazônicos (NAEA)
 - ▶ Federal University of Pará, Belém – PA, Brazil

- Funding partners:**
- ▶ German Federal Ministry of Education and Research (BMBF)
 - ▶ Brazilian National Research Council (CNPq)

Duration: 2003-2004

Brazilian children's view of fire in agriculture.



capital. These differences in smallholders' circumstances require a detailed classification of farm household types and the identification of factors that could influence technology adoption by the different farm households. The latter will be obtained by a production function approach, whereby a number of factors can be tested simultaneously. Besides, by using the "willingness to pay" approach we expect to obtain indications on smallholders' financial abilities to adopt the new technologies. We assume that even with limited private profitability for the adoption of fire-free technologies for many smallholders, there could be scope for adoption if the technology offers social benefits. Thus, within the framework of a social cost benefit analysis, the project investigates the costs and benefits that might be relevant to society. These include, for example, the costs incurred by the negative effects of fires on people's health or on local energy supplies (accidental fires sometimes destroy power lines), or the benefits that result from reduced carbon emissions (future carbon markets could offer additional returns to smallholders). Society might be willing to subsidize the use of fire-free technologies in order to reduce the

negative effects caused by slash-and-burn. In this context, the project also analyses environmental policies and the institutional set-up available to implement these policies, with particular emphasis put on the policy and institutional requirements that are necessary for the diffusion of fire-free technology. Lastly, in an attempt to bring together the different findings from the project, economic models are going to be developed that show different scenarios. These will first include a set of bio-economic models that combine biophysical and socio-economic factors at farm-household and regional level. Secondly, a set of multi-agent models will be tested to estimate the impact of interactions between economic agents and markets.

Participatory role of farmers

The socio-economics-based research as outlined here is going to be completed by the end of 2004. The agro-ecological and agronomic parts, however, are already in such an advanced stage of development that they allow on-farm testing. These tests are participatory and include an investigation of farmers' perceptions and reactions to the technologies. Farmers reported that the most immediate impact of the mulching technology is related to labor, because land preparation is done mechanically with the mulching machine and weeding is substantially reduced. Labor savings offer opportunities to become involved in activities with higher labor productivity, like the production of cash crops, food processing or off-farm income generating activities. Early results of the participatory research component suggest that chopping and mulching and the associated agricultural practices are developed sufficiently to be tested on a larger scale, for example within the framework of technical cooperation agreements between Germany and Brazil.

The entire project serves as an example of applied research that aims to develop feasible solutions to problems that threaten sustainable development. The fact that the project is well embedded in the Brazilian research and development setting increases its potential impact substantially. ■

"This was a very nice small farm. It had jack fruit, jambeiro and mango trees. But they set fire to them and it destroyed the nature."

(Maria Eziane Santors, 3rd class, Santo Antonio)



Biodiversity

Conservation of Coffea Arabica in Ethiopia

Hope stirs for the wild coffee bean

The world is experiencing the lowest coffee market prices for decades. While coffee consumers in industrialized countries are benefiting from stable or even decreasing coffee prices, the coffee farmers and developing countries depending on coffee as one of their main source of foreign currency are suffering severely. Farmers are starting to cut down coffee trees in order to plant more profitable crops.

At the same time there is another silent creeping risk to all those involved in the coffee sector. The wild populations of Arabica coffee (*Coffea Arabica*) in the montane rainforests of Ethiopia are severely threatened by the transformation of forest into cropland, since deforestation leads to the loss of the genetic diversity of *Coffea Arabica*. The impoverishment of its gene pool is irreversible, with unpredictable consequences for inter-

national coffee breeding and production and ultimately also for consumption.

Coffea Arabica originates from the Ethiopian highlands, where it has its highest diversity.

Wild coffee grows naturally in the understory of the montane rainforests in southwest Ethiopia at altitudes between 1,400 and 1,900 m. Even though numerous cultivars have been bred in Latin America and Asia, the genetic base coffee production depends on worldwide is very narrow. Hence the importance of the wild populations of *Coffea Arabica* in Ethiopia for breeding, including tolerance of coffee pests and environmental stress, cannot be estimated highly enough.

This is the starting point for another interdisciplinary research project at ZEF. Its overall objective is to develop concepts for the conservation and use of the genetic resources of *Coffea Arabica* in its center of origin. The conservation of the coffee genetic resources offers an interesting approach in biodiversity research: Through linking the species diversity of the rainforest with the genetic diversity of the wild coffee, rainforest conservation becomes conservation of the coffee gene pool and vice versa.

Furthermore, this research is challenging, because scientists from different disciplines representing eleven German, Ethiopian and



Coffee beans.

international research institutions are participating in it: botanists, geneticists, ecophysiologists, phytopathologists, economists and social scientists. In order to involve all stakeholders, close cooperation is taking place between the research institutions and political decision-makers, the local population, international organizations as well as the coffee industry. Nine doctoral students – all of them participating in ZEF's international doctoral studies program – ensure continuity of the fieldwork. ■

The research is funded by the German Federal Ministry of Education and Research (BMBF) and co-funded by "GEO schützt den Regenwald e.V.". Additional funds are anticipated from the coffee industry.



Members of the project team.

Project's title:

"Conservation and use of the wild populations of *Coffea arabica* in the montane rainforests of Ethiopia" (CoCE)

Research field: Biodiversity

Number of (academic) staff involved: ZEF: 12, others: 4 German & 6 Ethiopian staff members

Scientific partners: ▶ Institute of Botany, University of Bonn ▶ Institute of Plant Nutrition, University of Bonn ▶ Institute for Plant Diseases, University of Bonn ▶ Institute for Agricultural Policy, Market Research and Economic Sociology, Department of Resource and Environmental Economics, University of Bonn



▶ Ethiopian Agricultural Research Organization (EARO) Addis Ababa University ▶ Institute of Biodiversity Conservation and Research (IBCR) ▶ Ethiopian Wildlife and Natural History Society ▶ International Plant Genetic Resources Institute (IPGRI)
Funding partners: ▶ German Federal Ministry of Education and Research (BMBF) ▶ GEO schützt den Regenwald e.V.
Other research (projects) linked to this project: BioECON
Duration: August 2002 - December 2005

Political and Cultural Change

This research focuses on the role of the state; how its laws institutions and political dynamics influence the development process as well as the culture and identity of the population; and how economic development and cultural change in turn feed back on the institutional and legal structures of the state.

This research area consists of the following four research groups on the following topics:

- **Democracy, Rule of Law and Governance.** This research group analyses the relation between legal and institutional frameworks and economic development, particularly the management of natural resources.
- **Human Rights and Development.** The research is aimed at a better understanding of how the emerging global human rights regimes impact on the relations between the state and the population.
- **State Formation and Violent Conflict.** This research analyses how the precarious consolidation of the state in crisis countries causes violent conflicts but also how protracted violent conflicts are prevalently conveyed by the collapse of state structures.
- **Culture, Knowledge and Development.** This research area addresses the cultural aspects of development and how different knowledge systems inform the developmental agenda in the North and South.

Democracy, Rule of Law and Governance

Democratization and the Rule of Law

This research group focuses on problems relating to political, legal, and sociological aspects of state-market-society relations by examining institutional factors that bear on developmental outcomes, such as growth, peace, justice, human rights, and sustainable management of the environment. The group approaches the multifaceted problems from several disciplinary angles with the aim of shedding greater light on state-market-society interactions and their concomitants.

Natural Resources and the Political State

This project addresses the problem of resource-led development by focusing on state formation and institutional development under conditions dictated by natural capital. Research shows that mineral wealth tends to increase the likelihood of conflict and to decrease economic and social development. A sub-project has investigated problems associated with petroleum wealth in the Caspian Sea region. The research suggests that resource wealth affects governance outcomes and, indirectly perhaps, environmental sustainability. Petroleum resources also seem to hamper democratization. The project has highlighted the various ways natural resources affect governance outcomes and civil and political violence as well as the need for better management of resources as a way to create a virtuous cycle for development.

This project is being conducted in cooperation with the International Peace Research Institute, Oslo.

The Caspian Sea project was conducted in collaboration with the National Bureau of Asian Research, Seattle, and the University of Lancaster.

Rule of Law and Governance

This research seeks to develop a better understanding of the role that organization, competences and procedures of public institutions play in fostering democratically-legitimated decision-making. It finds that legal and institutional deficits effect political corruption and highlights the importance of legal reform for countries in transition. This research has addressed the problem of rent-seeking in agriculture and problems of reform in Uzbekistan.

Patterns of Democratic Governance

This research examines the various ways in which 'democracy' can affect developmental outcomes. It examines how the process of globalization, culture and institutional arrangements impacts on democratic governance. Research shows that openness to trade and foreign investment has benign outcomes for both economic and political development. Democratic governance mechanisms also enhance economic development, and it has been demonstrated that globalization does not carry the harmful socio-political effects often attributed to it. Contrarily, a host of liberal variables tend to predict civil peace and democratization. ■

This research was done in collaboration with the Department of Political Science, Boise State University, Idaho, USA and the Department of Political Science University of Alabama, USA.

Human Rights and Development

It is considered as a worldwide consensus that realizing human rights is indispensable to sustainable and equitable development. Premised on the indivisibility of civil, economic, political, and social rights, this research area focuses on mainstreaming human rights in development.

Legal Pluralism

In most developing countries, human rights law competes with communal, customary, or religious law. This project aims to understand how legal pluralism affects the integration of human rights into the dispute settlement processes relating to major social grievances. The cultural and political settings targeted are in Africa, Latin America, and Southeast Asia. One of the tentative findings is that weakly hierarchical legal systems hinder human rights regardless of outside pressure, but among hierarchical systems, appeal to outside international pressure to overcome internal political pressures helps.

Multinationals as Agents of Development

This project examines current human rights obligations of private investors by looking at two multinational companies in the extractive industry which enjoy government guarantees. It investigates the internal organizational structures of BP Amoco and Barrick Gold to explain differential handling by the companies of risks of human rights violations for them in selected countries in central Europe, South Asia, South America, and Africa.

The Centre for Socio-Legal Studies, Oxford University, is a scientific partner in this project.

Poverty, Child Mortality and Violations of Women's Human Rights

In response to the ZEF Board's recommendation, this is a pilot project. Child mortality is one of the UN Millennium Development Goals. The literature reveals that little has been done in measuring and correlating violations of women's human rights as determinants of child mortality. Two African countries with high child mortality shall be contrasted with lower rates in India.

This project is being conducted in cooperation with "Deutsche Gesellschaft für Technische Zusammenarbeit" (GTZ).

Human Rights and Development Policy

This project entails a study about placing human rights first in development and trade-related development. The focus of the study is on the contours of negotiating assistance agreements, structures of implementation and safeguards for providing accountability. One preliminary finding is that the absence of human rights officials at the negotiating table belies mainstreaming human rights in development projects. ■



Community health insurance schemes in India. Teaching women how to use herbal medicine.

State Formation and Violent Conflict

With the goal of widening its scope, this research area was recently renamed from "State Building and Ethnic Conflict" into "State Formation and Violent Conflict". The projects analyse how the precarious consolidation of the state in crisis countries causes violent conflicts often enough, but also how protracted violent conflicts are prevalently conveyed by the collapse of state structures, which destabilize not only the particular country, but eventually the whole region.

Crisis prevention and conflict transformation

In recent years, German foreign and development policy has increasingly focused on crisis prevention and conflict transformation. The Foreign Office and the Federal Ministry of Economic Cooperation and Development (BMZ) as well as the Ministries of the Interior and Defence are carrying out projects

in this field. ZEF has been appointed as a research consultant in the preparation of the official action plan on civilian crisis prevention. The aim of the action plan is to collect, evaluate and assess the various efforts of the German ministries and develop an overall crisis prevention strategy for the German government.

This project is being funded by the German Foreign Office (AA).

Structural stability and human security in Eastern Africa

Eastern Africa displays a chronic mixture of war, poverty, hunger, and human distress. This recently launched project conceptualizes an analytical framework to grasp the unfavorable conditions for successful political transformation in East-



ern Africa. It identifies strategies and paths of development that might strengthen domestic capacities in order to cope more successfully with the challenges of state crisis and violent conflict.

Afghanistan – The ethnicization of a conflict

Since September 11, Afghanistan has been undergoing a rapid political transformation. Research at ZEF accentuates the question what role ethnicity plays in the political reconstruction of Afghanistan. An important result of this research is that ethnicity should rather be considered as an informal aspect instead of as the basis of political decision-making. Furthermore, this research is directly related to several aspects of the Afghan conflict, such as the erosion of the state and the predominance of political fragmentation and patronage.

In the context of this project, ZEF conducted several workshops on political reconstruction, the economy of violence and security in Afghanistan (see the chapter on public awareness).

Pluralism in Southeast Asian Islam

Ethnicity and religion constitute important factors of political plurality in modernizing societies. Nevertheless, plurality, if left unaccommodated, may eventually lead to conflict. This research project inquires empirically into the problems of accommodating plurality in two predominantly Muslim societies of Southeast Asia, Malaysia and Indonesia. The project also draws a survey of contemporary reformist discourses there and compares them to relevant discourses in the Arab-Iranian core area of the Muslim world. The overall aim of the research is to sketch a map of political 'Islamic' modernity for both the core and the periphery of the Muslim world.

This research is being funded by the German Research Foundation (DFG).

The changing dynamics of collective violence and peace in KwaZulu/Natal, South Africa

The main objective of the research project is to investigate the dynamics of collective violence and peace at local and provincial level in KwaZulu/Natal, South Africa. One major finding of the research project is that, time and again, the dynamics of violence in the local arena has been detached from political conflicts at provincial level. Furthermore, the research project points to serious shortcomings in the peace process in KwaZulu/Natal. Another result that arose from the project is that collective violence has become a routine way of dealing with political conflicts in the local arena and has not been replaced by truly peaceful conditions. ■

Coping with day-to-day life in Kabul, Afghanistan.



Culture, Knowledge and Development

This research group considers and analyses knowledge as a factor of economic and social development. Research projects are focusing on development experts in their role as change agents, on the consulting industry, and on development strategies Asian governments intend to apply to close knowledge gaps.

Members of the group also served as consultants to the "Deutsche Gesellschaft für Technische Zusammenarbeit" (GTZ) and the German Federal Ministry for Economic Cooperation and Development (BMZ).

