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## Impressum

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# Preface

The start of the new millennium has provoked a wave of commentaries reflecting on the achievements of the past decades. The progress in the areas of development (elimination of poverty and hunger) and ecology (sustainable use of natural resources) in our limited world is not all that impressive. The Center for Development Research (Zentrum für Entwicklungsforschung, ZEF) at the University of Bonn sees this deficit as a challenge and a point of reference for defining its role as a German-based, but internationally oriented think tank. ZEF was conceived as a center where the major disciplines of development research—reflected in the departments “Political and Cultural Change”, “Economic and Technological Change”, and “Ecology and Natural Resource Management”—would interact to tackle development problems in a truly interdisciplinary approach. Development research, teaching, and policy advice were to be the three pillars on which the institute’s work was to be built.

After the initial phase in which ZEF was established (it only began operating in 1997), the institution consolidated its approach in the period covered by this report, namely July 1999 to June 2000. With the establishment of the third department “Political and Cultural Change”, which commenced work in October 1999, ZEF is now able to take a closer look at the social aspects of development, covering aspects of legal and institutional, socio-cultural and political changes. Strategic discussions are increasingly focusing on the strength of the Center’s cross-disciplinary thinking. The alignment of all research groups at ZEF behind a common strategic plan is an ongoing and challenging process. We believe the convergence of our thinking and its realization in concrete joint activities can already be recognized in this current report. The period from July 1999 to June 2000 has seen many promising developments at ZEF:

- The International Advisory Board, officially constituted in November 1999, has started to give ZEF the critical guidance and support without which such an institution would not thrive.
- The International Doctoral Studies Program for Development Research has been successfully initiated, and the first group of students from all over the world has been trained in two block courses. They are now applying what they have learnt at ZEF in field research for which most of them have returned to their home countries.
- ZEF has formed strategic alliances: amongst others, it is participating in the World Bank’s Global Development Network (GDN), various European development networks as well as in the German Net for Combating Desertification.
- ZEF has both expanded and intensified its research activities, resulting in numerous publications in peer reviewed journals, books and conference papers.

Several international conferences have been organized by ZEF. “World Axes 2000” (“Weltachsen 2000”), carried out together with the Center for European Integration Studies (ZEI) and in cooperation with the



*Margarita Marino de Botero, member of ZEF’s International Advisory Board, discussing with ZEF staff.*



The ZEF directors, Prof. Joachim von Braun, Prof. Andreas Wimmer, and Prof. Paul Vlek (from left) together with the rector of Bonn University, Prof. Klaus Borchard (2nd from left)

City of Bonn, was the first international conference to be held in the former Plenary Hall of the German Parliament in Bonn. World-renowned, distinguished speakers representing diverse cultures, international development, and the observation of human rights came together. Collectively, they outlined the major problems to be addressed in the new millennium, and an audience of around 1,000 people was proof that the public is very much concerned with these critical themes. The *Global Dialogue* on “The Role of the Village in the 21<sup>st</sup> Century”, a three-day event during the World Exhibition EXPO 2000 in Hanover, bringing together people from all over the world, will be another pioneering initiative organized by ZEF and largely supported by the private sector.

ZEF continues to receive wide support, both from within the German development community and from our partners outside. In this context we owe special thanks to the German Federal Government, various Federal Ministries, the State of North Rhine-

Westphalia, the University and the City of Bonn. Our thanks also go to all other sponsors as well as to the members of our Board, partners, friends and colleagues, who contributed to the development of ZEF and supported us in our ideas, concepts and activities. We especially wish to compliment and thank our staff for their help in implementing ZEF’s research agenda. Without the continuous and constructive assistance of all these institutions and people we would not be where we are today.

Prof. Dr. Joachim von Braun

Prof. Dr. Paul L.G. Vlek

Prof. Dr. Andreas Wimmer

## ZEF’s International Advisory Board

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Former State Secretary, Federal Ministry of Economic Cooperation and Development, Germany,

State Secretary, Federal Ministry of Economic Cooperation and Development, Germany

Swaminathan Research Foundation, India

Director General of the United Nations Environment Program, Kenya

Former Senior Vice President of the World Bank, Germany



# Research

## Overview

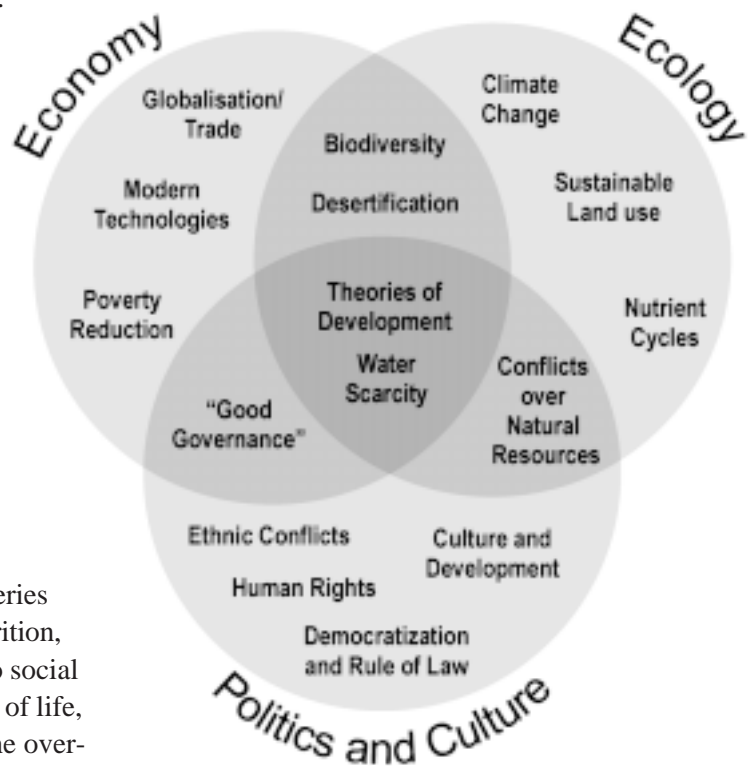
Research at ZEF aims at being theoretically, methodologically and empirically innovative. It should also be relevant for its partners and clients, giving due consideration to their research needs. ZEF takes a careful look at its comparative advantages and capacities in planning the research agenda. Identifying research priorities at ZEF follows certain guidelines which are described in detail in ZEF's strategy paper, currently under revision.

Being aware of the complexity of global development issues, ZEF has committed itself to an interdisciplinary approach. Each of the three departments of ZEF – dealing with cultural aspects and politics, economics and technology and the management of natural resources – has its own disciplinary and methodological background. Combining this knowledge in order to

- address global development problems adequately,
  - make a substantial contribution to problem solving and
  - provide sound policy advice
- will be the great challenge for ZEF.

Some of the research activities already build on the full range of disciplines combined in ZEF (such as research on water) while others rely on sub-sets of relevant disciplines (such as research on governance).

The figure gives an overview of the research priorities at ZEF. In the long run, it is foreseen to expand interdisciplinary activities such as those indicated in the area where the three circles overlap



Research activities of ZEF in 1999/2000 have to be seen against this background. So far, they can be grouped along the following eight thematic areas:

### ■ Human Resources and Poverty Reduction

Most people in developing countries face a series of problems ranging from poor health, malnutrition, limited access to resources, poor education to social exclusion. These factors constrain the quality of life, economic efficiency and growth as well as the overall sustainability of development efforts in the society



concerned. Against this background, ZEF's research agenda places emphasis on health and nutrition, social security and participation, risk management, combating child labor through improved education systems, as well as productive urban-rural linkages and migration policies.



### ■ Governance, Democracy, and Economic Reform

Democratic, stable and efficient governments, a coherent system of rules and regulations that is put into practice and a sound macroeconomic framework are some of the most important factors for successful development. However, where a minimal degree of political stability has been achieved or regained, state bureaucracy often displays features such as nepotism, inefficiency, arbitrariness, lack of transparency, and accountability. An interdisciplinary approach is used at ZEF to study the interactions between institutional and legal settings, the efficiency of markets and of development. Both the economic and political dimensions of the profound changes in the public sector in developing and transition countries are being studied. Major emphasis is put on institutional reform, the rule of law, decentralization and availability of public goods to the poor as well as "third sector" development (inclusive volunteers organizations).

### ■ State Building and Ethnic Conflicts

In the post-Cold War era ethnicity and nationalism have turned out to be the most important parameters of intra-state conflict. The politicization of ethnicity and consequentially evolving ethnic conflicts seem to be closely linked to state formation, nation-building and democratization. Research carried out by ZEF examines the interrelations between the processes of state building and ethnic conflicts by means of case studies on Iraq, Mexico, Afghanistan, and South Africa.

### ■ Human Rights and Development

All over the world an ever increasing number of state and non-state actors are seeking to enhance the respect for human rights. Development policies, both national and international, mirror the increased weight being given to the human rights approach. It is intriguing, however, that we know only relatively little about the actual mechanisms through which human rights are endorsed and realized. By means of a socio-legal analyses the focus of this program will be on the ways different constellations of actors and institutions influence the implementation of human rights norms. The multidisciplinary research team at ZEF aims at understanding the interaction between legal, political and administrative practice.

### ■ Modern Technologies for Development

Information and communication technologies (ICT) as well as biotechnology are the main technology areas said to revolutionize worldwide development in the coming decades. Such far-reaching technologies have great potential for improving the situation of the poor in developing countries. However, the specific technological de-



signs and institutional mechanisms must ensure that poor people have adequate access to these innovations. Without policy support, technological developments risk bypassing the low-income countries and the poor in particular. This would further aggravate the technological gap. This research program aims to identify conditions and constraints for technology development and utilization in low-income countries, with particular emphasis on ICT and agricultural biotechnology. In these fields ZEF research has close linkages to private sector initiatives.

### ■ Biodiversity and Ecosystems in a Development Context

Much has been done to safeguard the world's genetic resources, for which purpose both national and international conventions have been drawn up. Thus, it might seem that genetic resources are well protected for future generations. However, genetic resources are declining and many species are on the brink of extinction. Even economically important plant genetic resources for food and agriculture (PGRFA) are running the risk of disappearing. The political will to conserve PGRFAs has been expressed by many governments, however, information deficits and lack of long-term financial support constrain the implementation of a sound conservation approach. Likewise, efficient conservation of animals is impossible without reliable information about their distribution. At present, ZEF is analyzing the efficiency of PGRFA conservation activities and has set up the Global Register of Migratory Species (GROMS). This applied and interdisciplinary research will provide decision-makers at different levels with information on how to set priorities in biodiversity policies.



### ■ Sustainable Land Use Systems

Soils and water resources in the tropics are often inefficiently used. Traditional agriculture is challenged by a more ecological approach which takes soil life into account as well as the ecological services provided by it. Soils degrade because farmers lack the knowledge or the financial resources, or both, to invest in long-term soil fertility, or because they are not encouraged to make such investments by the existing land tenure systems. Several projects at ZEF deal with establishing sustainable land use systems in countries in all tropical continents





and in humid as well as semi-arid or arid regions. The approach goes mostly beyond the narrow view of natural science alone, with economists and social scientists analyzing economic, cultural, political and administrative aspects.

### ■ Atmosphere and Water Management

Water is another key resource that has to be sustainably managed for the survival of our species on this planet. Where this does not happen, political conflicts arise over access to this basic resource, or ecological catastrophes ensue, as in the Aral Sea Basin. Similarly, the consequences of man toying with the climate may be disastrous, as can be seen in the expected rise of sea levels due to global warming. Worse, these consequences may be irreversible. One large research activity at ZEF is the integrative project on sustainable water use in the Volta River Basin. ZEF is



also studying water allocation in the Mekong River and ways to enhance household water security along the Jordan River. In the area of climate change, ZEF is currently preparing a workshop on the reduction of greenhouse gas emissions from tropical agriculture.



