

Zentrum für Entwicklungsforschung
Center for Development Research

Universität Bonn

ZEF Bonn

Annual Report 1998/99





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Preface

We are pleased to present our first Annual Report on the initiatives and output of the Center for Development Research (ZEF) of the University of Bonn. This report documents the main activities of ZEF from the commencement of academic work in September 1997 until mid 1999. ZEF was phased in step by step, starting with the program on “Economics and Technological Change”, growing with the addition of the department of “Ecology and Natural Resource Management” in April 1998, and consolidating its planned composition by October 1999 with the “Political and Cultural Change” department.

The transformation of the former German capital Bonn into an international center for development offers a unique opportunity to launch this new research center into the international community. Establishing ZEF as part of the University of Bonn promises greater scope for synergy between development research and political action.

From the outset ZEF was very well received by members of both the public and the private sector, showing the great demand for such a research center in Germany.

ZEF research aims at reducing poverty and enhancing sustainable development. In support of this goal ZEF assists in the improvement of development policy. ZEF regards capacity-building for improved problem and policy analysis and decision-making in developing countries via doctoral studies and co-operative research a prime responsibility. With indepth research being at the heart of ZEF’s work, the Center actively engages in interdisciplinary cooperation open to all disciplines.

Thus, ZEF is committed to three goals:

- Development Research,
- Policy Dialogue and Public Awareness, and
- Teaching.

The dialogue with policy-makers and the private sector in workshops and seminars ensures that research at ZEF is focused on relevant policy issues and takes into account the future challenges of development. The policy advice we offer is a logical extension of applied research, and is based on independent research and a strong scientific base.

Academic training, especially of young scientists from developing countries, is another of ZEF’s main objectives. The international doctoral studies program was drawn up in 1999 and prepared for commencement in autumn 1999 in cooperation with the German Academic Exchange Service (Deutscher Akademischer Austauschdienst, DAAD). The program targets doctoral students from developing countries who have obtained an especially appropriate degree (Diploma, Magister or Master) of demonstrated excellence and are committed to development issues. ZEF will provide lecturers from a distinguished circle of international scholars.



Joachim von Braun



Paul Vlek



ZEF continuously participates in the international debate on a range of current development issues. Interdisciplinary and international research teams work together on long-term projects.

The establishment of ZEF would not have been possible without the support of many officials from the University of Bonn, the Federal Government, the State of North Rhine-Westphalia as well as from the city and region of Bonn. We would like to take this opportunity to thank especially all those colleagues, who devoted their time and efforts to the foundation of ZEF. We hope that those who committed themselves to the initiative of founding ZEF will continue to support us with their ideas and criticisms as we endeavour to move forward.

We would also like to thank all colleagues and friends from around the world who have not hesitated to co-operate enthusiastically and productively, despite us being a very new institute.

Professor Joachim von Braun
Director

Professor Paul Vlek
Director





ZEF's Establishment Phase and Further Strategy

The Center for Development Research (ZEF) is an international and interdisciplinary research institute. It was founded in 1995 as an integral academic institution of the Rheinische Friedrich Wilhelms University of Bonn. Together with its sister institute, the Center for European Integration Studies (ZEI), ZEF forms the International Academic Forum Bonn (Internationales Wissenschaftsforum Bonn, IWB), with headquarters in newly acquired facilities and a joint management.

The establishment of the Center, agreed upon under the “Bonn Agreement” of June 29, 1994 is part of the plan of consolidating the former federal city of Bonn as an internationally acknowledged center for scientific research and development cooperation.

Based on the concept of the Bonn University Senate, ZEF comprises three departments:

- Economics and Technological Change;
- Ecology and Natural Resource Management; and
- Political and Cultural Change.

An interdisciplinary approach to research, a strategy on recruiting researchers internationally and from developing countries in particular, and the use of English as the working language are responses to the development challenges in today's international research scene.

The first two years following the foundation of ZEF were marked by the general tasks of building up the Center under the guidance of the Managing Director of IWB, Dr Hartmut Ihne, in close cooperation with the University of Bonn.