The globalization of knowledge

This project was completed in 2002/3. Field data on the role and impact of development experts collected from surveys carried out in Germany, Indonesia, Kazakhstan and Uzbekistan, Nepal and in the Philippines confirm that the majority of basic development strategies and concepts originate from university departments and research institutes, but are "authorized" by major development organizations, led by the World Bank. While translating concepts into practice, experts tend to construct virtual worlds of development and underdevelopment through extensive report writing. Networking and exchange of knowledge among development experts is limited and mostly confined within national organizational boundaries. Networks are often controlled by "gate-keepers", which reduces the flow of information and knowledge. Local experts tend to fall in line with global trends rather than utilizing their local knowledge.

This project was funded by the "German Research Foundation" (DFG) and was carried out jointly with the Institute for the Study of World Society, University of Bielefeld.

Knowledge management

Another research project is dealing with knowledge management in large organizations and companies. One study is comparing knowledge management practices in Singaporean and German companies. Lack of building a culture of knowledge sharing has been identified as one of the crucial problems of knowledge management in large organizations.

In May 2002 an intensive course on knowledge management was conducted for higher civil servants and development experts from developing Commonwealth countries. The course provided training for the introduction of knowledge management in government agencies.

This project is being carried out with a grant of the Management University of Singapore (SMU).

The course will be repeated in 2003 under the sponsorship of the Technical Cooperation Programme of the Commonwealth Secretariat.

Knowledge society

A comparative macro-analysis of ASEAN societies on the path towards a knowledge society shows that Malaysia has pursued a very active policy of developing an infrastructure for high-tech industries. Whereas Malaysia was catching up fast with Korea in the 1980s, investment in the area of research and development and the training of personnel in this field has been in decline since the monetary crisis of 1997. Singapore has moved far ahead of its neighboring countries and has gained a competitive advantage by investing heavily in higher education, and in research and development within research institutions. The shortage of knowledge workers could only be bridged by attracting expatriate high-level manpower and by concentrating on selected fields, like bio-technology.

This project is being carried out in cooperation with the Department of Southeast Asian Studies, the University of Bonn and the Science University of Malaysia (USM).

Closing the knowledge gap: local and global knowledge in multi-ethnic societies

Data collection has started on social science research in selected Southeast Asian countries. Despite an increase of locally produced research results during the 1990s, the knowledge gap has widened within ASEAN and in relation to OECD countries. ■

This project is being carried out in cooperation with the Department of Southeast Asian Studies, University of Bonn.



Street scene in Singapore.

Economic Development and Technological Change

Economic development is fundamentally about overcoming poverty and improving efficiency in resource allocation and use. Improving efficiency is closely connected to technologies and innovation. Economic development and technological change are therefore closely connected in ZEF's research program. The technological change area focuses on new technologies (information technology and biotechnology) and their potential contribution to development. However, sustainable poverty reduction and development-enhancing technology utilization require appropriate institutional and governance frameworks. The emerging global trade and institutional frameworks pose complex social and environmental impacts which are differently viewed by poor and rich countries, as well as new forms of regional cooperation. This research is divided into the following main areas:

- **Poverty Reduction, Human Resources and Public Goods**
- **Trade and Macroeconomic Issues of Development**
- **Technologies for Development and Efficiency in Resource Utilization**

This cluster of research topics derives from the notion that sustainable development serving human welfare faces two major types of constraint. One is the natural environment and available technologies; the other is economic and political constraints, including institutions, policies, and legal frameworks at the international, national and local levels. Furthermore, an overall framework for the research agenda has to build on a comprehensive methodological base of competence. Competence must cover economic theory, modeling, empirical testing of relationships, policy evaluation, forecasting, and the development of indicator systems.

Poverty Reduction, Human Resources and Public Goods

Despite the remarkable economic and social progress achieved in the last century, around 1.3 billion people are still leading their lives in poverty. In response to this harsh reality, the international community has set the UN Millennium Development Goal of reducing poverty by half by 2015. In its multi-disciplinary research agenda, ZEF addresses the issue of poverty and access to basic services from two angles:

■ Enhancing the human capital of the poor

One of the major research focuses of ZEF is on tackling poverty by enhancing the human capital of the poor through providing efficient and accessible education and health services. Various types of research have been done in this area. One recently completed study shows how community health insurance schemes can play a significant role in improving the health sta-



Group of farmers consulting.

tus of the rural population and generating sustainable resources for the national health sector in Ethiopia. The study reveals that it is possible to generate up to 20 million € per annum from community health insurance schemes in order to restore the country's financially destitute health sector without excluding the poor and other socially disadvantaged groups of society from the health care market. The findings of the study also show that sound community health insurance schemes can help to produce a healthy and strong labor force, which is needed for poverty reduction and economic development

ZEF has also conducted two separate studies in Ghana and the Russian Federation to assess the impact of decentralization and economic reforms on the provision of public goods such as education and health. Many countries around the world have been attempting to create or strengthen local governments in recent years. For example, Ghana has been going through a decentralization process since 1998. An economic analysis of rural Ghana investigates the role of decentralization in the delivery of education, health, and water services and how this helps to reduce poverty. The empirical results showed that:

- (1) Access to public goods and services in a decentralized system can help to reduce poverty in Ghana.
- (2) The degree of political decentralization can influence the provision of public goods and services.
- (3) Public expenditure at district level in education was inefficient due to diseconomies of scale, whereas the provision

of health and water services was efficient due to increasing return to scale.

The other study, conducted in the Russian Federation, investigates how rural households' access to public goods such as health has changed during the period of transition due to a reduction in the supply of facilities and increasing user costs. The results reveal that despite the sharp drop in public funding of health care, physical access has not deteriorated and informal user charges that limit initial access to health care facilities are rare.

■ Augmenting the physical capital of the poor

Improving the access of the poor to physical infrastructure such as information and communication technologies (ICTs) is another focus of the specific research area "Economic Development and Technological Change". ZEF has been one of the first movers in this area of research. The ZEF research program on ICTs and their role in poverty reduction and development has been raising probing questions and providing valuable insights for the debates among academics and policy-makers since 1998. Based on the premise that information and knowledge is a remedy to combat and reduce poverty, the research program focuses on the role of ICTs for the poor and poverty alleviation. As a natural corollary, the research so far concentrates on households in rural areas and small and medium

sized enterprises (SMEs) in developing countries, considering the fact that an improved performance of these actors would eventually lead to an effective poverty reduction and a widely shared development. The ZEF research program has conducted studies in Bangladesh, China, Ghana, India, Lao PDR, Kenya, Peru, Tanzania, Uganda, and Uzbekistan to provide empirical evidence of the role ICTs play in the development process.

The study conducted in Uzbekistan shows that, in broad terms, the decision by SMEs to adopt different ICTs is influenced by owner/manager, firm, industry, ICT and environmental characteristics. Firms with more employees, international orientation, better educated and risk-taking managers, IT literate managers, and firms in industries with a higher level of information intensity tend to have higher levels of ICT adoption. The study also examines which of the ICT impacts reported by the literature, such as informational, diversification, cost reduction, networking, flexibility, and product/service quality improvements, occur in SMEs in Uzbekistan and explores the magnitude of their influence.

As a member of the Global Development Learning Network, ZEF organized a Global Dialogue on ICTs for Development in December 2002. The first session of this Dialogue focused on the role of ICTs and rural households, while the second session dealt with ICTs and SMEs (see chapter on Public Awareness).



Considering market conditions is indispensable for a practice-oriented research approach.

Trade and Macroeconomic Issues of Development

ZEF research has continued to put major emphasis on issues such as the enhancement of legal reforms, the role of labeling in international trade as well as sustainable development and food security.

Related research in Africa

The project "Regional integration in West Africa: Trade versus Migration Benefits" examined the question why households

decide to migrate from Burkina Faso to Cote d'Ivoire, making use of a recent household survey. The empirical results show that income gaps are an important factor for permanent migrants when they decide to migrate, whereas other motives exist for seasonal migrants.

A further study analyzes trade relations between the EU and North Africa, which are regulated under Euro-Mediterranean Association Agreements (EMA). The study concludes

that the North African countries should use the EMAs as vehicles of reform. They take advantage of them when anchoring reform decisions that would otherwise be tough to make, especially as they are backed by financial support and technical assistance. This would help the North African countries to overcome the many supply side problems that have hindered them from integrating themselves more successfully in the world economy and the EU markets and to enhance the openness of their economies.

For the developing countries, changes in the EU's Common Agricultural Policy (CAP) play an important role in further negotiations taking place in the framework of the Doha round. However, the proposed CAP reforms will have very different effects for different groups of developing countries. For example, the African Caribbean and Pacific (ACP) countries benefit from high internal EU prices via the sugar protocol whereas other sugar producers would gain from reducing protection within the EU market.

Enhancing legal reform for economic development: an analysis of stakeholder participation in selected Arab countries

ZEF has launched a three-year comparative research project in Morocco, Egypt, and Jordan to study the process of stakeholder participation in trade and investment reform processes, especially during the phase of designing regulatory frameworks. The project focuses on business associations, labor unions, consumer protection organizations, parliaments, and ministerial legal units. The study analyzes the knowledge base of these participants and will develop capability indicators in order to arrive at recommendations that reduce rent-seeking lobbyism

and enhance the corrective interface of ministries, parliaments, and market actors in the design of regulatory frameworks for economic reform.

The study is being funded by the German Federal Ministry of Development and Economic Cooperation (BMZ).

Impact of FDI in selected Asian countries

A case study from Vietnam indicates that FDI contributed significantly to economic growth in the 1990s through capital accumulation and spillover effects. Growth in turn helped to reduce poverty in Vietnam during 1996-2000.

To study the implication of FDI for employment and equity in Indonesia, qualitative and quantitative data was collected on gender-specific work and wages in foreign and domestic companies in the manufacturing, mining, estate and tourism sectors in rural Indonesia. Research results point to a positive role FDI plays in closing gender wage differentials in rural Indonesia. Whether or not foreign companies act as catalysts for female labor market integration depends on the sector analyzed.

Labeling, standards and international trade

Research at ZEF has put a strong focus on the impact of eco- and social labeling on developing countries, given its increasing role in international trade. One study looked at the question: Why do some countries establish their own national eco-labeling programs and some do not? Results show that a country's decision to adopt eco-labeling programs is systematically related to a country's stage of development, existing environmental performance in the absence of eco-labeling initiatives and scale of production. ■

tial in reducing rent-seeking activities by local elites. The local government has an important role to play in assuring the inclusion of marginalized groups, but by being susceptible to rent-seeking, it can also undermine an efficient and equitable management of resources. Where property rights are weak and the state does not take up its role of solving externality problems, communities may sell out resources to industrial actors for short-term benefits, and well-intended policies to improve communities' welfare can lead to compromises being struck at the cost of the environment. Data collection in approximately 150 communities in Ghana, Indonesia, and India is starting in 2003, allowing a more rigorous testing of the importance of various factors for explaining differences in performance across communities.

Projects in South Africa

A separate study on the process of water management transformation and its impact on smallholders' irrigation in South Africa also confirmed how important institutional aspects of water management are. In particular, a clear transfer of ownership rights, participation in project design and access to information (especially on credit and output markets) is critical. The sequencing of activities and the distribution of stakeholders' responsibilities (including the state) need to be negotiated at an early stage and have to be clearly defined. Based on this initial study, a more comprehensive, comparative analysis of water sector reform processes and their implications for rural development is planned to be conducted in three different African countries.

Biodiversity

As part of the larger EU-funded 'Biodiversity and Economics for CONservation' (BioEcon) project, ZEF aims at establishing a link between issues of biodiversity conservation and problems of agricultural economics. It seeks to demonstrate the importance of micro-level land use decisions for environmental sustainability and, conversely, the dependence of land use on environmental quality. Guided by the objective of developing efficient and flexible incentive mechanisms of maintaining plant genetic resources for food and agriculture, the project results are expected to provide decision-makers with information that can greatly assist in designing appropriate policies that adequately address the twin objectives of conservation and achieving food sufficiency. During the last project year, empirical case studies on the assessment of different incentive mechanisms for in situ conservation and on the design of contract schemes for the enhancement of conservation have been conducted in Ethiopia and India. PhD research within the project has investigated the conservation and sustainable utilization of coffee and sorghum genetic resources in Ethiopia. Its key objective is to analyze farmers' incentives to diversify native varieties, the opportunity costs involved, the role of on-farm diversity on yield stability and risk reduction, and what kinds of

implications on-farm diversity has on conservation of crop genetic resources. The results of this study will facilitate the deriving of policy options to enable Ethiopia to face the challenges of conserving and utilizing crop genetic resources among the rural poor farming communities.

Policy analysis for sustainable agricultural development: Central and Eastern European countries and South Africa

Smallholders' production of food crops in poor countries is particularly vulnerable to hazards that are related to production technologies and factor markets. In this context, we focus on three crucial aspects, namely

- (1) institutional and other determinants to foster the degree of commercialization of agricultural small-scale production,
- (2) alternative occupational choices in rural labor markets with respect to agricultural and non-agricultural employment, and
- (3) biophysical aspects concerning soil-conserving production technologies.

The main hypothesis is that all three aspects need to be addressed sufficiently and simultaneously in order to promote sustainable smallholders' agricultural production that is able to contribute to overall economic growth and sustainable development and, consequently, to food security.

This project is being funded by the Robert Bosch Foundation.

Food security analysis for Transition Countries

In the 1990s, Central and Eastern Europe and the countries of the former Soviet Union formed the only region in the world that experienced a significant increase in poverty. Nevertheless, most analyses of food security pertain to the traditional developing countries of the world. Thus, ZEF researchers have analyzed whether there are significant differences between food insecurity in developing countries and in transition economies. While similar basic factors determine food insecurity in transition countries and in developing countries at macro-level, socialist legacies have contributed to the disproportionate decline of the agricultural sector in some transition



Farmers' assembly, India.

Technologies for Development and Efficiency in Resource Utilization

Economics of natural resource management

The analysis of economic incentives determining natural resource management practices and the adoption of resource conserving technologies is an integral part of the cross-cutting research at ZEF that has been described above. In addition, ZEF is conducting research on these issues, focusing mainly on two aspects:

- (a) institutional aspects of natural resource management, and
- (b) economic incentives for the conservation of agricultural biodiversity.