## Human Resources and Poverty Reduction

### ■ Social Security and Risk Management

Insurance systems and markets are rapidly evolving in developing countries. To facilitate this institutional change for the benefit of the poor ZEF research focuses on low income households' insurance needs. Insurance is believed to be a viable method of reducing individuals' and households' exposure to risks such as illness, disability, natural disasters, etc. ZEF aims to carefully examine people's experience with risk management organizations, thereby identifying the most appropriate institutions and mechanisms for reducing and coping with risks. Recognizing the pioneering research done by other institutions, ZEF has focused its work largely on the health care sector. The following research questions are addressed: What is the effective demand for health insurance and health services? What are the strengths and weaknesses of the existing schemes? Who participates and does social exclusion remain? What is the impact of the schemes on health outcomes and productivity and, finally, what are the prospects of a public-private partnership in the provision of insurance systems? Research is being conducted in Ethiopia, Ghana, Senegal, Tanzania and India.

Research in Ethiopia is looking, for example, at the demand for medical care and the potential role of community-based health insurance schemes (CBHISs) in rural areas. In a country like Ethiopia, very little is known either about factors that affect the decision of households to join such schemes or their revealed preferences. This study, therefore, analyzes the health care demand behavior and health shock coping mechanisms of rural households and investigates the feasibility and potential role of CBHISs in rural areas of Ethiopia.



*Health Care Center  
in Senegal*

Preliminary results of a survey of 350 households in four villages in rural Senegal, which was conducted by the Institute of Health and Economic Development (ISED), Dakar, show that the impact of CBHISs can be considerable: members of a "*mutuelle de santé*" (mutual health insurance) seem to be more concerned about their health status than non-members; the use of preventive health care as well as hospitalization increases among members and they feel more secure vis à vis the risk of becoming ill.

This project is financially supported by the STEP (Strategies and Tools against Poverty and Exclusion) program of the International Labour Organization (ILO).





## ■ Participation

Weinberger, K: "Women's Participation: An Economic Analysis in Rural Chad and Pakistan," Peter Lang: publication series Development Economics and Policy Bd. 15 (Frankfurt, 2000)

Much has been written about the apparent role of participation in the development process but costs and benefits are seldom calculated. Participation is understood as taking part in a process which strengthens abilities and capabilities of poor people. A research project on the "Economics of Participation" that was completed at the beginning of 2000, was intended to identify the factors explaining participation. Based on field studies conducted in rural regions of Southern Chad and Kashmir, Pakistan, a major result of the empirical analysis was the identification of a "middle-class effect" of participation. This means that it is mainly people from the middle class who participate. Additionally, it was shown that an existing social network within communities is a precondition for participation. In the context of this research project the International Conference "Women Farmers: Enhancing Rights and Pro-

ductivity" took place at ZEF on 26 and 27 August, 1999. It was organized in cooperation with Tufts University in Boston and the University of Hohenheim. Around 100 experts from research institutions, development agencies and non-governmental organizations (NGOs) worldwide came together to discuss "best practices" of how women can be given a better opportunity to participate in the development process. Papers from the conference can be downloaded from the ZEF homepage at [http://www.zef.de/zef\\_englisch/f\\_veranstalt.html](http://www.zef.de/zef_englisch/f_veranstalt.html).



Women in Kashmir

## ■ Labor and Migration Issues

Employment is crucial for poverty reduction but child labor may inhibit building of human capital and growth in the long run. Child labor in Africa plays a significant role, as about 80 million children between the age of 5 and 14 are participating in work activities. The number is expected to increase to 100 million by the year 2015. Ethiopia is one of the Sub-Saharan African countries where the rate of participation of children in economic activities is estimated to be as high as 50 per cent. An empirical study was launched in 1999. It attempts (1) to examine the incidence of child labor in rural Ethiopia, and (2) to identify the determinants of children's labor force participation. Some preliminary results show that the incidence of child labor is indeed very high in rural areas, where children are forced to work for long hours either in domestic activities or on the farm, thereby reducing the time they have for schooling.

Employment of the poor closely relates to migration. Hence, ZEF aims to address a set of frontier research questions with high relevance for affected countries. ZEF research on migration issues included two theoretical papers. The results show, among other things, that out-migration from a low-income country to a richer country raises both the level of human capital formed by optimizing individuals in their home country and the average level of human capital of non-migrants in the country. A well-controlled, restrictive migration policy can enhance welfare and nudge the economy toward the social optimum.

ZEF Research on child labor is conducted in cooperation with Addis Ababa University, Ethiopia.

Stark, O., Wang, Y., "Externalities, Human Capital Formation, and Corrective Migration Policy," ZEF Discussion Papers on Development Policy No.11 (Bonn, 1999)

Stark, O., Wang, Y. Q., "A Theory of Migration as a Response to Relative Deprivation," ZEF Discussion Papers on Development Policy No. 25 (Bonn, 2000)



Employment and migration issues are of particular relevance for the poorest regions of the world, like South Asia. Therefore, a survey on the implications of economic liberalization and employment in South Asia has been conducted. The results show that expanding productive employment is central for sustained poverty reduction and food security in low income countries, as labor is the main asset for the majority of the poor. In South Asia, the impact of economic liberalization on employment and labor income has been lower than in Sub-Saharan Africa or Latin American countries, but higher than in some of the East Asian countries.

## ■ Food Security, Food Consumption and Nutrition

The fundamental problem of poverty remains hunger, undernutrition and malnutrition. ZEF has established a recognized capacity in related research areas and continuous studies on food consumption and nutrition in Africa and Asia (especially China). Based on this research experience, ZEF has developed an International Nutrition Index. This Index has been designed to better assess and compare the nutrition status of various countries. The International Nutrition Index is composed of the percentage of undernourished people in the population, the numbers of underweight children under the age of five and the mortality rates of under fives. A cross-country comparison of the Nutrition Index and national income shows that there is scope and need for implementation of policies to relieve hunger and malnutrition. It can serve to comprehensively monitor progress toward the goals of the World Food Summit (1996) to halve hunger and undernutrition by the year 2015.

Two case studies on relief aid projects in Angola and in Mozambique have been carried out. Based on a thorough analysis of the framework conditions under which relief agencies have to operate, the study shows that different levels of information problems and asymmetries within relief agencies and between donors and relief agencies hinder the interpretation of information and, moreover, impede the necessary flexibility of intervention.

The food crises of war and disaster zones have been studied by ZEF also applying new methods. ZEF research on urban and rural consumption patterns and trends in China is based on econometric food demand models. Projections of food demand have been conducted up to the year 2020. Results support the importance of a disaggregated analysis, as consumption reactions on income, prices and social factors largely differ across socio-economic groups. Relevant information for market developments and fighting poverty emerges from such research in China.

In cooperation with German Agro Action (Deutsche Welthungerhilfe) and the International Food Policy Research Institute (IFPRI), the "Yearbook on World Food Security" (Jahrbuch Welternährung) was published in spring 2000 addressing the general public in German speaking countries. Current topics on food security and nutrition ranging from trade liberalization to the impact of biotechnology and genetic engineering are analyzed and discussed by experts.



Deutsche Welthungerhilfe, ZEF-Bonn, IFPRI, "Jahrbuch Welternährung," Fischer Taschenbuchverlag (Frankfurt, 2000)

Wiesmann, D., von Braun, J., Feldbrügge, T., "An International Nutrition Index. Successes and Failures in Addressing Hunger and Malnutrition," ZEF Discussion Papers on Development Policy No. 26 (Bonn, 2000)



## Governance, Democracy, and Economic Reform

### ■ Governance and Development

Dethier, J.J. (ed.), "Governance, Decentralization & Reform in China, India & Russia," Kluwer Academic Publishers (Dordrecht/Boston/London, 2000)

ZEF has initiated a number of projects dealing with governance, democracy, the rule of law, decentralization and the provision of public goods (e.g. public health) to the poor. These projects are dependant on expertise from various disciplines, namely social sciences and economics. Both qualitative and quantitative research methods, field studies, historical analysis, comparative legal studies, as well as cross-sectional analysis of statistical data are used to understand the interaction between legal and political systems and development.

ZEF research on governance, decentralization and reform in China, India and Russia has been documented in a recent book publication edited by Jean-Jacques Dethier. It provides important insights into the state of the art of economic and political research on the emerging field of "governance". The huge and diverse examples of China, India and Russia pose a challenge. This volume facilitates the definition of research frontiers and a research agenda on the topic of governance, especially related to fiscal federalism, decentralization, the provisioning of public goods, and the rule of law as key elements of "good governance". It certainly helps immensely in setting the stage for further research on governance and development.

### **Public law and governance: decision-making processes and structural deficits**



Distorted or manipulated decisions taken by government institutions correlate with structural deficits, either legal or political. Based on this assumption, a comparative research project on governmental decision-making processes has been put on track at ZEF. Especially in developing countries, with state institutions and administrative functions in the process of adjusting to standards of liberalization and democratization, the issue of institutional settings and decision-making structure is fundamental. How can public law respond to the task of minimizing the susceptibility to "corrupted" decisions within the legislative, executive and judiciary? And what institutional and regulatory reforms are needed to discipline the most influential

factors in this respect, such as, for example, the military, taking into consideration the countries' legal and political tradition? These questions, which are closely related to the implementation of so-called *good governance*, are being pursued in selected Latin American countries.

### **Governance, democracy and economic development**

It is widely recognized that economic development requires "proper" governance. As such, democracy, which is now almost universally accepted as the most desirable political system, has also gained center stage. There is, however, very little



consensus on democracy's role in governance and development, despite the ubiquitous catchwords "participation", "transparency", "empowerment", etc. which have come to dominate the language of development. In fact, there is much in the theoretical and empirical literature to suggest incompatibilities between democracy, governance and development, the success of the newly industrialized East Asian countries providing the prime example. Dismal authoritarian failures have led some to suggest that it is not the type of regime but institutional arrangements which matter. Much of the scholarship on democracy and governance does little to dissect the many aspects, both normative and substantial, of varying democratic processes and institutional arrangements. Since democracy is often treated in a monolithic fashion, little meaning has in the past been attached to this term regarding its impact on "good governance" and development.

ZEF research focuses on questions such as: What types of political processes within democracies are more likely to ensure public goods are effectively provided? What factors and institutional arrangements foster an "encompassing interest" among the rulers? What processes assist and mitigate optimal institutional arrangements that minimize capricious rule? How, why and when is consensual policy-making possible and how does it come about? To answer these and related questions, this research moves beyond the narrower confines of the purely economic approaches which dominate the literature.

### **Institutional reforms in Egypt**

Issues of governance are also highly relevant in the Egyptian context. An institutional analysis of the legislature and the public and private promotion agencies has been conducted in an attempt to underline the urgency of institutional reform for investment and export promotion in Egypt. The field research which was coordinated jointly with the Economic Research Forum for the Middle East, Iran and Turkey, included a survey of the private sector, public officials and interest group representatives, the analysis of parliamentary discussions of nine economic laws, and sifting through official documents on budget allocations. The project results, which were discussed at a workshop organized by ZEF in cooperation with the Economic Research Forum (ERF) in Cairo in April 2000, emphasize the importance of institutional reforms.

The private sector underlined the weak legislative process and also stressed the need for administrative reform in tax, tariff, investment and export promotion agencies. State officials stressed the lack of trained personnel, the shortcomings of recruitment/reward policies and the poor information/knowledge base. The latter was found to be partially the result of a weak interest representation structure. A ZEF discussion paper and proceedings of the workshop are being compiled.

### **The rule of law in India and legal reform in China**

The heart of a functioning government is the rule of law, which is itself determined by the judiciary. ZEF undertook two projects in India that were based on this assumption. The first project, which was completed in the first half of 2000, analyzed the impact of a weak judiciary on the economic and social development of India. In-

de Soysa, I. (2000), "The Resource Curse: Are Civil Wars Driven by Rapacity or Paucity?", in: Berdal, M. and D. Malone (eds.), *Greed & Grievance: Economic Agendas in Civil Wars*. Lynne Rienner, Boulder, Col., pp. 113-135.