In September 1997, the first department, Economics and Technological Change, headed by Professor Joachim von Braun commenced its work at ZEF. Joachim von Braun, former head of the Institute for Food Economics and Policy at the University of Kiel, and Program Director of the International Food Policy Research Institute (IFPRI, Washington DC) moved with his staff from Kiel to Bonn. In the initial phase, research at ZEF focused on world food and poverty issues as well as on economies in transition (China, Russia). With the expansion of this department in 1998, the research activities entered new fields of development research such as issues concerning trade and environment, EU development policy, information and communication technologies, social security and “good” governance.

The second department, Ecology and Natural Resource Management, is headed by Professor Paul Vlek and started its activities in April 1998. Paul Vlek was head of the Institute of Agronomy in the Tropics at the Georg August University of Goettingen and Director of the International Fertilizer Development Center

ZEF—an international think tank for development research

Department of Economics and Technological Change

Department of Ecology and Natural Resource Management



Department of Political and Cultural Change

(IFDC), Togo, Africa. Some ongoing research projects have been brought from Goettingen to Bonn, and others from Karlsruhe with new staff members joining ZEF. Many other research projects have been developed in the first year of the department's existence, or are currently being developed. These include, for instance, a project on the rational management of water resources in the Volta River Basin, and another on policies for the improvement of land management in Uganda.

The third department, Political and Cultural Change, will commence its activities in October 1999 and will be headed by Professor Andreas Wimmer from the University of Zurich and Director of the Swiss Forum for Migration Studies at the University of Neuchâtel.

With the formation of the third department in 1999, the establishment phase of ZEF will be completed.

ZEF's Strategy

ZEF's medium and long-term plan is currently in preparation and shall be published as a ZEF strategy paper in the year 2000. The paper will further specify the objectives and tasks of ZEF as well as a strategy for "Research", "Policy Dialogue and Public Awareness" and "Teaching". Long-term goals are specified and current work plans and emerging projects are linked to these goals. It will also provide an overview of the organizational framework, and the role of the International Advisory Board, as well as the development of a funding strategy.

While ZEF management and staff are preparing a draft strategy and seeking a broad discussion with their partners and clients on strategic priorities, the newly appointed International Advisory Board of ZEF plans to discuss and review the ZEF strategy later in 1999.

Members of the International Advisory Board

Dr. Jürgen Abhauer	Member of the Board, Research and Development, Hoechst Schering Agrevo GmbH, Frankfurt
Prof. Klaus Borchard	Rector, University of Bonn (ex officio)
Dr. Margarita Marino de Botero	former member of Brundtland Commission; Member of Club of Rome; former Minister of Environment, Colombia; Vice-Chair, EXPO-2000 International Board
Prof. Hans R. Friedrich	Director General, Federal Ministry for Education and Research, Germany
Prof. Dong Fu-Reng	former Vice Chair of Economic and Financial Committee of Peoples Congress, Senior research fellow Chinese Academy of Social Science; Professor of Economics, Wuhan University, China
Dr. Robert D. Havener	former director general of various international research institutes (e.g. CIMMYT; Winrock), U.S.A.
Dr. Volkmar Köhler	former State Secretary, Federal Ministry of Economic Cooperation and Development, Germany; President of Africa Foundation
Mr. Erich Stather	State Secretary, Federal Ministry of Economic Cooperation and Development, Germany
State Secretary	State Chancellery of North Rhine-Westphalia
Prof. Monkombu S. Swaminathan	former President of International Union for the Conservation of Nature and Natural Resources, UNESCO-Cousteau Professor on Ecotechnology for Asia, India
Prof. Klaus Töpfer	Director General of the United Nations Environment Program, Kenya
Dr. Willi A. Wapenhans	former Senior Vice President of the World Bank; Economist, Member of the International Board of the Overseas Development Council (ODC), Washington D.C.



Research

Overview

The research activities at ZEF are organized in several research groups which may include researchers from different departments of ZEF working on similar questions. This structure promotes dialogue among researchers in different disciplines and the interdisciplinary design of projects. The following groups have been established:

■ Human Resources and Poverty Reduction

Poor people in developing countries face many problems at the same time, such as malnutrition, poor health, limited access to resources or low education level. These factors constrain the quality of life, economic efficiency and growth as well as sustainability of development efforts. Development interventions for the reduction of poverty through investment in the social sector are to be scrutinized. ZEF's research agenda in this area focuses on social security systems, building insurance markets, health and food security, crisis prevention and gender, economic aspects of participation, and child labor.