Institutions for Natural Resource Management

The research group 'Determinants and Effects of Alternative Institutions for Natural Resource Management in Developing Countries' was established under the Robert Bosch Founda-

tion's Junior Research Group Leader Program. It is motivated by the commonly observed trend towards decentralization, participation and a devolution of rights and responsibilities for natural resource management to local communities. ZEF's research aims at assessing the economic, environmental, and distributional outcomes resulting from devolution initiatives and at explaining why some communities are more successful than others in achieving efficient, equitable and sustainable management practices. Conceptual and empirical research is conducted on these issues for a variety of resources and countries: forest management in Indonesia, India, and Vietnam, and irrigation management in Ghana, Sri Lanka, and Chile. Preliminary results confirm that it is naive to think of local communities as homogenous units that automatically act in the interest of the whole. Rather, the sequencing of reforms and the consideration of intra-community power structures can be essen-

countries, and these still determine the pattern of food supply and consumption.

This research was funded by the Food and Agricultural Organisation of the UN (FAO), Rome.

Research on genetically modified cotton in India

(This text is an excerpt from a press release, launched by Berkeley University on February 7, 2003.)

This research was carried out by ZEF in cooperation with the University of California, Berkeley and was published in the journal "Science" in February 2003. It received worldwide coverage by the media and was paid considerable attention by scientific circles.

Transgenic pest-resistant crops hold particular promise for small-scale, low-income farmers in developing nations, according to the researchers. These farmers, especially those in tropical regions, regularly risk large, pest-related crop losses because they cannot afford to use the pesticides available to larger farms.

The researchers reported the results of field trials conducted on 157 farms in three major cotton-producing states in India during the seven-month cotton season that began in June 2001. The field trials were initiated by the Maharashtra Hybrid Seed Company (Mahyco), which has been studying Bt hybrids in India since 1997.

The farm sites contained three adjacent plots that measured 646 square meters each. One plot was planted with cotton bioengineered with a gene from the insecticidal bacterium *Bacillus thuringiensis* (Bt), the second with the same hybrid of cotton but without the Bt gene, and the third with a cotton hybrid traditionally grown in the local area.

The Bt cotton, produced by the Monsanto Company and Mahyco, is resistant to the three species of bollworm that plague crops in India. Prior studies in India show that crop damages from bollworm attacks average 50 to 60 percent.

In the study, the researchers found that average yields for

Bt cotton were a remarkable 80 percent greater than their non-Bt counterparts, and 87 percent greater than the local cotton hybrids. In addition, the Bt cotton crops were sprayed against bollworms three times less often than both the non-Bt and local cotton crops.

For sucking insects – such as aphids, jassids and whitefly – that Bt does not protect against, there were no significant differences in pesticide applications among the three types of crop.

While transgenic crops have been shown to reduce the use of certain chemical pesticides, they have not been known to substantially increase crop yields in the countries where they have been grown. For example, the yield gains of insect-resistant cotton crops in the United States and China average less than 10 percent. Transgenic corn and soybeans have even less impressive gains, and in some cases, the yield effects are negative.

Why the difference in India? The answer seems to be that the region suffers from a significantly higher pressure of crop-destroying pests, and that the resulting damage is not effectively controlled by chemical pesticides. Transgenic crops would likely have greater potential to reduce crop losses and thus increase actual yields in such regions, said the authors.

According to the researchers, the large-scale applications of transgenic crops in the United States or China are not truly representative of what would happen if the crops were grown in the small farm sectors of poor countries in tropical and subtropical climates. The results of the research in India might be more representative of what would happen if transgenic crops were used in sub-Saharan Africa or Southeast Asia.

For the majority of developing nations, the high cost of pesticides makes them too risky an investment for small, non-commercial farmers, the authors of the study argued. In addition, chemical pesticides are much more harmful to farmers' health and the environment, and require a significant amount of technical knowledge to be used properly, they said. ■

The study was funded by the "German Research Foundation" (DFG).



Cotton fields in India.



Ecology and Natural Resource Management

Water, land and biodiversity are the most important resources for humankind. Preserving and maintaining water resources is the main topic in this Annual Report, and has been addressed in several cross-cutting interdisciplinary projects of ZEF in which the Department for Ecology and Natural Resource Management has taken the lead (cf. ZEF's Projects). Analyzing land use is equally important as it addresses the most important pathways of human interference with natural resources. Sustainable ways of land use often interfere with classical views on agriculture and challenge "business as usual". The scientific look at biodiversity addresses the biotic element between land and water as the essential basis for the functioning of natural ecosystems. Although still little understood, biodiversity of plants and animals is of great relevance to the livelihood of hu-

mankind. There is and will continue to be an increasing need to develop new strategies to deal with the dramatic environmental changes caused by the rapid increase in human population and by economic development. Adequate protection and management of water, land resources and biodiversity is going to play a key role in such strategies. Therefore, these are the topics addressed not only in the interdisciplinary projects at ZEF, but also by many individual studies.

In this section, you will find information on the following Research Areas:

- **Managing Water as an Agricultural Resource**
- **Managing Land Use Systems**
- **Biodiversity Management and Conservation**
- **Transects for Biodiversity Monitoring: BIOTA Africa**

Managing Water as an Agricultural Resource

Scale and productivity in irrigation: rice in the Philippines

Hafeez, Mohsin, Water Accounting and Productivity at different spatial scales in a rice irrigation system: A remote sensing approach. Ecology and Development Series No. 8, 2003.

Asia produces 75% of the annual world rice supply. The region's 75 million ha, mostly irrigated crop land, accounts for a high proportion of the freshwater use in irrigated agriculture. Many different water-saving technologies have been developed in order to improve water-use efficiency in irrigated rice. However, the little explored possibility of re-use of water at a higher scale level could represent an appropriate solution.

A study carried out by ZEF in cooperation with the International Rice Research Institute (IRRI) in Manila aimed at measuring water productivity through water accounting in the rice-based irrigation system of the Upper Pampanga River in the Philippines. In the study, current water use, re-use, and water productivity were quantified, and seasonal actual evapotranspiration was estimated for the dry season of 2001 using different satellite sensors. The district studied was divided into ten spatial scales (1,500 ha – 18,000 ha), to examine the scaling-up effect on water productivity. The study showed that many farmers depend on the re-use of water in this system. The estimated total amount of water re-used through pumping is equivalent to 30 % of the water lost through seasonal evapotranspiration of rice. In short, the results showed that water productivity increases as the scale goes up, due to increased water re-use opportunities. Therefore, scale effects

are important to understand water availability and to develop appropriate measures for water saving and increased productivity. The results of this study can be used for a better management of the water resources in this region. Now they are also being applied to assess water use efficiency in ZEF's project in Uzbekistan, where large losses of water occur in the irrigation systems as well (see Chapter on Projects in this Annual Report). ■



Irrigation facilities in the Philippines.

Managing Land Use Systems

Green manures and inorganic fertilizers: cereal production in Uganda

Kayuki Crammer Kaizzi, The potential benefit of green manures and inorganic fertilizers in cereal production on contrasting soils in eastern Uganda. Ecology and Development Series No. 4, 2002.

Nitrogen is the most limiting nutrient for annual crops. This limitation can be remedied either traditionally with inorganic fertilizers, or by exploiting the natural process of biological nitrogen fixation (BNF).

The present study investigated two nitrogen sources for resource-poor farmers cultivating maize: the application of mineral fertilizer (urea) and the use of green manure, i.e. of plants that are able to fix nitrogen with the help of symbiotic bacteria living in their roots. In the present study, *Mucuna pruriens*, the velvet bean, was used for this purpose. The research was conducted on contrasting soils in different agro-ecological zones of eastern Uganda. The yields of the three different systems (2m maize, *Mucuna* and urea) were determined over a two-season cycle, and their agronomic and economic benefits were assessed in the context of the production environment.

Mucuna produced 3-8 t ha⁻¹ of dry matter and accumulated not less than 80-200 kg N ha⁻¹, with approximately 50% coming directly from the atmosphere through BNF. Maize farmers stand to gain 0.3-2.6 t ha⁻¹ of grain, depending on the soils, if they use either fertilizers or the *Mucuna* green manure, when compared to their current practice. Farmers cultivating rice under rain-fed conditions stand to gain 0.8 t ha⁻¹ of grain by using either fertilizers or *Mucuna* green manure. Therefore, the economic returns of a *Mucuna* relay crop are an improvement for all farmers. None will lose money by adopting this practice. In economic terms, with their current practice the farmers are

not getting local market returns on their labor on poor soils. The use of fertilisers easily pays for itself in the rice system, and does so on the high-fertility soils for maize, particularly when rainfall is secure. The greater benefits are derived under the most favorable conditions, but for those farmers working on poor soils with low rainfall only the use of *Mucuna* might still make small gains possible.

Harmony between resource use and conservation? Parks in India

Puja Sawhney, People-Park Interaction: A case of Bandhavgarh National Park, India. Ecology and Development Series No. 5, 2003.

Protected areas (PA) are essential for conserving biodiversity. But at the same time, they form an important source of subsistence and income generation for forest dependent communities.

This study assessed the degree of people's dependence on resources of one PA, Bandhavgarh National Park in India, which has the highest tiger density in the world. The research revealed that people residing inside the park are highly dependent on the park as more than 90% of their income derives from it. The mapping of pressure on the park revealed that some resources are strongly over-utilized, and many of these have an overlap with use by wildlife. Despite an explicit ban on resource extraction for income generation, sale of non-timber forest products represents the second largest income source.

Through interviews with local people and forest officials, the consequences for park management resulting from people-park conflicts were highlighted and ambiguous official policies, contradictory regulations and weak monitoring and enforcement of existing rules became evident. The study highlighted the need for alternative approaches. A recent initiative is the Eco-Development program funded by the World Bank, which emphasizes the role of awareness building and income generation in reducing people's dependence on the park. ZEF's analysis showed that awareness building is indeed likely to improve people's attitudes towards the park. However, the effect of more positive attitudes on the actual level of resource extraction is not clear. Similarly, it remains doubtful whether access to alternative income sources and/or higher living standards really reduce people's use of park resources. A more detailed analysis of these issues is currently being conducted at ZEF as an extension of the study. Preliminary results suggest that it is unlikely that people will reduce their pressure on park resources unless they are given a stake in the benefits of conservation. This could be achieved, for example, by increasing local people's involvement in eco-tourism activities and as forest guards.

Earthworms, termites, wood mulch: fire-free cropping systems in Central Amazonia

Slash-and-burn combined with shifting cultivation is commonly used in Amazonia to clear land for agriculture. Due to very high element losses during burning, this form of agriculture is not sustainable even with fertilization. Fields are often abandoned after one to two years to allow regeneration of the soil during the fallow period.

Fire-free land preparation is a viable alternative, and ZEF has developed a successful approach to fallow management in its Tipitamba Project in Eastern Amazonia (see Chapter on Projects in this Annual Report). In this approach, mechanically cutting and chopping the secondary vegetation produces a mulch layer of wood chips, preserves organic matter and nutrients, and improves crop production.

However, the role of soil fauna, especially whether wood feeding termites are beneficial in the decomposition and nutrient release or act as crop pests, was not clear because it has never been studied. Therefore, in the context of the SHIFT ("Studies on Human Impact on Forests and Floodplains in the Tropics") program of the BMBF (Federal Ministry of Education and Science) on polyculture systems in central Amazonia,

(Brazil), ZEF has investigated the role of the soil macrofauna, with a special focus on termites, ants and earthworms in areas of clear-cut and mulched secondary forest. The project is being carried out in close cooperation with the State Museum for Natural History in Karlsruhe and the Embrapa Amazonia Ocidental in Manaus. Three treatments were tested in an experimental field: (I) the traditional slash and burn system as a control; (II) a "slash/no burn" system, where the slashed logs are not burned but left on the ground and arranged in files (called "leiras" in Brazil, a commonly used technique if fire is not desirable); and (III) the "slash and mulch" system, in which the secondary vegetation was chopped into wood chips creating a thick mulch layer of chopped wood on the ground. This project provides interesting additional data to the Tipitamba project as it allows assessing the role of different groups of soil organisms in more detail, enhancing our understanding of the system. For example, first data revealed that earthworms – typical soil organisms of the area – were much more frequent in the mulch system than in the impoverished burned sites, providing a much improved aggregate stability in the soils under this treatment. ■

Biodiversity Management and Conservation

Variability of biological nitrogen fixation: forests in Central Amazonia

Christoph Gehring, The Role of Biological Nitrogen Fixation in Secondary and Primary Forests of Central Amazonia. Available at <http://www.cgehring.de>.

Slash-and-burn agriculture causes heavy nitrogen losses both to the atmosphere and via nitrate leaching. Biological Nitrogen Fixation (BNF) is believed to be the main mechanism through which secondary forest re-growth makes up for these losses, thus ensuring the sustainability of slash-and-burn land use. BNF is regulated by a wide range of factors, mainly the degree of N-limitation, availability of P and other nutrients, and access to light, all of which change along succession.

The present study was conducted in a central Amazonian slash-and-burn system at the frontier of agricultural colonization. First-cycle secondary succession was investigated with the false-time-series approach (13 sites) and took primary forests as controls (6 sites). Studies at another six sites addressed the effects of higher preceding land use intensity and of soil fertility.

Indirect evidence of the role of BNF along succession was obtained by investigating legume species composition and the impact of N₂-fixing legumes on vegetation and topsoil. In a second step, BNF was estimated quantitatively with the '15N natural abundance method'.

The findings proved significant BNF in secondary re-growth

as opposed to low or negligible BNF in primary forests, possibly because of physiological limitations of BNF in the dominating tree giants. However, results do not support the idea of any BNF peak at some stage of succession and rather suggest a constant role of BNF throughout the first 25 years of first-cycle secondary re-growth.

N₂-fixing lianas play an as yet insufficiently recognized key functional role as agents of BNF, notably in early stages of succession. The analysis reveals a clustered distribution of potential N₂-fixers, and BNF appears to be concentrated in 'hotspots' within the sites.

The study also yielded important methodological insights. The 15N natural abundance method fails as a quantitative method of estimating BNF in these tropical forests, since with all BNF-estimation methods large portions of estimates are invalid (mainly negative). Further research is therefore neces-

Fieldresearch in the Bandhavgarh National Park, India.