*Chinese women*



Mahal, A., Srivastava, V. and Sanan, D., "Decentralization and Public Sector Delivery of Health and Education Services: The Indian Experience," ZEF Discussion Papers on Development Policy No. 20 (Bonn, 2000)

Junhai, L., "Legal Reforms in China", ZEF Discussion Papers on Development Policy No. 13 (Bonn, 1999)

Menkhoff, L., "Bad Banking in Thailand? An Empirical Analysis of Macro Indicators", ZEF Discussion Papers on Development Policy No. 14 (Bonn, 1999)

dia is a federal union, where the States administer the judiciary following a uniform code of civil procedures. Empirical results show that, although the effects are indirect, a weak judiciary has a significant negative effect on per capita income and poverty ratios.

The second ongoing ZEF project examines the constraints determining why the poor do not use the courts. Therefore, a comprehensive survey of those calling on the judiciary on all three state levels, namely High Court, District Court and Lok Adalat, as well as a control group of non-users randomly selected in rural areas, is presently being conducted in India.

ZEF research has also looked at the legal system in China and its reform process. The results have been published in a ZEF discussion paper.

### **Decentralization and access to public goods by the poor**

Decentralization of policy-making in Russia in the course of transition coincided with a shift of responsibilities for social service provision to local and municipal administrations. However, more far-reaching institutional and organizational reforms of social services in rural areas of Russia have only recently started. Improving the efficiency of social service provision in rural areas seems to be hampered by various market and policy distortions. An in-depth study of the nature of social service provision on the local level is being carried out in three rural regions of Russia.

A further study in Ghana addresses the following issues: (1) has the decentralization process helped in delivering public goods and services in Ghana? and (2) to what extent has access to public goods and services helped to reduce poverty in Ghana? Surveys will be conducted in four districts in Ghana.

### **Bad banking in Thailand**

Before the economic crisis started in 1997, Thailand was one of the fastest growing economies. Many economists blame financial institutions for inappropriate behavior, for example, relationship-based lending. ZEF research analyzes how bank lending decisions are determined in Thailand. It looks at any distinct features of bank lending that may explain the crisis, for example, moral hazard and adverse selection problem. How do Thai banks come up with important terms of credits? How are interest rates, collaterals and the amount of lending determined? These questions are currently being addressed by ZEF.

## **■ Economies in Transition: Governance Research in Russia**

Two major research projects on the transition of Russia's agro-food sector have been carried out consecutively by ZEF. Both projects were financially supported by the Volkswagen Foundation. One major finding of the first research project was that food markets within Russia are poorly integrated. It was hypothesized that one reason for this observation is the significant degree of decentralization of policy-making in Russia as a result of President Jelzin's policy at the beginning of the early transition period. Therefore, the overall topic of the second project is "The Impact of Liberalization cum Decentralization on Russia's Agro-food Sector". The regional



focus of this project is Siberia because the vast spatial extension of this part of Russia poses additional problems.

The studies on this research topic are divided into various sub-components:

*Optimal trade and integration strategies.* To analyze various potential integration strategies for Russia's agro-food sector, a one-country and a multiregional computable general equilibrium model for Russia has been developed. The analysis supports the theory that a strategy of *both* inter-regional and inter-national integration would be optimal. However, cross-sectional analyses showed that Russia's regions are pursuing strategies of either self-sufficiency or integration on the level of so-called macro-regions instead of fostering inter-regional trade per se. With respect to the international integration efforts it became evident that negotiations on agricultural sector issues are major impediments preventing a more speedy accession of Russia to the World Trade Organization (WTO).

*Space and transformation.* Here the emerging new spatial allocation patterns of the food processing industry is studied. A survey of new and old food processing firms is being implemented in the Oblast Irkutsk, a region in Siberia. Furthermore, the impact of specific developments such as the restructuring of the transport sector on the evolution of the food marketing chain has been studied in various regions both in the western part of the country as well as in selected regions of Siberia.

*Financial crisis and micro-macro linkages with the agro-food sector.* The liberalization of Russia's foreign exchange and trade system has made the country vulnerable to international financial and economic crises. The significant devaluation of Russia's ruble following the financial crisis in 1998 "opened a window of opportunities" for domestic agro-food production. One general positive effect of the crisis was to bring the Russian economy closer to a more sustainable macro-economic equilibrium which is likely to overcompensate for the macro-economic instability which has again increased in the short-term. Firm-level and household surveys have been carried out in two regions of Siberia to study the micro-macro implications of the crisis on the agro-food economy.



Poverty in Moscow



Wehrheim, P., Froberg, K., Serova, E., and von Braun, J. (eds.), "Russia's Agro-food Sector: Towards Truly Functioning Markets," Kluwer Academic Publishers (Dordrecht, 2000)

Serova, E., von Braun, J., and Wehrheim, P. (1999) "Impact of Financial Crisis on Russia's Agro-food Economy," *European Review of Agricultural Economics*, 26 (3): 349-370.

Kuhn, A. and Wehrheim, P., (1999), "Klassifizierung der russischen Agrar- und Ernährungswirtschaft in der Transformation auf der Ebene der Regionen," *Europa Regional*, 7 (2): 2-9.



## ■ Volunteering

The past decade has witnessed a surge in private volunteer activity across the globe, generating an optimistic belief in the potential of the “third sector” in “filling” the niches where both the state and markets have failed. Yet, despite the social and economic importance attributed to this sector, there is little hard data. ZEF launched a comprehensive cross-country data collection study, to be followed by efforts to assess the economic contribution made by volunteers worldwide, thereby raising their societal appreciation. The research probes the following questions: How extensive is volunteering? What are the forces behind volunteering? What role does volunteering play in the development process? How can volunteering be stimulated? A forthcoming ZEF discussion paper on the economics of volunteering provides a conceptual background for future research. Preliminary results indicate that volunteering makes a significant “economic” contribution in most developed countries and is growing in importance in many developing countries.

The project is conducted in close collaboration with the United Nations Volunteers Program (UNV), with infrastructural support from the offices of the United Nations Development Program (UNDP) and ZEF's research partners in Bangladesh, Ghana, Peru, Poland, South Korea and Germany.

## ■ Environmental and Social Standards and the WTO

In the past year, ZEF research concentrated on two main topics related to trade policies, namely the impact of environmental standards on international competitiveness and the role of labeling for promoting social and environmental goals.

### **Environmental standards and international competitiveness**

ZEF investigated to what extent environmental standards for the production and processing of selected agricultural products affect international competitiveness in the context of growing trade liberalization. The study focused on grain, vegetable oils and chicken production systems in Brazil, Indonesia and Germany. The one-year project was financially supported by the German Ministry of Agriculture. The analysis shows that the impact of environmental standards on the production cost is relatively small (up to 4.4%) when typical farms are considered. At a processing level, the results are ambiguous. In addition, it was found that total costs differ significantly in the three countries. Factors like the wage level, prices for land, machines, buildings and equipment are the decisive determinants of the total international cost differences and thus competitiveness.

The case studies also revealed that there are more and higher standards in Germany, but most of them are of no relevance for the typical farms and plantations in Brazil and Indonesia. Differences in environmental standards are not only determined by climate, but also by the population density, country-specific economic and social conditions as well as differences in the scarcity of environmental goods. Current environmental laws are neglected and not enforced in Brazil and Indonesia, which results in large cost savings with possibly significant adverse environmental externalities (such as possible over-extended land use in Brazil and forest burning in Indonesia).

The study was conducted in cooperation with the

- Centre for Advanced Studies and Applied Economics (CEPEA) of the University of São Paulo, Brazil
- Centre for Agricultural Policy Studies (CAPS), Jakarta, Indonesia, and
- Global Farm GbR, Braunschweig, Germany



## Social and eco-labeling

Does labeling promote sustainable development? The results of ZEF research show that certification in the field of the environment is indeed an attractive solution for the problem of eco-unfriendly methods of production as it is a voluntary and market-driven approach. However, problems with labeling schemes arise from the fact that these initiatives operate across different economic, political and legal environments. Thus, criteria of labeling schemes need to be adjusted to local conditions. There are no guidelines with respect to their development, implementation or assessment. The fee for participating in a labeling scheme can also be too high to attract developing country producers.



*Chicken production in Brazil*

Contrary to what might be expected, a second ZEF study revealed that social labeling can make children and Northern producers worse off, while consumers—particularly in the North—and Southern producers benefit. Children are worse off because the danger remains that exporting companies will dismiss their child workers, who will then be pushed into the more hazardous jobs of the informal sector. Furthermore, insufficient monitoring of labeling programs can easily lead to false labels and thus undermine the trust of consumers in the longer run, causing the positive terms of trade for Southern countries to vanish.

Grote, U., Basu, A. K. and Chau, N. H., "The International Debate and Economic Consequences of Eco-Labeling," ZEF Discussion Papers on Development Policy, No. 18 (Bonn, 1999)

## ■ The Future of EU-ACP Relations

A new partnership agreement was signed by the EU and the 71 states of Africa, the Caribbean and the Pacific region (ACP countries) in June 2000 in Cotonou, Benin. Replacing the present Lomé convention, it should be valid for the next 20 years.

A total of 23 billion Euro was spent within the framework of the Lomé convention between 1975 and 2000. An econometric analysis carried out by ZEF showed that the EU funds were not distributed primarily in accordance with the level of development or efforts of the ACP countries concerning economic policy or human rights, but rather according to the interests of EU members. In the future, the funds (13.5 billion Euro for 2000 to 2007) should be distributed according to needs and performance criteria, and therefore the allocation of EU aid is expected to change considerably.

Negotiations on regional free trade agreements (FTAs) for reforming trade relations between the EU and the ACP states will start in 2002. Their effects are studied by ZEF for the West African Economic and Monetary Union (UEMOA). A computable general equilibrium (CGE) model has been used to analyze the impact of an FTA where mainly the UEMOA countries have to reduce tariffs, as the EU already grants them almost free market access. The results, which were presented at the

Wolf, S., and Spoden, D., "Allocation of EU Aid towards ACP Countries", ZEF Discussion Papers on Development Policy No. 22 (Bonn, 2000)





Third Annual Conference on Global Economic Analysis in Melbourne, Australia in June 2000, financially supported by the German Research Council (Deutsche Forschungsgemeinschaft, DFG), show that a reduction in tariff revenues by about 50% leads to a decline in real gross domestic product (GDP). To compensate for this, the government could raise other taxes or the EU could increase aid to reduce the adjustment costs of liberalization.

### ■ Promoting small and medium-scale enterprises in East Africa



*Small scale enterprise  
in East Africa*

The examination of possibilities of supporting private investment, which will become more prominent in the post-Lomé agreement, is the topic of a current ZEF research project which is being financially supported by the Alexander von Humboldt Foundation. This project looks at the chances, barriers and options of small and medium-scale enterprises (SME) in a liberal global economy in East Africa. The competitiveness of SMEs significantly depends on internal marketing efforts, investments in information and communications technology, and the level of education of the employees, as initial results of the study show.

This project is conducted in cooperation with the University of Dar es Salaam, Tanzania.



## State Building and Ethnic Conflicts

Ethnic conflicts seem to be characterized by their protracted nature and a potential for bringing about extreme violence and atrocities against civilians. In many cases, open violence or even civil war have led to the collapse of state structures and opened the path to warlordism and prebendalism. Ethnic wars are today perceived as the most important challenge to the global security system. The unresolved ethnic question represents one of the foremost obstacles for achieving good governance and providing a political environment conducive to sustainable development.

Unequal access to the economic, political and symbolic resources that the state controls are considered to be the main reasons for the politicization of ethnicity in periods of political transformation. However, there is still little understanding of how ethnic tensions are best managed during the process of state building, democratization and economic transformation. ZEF's approach is based on a thorough understanding of the dynamics of escalation and de-escalation in ethnic conflicts, more specifically of the conditions under which political entrepreneurs successfully mobilize their ethnic constituencies and choose violence as part of their power strategies.



### ■ Conference on Ethnic Conflicts

During the year 1999/2000, much energy was put into organizing a conference entitled "Facing Ethnic Conflicts—Perspectives from Research and Policy-making" that will take place in Bonn in late 2000. This conference will provide a platform for academics and policy-makers to exchange views on the difficulties and possibilities in managing ethnic conflicts peacefully. A variety of experiences, perspectives and approaches will be represented. Some of the most renowned researchers and policy-makers will review the state of the art in understanding the dynamics of escalation and de-escalation and in exploring possibilities of intervening at various stages of the process—from prevention to peace-building and maintenance.