■ Governance, Macroeconomics and Trade Policies

In addressing the central question of development—why do some countries lag behind, while others grow fast?—ZEF research emphasizes on the role of institutions. Transformation of economic systems, such as in Russia, is another research interest. The impact of international trade and capital markets on the development of low-income countries and the role of regional trade agreements are also a central focus of this research group. Here, ZEF is addressing trade and environmental standards, and social standards. The future of an EU-development policy in the context of cooperation with the African, Caribbean and Pacific states is a further policy research topic. Macro economic research at ZEF has started with studies of banking in Thailand and instability issues in Russia.

■ Modern Technologies and Resource Use for Development

The role of technology is a traditional area of development economics. Additional research is warranted due to the rapid development of some technologies that seem to offer potential in generating growth in developing countries. This is especially true for the area of information and communication technologies as well as biotechnology. In an increasingly crowded and urbanized world, closer attention must be paid to conflicts between humankind and nature. Technologies fostering resource efficiency have an obvious link to sustainable resource use. For instance, ge-





netic resource conservation and information systems for biodiversity assessment are addressed from a technological perspective in this group. Close linkage is sought with the research groups working on water and land use.

■ Biodiversity and Ecosystems in a Development Context

The appropriate management of natural resources is of crucial importance. Uncontrolled exploitation has led to an irreversible loss of valuable and unique resources, and to costly natural disasters. There is an urgent need to develop appropriate policies and to investigate possible economic incentives favoring sustainable use of biological resources. This group will help design ZEF projects in order to provide a better insight into the processes leading to ecosystem loss.

■ Sustainable Land Use Systems



Land use relates to resource use by people, the attributes of land, eg. water, soils, and vegetation. Soils are one of the primary components of land. Soils are not just dead surfaces to build on or substrates containing nutrients for plant growth but the living interface between parent material, the atmosphere and the vegetation cover in which many of the biological processes related to ecosystem functioning take place. Therefore, sustainable systems for land use must preserve the soil biota as well as nutrients and organic matter in the soil. Choosing the proper vegetation cover and the right management techniques is crucial for the sustainability of land use systems. With its emphasis on land-based resources, ZEF research pays attention to the different aspects of the anthropogenic changes the pedosphere is facing, e.g. erosion, loss of organic matter, degradation and desertification. The ecological, social, and political basis for land management systems is studied, and sustainable alternatives to conventional, often degradative land-use systems are developed.

■ Atmosphere and Water Management

By changing land use and management, human intervention in natural systems has a direct impact on the atmosphere. The atmosphere's composition is modified by human development activities, thus resulting in a changing climate. To understand the processes leading to global change is one of the objectives of research at ZEF. Moreover, the water crisis that threatens to limit development in many countries is another issue which cannot be ignored. ZEF addresses it from various angles, including hydrology, ecology, and politics.



Human Resources and Poverty Reduction

■ Food Security, Nutrition and Health

Nutrition improvement in developing countries

Many people in developing countries still suffer from undernutrition. It is estimated that more than 840 million people lack sufficient energy intake and more than 167 million children under the age of 5 are underweight. Micronutrient deficiencies (lack of vitamin A, iodine, iron etc.) are prevalent in many developing countries. Besides individual hardship and misery, undernutrition also represents a loss for economic development. As the causes of undernutrition are multi-faceted, no easy solution applies.

In 1998, ZEF finalized a research project on “Improvement of nutrition in developing countries: Strategies and policy implications” which was financed by the German Ministry of Development and Cooperation (BMZ). The project, coordinated by ZEF, was a joint effort by experts from the Universities of Hohenheim, Giessen and Bonn (ZEF). The findings were published as a book of the German Ministry of Development and Cooperation (BMZ). The book illustrates various strategies for improving nutrition. It is stressed that the right combination of programs that foster agricultural development, create employment and stabilize prices, with programs that improve health, hygiene, education and the situation of women, is at the center of nutrition improvement. Improved nutrition can only be the result of a well-developed package of strategies and activities. The book puts this perspective into a coherent conceptual framework.