ZEF Staff doing field research in Central Amazonia.

sary to address the methodology of measuring nitrogen fixation in ecological settings.

Honey for money: Beekeeping in Kenya

Mercy Gichora, Towards realization of Kenya's full beekeeping potential: A case study of Baringo District. Ecology and Development Series No. 6, 2003.

Beekeeping is considered as a viable economic activity for people inhabiting areas with marginal crop farming potential. One such area is Baringo District in Kenya, located in the semi-arid Rift Valley Province. The southern region of this district is inhabited by the Tugen people, who lead a predominantly pastoralist lifestyle but also practice beekeeping (the area is a well-known source of hive products in Kenya). This district was selected for the present study on the impact of a national beekeeping development program that the Kenyan Ministry of Agriculture embarked on fifty years ago.

Through interviews with the beekeepers, the study showed that the Tugen ranked beekeeping second in importance as an income-generating activity in agricultural production. However, 90% of the beekeepers still use traditional log hives and accessories, in spite of government efforts to promote the use of modern, more efficient beekeeping equipment. Most honey reaches the market as a crude product in the form of crushed honeycombs sold by the beekeepers to middlemen in local markets; it is mainly used for beer brewing, but also as food and medicine, or exchanged as a gift. Wax is mostly discarded. No bee products are exported. For hive products to penetrate alternative external markets, they would have to comply with international standards. The beekeepers' situation is aggravated by poor road and telecommunication infrastructure as well as government budgetary constraints that prevent close contact between beekeepers and extension agents. Another problem is the poor availability of flowering plants during the dry season, which induces unwanted migration of the bees from hives. Also, conflicting interests in plant utilization by different stakeholders in the communally owned land lead to a general decline in bee plant diversity, which calls for conservation measures. This case study showed that beekeepers in Baringo do not fit well into the overall national picture of a modern beekeeping industry in Kenya. More studies of regional peculiarities will be needed involving the beekeepers as the most important stakeholders. Only by looking at beekeeping technologies and at socio-economic issues at the same time can hive production be increased and marketing improved for each situation.

Panda eats bamboo (bamboo eats Panda): Reserves in China

Zhaohua Li, Diversity and ecology of mountain bamboos in the Shennongjia National Nature Reserve of Central China: Implications for resource management and biodiversity conservation. Ecology and Development Series No. 7, 2003.

Another ZEF study revealed some of the ecological interac-

tions that need to be understood for a successful management of natural resources. By 1800, Giant Pandas mainly occurred in two isolated regions: in West China on the east slope of the Tibetan plateau and in a hilly area in Central China, where they had become extinct by 1900.

The present study, carried out in cooperation with the Institute of Botany of the University of Bonn, was an attempt at finding a possible answer for the Giant Panda's extinction in Central China by studying the relationship between the Panda and the availability of its staple food, bamboo, in a historical Panda habitat, the Shennongjia National Nature Reserve (SNNR) in Central China.

The Giant Panda is a highly specialized carnivore whose



Pandas having lunch.

diet, however, consists almost entirely of various species of bamboo. In SNNR, arrow bamboo and umbrella bamboo comprise the staple food of the Panda: arrow bamboo provides the Panda with fresh shoots from early April to June, the umbrella bamboo from late June to July. ZEF's findings show that the bamboo available in the SNNR can feed approximately 200 Giant Pandas in terms of species availability, diet combination, and fresh shoot supply.

However, this availability may be affected by the exceptional flowering behavior of bamboo, as all individuals of most bamboo species flower simultaneously and subsequently die back over a wide area. In the late 19th century, the three bamboo species in SNNR preferred by the Giant Panda flowered and died back one after another during a period of less than ten years (umbrella bamboo 1886, arrow bamboo 1879, *Yushania confusa* 1888). This means that the affected Pandas had to move to another region where bamboo had not yet flowered. Geographically, SNNR is separated from other Panda habitats by the Hanshui River in the north, the Yangtze River in the south, and the Jianhan Plain in the east. When the bamboo died back in the SNNR, most Pandas moved to the west, to habitats in Sichuan. However, by the end of 19th century, this route no longer existed due to expanding settlements and a growing population in the Sichuan basin. Consequently, when all relevant bamboo species simultaneously flowered and died, starvation might have led to the extinction of the Giant Pandas in Shennongjia. ■

Chapter 2. Capacity Building: Teaching and Training

The International Doctoral Program for Development Studies

In 2002, ZEF's International Doctoral Program became three years old, and twenty students of the first batch finished their doctoral studies at the centre (see list below). Since its inception, 183 PhD students from 45 countries have participated in the program. Nowadays, the International Doctoral Studies Program at ZEF is considered as one of the most reputable graduate schools for development research worldwide. Each year, between 300 and 400 interested students from all over the world – many of them with very good qualifications – apply for the 30 to 40 places available. With a current 123 students, mainly from Africa, Europe and Asia, it is the largest doctoral program in Germany. The participants of the program are mainly from developing countries (55%), but include Germans and citizens from developed countries planning a career in international development as well. Parts of the program are also open to students at other universities who could both benefit from the program and enrich it. One third of the participants are women.

The program offers doctoral degrees of a top academic standard for young scientists engaged in policy analysis, economics, social sciences and management of natural resources. The students are usually integrated into one of the ZEF research groups to ensure an adequate training environment and an overall coherence within ZEF. The interdisciplinary character of the program is unique. Key to this program is the research phase, which is required to be carried out in developing countries or at development-related institutions.

The structure of the doctoral program is tailored to individual needs, but is limited to three years in duration. The program involves an intensive set of courses. Normally, students will qualify for entry to the research phase within six to twelve months, followed by a research phase of twelve to 18 months. A final period of six to twelve months for synthesis and writing completes the program. The entire program is conducted in English. Thesis writing is done in Bonn under the close supervision of a committee whose members are experts in the fields covered by the research. Students may pursue their doctoral study under direct supervision of ZEF professors but may also be associated with ZEF while supervised elsewhere. The degree may be obtained from a German institution or within sandwich programs at qualified universities overseas. In consultation with ZEF, the doctoral thesis may be submitted to any faculty co-operating in Germany or abroad (in a sandwich scheme).

Scholarships and Funding

Around 36% of the participants received scholarships from the DAAD (only for students from developing countries). The rest were supported by the Robert Bosch Foundation (for German and EU citizens), the Catholic Academic Foreign Service (KAAD), the Ecumenical Foundation (ÖSW), the Foundation of the German Business (SDW), the Eiselen Foundation, the World Bank, the Volkswagen Foundation, the Friedrich Ebert Stiftung, the Konrad Adenauer Stiftung and the European Union or their



PhD Students of ZEF in Bonn, June 2003.



PhD Student after graduation.

own country (students from China, Brazil, Italy). Thirty-eight students were funded from research projects at ZEF, and ZEF itself supported ten students with scholarships. In addition, the Federal Ministry for Economic Cooperation and Development (BMZ) via Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ) and the Robert Bosch Stiftung supported the program with funds for the students' empirical research.

The Doctoral Courses

In 2002, more than 160 lectures and seminars were conducted in the doctoral program, approx. 40% by external lecturers. To this end, ZEF had invited experts from leading institutions like Harvard, the University of Maryland, the University of Oslo, the University of Massachusetts, ISS (The Hague), ICT (Enschede), WAU (Wageningen), the Potsdam Institute for Climate Impact Research, and others.

The teaching program includes three course modules spread over the first and third year of the program. The first module provides a sound theoretical background, including knowledge and skills to address the complex and interlinked problems of development. The second and third modules are structured along disciplinary lines in economics, social sciences, and ecology, with a special emphasis on theory and methodology. ZEF also offers training in generic tools and skills. In lieu of the second and third module, individual students may visit laboratories at the University of Bonn or other cooperating institutes in Germany or abroad to learn specific research methods.

Course Module I

The Reading Exercise (August – September 2002) built a fundamental understanding of the problems and theoretical knowledge in all three disciplines touched by the course: ecology, economics and social science. A reader was distributed which contained scientific articles and selected chapters from

monographs and series, etc. The reading exercise was accompanied with tutorials by ZEF staff.

The Interdisciplinary Course took place in October-November 2002 during a four-week course (full-day) that opened the minds of the students to other disciplines and changed their working mentality for their future doctoral research. The course embraced the classical fields of environmental disciplines within natural sciences and the economic, political, and social-cultural dimensions of development. The themes in the course were: environment, societal organizations and economic growth, democracy and good governance, globalization, change and development, sustainability and collective action, knowledge and human capital formation, legal perspectives of development, human behavior and sustainable development. Another part of the course focused on modeling: model choices, fundamental modeling approaches in social, economic and natural sciences, multidisciplinary models and exercises in the Geographical Information System (GIS) lab of ZEF. Three additional weeks were dedicated to reflective activities (writing, literature research) and writing of a term paper jointly by two students of different disciplines.

Before and after the course, other lectures and seminars were dedicated to improving the skills of the students. They included a course on mathematics and statistics and courses on managerial skills, technique options, research planning and research economics, literature and web research and communication, public speaking and preparation of presentations.

Course Module II

The Tutorial on Sociology, Cultural Change & Development (November 2001 – January 2002) covered five areas: (I) concepts of development, (II) democratization, rule of law and human rights, (III) social and political dynamics of local development, (IV) nationalism, ethnicity, conflict, conflict prevention and (V) globalization, culture and development.

The half-day Course on Development Policy Analysis & Development Economics (November 2002 – January 2003) aimed at revisiting some of the mainstream quantitative and economic tools for development policy analysis and was spread over eight weeks. It encompassed four parts: (i) econometric tools for development policy analysis, (ii) microfoundations of development, (iii) macroeconomics and international aspects of development and (iv) environment and resource economics. The courses familiarized the students with applied econometric analysis. The focus was on studies of empirically tractable and testable models of individual, household, and firm behavior as well as macro and international aspects of development economics.

The full-day Course on Ecology, Land Use and Development (February – March 2003) focused on the complexity of natural and agricultural ecosystems. It assessed the impact of human interventions on the natural resource base in the context of sustainable and unsustainable development and delineat-

ed adequate measuring techniques for different scientific questions and scales. The students acquired 'T'-shaped skills: analyzing an ecological issue in its breath, focusing on the critical issues and studying these issues in depth. The course content was: (I) water and nutrient cycles, (II) ecology of landscapes and ecosystem functions, (III) symptoms of unsustainable development, and (IV) analysis and management of natural resources and (V) modeling and GIS laboratory. The latter

class aimed to enhance the students' GIS skills to assemble and analyze GIS data for their own research purposes.

Course Module III

In Course Module III, various courses on specific topics were offered, including specific training for individual students in laboratories at the University of Bonn, or other cooperating institutes in Germany or abroad. ■

Information and Deadlines of Application

A successful application requires an excellent master or diploma and an excellent proficiency in English. The applicant should be younger than 32. The application in English must include: a letter of application, the ZEF application form, the DAAD application (only if applying for a DAAD scholarship), an abstract of the master or diploma thesis, the plan of proposed research, two letters of recommendation, a recent photograph, the curriculum vitae and certified copies of all relevant certificates

The yearly application deadlines are September 30 for non-EU citizens and DAAD scholarships and May 31 for German and EU citizens and scholarships of the Robert Bosch Foundation. Information is available from: Dr. Günther Manske Email: docp.zef@uni-bonn.de Tel.: (# 49 228) 73-17 94; 73-17 27 Fax: (# 49 228) 73-18 89 Homepage: www.zef.de

PhD students in the International Doctoral Program at ZEF (August 1999 - March 2003)

183 students from 45 countries

EU states	49	29%
Middle income countries	26	15%
Low income countries	94	56%

All participants 1999-2002	Current PhD students (till March 2003)	External participants in the courses	Alumni (finished dissertations)	
No.	No.	No.	No.	
Europe	61	40	4	17
Africa	54	40	6	8
Asia	40	23	5	13
Latin America	13	7	2	4
Central Asian Republics, GUS	12	11	1	0
West Asia, North Africa	2	2	0	0
Total	183	123	18	42

42 PhD candidates from 20 different countries joined ZEF in the Academic Year 2002/2003.

Networking

ZEF is a scientific institution with strong emphasis on dissemination of information and results among a public as broad as possible. The interdisciplinary and international set-up of its scientific work ensures a strong networking among scientific and other partner institutions and organizations all over the world. Also, through its implementation-oriented work, ZEF strives to play an indispensable role in policy-making processes and be a crucial partner among decision-makers in the development scene. In addition to making a vital contribution as an advisory body and partner in the framework of its projects and research areas, ZEF has a major interest in informing the more general public about its findings, thus crossing the boundaries of a pure scientific institution. With its publications such as "ZEF news", its homepage and its regularly organized public lectures, ZEF ensures that it reaches out to a non-scientific public, and workshops and events bring specific topics to a general audience. ZEF is also regularly in touch with representatives of NGOs and media. Thus ZEF contributes both to a broad dissemination of relevant scientific results and to setting an agenda among governmental and non-governmental organizations and experts.

Raising public awareness and attracting media response

ZEF's reputation as a competent partner for media inquiries has grown in accordance with its establishing and sharpening its scientific profile. ZEF's research agenda offers interesting background information for the media, as is shown by the topic of gene modified cotton (see part on Economic and technological change). But individual scientists like our specialists on Afghanistan and Africa are also frequently requested as partners for interviews or statements by the national media. Since ZEF's project setup includes an intensive cooperation with local stakeholders, ZEF's projects are regularly covered by the local media in the project countries as well.

By organizing conferences, workshops and business meetings on a regular basis on current "hot topics" like Iraq, Afghanistan or Africa, ZEF offers a platform for a broad audience where representatives of scientific, governmental and non-governmental circles meet and exchange views and information. Hereby, ZEF contributes to policy advising and agenda setting for development issues.

ZEF's explicit role as a competent scientific and media partner, in the local, the German, and the international context, leads to an expanding demand for further cooperation partnerships.