### ■ Shadows of Modernity. State-Building, Nationalism and Ethnic Conflict

The central thesis of this project is that there is a systematic link between modern state formation and the politicization of ethnicity. Going beyond current debates on whether nations and ethnic groups were invented by elites or reconstructed on the basis of older identities, it offers a new understanding of political modernity itself. It shows that modern societies unfolded within the political and cultural confines of the nation state and deepened them with every step of development.

While the principles of democracy, citizenship and popular sovereignty allowed for



the inclusion of large sections of the population previously confined to the status of subjects and subordinates, new forms of exclusion based on ethnic criteria developed, largely unacknowledged by the grand theories of modernity as a universalistic



and egalitarian model of society. The main promises of modernity—political participation, equal treatment before the law and protection from the arbitrariness of state power, dignity for the weak and poor and social justice and security—were only fully realized for those who came to be regarded as true members of the nation.

This project has resulted in a book which contains two theoretical chapters outlining the basic conceptual tools of analysis and the main hypothesis; it further contains two comparative chapters on ethnic conflicts in the South and on racism and xenophobia in the West; the book concludes with

case studies on the history of nation building and the ethnicization of politics in Mexico, Switzerland and Iraq.

### ■ Afghanistan—Ethnicization of a Conflict

Schetter, C. (1999),  
“Ethnizität als Ressource der  
Kriegführung”, in: Schetter,  
C. and A. Wieland-Karimi  
(eds.), *Afghanistan in  
Geschichte und Gegenwart*,  
Frankfurt a. M., pp. 91-108.

Afghan society, which is segmented along various ethnic lines, has been torn by war for more than 20 years. With the collapse of the Communist regime in 1992, the ideological framework within which warriors were mobilized and claims to state power expressed changed considerably. The ideological opposites of Islam and Communism were replaced by ethnicity as the main source of political legitimacy. This project, which is near to completion, focuses on two issues. On the one hand, it examines the discourse of power, which resulted in establishing an ethnically de-



defined nation and an ethnic categorizing of political conflict. Of special interest is the creation of myths and stereotypes. Furthermore, the project analyzes how this ethnicized discourse has been reflected in an ethnic stratification system and in unequal access to political and economic resources controlled by the state.

On the other hand, the causes and courses of the ethnicization of the conflict in the 1990s are explored. The project examines how the warring parties used ethnicity to mobilize supporters and to claim rights as well as state resources. It is shown



how in the Afghan conflict an “ethnic climate” has emerged and has been installed as well as what the main barriers are.

### ■ Ethno-Nationalist Mobilization and Conflict Prevention in South Africa

At the beginning of the 1980s endemic political violence erupted in KwaZulu/Natal, South Africa claiming more than 21,000 lives by 1994. The intention of a one-year field research project is to explore the dynamics of the effective ethno-nationalist mobilization by the Inkatha Freedom Party (IFP). This mobilization played an important part in the violent conflict between supporters of the IFP and the African National Congress (ANC). Previous studies focused on the role of political elites—the so-called “ethnic entrepreneurs”. However, ethno-nationalist movements can only be effective if they are able to integrate the various social classes into their following. To fill the research gap, this recently established project will explicitly deal with the perspective of “non-elites”.

Although the conflict in KwaZulu/Natal has cooled down since 1994, there still exists a considerable potential for violence that constantly threatens the “fragile peace”. The second part of the research project will focus on methods of conflict prevention currently applied in the province in order to avoid a resurgence of violence. The project will describe and analyze the various preventive measures and try to evaluate their capability of preventing ethnic conflicts in a sustainable way.

### ■ Privatizing Peace?

This recently initiated research project addresses the role of the private sector in conflict management. Economic factors are frequently discussed in contemporary conflict theories: Development and modernization are regarded as processes that can aggravate and alleviate violent strife. However, little research has been done on private actors, such as major companies, in breaking or establishing peace.

This ZEF project will examine the role of the business sector in causing or intensifying violent conflicts, and it will explore the options of the private business sector in contributing to conflict prevention and transformation in collaboration with other stakeholders. The research project will not appeal to the enterprises’ philanthropy but it will analyze their (enlightened) self-interests for conflict transformation.



## Human Rights and Development

Hey, H. and Lasbrey, C. (1999), "Dutch Official Development Aid to Guatemala: Are Human Rights Promoted?" in: Stokke, H., Suhrke, A. and A. Tostensen (eds.), *Human Rights in Development: Yearbook 1998*, Kluwer Law International, Dordrecht, pp. 67-89.

Jones-Pauly, C. (2000), "Problems of International Law in the Recognition of Islamic Law", in: F. Vogel (ed.), *Islamic Law*, Harvard University Press.

In the course of democratization processes all over the world an increasing number of actors are seeking to enhance the respect for human rights. The international human rights legal framework has been enlarged and refined. More and more people and organizations are expressing interests and grievances in the language of rights, entitlements and obligations. Development policies, both national and international, increasingly reflect a human rights approach. Although, the 1990s witnessed a significant expansion of the human rights regime, today we still know little about the mechanisms through which human rights become respected in everyday life and become part of legal and political systems.

The central aim of the ZEF research program "Human Rights and Development" which began in January 2000 is to better understand why international human rights instruments are interpreted in different ways by different actors and how this influences the processes of their institutionalization and implementation at the national and sub-national level. Of special interest is the question of how various stakeholders adopt and transform human rights norms while implementing international human rights instruments and agreements. The research program consists of five projects.

### ■ Inventory on Human Rights Actors

In order to ascertain the "who's who" of Europe, and especially in Germany, in the field of human rights and development, information was collected on the work undertaken by different organizations in the field. This information is to be compiled in a functional inventory during the second half of 2000.



### ■ Inside and Outside the State: Human Rights, Enterprises and Global Governance

This research project, planned in cooperation with the Centre for Socio-Legal Studies, University of Oxford, United Kingdom, examines the impact of transnational non-state actors on the national dynamics of implementing human rights. In recent decades, multinational corporations have ex-



panded their activities, civil society movements have been strengthened across the globe and legal and quasi-legal sets of norms and instances of arbitration in the transnational space have proliferated. Concentrating on two countries from Eastern Europe and two from the “developing world”, this project seeks to understand how these developments influence national policies of human rights implementation.

### ■ Access to Justice: Human Rights Caught in the Crossfire

The purpose of this project is to identify—as a contextual factor determining the implementation of human rights—the basic nature of a legal system. The thesis is that the extent of implementation will differ according to whether a country has a unitary legal system or a pluralistic legal system. The project will be carried out by means of a comparative analysis of five countries from the southern hemisphere.



*Education – a basic right.  
Primary school in China  
(above) and Thailand (below)*

### ■ Trick or Trickle: The Incorporation of Human Rights Norms into Development Policy

Donor countries, international organizations and aid-recipient states are increasingly including human rights norms in their development policy. Central to this research project is the attempt to understand why, and with what effects, this is occurring. Through an analysis of policy documents and an examination of selected development projects, insight will be obtained into the extent to which human rights become implemented when human rights norms are integrated in the development policy. The project will be carried out through a comparative analysis focusing on Latin American states.

### ■ Putting Human Rights First?

Whether human rights should be regarded as only a part of, or as the primary explicit goal of development is the central issue of a ZEF workshop, “Putting Human Rights First? Rethinking Development and Trade Policies”, to be held in November 2000. Academics, officials from bilateral and multilateral aid and trade-related assistance agencies, as well as representatives of multinational business and worldwide NGOs have been invited. The workshop is designed to initiate a debate on the implications of making human rights the major aim of development. The workshop will lay the foundation for a larger conference on human rights and development to be held in 2001.





## Modern Technologies for Development

### ■ Information and Communication Technologies

Lal, K., "Information Technology and Exports: A Case Study of Indian Garment Manufacturing Enterprises," ZEF Discussion Papers on Development Policy, No. 15 (Bonn, 1999).

Maximo Torero, "The Access and Welfare Impacts of Telecommunications Technology in Peru," ZEF Discussion Papers on Development Policy, No. 27 (Bonn, 2000).

The development and spread of information and communication technology (ICT) is often touted as the harbinger of a new industrial revolution. International organizations are suggesting that the spread of and access to these new technologies should be viewed as an integral and primary element of a country's development strategy. Notwithstanding these views and the increasing diffusion of ICTs, their role in promoting growth and development is not seen unambiguously. Views range from optimism about the opportunities they provide to deep pessimism about the capabilities of developing countries to exploit these technologies to their benefit.

The debate on the role of ICTs in development suffers from a lack of convincing evidence and information. Recognizing this need, ZEF has launched a research program that aims to gather empirical evidence on the effects of these technologies on rural incomes, productivity and welfare. Currently, studies are under way in Bangladesh, China, Ghana, India, Laos and Peru.



First results indicate that people in rural areas benefit considerably from the provision of telephone services. The presence of phones reduces the need to travel and therefore the costs and risks associated with this method of gathering information. Villagers can receive better information about market prices for their products. The example of the Grameen Telephone Project in Bangladesh, in which poor women act as telephone agencies in their villages, shows that telephones also can be a business activity and a source of income in rural areas.

However, advanced ICTs, like e-mail and the internet still play a minor role in rural areas, because they still lack the most basic telecommunications infrastructure. In addition, adequate information is not available or only at prohibitive cost. Nevertheless, enterprises in developing countries are increasingly starting to use advanced ICTs. Large and multinational enterprises pioneered the use but small enterprises are following hard on their heels, trying to realize the benefits of these technologies, i.e. reducing communication costs, increasing flexibility and access to a vast pool of information on most recent technologies and business practices.



## ■ The Economics of Agricultural Biotechnology in Low-Income Countries

Few topics are as controversial as biotechnology in agriculture. Risks and potential benefits for low income countries are not yet comprehensively studied. ZEF's main research objective is to demonstrate the potential benefits of modern biotechnology in smallholder agriculture. Moreover, constraints on the full exploitation of these potentials are being identified. Empirical *ex ante* studies on the impacts of different biotechnology applications have been carried out in Mexico and Kenya in collaboration with the International Service for the Acquisition of Agri-biotech Applications (ISAAA). The studies which were sponsored by the DFG and the German Agency for Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit, GTZ) underscore that biotechnology offers efficient solutions to a wide range of agronomic problems in developing countries, with concomitant advantages for food producers and consumers. Biotechnological innovations, which help reduce biotic production constraints, are suitable for small- and large-scale farmers alike. Since pest and disease problems are often more severe for smallholders, the potential benefits are even greater for this group of farmers. Especially transgenic crops can easily be integrated into traditional farming systems because the technology is packaged into the seed and can be reproduced by the farmers themselves. Apart from the technological characteristics, however, institutional aspects also influence the actual socio-economic outcome. Scenario simulations under different policy assumptions depict how undesired equity effects could be prevented.



In November 1999, an international conference on "Agricultural Biotechnology in Developing Countries: Towards Optimizing the Benefits for the Poor" was held at ZEF. The international conference was co-organized by the ISAAA, Hoechst-Schering AgrEvo GmbH and the German Foundation for International Development (Deutsche Stiftung für Internationale Entwicklung, DSE). Around 100 experts and stakeholders from all over the world discussed related challenges for policy and research. It became obvious that an intensified and innovative collaboration between the public and the private sector based on comparative advantages is required. Moreover, the communication systems have to be improved in order to dismantle the mutual mistrust between the diverse interest groups and to improve the integration of developing countries. More policy-oriented research is needed with respect to (1) quantifying the benefits of biotechnology to counterbalance the public debate, which is often dominated by the technology risks and (2) a better understanding of the property rights issue.

Qaim, M. (2000), "Biotechnology for Small-Scale Farmers: A Kenyan Case Study," *International Journal of Biotechnology*, Vol. 2, No. 1/2/3, in press.