In the course of the research project, a workshop took place at ZEF on May 28, 1998. Experts from universities, politics, development aid organizations as well as representatives from non-governmental organizations discussed strategies for improving nutrition in developing countries. The workshop focused on the following issues:

- Conceptual framework for food security;
- Relationship between nutrition and health and the importance of health interventions for nutrition;
- Relevance of macro-economic aspects for food security with recent developments due to the Asian crisis; and
- Institutional and organizational aspects of nutrition improvement projects, with the example of Tanzania.

The results of the workshop were integrated in the above mentioned book.

Economic Aspects of Disaster Management in Developing Countries

During the last decade, a rise in the number of violent conflicts and disasters with subsequent relief interventions can be observed. Similarly, a shift in the budget of major donors (e.g. World Food Program) from development aid towards relief aid has taken place. With donor budget constraints, relief aid has to be used efficiently.

ZEF research on the “Improvement of nutrition in developing countries: Strategies and policy implications”

Joachim von Braun, Friederike Bellin-Sesay, Torsten Feldbrügge, Franz Heidhues, “Verbesserung der Ernährung in Entwicklungsländern: Strategien und Politikempfehlungen” (Improvement of nutrition in developing countries: strategies and policy implications). BMZ Research Book 123 (Weltforum-Verlag: Cologne, 1998).



Economic criteria need to be developed which enable decision makers in disasters to respond quickly under extreme uncertainty. ZEF research focuses on disaster management in developing countries and the development of tools to support disaster decision-making.

The specific information needs and constraints of disaster management were analyzed in case studies in 1998 in Mozambique with the German Agency for



Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit, GTZ) and in Angola with the German Agro Action (Deutsche Welthungerhilfe). In 1997, the GTZ Integrated Food Security Project in Mozambique was confronted with a flood emergency of the Zambezi river that affected one project area. Destruction of crops, roads and houses resulted in a relief operation for a period of two months in the remote district. In Angola, the research focused on drought relief by the German Agro Action in a very unstable security context. The relief included food aid, food-for-work projects, seed distribution, vocational training and others. The analysis on both case studies is ongoing and will produce results by the end of 1999.

■ Social Security in Developing Countries

More than 2 billion people in developing countries do not have access to any type of public social security protection. The exposure to risk in their daily life can be of an individual nature such as illness, disability and widow-hood or a whole community or region may be affected, for example, in the form of political crises and natural disasters. These risks have an influence on income and represent a permanent threat to the existence and survival of people, especially of the rural population. Efficient social security systems are a means to mitigate the consequences of these risks. They can contribute to a change in productive activities, and hence have a potentially positive effect on income and on overall economic development.

Growing needs for innovative protection arrangements

It is generally accepted nowadays that enlarging state-based social security systems in developing countries so as to reach a higher coverage rate have failed. On the other hand, however, the predominant risk-sharing arrangements in developing countries, based on family and neighborhood-relations or networks, cannot guarantee sufficient protection either. Correlated risks such as a drought affecting a whole community, as well as a changing socio-economic environment, for instance, because of market penetration and migration, mark the limits of the traditional systems. By means of research into social security systems in rural areas of developing countries, ZEF aims to improve the knowledge of the institutional design of efficient and effective insurance arrangements, to analyze the impact of innovative insurance schemes on economic behavior and to explore opportunities for building viable insurance markets which reach out to the poor.

Sufficient
Protection
is Needed



ZEF focuses on viable insurance schemes and participation

Social Security

ZEF initiated a research program on social security in 1998. Based on case studies in various countries this project seeks to estimate the effective demand for social security and to analyze which institutions could provide insurance and social services in rural areas. In this context, special emphasis is given to factors which promote the building of viable health insurance systems in low-income countries. The work is carried out in close collaboration with the International Labor Organization (ILO) and other research institutes in India, China and Tanzania.



A survey on social security in developing countries which has been recently published as a ZEF discussion paper, depicts that especially the rural and poor population and vulnerable groups, such as women, children and the elderly, practically do not have access either to state-based social security programs or to insurance contracts offered by the private for-profit sector.

Given these circumstances, the paper explores the possibilities of a public private partnership, e.g. to link existing insurance schemes on the community level with private firms or local government bodies. The rapid expansion of community health insurance schemes in several African countries underlines the huge demand for insurance. That "insurance matters" is also a major conclusion of an empirical case study on the participation of women in local organizations in Chad and Kashmir, conducted by ZEF in 1997/98.