Focal point Afghanistan

Although ZEF, as an independent research institution, has its focus on long-term projects, its work is naturally affected by current events and short-term developments. A good example of this interaction of topicality and long-term research is the activities by ZEF on Afghanistan. Here, ZEF plays an important role in inter-connecting knowledge, high-level expertise and experience among NGOs, policy-makers and scientists in this field. By means of regular papers, workshops and international conferences, ZEF is providing significant input for the international and overall strategy and policy-making discussion on the process of state reconstruction and rebuilding of a civil society in Afghanistan. Thus, ZEF held a meeting with the Afghan Constitutional Commission end of November 2002 and carried out a workshop on the Economy of Violence and the Economic Reconstruction in January 2003.

These activities are often organized in cooperation with other scientific partners. Two conferences took place in May 2003; one of them was prepared with Princeton University (USA) on Promoting Security in Afghanistan and the Region. The other conference was organized with the London School of Economics on State Reconstruction and International Engagement.

Iraq war

Another example of ZEF's contribution to the scientific and broader discourse on current issues is its response to the 2003 Iraq war. During the military phase of the war, media coverage was providing pictures and stories on an almost daily basis, focusing on a short-term and detailed account of single occurrences and developments. ZEF saw its role in putting the whole conflict in a broader setting and organized a panel discussion with experts from various fields. In this discussion, the Iraq war was debated from a broad perspective, taking into account economic, historical, humanitarian and political aspects. Not only did several representatives from governmental and non-governmental organizations participate in the well-visited discussion, numerous journalists also showed their interest in exchanging and multiplying more profound background information.

Public awareness in the target countries

Chico Mendes Prize for "Tipitamba" in Brazil

The impact of the research projects on the local setting is another important aspect in raising awareness of the relevance scientific output has among a broader, non-scientific public. In December 2002, the ZEF-led "Tipitamba" project in the Bragançina region in the Eastern Amazon was awarded the Chico Mendes Environment Prize by the Brazilian government (see chapter 1, project on Eastern Amazon), proving the practical relevance of ZEF's research to the people for whom it is meant to be beneficial.

Mega event organized by ZEF students in the Eastern Amazon Region

On April 13, ZEF Students organized a two-days' seminar involving 252 smallholders in Bragança in the Brazilian eastern Amazon region. Following a period of intensive surveys among 270 farmers in three selected districts, the students invited the

farmers to present their preliminary research findings and to offer a platform to meet and discuss. In addition, guest speakers from governmental and non-governmental organizations informed farmers about the latest developments in credit programs and technical issues like a cassava disease that is currently creating substantial problems for farmers. The organizational challenges of the event, particularly the problem of conveying farmers from remote areas to Bragança (some from a distance of up to 200 km), were tremendous, but were faced with commitment and a large number of helping hands.

Coffee project in Ethiopia

Disseminating information about the set-up and goals of projects is a general characteristic of ZEF's activities. Thus the project launch in Addis Ababa, Ethiopia, in February 2003 of the ZEF-led study and fieldwork on the conservation and use of the wild populations of "Coffea Arabica" (see chapter 1, project on Coffea Arabica) received nation-wide press coverage by the Ethiopian media.

GLOWA project in Ghana

Another example of ZEF's focusing on public awareness is the GLOWA Volta policy workshop in Accra (Ghana), July 2002, which was jointly organized by the University of Ghana, the University of Bonn and other partner institutions in order to evaluate the results so far and to inaugurate the coming research phase. In this case too, the international workshop was broadly featured on Ghanaian television and in the national newspapers.

Uzbekistan

In Uzbekistan, a team of the national Uzbek TV station filmed the premises of the ZEF research program on land and water use efficiency (see chapter 1, project on Aral Sea) located at the State University of Urgench. The project was covered for twelve minutes of the resulting 20-minute documentary enti-

Workshop with smallholders in Bragança, Eastern Amazon, April 2003.



Ethiopian woman sorting out coffee beans.



Distance Learning at ZEF.

tled "Science and Research in Khorezm" that was broadcasted by Uzbek television. Representatives of various agencies paid the program in Urgench a visit, among them the German ambassador to Uzbekistan, the representative of UNESCO to Uzbekistan, a German delegation consisting of staff of the Federal Ministry of Economic Cooperation and Development (BMZ), of "Gesellschaft für Technische Zusammenarbeit" (GTZ), and of "Kreditanstalt für Wiederaufbau" (KfW), and others. In December 2002, ZEF and the Institute for Plant Production of the University of Bonn received the Deputy Minister for Agriculture and Water Management of Uzbekistan and informed him about the project and about precision agriculture.

The Global Distance Learning Center (GDLN) at ZEF

Since May 2002, ZEF has been affiliated with the Global Development Learning Network (GDLN), and it has established the first GDLN center in Germany. GDLN is a global partnership of public, private, and non-governmental organizations at the World Bank Group dedicated to fighting poverty and committed to providing quality distance learning programs. Currently, there are twenty-eight affiliated distance-learning centers (DLCs) worldwide, each with interactive video-conferencing and Internet access capabilities. The goals of ZEF's DLC are to use modern technology in a cost-effective way for distance education in the PhD courses at ZEF, or for dialogues with representatives from politics, business, and NGOs worldwide and to improve communication among researchers and partner institutes.

The first two distance lectures took place in October/November 2002 in the context of the International Doctoral Studies Program. Lecturers from the International Food Policy

Institute (IFPRI) in Washington D.C. and the International Center for Tropical Agriculture (CIAT) in Colombia gave presentations on specific development topics to around 40 doctoral students at ZEF. In January 2003, the working group at ZEF on "Determinants and Effects of Alternative Institutions for Natural Resource Management in Developing Countries" had a workshop by video conferencing with the Center for International Forestry Research (CIFOR) in Indonesia.

The first Global Dialogue, which took place at ZEF in December 2002, was organized by the Center's research group on Information and Communication Technologies (ICTs). The purpose was to discuss the opportunities and challenges of ICTs for poverty reduction among involved parties, including academics and policy makers. It provided a unique opportunity to disseminate the results from ZEF's research group and to initiate discussions on key issues. This first Global Dialogue consisted of two live video conferences. The first session with Ghana and the World Bank in Washington focused on ICTs and households in rural areas, while the second session with Tanzania, Uzbekistan and India referred to ICT sand small and medium-sized enterprises.

Funds for these and other related development workshops and lectures have been provided by the Land of North Rhine-Westphalia (NRW), the Federal Ministry for Economic Cooperation and Development (BMZ) and "Deutsche Gesellschaft für Technische Zusammenarbeit" (GTZ).

ZEF's facilities include three rooms for video conferencing via ISDN of which one conference room has a seating capacity for 250 people, a computer network, multimedia equipment, FTP, and a WWW server. These facilities can be used by other organizations as well.

In this context it should be also mentioned that a study has been launched at ZEF that is to analyze the opportunities and challenges of distance learning in developing countries.

The European Development Research Network (EUDN)

The secretariat of EUDN is located at ZEF. EUDN aims at strengthening the capacity of institutes to undertake high-quality, policy-relevant research and to move research results into policy debates. It now consists of 46 European members and sees its primary role in promoting cooperation between researchers from Europe and developing countries but also among development researchers throughout Europe. Major research activities in 2002/03 included the following:

- In September 2002, EUDN organized a session on "poverty dynamics and insurance" at the Conference of the International Economics Association (IEA) in Lisbon. The main purpose of the session was to make EUDN and European research results better known to the academic public.
- In October 2002, the second EUDN-workshop on development research took place in Bonn. Eleven young development economists from Bangladesh, Belgium, China, Ecuador, France, Germany, Israel, Peru, Tanzania and the United Kingdom had been selected to participate in the workshop. They met for two intensive days to present their current research covering topics like repayment rates in

Bangladesh, survival and success in African manufacturing firms, human capital externalities in India, reforms, climatic risks and cereal-cash crop diversification in China or social interactions in growing bananas. In the open review of this program, the doctoral students expressed high satisfaction with the exercise. It was the first time that most of the students had attended such a workshop.

- In January 2003, EUDN participated in the Fourth Annual Conference of the Global Development Network (GDN) in Cairo, Egypt. The topic of this event, which was attended by more than 500 people, was "Globalization and Equity". The network was represented by seven members who participated actively as speakers, discussants or reviewers.

These activities were financially supported by the Land of North Rhine-Westphalia, the Federal Ministry of Economic Cooperation and Development (BMZ) and "Deutsche Gesellschaft für Technische Zusammenarbeit" (GTZ).

Once again a ZEF doctoral student as well as a guest fellow from ZEF were invited to participate in the competition for the best development research at this GDN Annual Conference. The latter won the first prize, which enables him to do some more research in his home country of Peru. ■

Further details on EUDN can be found at <http://www.eudn.org>.



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ZEF's Organization, Management and Facilities

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Organization, Management and Facilities

IWB Management

Together with the Center for European Integration Studies (ZEI), ZEF forms the International Science Forum Bonn (IWB). IWB management supports the two centers in central administrative and budgetary affairs, as well as in co-ordination, acquisition and communications. Internally, as a cross-center unit, the management is responsible for the efficient use of common facilities and resources the centers can dispose of. Externally, particularly in the framework of its public relations and acquisition activities, it establishes links with relevant institutions and key persons in politics, industry, science, the media and government administration. Above all, in financial issues it provides a link with the Land of North Rhine Westphalia and the German federal ministries. The management has also been commissioned by the Rector's office to coordinate the interests and activities of the University of Bonn in the context of EUROPAEUM, which is a European science network of the Universities of Bologna, Bonn, Geneva, Leiden, Paris/Sorbonne, Oxford and Prague.

Facilities

The IWB building is situated in the former government district of the Federal City of Bonn. There are three conference rooms that can be linked up and are fitted with modern conference technology. The ZEF/ZEI library is mainly reserved for use by ZEF/ZEI staff but is available to the public at certain times as well. Besides monographs and journals, the library provides several data banks, including those of the European Commission, the OECD and the International Monetary Fund. The IWB library has the official status of a European Documentation Center (EDC) of the EU and therefore provides access to documents issued by the European Commission since 1986. In addition, the library has the status of an OSCE Depot Library as well as the status of a European Parliament Depot Library. The documents of the European Court of Justice and the European Central Bank as well as almost all statistical journal series of the EU are available.

Staff, Guest Researchers and Fellows

Department of Political and Cultural Change

Interim Director: Prof. Dr. Thomas Bierschenk (until March 2003)

Acting Director: Dr. Tobias Debiel (since April 2003)