Qaim, M. (1999), "Potential Benefits of Agricultural Biotechnology: An Example from the Mexican Potato Sector," *Review of Agricultural Economics*, Vol. 21, No. 2, pp. 390-408.

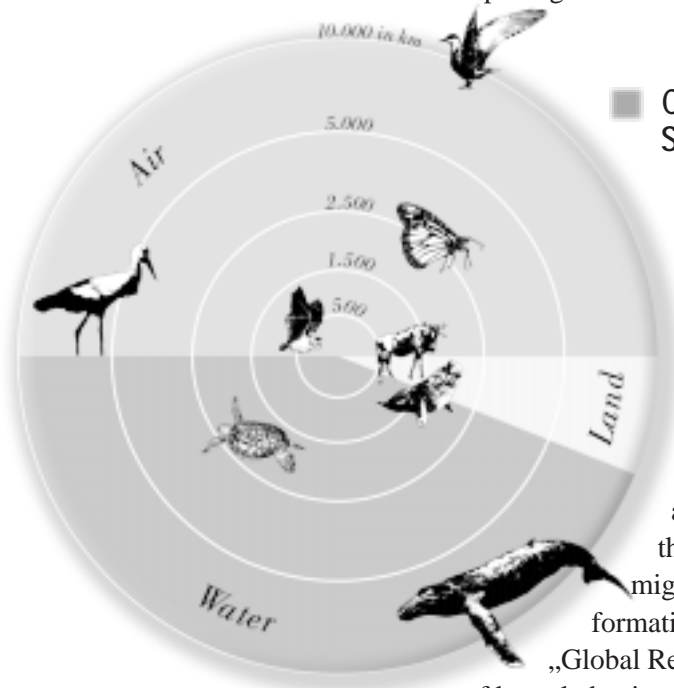




## Biodiversity and Ecosystems in a Development Context

In the broad and complex area of biodiversity ZEF research continues to focus on two important issues:

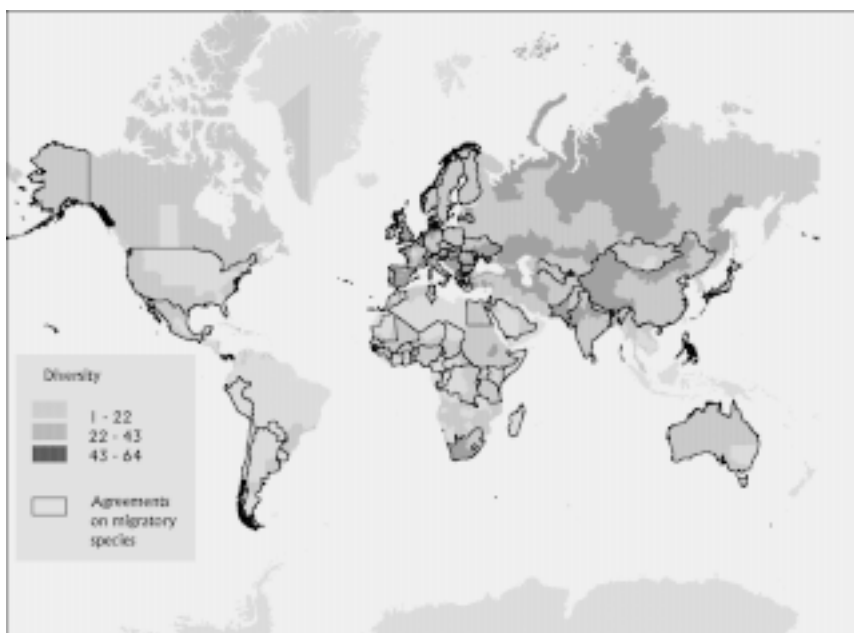
- migratory species, often being affected by development processes and
- plant genetic resources being fundamental to sustainable world food systems.



Migration distance of various species

### Conservation by using Geographical Information Systems: Examples from Migratory Species

Many animal species have to migrate, some to spawn, like salmon, others to flee seasonally unfavorable conditions, like the many birds that spend the winter in tropical regions. These migratory species cross political borders en route, and efficient protection of these species requires international cooperation. Endangered migrant species are protected by the Convention on the Conservation of Migratory Species of Wild Animals (also known as the CMS, or the Bonn Convention), an international treaty signed by 66 member states. However, the knowledge about animal migration is not homogeneous: Bird migrations are well monitored, but for mammals, fish or insects information is available mainly for economically important species. The „Global Register of Migratory Species (GROMS)“ summarizes our state of knowledge in a standardized database connected to a „Geographical Information System“ (GIS). GROMS is supported by the Federal Agency for Nature Conservation with funds from the German Federal Environment Ministry.



Number of migratory species per political unit

The database provides fully referenced information on species, a bibliography and the addresses of monitoring organizations and experts. Distribution maps, migratory routes and point data of 450 species are geo-referenced and can be used in other GIS projects. As a first example, GIS maps of birds and mammals were intersected with administrative borders of geopolitical units and the number of species was calculated for each province. Interestingly, the diversity of the migratory species (the number of species per political unit) is higher in temperate regions than in the tropics. Therefore, the responsibility for conservation of migrants lies very much with the industrialized nations and countries undergoing transformation. To



identify potential threats by changes in land use, development and pollution hazards, further GIS analysis is planned for a second two-year project phase that starts in 2001.

A completely new Java-based user interface has been designed for easy display of interactive maps on the Worldwide Web. This tool was adapted to the needs of conservationists and policy-makers.

A pilot version can be tested under <http://www.groms.de>. In addition, the GROMS website hosts a discussion list on migration and information about the contribution of GROMS to the International Biodiversity Observation Year 2001 (IBOY).

### ■ Increasing Conservation Efficiency to Safeguard Genetic Resources

A wide range of different players at local, national and international levels are maintaining plant genetic resources for food and agriculture (PGRFA). Besides the millions of farmers still utilizing farmers' varieties in their fields, public organizations dominate the conservation of PGRFA in gene banks and other conservation facilities. Eighty-three per cent of all conserved PGRFA is stored in international and national conservation facilities, whereby 85% of total estimated expenditure for PGRFA conservation is spent by the national public sector. These figures indicate that countries are the most important conservators. Hence it is decisive for the long-term sustainable conservation of genetic resources that the countries, especially all diversity-rich countries, are enabled to conserve the existing PGRFA.

A research project at ZEF, funded by the DFG, intends to provide decision-makers at different levels with information on how to set priorities in politics on biodiversity conservation, as a contribution to sustainable development in the poorest countries. The project is developing more efficient conservation strategies by focusing on the costs and on the conservation quality of specific measures. By combining cost-efficiency and quality assessment, a powerful mechanism for monitoring the implementation of conservation activities will be created. This research project is being conducted in cooperation with scientists in Colombia, Uganda, Kenya and India.

Virchow, D., "Spending on Conservation of Plant Genetic Resources for Food and Agriculture: How much and how efficient?" ZEF Discussion Papers on Development Policy No.16 (Bonn, 1999)





## Sustainable Land Use Systems

### ■ Secondary Forests and Fallow Vegetation in the Agricultural Landscape of the Eastern Amazon Region, Brazil

The project is being conducted in cooperation with Embrapa Amazônia Oriental, Belém, Brazil, and the Institute for Agricultural Engineering of the University of Göttingen, Germany

In Eastern Amazonia, ZEF is searching to find improvements in the traditional small-farmer land use system, aiming at the sustainable use of its natural resources. The study is being financed within the SHIFT program (Studies of Human Impact on Floodplains and Forests in the Tropics) of the German Ministry of Education and Research (BMBF) and the Brazilian National Council for Development of Science and Technology (CNPq). Within the project, the replacement of the slash-and-burn practice during

land preparation prior to cropping as well as the increase of biomass production during the fallow period were identified as critical needs for improvement, resulting in conservation and higher accumulation rates of organic matter and nutrients.

Two technologies have been suggested which would provide options on how to intensify the production system while protecting the natural resource base. These technologies are the replacement of slash burning by a mechanized cut-and-chop technology that transforms the shrubby fallow vegetation into a mulch layer on the soil surface, and fallow enrichment with fast-growing trees producing biomass at high rates.



*The traditional slash-and-burn practice; ZEF is looking for alternatives*

Denich, M., Kanashiro, M., Vlek, P.L.G. (2000), "The potential and dynamics of carbon sequestration in traditional and modified fallow systems of the Eastern Amazon region," In: Lal, R., Kimble, J.M., Stewart, B.A. (eds.), *Global Climate Change and Tropical Ecosystems*, CRC Press, Boca Raton, 213-229.

Sommer, R., Denich, M., Vlek, P.L.G. (2000), "Carbon storage and root penetration in deep soils under small-farmer land-use systems in the Eastern Amazon region, Brazil", *Plant and Soil* 219, 231-241.

In September 1999, the third four year project phase was started. The principal objectives are farmer-oriented testing of the mechanized mulch technology together with the associated agronomic changes and assessment at farm and landscape level of the ecological and economic benefits and disadvantages of the alternative crop/fallow system. Consequently, policy parameters will be defined and implementation strategies will be developed aiming at the diffusion of the farming system improvements.

ZEF is carrying out the following activities at present: (1) constructing and testing two follow-up models of a bush chopper, which was developed in the preceding project phase, for transforming the fallow vegetation into a manageable mulch, (2) exploring the full scope of the bush chopper by combining the mulch technology with new and more flexible agronomic practices, such as starting the cropping period at different seasons, re-arranging the crop sequence within a cropping period, or extending the cropping period beyond the common one to two years, (3) assessing to what extent the new technology causes changes in the biodiversity of the fallow vegetation, compared to that of the traditional system, (4) evaluating the ecological impacts (nutrient losses, erosion) of the mulch system in a watershed approach, and (5) identifying and addressing the agronomic, economic and social challenges and problems arising from the introduction of the mechanized mulch technology in small farming. The latter will include studies on the farmers' willingness to accept the new technologies.



Starting at the end of 2000, an additional ZEF project in cooperation with the Universidade Federal do Pará, Belém, Brazil, will analyze the economics of the small-farmer production system applying the proposed alternatives.

## ■ Policies for Improved Land Management in Uganda

Soil–nutrient depletion has reached an alarming stage in Uganda, and is contributing to declining agricultural productivity, poverty and food insecurity. Increasing nutrient imbalances and rapidly declining land quality for cropping systems in Uganda are crucial indicators of deteriorating land sustainability. With conventional land management practices persisting, the downward spiral of soil nutrient depletion will soon cause tremendous problems to Uganda in maintaining food security and environmental stability.

The research project “Policies for Improved Land Management in Uganda” is funded by the BMZ and aims to assess multiscale impacts of bio-physical and socio-economic factors on soil fertility and land management technologies as well as policy strategies for combating the vicious cycle of soil–nutrient depletion.

During the first project phase, land management and soil resources in Uganda were characterized in terms of agricultural potentials and problems. The research region was selected and stratified by spatial modeling of bio-physical and socio-economic data covering about two thirds of the country. The resulting maps stratify the project region in 20 domains which show different characteristics of environmental variables, population density, market access and agricultural potential. More than 100 communities were selected and surveyed to assess site-specific land management, soil fertility and socio-economic conditions. Soil samples, questionnaires and community resource maps were collected from the field and are being analyzed in the Geographical Information System (GIS) and soil laboratories. Main “pathways of development” and underlying factors which caused changes and spatio-temporal agro-ecological relationships will be identified.

Based on this analysis a subset of eight communities will be selected for on-farm trials, bio-physical and economic modeling. Bio-physical research will focus on spatio-temporal assessment of soil nutrient balances and land quality changes. Also, improved and site-specific soil fertility technologies will be tested in farmer-managed on-farm trials. Socio-economic research will assess impacts of promising technologies, and of political and institutional alternatives to agricultural productivity and sustainability of land use. Bio-economic models will account for short to long-term impact assessments of agricultural policies on sustainable land use and household welfare.

This intensive bio-physical and economic research will provide recommendations for investments and improved strategies of land management by the end of 2002. The project is explicitly considering cross-scale dynamics of both physical and human factors for different “pathways of developments”, which it is envisioned will provide more sustainable and site-specific policy recommendations.

An interdisciplinary team of researchers from ZEF, IFPRI (International Food Policy Research Institute), and the Ugandan organizations NARO (National Agricultural Research Organisation), MUK (Makerere University, Kampala) and APSEC (Agricultural Policy Secretariat) is jointly working on this project, which started in April 1999.

Sserunkuuma, D., Pender, J., Nkonya, E., and Rücker, G., “Land Management in Uganda: Characterization of Problems and Hypotheses about Causes and Strategies for Improvement,” IFPRI discussion paper (Washington, D.C., 2000)



*Traditional farming in Uganda*



### ■ The Aral Sea Dilemma—Improvement of Water and Land Use Practices in the Rural Areas of the Lower Amu Darya River in Uzbekistan



*Cotton production in the Aral Sea Basin*

The Aral Sea basin has long been declared an “ecological disaster area” by international scientific bodies. The water level of the Aral Sea has fallen by over 18 m since the 1960s, and only 20% of the water volume of what was once the fourth largest lake in the world remains. This is mainly because river water has increasingly been used for irrigation. In the former Soviet Union, the regional agriculture was almost totally dedicated to cotton production, and the area under irrigation in the Aral Sea Basin was increased from 2 to 7.2 million ha between 1925 and 1985.



Since the central Asian states gained their independence, many international efforts have been undertaken to deal with the Aral Sea problem, but the problems remain unsolved. The fishery industry is disappearing, clean drinking water is lacking, health conditions are poor, the mortality rate is very high, and the average temperature is constantly rising due to the loss of water surface area. In addition, salinity in soils and river water is increasing, soil fertility is deteriorating dramatically, and biodiversity is decreasing.

Recently, the policy, aimed at a regional disaster mitigation, has shifted to a new paradigm. Instead of focusing on saving the Aral Sea at all costs—efforts could take decades and the outcome is uncertain—there will be technical and financial support in in-

creasing health and welfare, and improving the economic, ecological and socio-political conditions within the river delta region.

ZEF is currently developing an interdisciplinary project proposal in collaboration with partners in Uzbekistan on how to improve economic effectiveness and ecological sustainability of water and land use practices in the Aral Sea Basin. The interdisciplinary research project in Uzbekistan is being financially supported by the German Ministry of Education and Research (BMBF). The proposal will be presented to the Ministry at the end of the year 2000.

### ■ Soil Fauna and Litter Decomposition in Primary and Secondary Forests and a Mixed Culture System in Amazonia

Most farmers never take note of the living organisms in the soils they exploit for crop production, although soil scientists have long pointed to the importance of soil animals for nutrient cycling. Soil fauna and microorganisms are able to provide many “ecological services”, among them the formation of organic matter in soils. Actively managing the soil fauna will contribute to an enhanced sustainable crop production in the tropics. This could play an important role in low-input systems, for example, mulching systems based on organic matter inputs. A ZEF project is investigating soil fauna and litter decomposition in three ecosystems of central Amazonia:

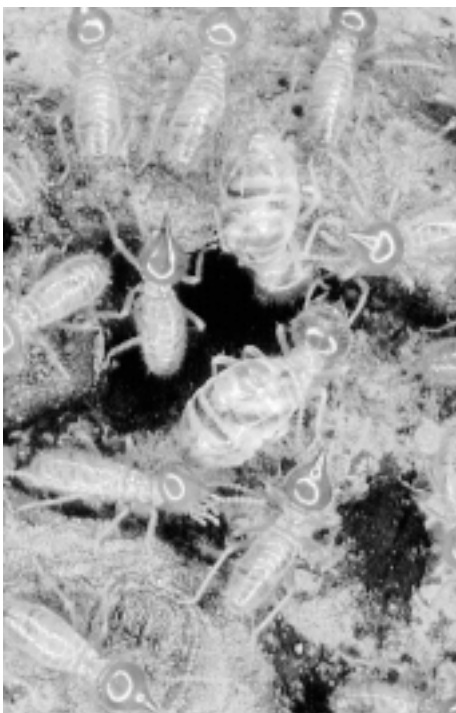
Höfer, H., Martius, C., Hanagarth, W., Garcia, M., Franklin, E., Römbke, J., Beck, L., “Soil fauna and litter decomposition in primary and secondary forest and a mixed culture system in Amazonia,” Final report of the SHIFT project ENV 52. BMBF (Bonn, 2000)



a primary rain forest, a secondary forest and two agro-forestry plantation sites. The study is being financed within the SHIFT Program run by the BMBF.

The soil fauna and decomposition rates in the mixed culture systems differed considerably from the primary forest, influencing nutrient flux and the decomposition processes. In the primary forest, the concentration of carbon and nitrogen in litter and topsoil was higher than in the other areas. The two polyculture systems were different, with one in many respects being more similar to the primary forest, and the other more similar to the secondary forest, showing the large influence of the microclimate. The microclimate is in turn influenced by the cropping system, for example, via shadowing through the plant canopy, soil cover by litter, etc.

ZEF research is being conducted in cooperation with Staatliches Museum für Naturkunde, Karlsruhe, Embrapa Amazônia Ocidental, Manaus/AM, Brazil, Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Brazil, Zoologisches Institut, Univ. Göttingen, ECT Oeko-toxikologie GmbH, Flörsheim, Germany.



In all investigated sites, the systems of litter decomposition were, above all, controlled by the macrofauna (large soil animals like termites or earthworms). Thus, the functional system of the litter decomposition processes can be optimized towards higher sustainability of the cropping systems through manipulating macrofauna populations. In a follow-up to this project, studies are now beginning to determine how soil animals can be managed so that they deliver the benefits without destroying the crop. For farmers struggling on marginal land in the tropics, “feeding the soil fauna” might ultimately become part of their strategy to conserve and enhance the soil.



*Termite hill (above); Termites (left)*

## ■ The Role of Biological Nitrogen Fixation in Fallows and Forests of Central Amazonia

Biological nitrogen fixation (BNF) by spontaneous legume species constitutes the most important pathway of recuperation of nitrogen (N) stocks in secondary vegetation after large N losses caused by slash-and-burn agriculture. Understanding the dynamics and underlying mechanisms of BNF is decisive for enhancing productivity and sustainability of traditional slash-and-burn agriculture. ZEF examines the regulating mechanisms of BNF in secondary and primary vegetation of Central Amazonia. The study is being financed within the SHIFT Program run by the BMBF.

The research is being conducted in areas of agricultural colonization in the surroundings of Manaus (Central Amazonia, Brazil). The study sites (on-farm) represent four chronosequences of secondary forests (two to 25 years) and eight primary forests.



Preliminary results point to a great importance of lianas: Legume lianas appear to play a key role in recuperation of N stocks after slash-and-burn losses, notably in the initial phases of successional development. Also, the legume biomass of primary forests is highly skewed. The five largest trees combine 47% of total (estimated) primary forest legume biomass. Biomass distribution is more equal in secondary vegetation. Distribution patterns appear to change along successional development. The clustering of potentially nodulating species could be an indication of concentrated BNF activity in “hotpots”. Spatial distribution of BNF is important for interpretation of ecosystem heterogeneity. Factors regulating BNF activity (i.e., topsoil nutrient availability, allelopathic substances, etc.) will likewise differ between cluster and non-cluster situations.

The surprising importance of potentially N<sub>2</sub>-fixing liana species in young secondary vegetation motivated a more detailed study on the role of legume lianas in N cycling. A field study on N cycling via litter production and decomposition of selected liana species in a successional chronosequence is being conducted in Brazil. The study on the role of legume lianas in N cycling is being financed by a grant from CNPq and conducted in close cooperation with the INPA (Instituto Nacional de Pesquisas da Amazônia).





## Atmosphere and Water Management

### ■ Sustainable Water Use Under Changing Land Use, Rainfall Reliability, and Water Demands in the Volta Basin (GLOWA-Volta)

The Volta Basin covers 400,000 km<sup>2</sup> of the sub-humid to semi-arid West African savanna zone. Roughly one third lies in Ghana, one third in Burkina Faso and the remainder in Mali, Côte d'Ivoire, Togo and Benin. Rainfall averages 1,000 mm per year, of which about 9% (35 km<sup>3</sup>) turn into river discharge. In 1964, the lower reach of the Volta was dammed for hydropower generation. The resulting Lake Volta has the largest surface area of any man-made lake in the world. In the 1960s, the dam's capacity by far exceeded Ghana's demand for electricity. Now, however, Ghana is plagued by frequent power shortages during dry years.



*Irrigated agriculture in Ghana*

Unreliable rainfall is also the main hindrance for increased food and fiber production because fertilizer investments in the traditionally rain-fed agriculture show no returns when rain fails. To feed the rapidly increasing population (3% per year), irrigation development is necessary, either in the form of large-scale floodplain development or as a more diffuse set of systems built on lower order streams. Either way, irrigation expansion is bound to have a downstream effect on the amount of water available for power generation.

The central objectives of the GLOWA-Volta project are to analyze the physical and socio-economic determinants of the hydrological cycle. On this basis, a scientifically sound decision support system will be developed for the assessment, sustainable use and development of water resources in the Volta Basin. The GLOWA-Volta research project addresses many aspects of water resource development in the Volta Basin, from meteorology and hydrology, to pedology and agronomy, to economy and law. Integration of climatic, ecological and socio-economic factors and correlations with respect to the hydrologic cycle is the main scientific challenge. Some early results can be found in the ZEF Discussion Paper 21 "Volta Basin Water Balance". The German BMBF is funding the long-term project as part of the larger GLOWA program, together with the state of North Rhine-Westphalia.

### ■ Water Allocation in the Mekong River Basin

The Mekong River is the dominant geo-hydrological structure in mainland South East Asia. It is shared by six riparian countries, namely Cambodia, Lao People's Democratic Republic, Myanmar, the People's Republic of China, Thailand and Vietnam. Although water resources are more than adequate during the wet season, the region experiences substantial water shortages during the dry season, when only one to two per cent of the an-

Research partners in the GLOWA Project are the Remote Sensing Research Group and the Institute of Land and Water Management at Bonn University, the Fraunhofer Institute for Environmental Atmospheric Research (IFU), and the Institute for Tropical Medicine and Hygiene at Heidelberg University.

In Ghana and Burkina Faso, research will take place in close cooperation with the Remote Sensing Application Unit (RSAU), the Population Impact Project (PIP), the Institute of Statistical, Social and Economic Research (ISSER), all at the University of Ghana, Legon, and with the Savanna Agricultural Research Institute (SARI), the Water Research Institute (WRI) and l'Institut de l'Environnement et de Recherche Agricoles (INERA).





nual flow reaches the delta. Recent rapid agricultural and economic development in the basin has led to increasing demands by the riparian countries on Mekong water resources. This development calls for a structured approach to the management of the basin, including efficient, equitable and environmentally sustainable water allocation mechanisms that support the region's socio-economic development.

This research is being conducted in cooperation with the IFPRI, Washington DC, and the Mekong River Commission (MRC).

An aggregate economic-hydrologic model for the basin is being developed that allows for the analysis of water allocation and use under various alternative policy scenarios. The objective of the model is to maximize net benefits to water uses in the basin area. Water demand and benefit functions are being developed for irrigation, urban-industrial water uses, hydropower, wetlands and fish production. Minimum flow requirements to combat downstream saltwater intrusion are incorporated as a constraint.



Results from synthesized and estimated data indicate that although competition for Mekong water still appears to be very low, trade-offs and complementarities in water uses across sectors and countries do exist, particularly between fish production and off-stream water uses. An analysis of alternative water allocation mechanisms shows that to achieve both equitable and optimal benefits from water use across countries and sectors, the optimal strategy would be to strive for the largest basin water use benefits and then to redistribute these benefits instead of the water resource.

### ■ Household Water Security in Jordan

Household water insecurity is a pressing problem in developing countries. Water withdrawals are growing rapidly due to population growth, industrialization, urbanization and increasing agricultural production. The number of countries facing problems of water scarcity and insufficient water supply is rising. There are already 1.2 billion people without access to clean water in developing countries and this number is rising. Little is known about individual and household water consumption behavior. Knowledge of the demand structure is essential for sectoral policy analysis and for defining policy interven-

tions to improve the supply status of households.