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Senior Researchers				
Debiel, Tobias Dr. (From 06.02.03 until April 2003)	Senior Researcher	State Formation and Violent Conflict; Structural Stability and Human Security in Eastern Africa; Civil Conflict Prevention	Germany	
Köbler, Reinhart, Prof. Dr. (until 30.09.02)	Senior Researcher	Theories of Development	Germany	University of Frankfurt
Jones-Pauly, Christina Dr. Dr.	Senior Researcher	Human Rights, Gender Law, Comparative and Islamic Law, European Law, Minorities and Labor Law	Germany	
Schoeller-Schletter, Anja Dr.	Senior Researcher	Transition to Democracy and Institutional Reform Corruption Military	Germany	
De Soysa, Indra Dr. (until July 2003)	Senior Researcher	Democracy, Rule of Law & Governance Democracy and Development Globalisation and Economic and Political Development Causes of Civil and Political Violence	Sri Lanka	International Peace Research Institut, Oslo (PRIO), Norway
Wagner, Christian, Dr. (until 31.12.02)	Senior Researcher	State Formation and Violent Conflict; International Politics	Germany	Stiftung Wissenschaft und Politik (SWP), Berlin
Researchers				
Bodenstein, Thilo Dr. (From 16.09.02 until 28.02.03)	Researcher	Water Administration in Uzbekistan Trade Liberalization in Transition Countries	Germany	Freie Universität Berlin
Fuest, Veronika Dr. (Since 01.07.02)	Researcher	Institutions of Water Management in Ghana and Burkina Faso	Germany	
Schetter, Conrad Dr.	Researcher	State Formation and Violent Conflict; Ethnicization of Conflicts in Afghanistan	Germany	Swiss Peace; Deutsches Orient Institut Hamburg
Wegerich, Kai (From 02.09.02 until 31.05.03)	Researcher	Analysis of Water Organisations and Institutions in Uzbekistan	Germany	
Junior Researchers				
Ashour, Sanaa	Junior Researcher	Towards an Institutionalized Development Planning Process in the State of Palestine	Palestine	
Aviles-Irahola, Dennis	Junior Researcher	Popular Participation and Local Development: The Role of Social Actors in the Consolidation of Productive Municipalities in the Area of East Chuquisaca, Bolivia.	Bolivia	
Belyaev, Mikhail	Junior Researcher	Political Risk for Foreign Direct Investment: Empirical Evidence from Regions of Russia	Russia	
Bhuyian, Hafeez Shahjahan	Junior Researcher	Community-Based Solid Waste Management in Urban Bangladesh: Does Social Capital Matter?	Bangladesh	
Chinsinga, Blessings (Since 30.09.02)	Junior Researcher	The Politics of Poverty Alleviation in the Context of Political and Administrative Reforms. The Case Study of Decentralisation in Malawi.	Malawi	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Elbern, Stefanie	Junior Researcher	State and Civil Society Activities in the field of Children's Rights: Implementation and Socialization of the United Nations Convention on the Rights of the Child in the People's Republic of China	Germany	
Gunawan, Ketut	Junior Researcher	The Politics of Indonesian Rainforest: A Study of Forest Conflicts in East Kalimantan	Indonesia	
Joras, Ulrike	Junior Researcher	Privatizing Peace? The Role of the Private Business Sector in the Civil War and Conflict Transformation in Guatemala	Germany	
Kassahun, Belachew Samson	Junior Researcher	Urban Poverty in Ethiopia: The Cultural and Social Perspective	Ethiopia	
Kaßner, Malte (Since 01.10.02)	Junior Researcher	The Impact of Multiethnicity and Multiculturalism on Democratic Consolidation - an Interregional Comparison between South Africa and Ukraine	Germany	
Khalafalla, Yousif Khalid	Junior Researcher	The Rise of Political Islam in Sudan: Economic Transformation and Social Differentiation	Sudan	
Krämer, Mario (until 15.04.04)	Junior Researcher	The Changing Dynamics of Collective Violence and Peace. Case studies from KwaZulu/Natal, South Africa	Germany	
Kustov, Igor (Since 01.10.02)	Junior Researcher	Institutions of Civil Society: Crossnational studies (the cases of Russia and Kyrgyzstan)	Russia	
Laube, Wolfram	Junior Researcher	Water Institutions and Water Rights in Ghana/Volta River Basin (GLOWA Project)	Germany	
Naher, Ainoon	Junior Researcher	Gender, Religion and Development in Rural Bangladesh	Bangladesh	
Paudel, Hari (Since 30.09.02)	Junior Researcher	The Implementation of Privatisation Policy in a Developing Country. Is 'Privatisation' a Viable Policy Option? The Case of Nepalese Privatisation Policy	Nepal	
Rai, Kavita	Junior Researcher	Institutional Management of Water Technologies with specific Reference to Hydropower in Nepal: Advancing Equity choices	Nepal	
Renzi, Beatrice (Since 31.08.02)	Junior Researcher	Political Determinants of Rural Decentralization. A comparative study of two Indian states	Italy	
Sessouma, Alexandre (Since 01.04.03)	Junior Researcher	Space Management and Cooperation between Cultivators and Animal Breeders in the Province of Kenedougou, Burkina Faso: A Socio-anthropological Analysis of Land Use	Burkina Faso	
Stellmacher, Till (Since 14.10.02)	Junior Researcher	Analysis of institutional factors influencing the use and protection of wild coffee arabica in Bonga region and Bale mountains	Germany	
Tafere-Reda, Kelemework (Since 30.09.02)	Junior Researcher	Women, Resource Conflict Management: Views and Practices among the Agro-pastoral Afar, Northern Ethiopia	Ethiopia	
Terlinden, Ulf (Since 02.05.03)	Junior Researcher	State Formation and Violent Conflict; Structural Stability and Human Security in Eastern Africa; Civil Conflict Prevention	Germany	
Tesfaye, Teklu (Since 01.10.02)	Junior Researcher	The Study of Local-level Institutions Influencing the Conservation and Use of the Wild Coffee Arabica Population in the Montane Rainforest of South-western Ethiopia	Ethiopia	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Trevisani, Tommaso (Since 01.07.02)	Junior Researcher	Differences in Efficiency and Investment Behaviour as Related to Formal/Informal Conflict Resolution Capacities in Rural Uzbekistan	Italy	
Van der Schaaf, Charlotte	Junior Researcher	Institutional Analysis of Water Management: The Multi-Application of Barrages and the Influence of Decentralization Policies on Water & Conflict Management in Kourittenga, Burkina-Faso	Netherlands	
Vela-Eiden, Talia	Junior Researcher	The Impact of Structural Reforms on Institutional and Regulatory Framework with regard to Environmental Policy: A Study on the Mining Sector in Peru.	Peru	
Zavgorodnaya, Darya (Since 01.10.02)	Junior Researcher	Water Users' Association in Uzbekistan: Influencing factors on an Efficiency of Water Management	Uzbekistan	
Senior Fellows				
Evers, Hans-Dieter, Prof. Dr.	Senior Fellow	Globalisation of Knowledge; Knowledge Management and the Role of Experts in Development Cooperation	Germany	
Goh, Lee Ban, Prof. Dr. (From 01.06. until 30.06.03)	Senior Fellow	Urban Management and Governance. Compliance with Municipal Rules and Regulations	Malaysia	School of Social Sciences, Sains University of Malaysia, Penang
Oneal, John Prof. (From 01.07. until 09.08.02)	Senior Fellow	Foreign Investment, Economic Openness, Democracy and Economic Development	USA	University of Alabama, USA
Pfaff-Czarnecka, Joanna Prof. Dr.	Senior Fellow	Political anthropology: Integration and Minority Research; Ethnicity; Ethnology of legal systems	Switzerland	University of Bielefeld; Department of Sociology
Reich, Simon Prof. (From 20.06. until 14.08.02)	Senior Fellow	Development of Norms in the Context of Global Governance	USA/UK	Graduate School of Public and International Affairs
Trautner, Bernhard Dr. (Since (Since 01.03.02)	Senior Fellow	Islam and the Accommodation of Plurality: Extremo Oriente Lux? Contemporary Muslim Reformist Approaches in Southeast-Asia (Indonesia, Malaysia), Crisis prevention in Central Asia	Germany	Institute for Intercultural and International Studies (InIIS), Bremen University Chair for Political Science and Political Management at the University of Applied Sciences Hochschule Bremen
Fellows				
Devic, Ana Dr. (Until 31.07.02)	Fellow	Regionalism and Multiculturalism in the Vojvodina	Serbia and Montenegro	University of Aarhus, Denmark
Research Assistants				
Becker, Alwin	Research Assistant	Governance, Democratisation and Rule of Law (Usbekistan-Projekt)	Germany	
Braukämper, Lisa	Research Assistant		Germany	
Eckermann-Seel, Claudia (Until 31.07.02)	Research Assistant	Theories of Change	Germany	
Gardizi, Manija (Since 15.05.03)	Research Assistant	State Building and Ethnic Conflict	Germany	
Günden, Orhan	Research Assistant	State Building and Ethnic Conflict	Turkey	
Henke, Kerstin (Until 31.07.02)	Research Assistant	Governance, Democratization and the Rule of Law	Germany	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Kupfer, Heike (From 25.11.02 until 31.05.03)	Research Assistant		Germany	
Rüger, Claudia (Since 28.05.03)	Research Assistant	Governance, Democratization and the Rule of Law	Germany	
Sheikh, Nusrat (Until 31.10.02)	Research Assistant		Germany	
Sticht, Monika (Since 14.04.03)	Research Assistant	State Building and Ethnic Conflict The Efforts of the Council of Europe to Consolidate Democracy in Central and Eastern Europe since 1989	Germany	
Volck, Katrin (From 01.05. until 13.06.03)	Research Assistant	State Building and Ethnic Conflict	Germany	
Waedt, Karina	Research Assistant	(Internet)-Research Adress Management and Internal Communication for ZEFa	Germany	
Wagner, Angelika (Until 31.05.03)	Research Assistant		Germany	
Others				
Wagener, Sonja	Office management		Germany	

Department of Economic and Technological Change

Deputy Director: Professor Dr. Klaus Frohberg
 Director on leave: Prof. Dr. Joachim von Braun,
 Director at IFPRI (International Food Policy Research Institute, Washington, D.C.)

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Senior Researchers				
Asfaw, Abay Dr.	Senior Researcher	Household Economics, Health Economics, Economics of Education, Development Economics and Poverty and Gender Issues	Ethiopia	
Berger, Thomas Dr.	Senior Researcher	Water Allocation in the Ghanaian Volta Basin (GLOWA Volta), Agent-Based Simulation of Sustainable Resource Use in Agriculture and Forestry (Robert Bosch)	Germany	
El-Mikawy, Noha Dr.	Senior Researcher	The Role of the State & Its Policy and Institutional Implications; Political and Social Inclusion in Institutional Reform; Political Economy of Trade Reform; Geographical Focus: Arab Region	Egypt	
Engel, Stefanie Dr.	Senior Researcher	Determinants and Effects of Alternative Institutions for Natural Resource Management in Developing Countries (Bosch), Eco-labeling/ Trade and Environment, Economics of Displacement due to Violence	Germany	
Grote, Ulrike Dr.	Senior Researcher	Trade and Environmental and Social Standards, Labeling	Germany	Asian Development Bank, Manila, Philippines
Hedden-Dunkhorst, Bettina Dr.	Senior Researcher	Alternatives to Slash-and-Burn in Brazil (SHIFT), Community Water Resource Management in Africa	Germany	Federal University of Pará, Brazil, IWMI, Sri Lanka, University of the North, South Africa

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Hurtienne, Thomas Dr.	Senior Researcher	Smallholder Agriculture in the Amazon Region	Germany	Federal University of Pará, Brazil, Embrapa, Brazil
Micevska, Maja Dr.	Senior Researcher	Poverty Reduction, ICT, Transition Economies, Populations Economics, Economics and Law	Macedonia	
Qaim, Martin Dr.	Senior Researcher	Economics of Agricultural Biotechnology (Argentina, India, The Philippines, Global)	Germany	
Wobst, Peter Dr.	Senior Researcher	Macroeconomics and Trade Policy; Sustainable Rural Development	Germany	International Food Policy Research Institute, Washington, D.C., USA
Researchers				
Burhop, Carsten	Researcher	Economic Development in Historical Perspective; Banking and Growth	Germany	
Mburu, John Dr.	Researcher	Biodiversity Economic Valuation, Economic Incentives for Biodiversity Conservation (BIOECON)	Kenya	
Wiesmann, Doris Dr.	Researcher	Health Economics in Khorezm, Uzbekistan, Food and Nutrition Security in Countries in Transition, Community-based Health Insurance	Germany	
Zhu, Qiuxia Dr.	Researcher	Economic and Institutional Change in China		
Junior Researchers				
Abebaw Ejigie, Degnet	Junior Researcher	Farm Household Decision making, Risk Perceptions and Utilization of Wild Coffee Populations in Ethiopia: Implications for Integrating Biodiversity Conservation with Peasant Agricultural Development	Ethiopia	
Algieri, Bernadina	Junior Researcher	Economic Transition in Russia	Italy	
Balint, Borbala Eszter	Junior Researcher	The Determinants of Commercial Orientation and Sustainability of Agricultural Production of the Individual Farms in Romania	Romania	Project PASAD, Robert Bosch Foundation, Germany
Behera, Bhagirath	Junior Researcher	Determinants of Sustainable Management of Natural Resource: The Case of Joint Forest Management in India	India	Centre for Economic and Social Studies (CESS), Hyderabad, India
Börner, Jan	Junior Researcher	Small-Scale Agriculturalist's Production Decisions and Technology Choice in the Brazilian Amazon – Farm Household Modeling	Germany	Federal University of Pará, Brazil
Carambas, Cristina M.	Junior Researcher	Ecolabeling in Organic Agriculture, China, Thailand and Philippines	Philippines	
Chakrabarty, Sayan	Junior Researcher	Social Labeling, Child Labor	Bangladesh	
Djanibekov, Nodir	Junior Researcher	Uzbekistan	Uzbekistan	
Gyasi, Kadir Osman	Junior Researcher	Determinants of Success of Community-Based Irrigation Management in Northern Ghana	Ghana	
Jiang, Yuansheng	Junior Researcher	Health Risk Coping Strategies and Health Insurance Demand in Rural China	China	
Konseiga, Adama	Junior Researcher	Migration, Trade and Regional Integration	Burkina Faso	CERDI, France
Korf, Benedikt	Junior Researcher	Political Economy of Property Regimes in Complex Emergencies: Case Study Sri Lanka	Germany	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Makhmudov, Nurullo	Junior Researcher	ICT Adoption process and impacts of ICT in small and Medium Sized Enterprises in Uzbekistan	Uzbekistan	RWTH Aachen
Mandour, Dina	Junior Researcher	Trade Liberalization, Egypt	Egypt	
Mduma, John K.	Junior Researcher	Rural Labor Markets, Land Degradation and Agricultural Sector Growth in Tanzania	Tanzania	
Mendoza-Escalante, Arisbe	Junior Researcher	Economic Analysis of Alternative Technologies for Sustainable Agriculture: Study on Potential Adoption among Small-scale Farmers in the Context of Fallow-based Systems in the Eastern Amazon Region	Mexico	Federal University of Pará, Brazil
Müller, Marc	Junior Researcher	Agricultural Production and Transformation in Uzbekistan	Germany	
Nguyen, Thi Phuong Hoa	Junior Researcher	Foreign Direct Investment, Growth and Poverty	Vietnam	University of Giessen
Obeng-Asiedu, Patrick	Junior Researcher	Allocating Water Resources to Agricultural and Economic Development in the Volta River Basin	Ghana	
Osei-Akoto, Issac	Junior Researcher	Demand Study of Risk Sharing Arrangements for Health Care Services in Ghana	Ghana	Institute of Statistical, Social and Economic Research (ISSER), University of Ghana
Osei-Asare, Yaw Bonsu	Junior Researcher	Water Security and the Determinants of Household Water Demand in the Volta Basin of Ghana	Ghana	
Palmer, Charles	Junior Researcher	Determinants and Effects of Community-industry Negotiations on Forest Management and Livelihoods in Indonesia	United Kingdom	
Pfeiffer, Ellen	Junior Researcher	ICT-based Distance Education in Developing Countries	Germany	
Rojahn, Anke	Junior Researcher	Designing an Incentive Mechanism for a Sustainable Use System of the Montane Rain Forest in Ethiopia	Germany	University of Kiel
Schieder, Tina	Junior Researcher	Efficient Allocation and Use of Water Resources: An Analysis Based on a River Basin Model for the Amu Darya River with a Focus on Khorezm Region in Northern Uzbekistan	Germany	
Schreinemachers, Pepijn	Junior Researcher	Decomposition of Yield Gaps at the Aggregate and Household Level	The Netherlands	
Seebens, Holger	Junior Researcher	Rural Development, Intra-Household Decision Making, Political Sociology	Germany	University of Munich
Shibru, Admasu	Junior Researcher	Assessment of the Economic Value of Wild Coffee in Ethiopia	Ethiopia	
Siegmann, Karin Astrid	Junior Researcher	Gender Employment and Equity: Effects of Foreign Direct Investment on Rural Indonesia	Germany	
Stein, Alexander	Junior Researcher	Economics of Agricultural Technology	Germany	
Tchale, Hardwick	Junior Researcher	Economic Policies, Soil Fertility Management and Sustainable Agricultural Growth in Malawi: A Bio-Economic Analysis	Malawi	Bunda College of Agriculture, University of Malawi
Tsegai, Daniel	Junior Researcher	Population and Migration Analysis in the Volta Basin of Ghana	Eritrea	
Velasquez Castellanos, Ivan Omar	Junior Researcher	Trade Liberalization & Poverty Reduction, Latin America	Bolivia	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Wale, Edilegnaw	Junior Researcher	The Economics of On-farm Conservation of Crop Genetic Resources in Ethiopia	Ethiopia	
Yilma, Tsegaye	Junior Researcher	Modelling Farm Household Land & Water Use Decisions in the White Volta Basin of Ghana: Agent Based Bio-economic Modelling Approach	Ethiopia	
Zander, Kerstin	Junior Researcher	Economic Valuation of Indigenous Breeds and how the Loss of AnGR (Animal Genetic Resources) Affects Welfare	Germany	
Ziemek, Susanne	Junior Researcher	Economics of Volunteer Labor Supply: An Application to Countries of a Different Development Level (Bangladesh, Ghana, Poland, South Korea)	Germany	University of Giessen
Zimmermann, Roukayatou	Junior Researcher	Biotechnology and Value-Added Traits (VATs) in Food Crops. Relevance for Developing Countries (DCs) and Economic Analysis	Cameroon	
Senior Fellows				
Bayes, Abdul Dr.	Senior Fellow	Agricultural Development, Trade Liberalization, Women Empowerment	Bangladesh	Jahangirnagar University, Dhaka, Bangladesh
Costa, Francisco de Assis Prof. Dr.	Senior Fellow	Technology Adoption for Small-Scale Agriculture in the Amazon Region	Brazil	Federal University of Pará, Brazil
Dev, Mahendra Prof. Dr.	Senior Fellow	Low-Income Countries Labor, Income and Migration: A South Asian Perspective, Health Insurance for the Poor in India	India	Indira Gandhi Institute of Development Research in Mumbai, India
Gocht, Werner Prof. Dr. Dr.	Senior Fellow	Economic Geology, International Commodity and Energy Markets, Project Planning and Project Evaluation, Environmental Assessment	Germany	Research Institute for International Technical and Economic Cooperation, RWTH Aachen
Handousa, Heba Prof. Dr.	Senior Fellow	The Role of the the State in Egypt and its Policy Implications in the Age of Globalization	Egypt	Economic Research Forum, Cairo, Egypt
Heidhues, Franz Prof. Dr.	Senior Fellow	Natural Resources and Technologies	Germany	University of Stuttgart, Hohenheim
Hemmer, Hans-Rimbert, Prof. Dr.	Senior Fellow	Globalization, Foreign Direct Investment, Focus on Asian Countries, Child Labor	Germany	University of Giessen
Hiemenz, Ulrich Dr.	Senior Fellow	Macroeconomics, Trade and Governance	Germany	OECD Development Center, Paris, France
Klasen, Stephan Prof. Dr.	Senior Fellow	Human Resources and Poverty Reduction	Germany	University of Munich
Lopez, Ramon Prof. Dr.	Senior Fellow	Economic Development, Environmental Sustainability and Poverty Reduction	Chile/Canada	University of Maryland, College Park, USA
Menkhoff, Lukas Prof. Dr.	Senior Fellow	Asian Crisis, Banking in Thailand	Germany	University of Hannover,
Nasr, Mamdouh Prof. Dr.	Senior Fellow	Desertification and Water	Egypt	Ain Shams University, Cairo, Egypt
Stark, Oded Prof. Dr.	Senior Fellow	Economic Development Theory, Migration	Israel	University of Vienna, Economic and Social Research Center, Cologne and Eisenstadt (ESCE)
Vosti, Stephen Prof. Dr.	Senior Fellow	Applied Economics and Policy Research	USA	University of California, Davis, USA
Webb, Patrick Prof. Dr.	Senior fellow	Water Policies in Developing Countries	USA	Tufts University, Boston, USA