Preliminary results of a ZEF survey conducted in Amman, the capital of Jordan, and in 14 villages in northern Jordan show that households rely on public and private water sources at (seasonally) varying prices. In addition to direct expenditure for



water, households have a considerable share of indirect expenditure for securing their water needs, including expenditure for water storage and water treatment.

## ■ Mitigation of Greenhouse Gas Emissions from Tropical Agriculture

The global climate is changing due to anthropogenic emissions of greenhouse gases. The major emitters of greenhouse gases are industrialized countries, but in developing countries, emissions are also expected to further increase due to industrialization and higher living standards. Industrialized and developed countries have pledged to explore possible means of mitigating emissions. Opportunities to reduce emissions are seen in specific sectors such as agriculture without impeding development. Recent research has shown that mitigation of greenhouse gas emissions through agricultural activities is technically feasible: rice can be grown with fewer methane emissions, alley cropping can sequester carbon, etc. However, the modalities of conceptualizing, implementing and auditing mitigation projects need to be discussed and established. Therefore, an international workshop on “Tropical Agriculture in Transition—Opportunities for Mitigating Greenhouse Gas Emissions?”, jointly organized by ZEF and the Fraunhofer Institute for Atmospheric Environmental Research, Garmisch-Partenkirchen, Germany, will be held in Bonn in December 2000.

It will give different stakeholders—i.e., scientists, donor agencies, NGOs and implementing agencies in the developing countries—the opportunity to discuss and plan agricultural development in line with the goals of the UN Framework Convention on Global Climate Change (UNFCCC).



*Growing rice with reduced methane emissions*



# Teaching

## The International Doctoral Studies Program for Development Research

The International Doctoral Studies Program at ZEF aims at further education of highly qualified scientific staff, advisors and managers, both for the private and public sector.

The scholars on this program are exposed to an interdisciplinary development philosophy and to an integrated approach to development. A key role is played in this program by the research phase that is to be carried out in developing countries or development-related institutions. The entire program is in English. The doctoral studies are associated with an intensive course program offered by ZEF. These courses are



Some students of the first academic year, together with the program coordinator Dr. Günther Manske (2nd from right)

open to students outside ZEF as long as room is available and the study topics are relevant to the candidates' doctoral study.

The program receives considerable financial support from different organizations and foundations. It would not be possible without the financial support by the DAAD, which finances stipends for students from developing countries, short-term scholarships to allow external doctoral students to attend the doctoral courses at ZEF, and external lecturers. The BMZ provides financial support for staff, tutors and research funds. In 2000, additional scholarships and research funds for German doctoral students will be available from the *Robert Bosch Foundation*.

The first batch of Ph.D. students, mainly from developing countries, joined the ZEF International Doctoral Studies Program in August 1999.

The program started in August 1999. In August and September, the students participated in a two-month conversational German language course and were trained in basic mathematics and statistics. In October and November 1999, the first interdisciplinary course module introduced the students to the theoretical background of complex and interlinked problems of economic development, ecology and resource management. The lectures addressed the basic theories of economic growth, ecology and natural resource management. Case studies connected the theoretical backgrounds with practical skills development and problem-oriented analysis. The course ended with term papers on interdisciplinary topics written by two students



from different disciplines.

In February and March 2000, two parallel intensive courses were offered by the Department of Economics and Technical Change and by the Department of Ecology and Resource Management.

The first course focused on quantitative and economic tools for development policy (basic econometric tools and microfoundations and macrofoundations of development), and the latter course on the general understanding of the complexity of ecological issues, practical questions of the management of natural resources and methods. Both courses ended with written exams.

The courses were conducted by internal and external lecturers. Among the external lecturers were Dr. Arjun Bedi (The Hague), Dr. Nauro Campos (Czech Republic), Dr. Hahn (Fraunhofer-Institute), Prof. Daniel Hillel (Massachusetts), Dr. J.C. Katyal (India), Prof. Ramon Lopez (Maryland), Prof. Michael Mühlenberg (Göttingen), Prof. Wim Sombroek (Wageningen), Prof. Oded Stark (Oslo) and Dr. Paul Winkler (Göttingen).

The students of the first academic year came from Bangladesh, China, Ethiopia, Ghana, India, Indonesia, Kenya, Korea, Pakistan, the Philippines, Thailand, Uganda and Vietnam.

The deadline for applications from students from developing countries is 15 October, and for German students 31 May, each year. Information is available from Dr. Günther Manske (E-mail: [docp.zef@uni-bonn.de](mailto:docp.zef@uni-bonn.de)) or from the ZEF homepage (<http://www.zef.de>).

## Examples of Research Projects Conducted Within the International Doctoral Studies Program

### **Human impacts on keystone ecosystems for conservation of the *Coffea arabica* genetic pool**

Coffee is the second most valuable exported legal commodity on earth next to oil. At the same time, coffee is one of least studied crops. Among the three commercially important coffee species, *Coffea arabica* dominates 90% of the world coffee market. Ethiopia is not only the place of origin but also the primary center of diversity for *Coffea arabica*. The spread of Arabica coffee around the world was based on a very limited number of trees, which suggests that the whole genetic base of the coffee plantations outside of Ethiopia is very narrow. These plantations are at risk of disease, such as the coffee rust that hit Brazil in the 1970s, and the conservation aspect of the genetic resource has been totally neglected in the past.

The genetic pool of Arabica coffee used to cover vast areas of the Afromontane rainforest of Ethiopia. The wild coffee genetic pool is disappearing at an alarming rate because of deforestation. At present only 2,000 km<sup>2</sup> of such forest remains, in a highly fragmented form. In addition, there are also warnings from outside Ethiopia that the gene banks for coffee in Kenya, Brazil, Colombia, Costa Rica and elsewhere are also in danger. The large genetic variation among wild *C. arabica* in Ethiopia can be used in breeding programs to develop good quality, high yielding and disease-resistant cultivars in different parts of the world.

The objectives of this study are to (1) assess distribution patterns of the plant communities of the forest ecosystem and coffee population in the forest landscape, (2) assess impacts of land use on the coffee genetic pool / forest coffee



ecosystem, (3) identify priority sites for *in situ* conservation of wild coffee population, and (4) draw recommendations on management options and policy issues for conservation.

**The Role of Information Communication Technology in the Functioning of Markets: A Case of Telephone Services in Laos**

Information communication technologies (ICTs) are expected to assist developing countries in alleviating information deficiencies. The existence of a basic telecommunications service is an essential requirement for this development. While direct and prompt economic benefits of telecommunications services arise from the time and costs saved, more important benefits are generated by the expansion of information available to economic agents. In developing countries where information is costly, decisions are often made based on a minimum of information. Such decisions may lead to inefficiency both in allocating precious resources and in how institutions function. However, quantifying the benefits of telecommunications infrastructures is very difficult due to the existence of the above-mentioned externalities.

By studying a rural telephone service in Laos and its impact on the performance of the economic agents, this thesis aims to capture the positive externalities of telecommunications services on markets. For the last 10 years the Laotian tel-

communications network has been constantly expanded to rural areas and remote provinces. The revenue generated by the rural telecommunication system exceeded projections many times over, indicating that there was a huge unmet demand for telephone services in rural areas. The telephone, often in the form of public telephone facilities, is used for business purposes or to maintain contact with family members in the capital or abroad.



*Telephone booth in Laos*

**Towards Realizing Kenya’s Full Beekeeping Potential: A Case Study from the Baringo District**

Kenya is naturally endowed with several races of the African honey bee. Beekeeping and honey production could therefore have great potential for improving the economic base of Kenyan rural inhabitants. A ZEF study will analyze this potential in two different locations in the Baringo District, Rift Valley Province, Kenya. Socio-economic and technical data will be generated to provide background information which beekeepers currently use. Floral nectar characteristics will be documented to provide guidelines for conservation or propagation of important honey bee forage in the landscape. The first phase will consist of a sectoral survey to review socio-economic and technical aspects; the second phase of field experiments being to quantify the level of nectar resources available to bees at different times of the year.



**Other Teaching Activities**

In addition, ZEF researchers have also been involved in teaching at other research centers and universities, namely:

The University of Bonn, Institute of Agricultural Policy, Market Research and Economic Sociology:

- Theory of economic development (summer course)
- Development policy and methods of policy analysis (winter course)
- Development and transformation economics (seminar, summer term)

ZEF staff have also been invited as guest lecturers, for example, at the University of Konstanz and the Humboldt-University of Berlin.



## An Overview of Ph.D. Candidates and Doctoral Themes of the Academic Year 1999/2000

<i>Name, Country</i>	<i>Title</i>
Felix Ankomah Asante, Ghana	Poverty Reduction, Decentralization and Access to Public Goods and Services in Ghana
Abay Asfaw, Ethiopia	Demand for Medical Care and the Potential Role of Community-Based Health Insurance Schemes in Rural Areas: A Case of Ethiopia
Shyamal K. Chowdhury, Bangladesh	The Role of Information Communication Technology on Transaction Costs, Production of Traded Goods, and Household Performance: Bangladesh and Peru Experience
Andrea de Macale, Philippines	The Role of Azolla Cover in Improving the Nitrogen Use Efficiency of Lowland Rice
Fatondji Doughbedji, Niger	Organic Fertilizer Decomposition, Nutrient Release and Nutrient Uptake by Millet Crop in a Traditional Land Rehabilitation Technique (Zaï), in the Sahel
Mercy Gichora, Kenya	Towards Realization of Kenya's Full Beekeeping Potential: A Case Study of Baringo District
Tadesse Woldemariam Gole, Ethiopia	Human impacts on keystone ecosystems for conservation of the <i>Coffea arabica</i> genetic pool
Muhammad Mohsin Hafeez, Pakistan	Modeling and Measuring Water Use Efficiency at a Large-Scale Rice Irrigated System
Kaizzi Crammer Kayuki, Uganda	Cost and Benefit of Investing in Soil Fertility Replenishment in Soils with Different Productivity Potential in Uganda
Phuong T. Le, Vietnam	Effects of Seeding and Nitrogen Application Methods on Rice-Weed Competition in Direct Wet Seeded Rice
Daniela Lohlein, Germany	Decentralization and the Provision of Social Infrastructure in Rural Russia: Economics of Service Provision during the Transition
Pooja Sawhney, India	Effects of Protected Area Formation on Local People's Livelihood Security and People-Wildlife Relationship. A Case Study of a Protected Area in India
Gi-Soon Song, Korea (Seoul)	The Role of Information Communication Technology in the Functioning of Markets: A Case of Telephone Services in Laos
Chodechai Suwanaporn, Thailand	Relationship Banking in Thailand: Behavior and Implication
Wensheng Wang, China	The Impact of Information and Communication Technologies on Farmer Households in Rural China
Rahayu Widyastuti, Indonesia	Soil Fauna in Rain-fed Paddy Field Systems: Their Role in Organic Matter Decomposition and Nitrogen Turnover
Johannes Woelcke, Germany	Integrating Bio-physical and Socio-economic Approaches to Identify Suitable Incentives for Enhancing Sustainable Land Use. A Case Study for Uganda
Arief Sabdo Yuwono, Indonesia	Sensor Implementation to Monitor Volatile Emission in the Biofiltration Process
Li Zhaohua, Wuhan, China	An Ecological Appraisal of the Arrow Bamboo ( <i>Fargesia nitida</i> ) Community in Shennongjia National Nature Reserve: Implications for ex-situ Conservation of the Giant Panda in China.
Roykayatou Zimmermann, Cameroon	Biotechnology Potentials in African Agriculture



# Policy Dialogue and Public Awareness

Policy dialogue at ZEF over and above the research activities and training programs at the Center plays a central role. Ongoing discourse with both national and international political decision-makers ensures that research is carried out consistent with current issues and that the ensuing results can be incorporated into the political decision-making process and consequently implemented. Parallel to this, the importance of development research needs to be broadly publicized, in order to strengthen the population's awareness of existing global challenges.

The aim of one particular ZEF discussion paper on the future of development cooperation is to stimulate the debate and policy dialogue between policy makers and researchers. As stated in the paper, the total volume of official development aid (ODA) has steadily declined in recent years. With less than 0.25% of the GDP of the DAC member countries, ODA has reached an all time low since 1950. At the same time the efficiency and effectiveness of development assistance is being increasingly questioned. It seems that the intensity of evaluation and review of aid is growing at the same rate as ODA is declining. Apparently, social, political and economic changes demand a restructuring of development assistance.

Von Braun, J., Grote, U., Jütting, J.: "Zukunft der Entwicklungszusammenarbeit", ZEF Discussion Papers on Development Policy No. 24 (Bonn, 2000)



Development cooperation should be viewed as any interstate and intrastate allocation of resources aimed at improving the present and future living conditions of the poor and disadvantaged. Resources taken into consideration include financial assistance as well as technological and science-related transfers, and not just ODA. This extended definition comprises publicly provided resources as well as those which are mobilized within a country, in the event that they were stimulated by development policy. Private efforts from NGOs, business associations and the private sector are to be included as well.

In order to prevent development cooperation being vulnerable to policy fashions, strict criteria are needed for setting priorities. Normative criteria for setting priorities are comparative advantages, complementarity and subsidiarity.

Development cooperation should concentrate on fostering democratic structures and the rule of law in developing countries. It should work towards weakening the conflict potentials between trade and environment and trade and development, respectively, by means of bilateral or multilateral cooperation. Furthermore, development cooperation should promote research and the transfer of available knowledge and technologies which serve to reduce poverty. Finally it should utilize and support private provision of public services which are delivered by the state and markets in sub-optimal levels, especially in rural areas where most of the poor live.



The focus of future development aid will be directly and indirectly to reduce absolute poverty levels, including present and potential future poverty. In a swiftly changing global environment the goal of sustainable development has to be tackled with new sets of policy instruments.

A further step ZEF takes to stimulate the dialogue is the “ZEF Research Seminar” which was again held regularly in 1999/2000. The lecture series constitutes a scientific colloquium at which internationally renowned experts from the field of science address the current issues of development research. In June 2000 the series was renamed “ZEF Public Lectures” in order to underline both the public nature of the series and the diverse themes on which it focuses. An overview of these themes as well as a list of speakers can be found in the chapter “ZEF in Brief”.

Likewise in 1999, two international conferences were held at ZEF focusing on the themes of “Women Farmers: Enhancing Rights and Productivity” (in August 1999) and “Agricultural Biotechnology in Developing Countries: Towards Optimizing the Benefits for the Poor” (in November 1999).

In November 1999, the Center for European Integration Studies (Zentrum für Europäische Integrationsforschung, ZEI) together with ZEF and the city of Bonn organized the international conference “Weltachsen 2000” in the former plenary hall of the German parliament in Bonn. The aim of the conference was to identify central challenges facing mankind on the threshold of the 21<sup>st</sup> century and to discuss future perspectives. Around 1,000 representatives from the fields of science, economy, politics and development cooperation participated in the conference and in plenary sessions and working groups discussed six key themes which characterize the work at ZEF, namely “Universality of Human Rights”, “Dialogue of Cultures”, “Global Markets and the Future of the State”, “Conditions for Good Governance”, “Development as a Global Agenda: Poverty as a Global Challenge” and “Evolution of Ethnicity”. During these sessions, distinguished persons, including the former President of Costa Rica and Nobel Prize winner for Peace, Oscar Arias Sanchez, the former Polish President Lech Walesa, Nobel Prize winner for Literature, Wole Soyinka, and the United Nations High Commissioner for Human Rights, Mary Robinson, expounded their visions.

In early December 1999, within the framework of an international conference in Bonn, the “Global Development Network (GDN)” was established—an initiative of the World Bank. The goal of the GDN is to support and link research and policy institutes involved in the field of development and whose work is predicated on the notion that ideas matter. The initiative, still in its early phase, has proceeded on two fronts: knowledge generation and knowledge sharing. ZEF already took part in discussions as to the formation of the network during its development phase and was a strategic participant at the conference. In future, ZEF, together with the European Association of Development Research and



*Speciosa Wandira Kazibwe, Vice President of Uganda, during the ZEF conference on women farmers*



*International conference „Weltachsen 2000“, November 1999, Bonn*





Training Institutes (EADI), plans to support the European hub of the worldwide network.

In August 2000, during the world exhibition EXPO 2000 in Hanover, ZEF will coordinate one of the ten scheduled Global Dialogues, the theme of the ZEF Global Dialogue being “The Role of the Village in the 21<sup>st</sup> Century: Jobs, Crops and Livelihood”. The dialogue brings together an international group consisting of village and city representatives, scientists, experts in rural development, politicians and business leaders worldwide. At the time of writing this report, preparations for this event were in full swing. A preliminary presentation of the project could be viewed at the “EXPO Party”, initiated and organized by the University and the City of Bonn, and held in Bonn on 30 May 2000.

ZEF is also active in the media and in public affairs issues, and numerous press releases were again published during 1999/2000. With the establishment of an e-mailing list, effortless and efficient communication with the media has been made possible. The ZEF Pressespiegel, which was published at the end of 1999, provides a collection of media coverage gained in the course of that year.

External publicity of the Center includes the production and updating of diverse information material. This consists of a ZEF Short Information leaflet in English and German, information on ZEF’s International Doctoral Studies Program as well as the ZEF Annual Report.

Furthermore, during the period of this report, ZEF published three issues of *ZEFnews*. The publications report on new projects at ZEF, present research results and also provide standpoints on current themes in the area of development research. *ZEFnews* appears in both English and German and is disseminated worldwide. Additionally, individual editions can be downloaded in .pdf format directly from the internet.

ZEF has been represented on the internet via its own homepage ([www.zef.de](http://www.zef.de)) since mid-1998. In May 2000 the ZEF internet pages were relaunched, entailing a restructuring of parts of the site. With over 105,000 file inquiries from more than 80 countries worldwide registered at the start of June 2000, the ZEF homepage has developed into the Center’s most important information and communication medium.

A further undertaking of the media and public affairs section is the preparation of and participation in exhibitions. ZEF portrayed its work in the form of posters, brochures and scientific publications on the occasion of the World Forum of Mayors on Cities and Desertification in Bonn, a panel discussion at the GMD National Research Center for Information Technology, the fifth Conference of the Parties for the UNFCCC in Bonn and an exhibition by the Agricultural Faculty in the representation of the Federal State of North Rhine-Westphalia in Brussels, Belgium. Public attention was also captured with two book presentations by ZEF scientists



Nobel laureate for literature Wole Soyinka at the international conference „Weltachsen 2000“, November 1999, Bonn

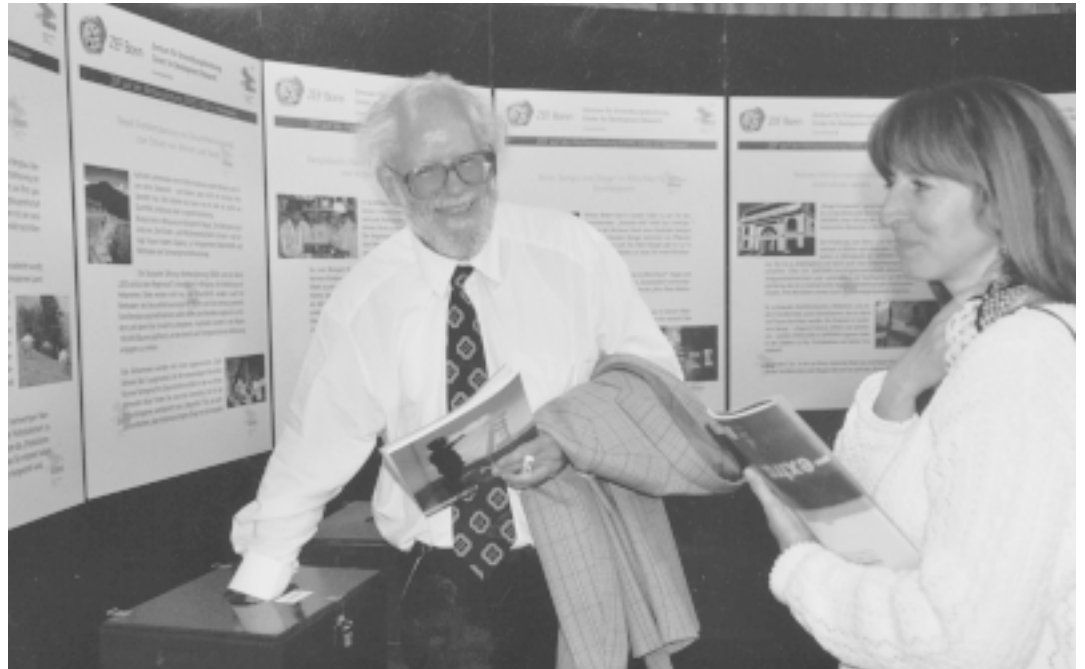




(“Zukunft der EU-AKP-Beziehungen” and “Famine in Africa”). In November 1999, in cooperation with the German Committee for UNIFEM and the City of Bonn, ZEF hosted the first UNIFEM award conferment.

As part of the preparations in progress for the Global Dialogue on the future of the rural areas in the 21<sup>st</sup> century planned for EXPO 2000, and “to bring a small piece of the EXPO to Bonn”, ZEF constructed a “Dialogue Exhibition” comprising 14 posters to coincide with the opening of the EXPO in June 2000. The aim of the exhibition was also to acquaint “non-experts” with just how people in other parts of the world live. Based on eight examples, various situations of rural life in different regions around the world were illustrated and for each example, a question was put forward. The answers to these questions were resolved by reaching into the box located under each example and feeling the object hidden inside. The Dialogue Exhibition proved to be a success not only among the Bonn public, but in particular, among school pupils.

The research results of work at ZEF are presented in the Center’s own publication series “ZEF Discussion Papers on Development Policy”. In the period from July 1999 to June 2000, 18 Discussion Papers were published. Moreover, numerous articles by ZEF staff were published in renowned journals, both national and international, and many of the ZEF scientists have also appeared as author, editor or co-editor of books. An overview of the publications appearing in 1999/2000 can be found in the chapter “ZEF in Brief”.



*„Feeling“ what makes living easier in rural areas*



# Management and Central Facilities

As part of the International Academic Forum Bonn (Internationales Wissenschaftsforum Bonn, IWB), ZEF cooperates with the Center for European Integration Studies (Zentrum für Europäische Integrationsforschung, ZEI). The two research institutions are supported by a joint management in all matters of administration and budgeting as well as communication and public affairs. Internally, management as a structural frame embracing both Centers secures efficient utilization of the common infrastructure and the resources available. Externally, management develops and maintains contacts—especially as they relate to its public relations activities—with relevant institutions in the field of science, economy, politics, the media and administration. Particularly in questions of finance, management provides the link to the ministries of the Federal Republic and the Federal States.

ZEF is able to offer attractive working conditions. In a university-owned office building in Walter-Flex-Strasse, scholars find modern computer spaces at their disposal in technically well-equipped offices. All research desks have direct internet



access, via a high-capacity house-owned computer network connected per 100MB lines to the computer center of Bonn University. Highly functional conference and seminar installations allow the organization of events for an audience of up to two hundred participants. A canteen provides for the physical well-being of those working on the premises. ZEF accommodation is located in the middle of an area of Bonn known as the “mile of museums”, a two-minute walk from the Art and Exhibition Hall of the Federal Republic of Germany, the Bonn Art Museum and the Haus der Geschichte, a museum dedicated to modern German history.

The institute’s research-oriented library, still in its developmental phase, is an essential factor in providing for an attractive surrounding conducive to research work. By the end of June 2000, users were able to avail themselves of over 9,000 scholarly monographs. Moreover, the library has several databases on CD-Rom at its disposal. The periodicals section contains over 600 publications from countries all over the world. The library’s reading room provides research space for 50 people and, in a separate media room, additional computer terminals with internet access.