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Wehrheim, Peter Dr.	Senior Fellow	Economies in Transition, WTO, Regionalism	Germany	University of Maryland (IRIS), USA
Zeller, Manfred Prof. Dr.	Senior Fellow	Stability of Rainforest Margins; Micro-Finance; Agricultural Policy Reform; Poverty Measurement; Land Use Change	Germany	University of Göttingen
Fellows				
Admassie, Assefa, Dr.	Fellow	Human Resources, Poverty, Child Labor in Africa	Ethiopia	Addis Ababa University, Ethiopia
Basu, Arnab K. Dr.	Fellow	Social Standards and Trade, Labeling	India	College of William and Mary, Williamsburg, USA
Bedi, Arjun Dr.	Fellow	Development of Science and Knowledge Systems in LDCs and Information and Communication Technology in LDCs	India	Institute of Social Studies, Den Haag, the Netherlands
Chau, Nancy Dr.	Fellow	Social Standards and Trade, Labeling, Governance	Hong Kong, PRC	Cornell University, USA
Debroy, Bibek Dr.	Fellow	Project on Judicial Delays and the Access of the Poor to the Judicial System	India	Rajiv Gandhi Foundation, India
Jütting, Johannes Dr.	Fellow	Social Institutions and Development, Innovative Health Insurance Schemes for the Poor	Germany	OECD Development Center, Paris, France
Matambalya, Francis Dr.	Fellow	East African Small and Medium Scale Enterprises (SMEs) in a Liberal Global Economy	Tanzania	University of Dar-es-Salaam, Tanzania
Msuya, John M. Dr.	Fellow	Food Security and Health	Tanzania	University of Dar-es-Salaam, Tanzania
Torero, Maximo Dr.	Fellow	Information and Communication Technologies in Latin America	Peru	GRADE – Grupo de Análisis para el Desarrollo, Peru
Wolf, Susanna Dr.	Fellow	Governance and Investment in Africa: Determinants of Domestic and Foreign Investment in Different Sectors – The Case of Ghana	Germany	University of Ghana
Zhu, Ling Dr.	Fellow	Inequality of Income Distribution, Establishment of Rural Social Security System as Instruments of Poverty Reduction and Rural Development, Woman and Child Issues, Socio-Economic Development in Tibet	China	Deputy Director, Institute of Economics, Chinese Academy of Social Science
Research Assistants				
Endemann, Christina	Research Assistant	Support for SHIFT Project (Alternatives to Slash-and-Burn in the Amazon)	Germany	
Ohly, Hana	Research Assistant	Support for Poverty Reduction Group; Health Insurance Schemes for the Poor	Germany	
Others				
Förg, Renate Dr. (until 31.12.2002)	Secretariat		Germany	
Hagedorn-Mensah, Karin	Administration for Personal		Germany	
Kloep, Barbara (from 3.2.03 until July 03)	Secretariat		Germany	
Ritter-Pilger, Gisela	Office Management		Germany	
Saad, Ines	Support of EUDN (European Development Research Network)		Germany	

Department of Ecology and Natural Resource Management				
Director: Professor Dr. Paul L.G. Vlek				
Name, Title	Position	Area of Research	Country of Origin	Affiliation
Scherges, Christina	Support of Research Groups		Germany	
Coordinator				
Manske, Günther, Dr.	Coordinator	International Doctoral Studies Program	Germany	
Senior Researchers				
Andreini, Marc, Dr.	Senior Researcher	Hydrology, Soil Physics	USA	SARI, Ghana IWMI, Ghana
Denich, Manfred, Dr.	Senior Researcher	Land Use Systems, Alternatives to Slash and Burn, Fallow Management, Agrobiodiversity	Germany	
Lamers, John, Dr.	Senior Researcher	Tropical Agronomy and Agricultural Economy, Institution Development	Netherlands	UNESCO, SUU, Uzbekistan, TIAME, Uzbekistan, IFU, Garmisch-Partenkirchen, DFD, Oberpfaffenhofen, BMBF
Martius, Christopher, Dr.	Senior Researcher	Soil Ecology, Ecosystems, Desertification	Germany	
van de Giesen, Nick, Dr.	Senior Researcher	Hydrology, Effect of Land Use Changes on Water Resources, Geographical Information Systems	Netherlands	
Vielhauer, Konrad, Dr.	Senior Researcher	Systems Agronomy, Plant Nutrition	Germany	
Virchow, Detlef, Dr.	Senior Researcher	Economics of Biodiversity Conservation and Utilization; Rural Development; Poverty Reduction	Germany	
Researchers				
Fosu, Mathias, Dr.	Researcher	Soil Management Effect on Soil Fertility Decline	Ghana	SARI, Ghana
Hafeez, Mohsin, Dr.	Researcher	Irrigation and Drainage, Surface Water Hydrology, Remote Sensing, Evapotranspiration, Water Balance and Productivity of Large Irrigation Systems	Pakistan	
Kunstmann, Harald, Dr.	Researcher	Hydrology, Atmospheric Science, Climate Modeling	Germany	IFU, Garmisch-Partenkirchen
Mitra, Sudip, Dr.	Researcher	Wetland Management and Ecosystems Modeling	India	
Olufayo, Ayorinde A., Dr.	Researcher	Hydrology, Water Management	Nigeria	Federal University of Technology, Akure, Nigeria
Park, Soojin, Dr.	Researcher	Pedogenesis, Soil Landscape Analysis, Spatial Statistics	Korea	
Sawhney, Puja, Dr.	Researcher	Natural Park Management	India	
Schmidt, Petra, Dr.	Researcher	Agroforestry Systems	Germany	Staatliches Museum für Naturkunde, Karlsruhe
Szarzynski, Jörg, Dr.	Researcher	Bioclimatology, Biosphere-Atmosphere Interactions, Tropical Ecology	Germany	
Tischbein, Bernd, Dr.	Researcher	Hydrology and Irrigation	Germany	ZFL, University of Bonn
Vescovi, Fabio, Dr.	Researcher	Agronomy, Remote Sensing, Land Use Change, Vegetation Cover	Italy	RSRG, University of Bonn
Worbes, Martin, Dr.	Researcher	(Agro-)Forestry and Ecology	Germany	University of Göttingen

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Junior Researchers				
Bharati, Luna	Junior Researcher	Project Support	Nepal	
Brunner, Almut	Junior Researcher	Soil Erosion Modeling	Germany	NARO, Uganda
Burhop, Carsten	Junior Researcher	Project Accountancy	Germany	
Ishihata, Liliana	Junior Researcher	Selection and Management of Protection Areas	Brazil	INSA, IUCN, FNMC, Brazil
Paparcíková, Lubica	Junior Researcher	Biological N Fixation	Slovakia	
Rücker, Gerd	Junior Researcher	Remote Sensing, GIS, Spatial Scaling, Landscape Analysis	Germany	German Aerospace Center (DLR)
Senior Fellows				
Craswell, Eric T., Dr.	Senior Fellow	Soil Fertility, Nutrient Cycling, Global Nutrient Flows	Australia/UK	International Fertilizer Development Center
Hendrickx, Jan, Dr.	Senior Fellow	Vadose Zone Hydrology, Remote Sensing	USA	Hydrology Program, Department of Earth and Environmental Science, New Mexico Tech, Socorro NM, USA
Hillel, Daniel, Prof. Dr.	Senior Fellow	Hydrology, Natural Resources	USA	Center for Environmental Studies, Karkur, Israel
Mata, Luis Jose, Dr.	Senior Fellow	Impact of Global Climate Change on Natural Resources	Venezuela	
Stein, Alfred, Prof. Dr.	Senior Fellow	Statistics and Mathematics	Netherlands	Wageningen Agricultural University, the Netherlands
Tiessen, Holm, Prof. Dr.	Senior Fellow	Organic Matter and Nutrient Dynamics in Tropical Ecosystems	Germany/Canada	University of Göttingen
Fellows				
Ssali, Henry, Dr.	Fellow	Land Use and Soil Management	Uganda	Kawanda Agricultural Research Institute, Kampala, Uganda
Wassmann, Rainer, Dr.	Fellow	Global Climate Change and Tropical Agriculture	Germany	IFU, Garmisch-Partenkirchen
Research Assistants				
Ahmed, Sohel	Research Assistant	Administration – International Doctoral Studies Program	Bangladesh	
Berg, Andrea	Research Assistant	Administration	Germany	
Block, Carolin (until April 2003)	Research Assistant	GIS, Hydrology, Organization Support	Germany	
Bremer, Sina	Research Assistant	Project Support	Germany	
Carrera Carazas, Luis Felipe	Research Assistant	Project Assistance	Peru	
Dame, Juliane	Research Assistant	Project Assistance	Germany	
Friesen, Jan	Research Assistant	GIS Lab, Hydrology, Remote Sensing	Germany	
Haller, Inga	Research Assistant	Administration, Project Assistance	Germany	
Heinen, Dorothee	Research Assistant	Project Assistance	Germany	
Holzknicht, Bianca	Research Assistant	Land Use Systems, Biodiversity	Germany	
Huang, Ying	Research Assistant	Economics	China	
Jend, Margaret	Research Assistant	Editing of Scientific Texts	Germany/UK	

Name, Title	Position	Area of Research	Country of Origin	Affiliation
Liebe, Jens	Research Assistant	GIS Lab, Remote Sensing	Germany	
Peters, Hanna	Research Assistant	International Doctoral Studies Program	Germany	
Retat-Amin, Maike	Research Assistant	Administration – International Doctoral Studies Program	Germany	
Schlömann, Andreas	Research Assistant	Project Assistance	Germany	
Schulz, Anja	Research Assistant	Project Assistance	Germany	
Staudenrausch, Sandra	Research Assistant	Administration	Germany	
Wang, Yingkun	Research Assistant	Project Assistance	China	
Wei, Qi	Research Assistant	Administration – International Doctoral Studies Program	China	
Weidmann, Susanne	Research Assistant	Project Assistance	Germany	
zum Felde, Alexandra	Research Assistant	Project Assistance	Germany	
Others				
Aengenendt-Baer, Sabine	Office Management		Germany	
Rupprecht, Deborah	Technical Assistant	Conducting Laboratory Analysis by Mass Spectrometry (IRMS), Stable Isotope Research	Germany	



Selected Publications 2002/2003

ZEF Discussion Papers on Development Policy

- No. 48:** Shyamal, K. Chowdhury : Attaining Universal Access: Public-Private Partnership and Business-NGO Partnership, Bonn, July 2002.
- No. 49:** L. Adele Jinadu: Ethnic Conflict & Federalism in Nigeria, Bonn, June 2002.
- No. 50:** Oded Stark: Overlapping, Bonn, August 2002.
- No. 51:** Roukayatou Zimmermann, Matin Qaim: Projecting the Benefits of Golden Rice in the Philippines, Bonn, September 2002.
- No. 52:** Gautam Hazarika, Arjun S. Bedi: Schooling Costs and Child Labor in Rural Pakistan, Bonn, October 2002.
- No. 53:** Margit Bussmann, Indra de Soysa, John R. Oneal: The Effect of Foreign Investment on Economic Development and Income Inequality, Bonn, October 2002.
- No. 54:** Maximo Torero, Shyamal K. Chowdhury, Virgilio Galdo: Willingness to Pay for the Rural Telephone Service in Bangladesh and Peru, Bonn, October 2002.
- No. 55:** Hans-Dieter Evers, Thomas Menkhoff: Selling Expert Knowledge: The Role of Consultants in Singapore's New Economy, Bonn, October 2002.
- No. 56:** Qiuxia Zhu, Stefanie Elbern: Economic Institutional Evolution and Further Needs for Adjustments: Township Village Enterprises in China, Bonn, November 2002.
- No. 57:** Ana Devic: Prospects of Multicultural Regionalism As a Democratic Barrier Against Ethnonationalism: The Case of Vojvodina, Serbia's "Multiethnic Haven", Bonn, December 2002.
- No. 58:** Thomas Berger, Heidi Wittmer: Clean Development Mechanism: Neue Potenziale für regenerative Energien? Möglichkeiten und Grenzen einer verstärkten Nutzung von Bioenergeträgern in Entwicklungsländern, Bonn, December 2002.
- No. 59:** Oded Stark: Cooperation and Wealth, Bonn, January 2003.
- No. 60:** Rick Auty: Towards a Resource-Driven Model of Governance: Application to Lower-Income Transition Economies, Bonn, February 2003.
- No. 61:** Andreas Wimmer, Indra de Soysa, Christian Wagner: Political Science Tools for Assessing Feasibility and Sustainability of Reforms, Bonn, February 2003.
- No. 62:** Peter Wehrheim, Doris Wiesmann: Food Security in Transition Countries: Conceptual Issues and Cross-Country Analyses, Bonn, February 2003.
- No. 63:** Rajeev Ahuja, Johannes Jütting: Design of Incentives in Community Based Health Insurance Schemes, Bonn, March 2003.
- No. 64:** Sudip Mitra, Reiner Wassmann, Paul L.G. Vlek: Global Inventory of Wetlands and their Role in the Carbon Cycle, Bonn, March 2003.
- No. 65:** Simon Reich: Power, Institutions and Moral Entrepreneurs, Bonn, March 2003.
- No. 66:** Lukas Menkhoff, Chodechai Suwanaporn: The Rationale of Bank Lending in Pre-Crisis Thailand, Bonn, April 2003.
- No. 67:** Ross E. Burkhart, Indra de Soysa: Open Borders, Open Regimes? Testing Causal Direction between Globalisation and Democracy, 1970-2000, Bonn, April 2003.
- No. 68:** Arnab K. Basu, Nancy H. Chau, Ulrike Grote: On Export Rivalry and the Greening of Agriculture – The Role of Eco-labels, Bonn, April 2003.
- No. 69:** Gerd R. Rucker, Soojin Park, Henry Ssali, John Pender: Strategic Targeting of Development Policies to a Complex Region: A GIS-Based Stratification Applied to Uganda, Bonn, May 2003.
- No. 70:** Susanna Wolf: Private Sector Development and Competitiveness in Ghana, Bonn, May 2003.
- No. 71:** Oded Stark: Rethinking the Brain Drain, Bonn, June 2003.

Books of ZEF-Staff and Collaborators

- Bierschenk, T. and G. Stauth (eds.) (2002): "Islam in Africa", Yearbook of the Sociology of Islam, 4, LIT, Münster.
- Debiel, T. (2003): "UN-Friedensoperationen in Afrika: Weltinnenpolitik und die Realität von Bürgerkriegen", J.H.W. Dietz Nachf., Bonn.
- El-Mikawy, N. and H. Handoussa (eds.) (2002): "Institutional Reform & Economic Development in Egypt Cairo", American University in Cairo Press.
- Jones-Pauly, C. and S. Elbern (eds.) (2002): "Access to Justice: The Role of Court Administrators and Lay Adjudicators in the African and Islamic Contexts", Kluwer Law International, The Hague.
- Schetter, C. (2003): "Ethnizität und ethnische Konflikte in Afghanistan", Dietrich Reimer Verlag, Berlin.
- de Soysa, I. (2003): "Foreign Direct Investment, Democracy & Development: Assessing Contours, Correlates, and Concomitants of Globalization", Routledge, London.
- Virchow, D. (ed.) (2002): "Efficient Conservation of Crop Genetic Diversity: Theoretical Approaches and Empirical Studies", Springer-Verlag, Berlin Heidelberg.

Reviewed Articles of ZEF Staff and Collaborators

- Abdullaev, I. I., Khamraev, A. Sh., Martius, Ch., Nurjanov, A. A. and R. A. Eshchanov (2002): "Termites (Isoptera) in Irrigated and Arid Landscapes of Central Asia (Uzbekistan)", in: Sociobiology, 40: 605-614.
- Bharati, L., Lee, K.-H., Isenhardt, T. M. and R. C. Schultz (2002): "Soil-water infiltration under crops, pasture, and established riparian buffer in Midwestern USA", in: Agroforestry Systems, 56: 249_257.
- Bierschenk, T. (2002): "Hans-Dieter Evers und die Bielefelder Schule", in: Entwicklung und Zusammenarbeit (E+Z), 43 (10): 273 – 276.
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- Asante, Felix Ankhoma: "Poverty Reduction, Decentralisation and Access to Public Goods and Services in Ghana".
- Asfaw, Abay: "Costs of Illness, the Demand for Medical Care, and the Prospect of Community Health Insurance Schemes in the Rural Areas of Ethiopia".
- Aung, Mie Mie: "The Fate of Carbon in Azolla-Anabaena Symbiosis".
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- Fatondji, Dougbedji: "Organic fertilizer decomposition, nutrient release and nutrient uptake by millet crop (*Pennisetum glaucum* (L.) R.Br.) in a traditional land rehabilitation technique (Zai) in the Sahel".
- Gichora, Mery: "Towards Realization of Kenya's Full Beekeeping Potential: A Case Study of Baringo District".
- Hafeez, Muhammad Mohsin: "Water Accounting and Productivity at Different Spatial Scales in a Rice Irrigation System: A Remote Sensing approach".

- Iskandarani, Maria: "Economics of Household Water Security in Jordan", in: *Development Economics and Policy*, 26, Peter Lang, Frankfurt a.M. (2002).
- Kaizzi, Crammer Kayuki: "The Potential Benefit of Green Manures and Inorganic Fertilizers in Cereal Production on Contrasting Soils in Eastern Uganda".
- Li, Zhaohua: "Diversity and Ecology of Mountain Bamboos in the Shennongjia National Nature Reserve of Central China: Implications for Resource Management and Biodiversity Conservation", in: *Ecology and Development Series*, 7, Cuvillier Verlag, Göttingen (2003).
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- Sheng, Mingzhi: "Lebensmittelkonsum und -konsumtrends in China. Eine empirische Analyse auf der Basis ökonomischer Nachfragemodelle", in: *Development Economics and Policy*, 24, Peter Lang, Frankfurt a.M. (2002).
- Song, Gi-Soon: "The Impact of Information and Communication Technologies (ICTs) on Rural Households: A Holistic Approach to the Case of Lao People's Democratic Republic".
- Suwanaporn, Chodechai: "Determinants of Bank Lending in Thailand: An Empirical Examination for the Years 1992 to 1996".
- Widyastuti, Rahayu: "Soil Fauna in Rainfed Paddy Field Systems: Their Role in Organic Matter Decomposition and Nitrogen Turn-over".
- Wiesmann, Doris: "An international Nutrition Index: concept and analyses at country levels", in: *Development Economics and Policy*, 24, Peter Lang, Frankfurt a. M. (2003) (forthcoming).
- Woelcke, Johannes: "Bio-Economics of Sustainable Land Management in Uganda".



Workshops and Conferences

17 June 2002

Lecture/Workshop: Hyperspectral Remote Sensing - Basics, Techniques and recent Issues in Application for Imaging and Mapping the Land Surface
Organized jointly by ZFL and RGRS

20–21 September 2002

Workshop: GROMS: GIS and database training workshop
Organized by the Center for Development Research (ZEF), ZEF Bonn

22 November 2002

Workshop: Chancen und Fallstricke der Interdisziplinarität: Sozial- und Kulturwissenschaftler in naturwissenschaftlich geprägten Forschungsprojekten
Organized by the Center for Development Research (ZEF) and the Institute for Ethnology and African Studies (BIOTA), University of Mainz, ZEF Bonn

29 November 2002

Workshop: Civil Society and State Building in Afghanistan
Organized by the Center for Development Research (ZEF), ZEF Bonn

16 December 2002

Video Conference: Global Dialogue I: "Impact of Information and Communication Technologies on Rural Households and Small and Medium Enterprises"
Organized by the Center for Development Research (ZEF); Participating Countries: Ghana, Jamaica and Washington (IFPRI)

18 December 2002

Video Conference: Global Dialogue II: "Impact of Information and Communication Technologies on Rural Households and Small and Medium Enterprises"
Organized by the Center for Development Research (ZEF); Participating Countries: India, Uzbekistan, Tanzania

13–15 January 2003

Workshop: Theories of Development and Underdevelopment
University of Landau

21 January 2003

Workshop: Afghanistan: From Economy of Violence towards Economic Reconstruction
Organized by the Center for Development Research (ZEF), ZEF Bonn

7 February 2003

Conference call: "Outcomes of Community-Company Negotiations over Forest Resources in the Context of Decentralization Reforms in Indonesia."
ZEF and the Center for International Forestry Research (CIFOR), Bogor, Indonesia. Funded by the Robert Bosch Foundation.

10–11 February 2003

Project Launching Workshop: Conservation and Use of the wild Populations of Coffee Arabica in the Mountain Rainforests of Ethiopia.
Organized by Center for Development Research (ZEF) University of Bonn And Ethiopian Agricultural Research Organization (EARO) Addis Ababa, Addis Ababa

24 April 2003

Podiumsdiskussion: "Irak nach dem Krieg: Zerfall oder entwicklungspolitische Perspektiven?"
Organized by the Center for Development Research (ZEF), ZEF Bonn

21–24 May 2003

Colloquium: Promoting Security in Afghanistan and the Region
Organized by the Liechtenstein Institute on Self Determination, Princeton in collaboration with the Center for Development Research (ZEF), Avendi, Bad Honnef and ZEF, Bonn

27 May 2003

Workshop: Human Rights, Development, and the Private Sector: Who carries responsibility and how?
Conversational Workshop between United Nations Volunteers and ZEF, Bonn, ZEF

30 May – 1 June 2003

Symposium: State Reconstruction and International Engagement in Afghanistan
Organized by the Center for Development Research (ZEF) and the Development Research Centre, London School of Economics, ZEF, Bonn

11 June 2003

Workshop: Structures of Violence
Organized by the Center for Development Research (ZEF) in collaboration with BICC (Bonn International Center for Conversion), ZEF, Bonn

Funding Partner Organisations and Institutions

(For research projects, stipends, conferences)

- ▶ Bertelsmann Stiftung (Bertelsmann Foundation)
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- ▶ Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (German Federal Ministry of Economic Cooperation) (BMZ)
- ▶ Commission on Human Security, United Nations
- ▶ Deutsche Forschungsgemeinschaft (German Research Foundation) (DFG)
- ▶ Deutscher Akademischer Austauschdienst (German Academic Exchange Service) (DAAD)
- ▶ Directorate General for International Cooperation of The Netherlands (DGIS-ADEPT)
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- ▶ Europäische Union (European Union) (EU)
- ▶ Deutsche Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation) (GTZ)
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- ▶ Landesministerium für Wissenschaft und Forschung des Landes Nordrhein-Westfalen (Ministry of Science and Research of North Rhine Westphalia)
- ▶ Ökumenisches Studienwerk (ÖSW)
- ▶ Overseas Development Institute (ODI)
- ▶ Robert Bosch Stiftung (Robert Bosch Foundation)
- ▶ United Nations Volunteers (UNV)
- ▶ Vater und Sohn Eiselen Stiftung
- ▶ Volkswagen Stiftung (Volkswagen Foundation)



Academic Awards

The following awards have been given to ZEF staff during 2002/2003:

- ▶ Dr. Rolf Sommer, a former PhD and postdoc at ZEF, has won the "Josef G. Knoll- Wissenschaftspreis" 2002 by the Eisen-Stiftung, Ulm, for his PhD thesis on "Water and Nutrient Balance in Deep Soils under Shifting Cultivation with and without Burning in the Eastern Amazon". The "Josef G. Knoll-Wissenschaftspreis" is awarded to young scientists who focus on methods to combat hunger in developing countries.
- ▶ Mr. Abay Asfaw was awarded two prizes for his PhD-thesis on "Costs of Illness, the Demand for Medical Care, and the Prospect of Community Health Insurance Schemes in the Rural Areas of Ethiopia". He received the "Josef G. Knoll-Wissenschaftspreis" in October 2002. Furthermore, he was awarded the "Theodor Brinkmann-Förderpreis" by the "Theodor Brinkmann Stiftung" in July 2003. This prize is awarded annually for the best dissertation at the Faculty of Agriculture of the University of Bonn.
- ▶ Mrs. Darya Zavgorodnyaya was awarded the "Internationaler DLG-Fortbildungspreis" of the "Deutsche Landwirtschaftliche Gesellschaft" in Munich for her work at the Uzbekistan project in January 2003.
- ▶ Mrs. Darya Zavgorodnyaya also won the competition for the "Best Poster" at the "Deutscher Tropentag" at the University of Kassel, Witzenhausen in October 2002. Together with her colleagues Mr. Holm-Müller and Peter Wehrheim, she created a poster on the Uzbekistan Project titled "Organizational Efficiency of Water Users Associations in Uzbekistan".

The Society of the Friends for Development Research ZEF e.V. (reg.Ass.)

The Society of the Friends for Development Research was founded to build a network of experts in order to promote the exchange of scientific knowledge and practical experiences at ZEF. The overall objective of the Society is the fostering of knowledge and understanding of development research and development policy. The members of the Society are inter-

nationally experienced scientists, politicians, entrepreneurs, and developmental practitioners from Germany, some of them already retired. All members committed themselves to share their profound knowledge and experiences with ZEF staff, especially with the new generation of academics at ZEF.

ZEF's Cooperation Partners 2002/2003

A complete list of our national and international cooperation partners can be found at our Homepage: [WWW.ZEF.DE/links/Cooperation Partners](http://WWW.ZEF.DE/links/Cooperation%20Partners).

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