Johannes Jütting, "Strengthening Social Security Systems in Developing Countries", ZEF Discussion Papers on Development Policy No.9. (Bonn, 1999)

Participation

Participation of target groups to strengthen collective action and empowerment is a development concept increasingly being applied by many donor agencies. Two case studies performed in collaboration with the United Nations Development Program (UNDP) and the German Agency for Technical Cooperation (GTZ) analyze the participation of women in local organizations in Kashmir and Chad. Based on structured household interviews and intensive group discussions, ZEF looked into the factors that determine participation of women as well as the benefits and costs connected with participation. The preliminary results, based on binary choice models as well as on a review of the qualitative data collected, show that a "middle class effect" can be observed. Neither the wealthiest nor the poorest members of a community engage in collective action. Although poor segments of a community know about the benefits of participating, costs in the form of monetary and time input are very high and excluding for them. For instance, up to 160 hours per year spent on group meetings and joint group activities were reported. A very important benefit for group members is the social security delivered through the groups: insurance schemes such as collective grain stocks and lending among group members are very common and well recognized, also among non-members. This in turn

Participation
of Women:
Benefits and
Costs



underlines the enormous demand for insurance schemes that can be noticed in many developing countries. The research results also emphasize the importance of organizations and associations in creating reliability: individuals who participate in informal solidarity groups such as mutual labor exchange groups are far more probable to engage in collective action than individuals who do not participate in these informal solidarity groups. This holds true not only in countries but also in a

cross-country comparison.

Women in Kashmir do not have the opportunity to participate in informal networks as they have in Chad, because of the constraints they face in a Muslim culture (namely the *purdah system*, which does not allow them to leave their family compound). In contrast, in Chad no such constraints exist. Therefore, the overall probability of participating in informal solidarity groups was much higher in Chad than in Kashmir.





Governance, Macroeconomics and Trade Policies

■ Governance and Development

Recently, development researchers and practitioners are paying much more attention to the role of institutions and incentives in public organizations. Legal systems, arrangements to protect property rights and supervise banks, political checks-and-balance mechanisms have come to be seen as essential for economic development and social stability.

ZEF is developing a research program focusing on the role of governance for development. The program started in 1998 and has three themes:

- (1) how public institutions and incentive systems affect economic efficiency and social welfare;
- (2) how political rules act as constraints on economic activity; and
- (3) how legal systems facilitate the development of market economies.

An interdisciplinary approach is adopted since governance relates to processes that have complex historical, cultural, social and political determinants. However, to ensure coherent analytical foundations, the program builds on incentive economics combined with institutional economics. Government and markets are examined not only from the perspective of resource allocation—through prices, voting systems or discretionary power—but also from the viewpoint of informational advantages, incentives and rights of control over resources. There are political failures just as there are market failures, and both are rooted in the same agency problems. This means that when an agent has formal or informational advantage over his/her principal, a scheme of incentives and penalties is needed to alter the agent's action in a direction that favors the principal's interest. Typically this means that there will be a tradeoff between efficiency and risk-sharing.

Political
Failures
and
Market
Failures

Governments typically perform worse than markets in delivering goods and services to the majority in developing countries. Why is that? One reason is that the objectives of public organizations need to be defined by a political process and the preferences of many different persons have to be taken into account, while private enterprises simply have to look at the “bottom line.” Another reason is that interest groups and political parties have incentives that are different from their constituents. A third reason is that governments have more complex agency problems than enterprises. Information, credible commitment, monitoring and reliable enforcement is more difficult in public than in private organizations.

Many developing and transition countries are undergoing, at various degrees of intensity and speed, a profound process of reform and change. The reform process is economic (liberalization of the price system, macroeconomic stabilization, and privatization), political (involving more democratic participation and elections at local level) and legal (adapting laws and legal institutions to support a market economy). However significant economic and social inequalities exist between poor and rich, political and economic elites are powerful and the rule of law is

Reform
Processes



weak with often ill adapted legal systems, poor enforcement and abuses by unchecked and corrupt officials.

The extent to which the governance framework is supportive of private investment and private activity varies greatly from one country to another. In productive sectors, public enterprises dominate and the government has a lot of regulatory power over private activity. The cost of this political control can be high and it is borne by society at large, not by politicians and their allies. For public goods like essential social services and an acceptable legal system, which are critical both for growth and to raise the living standards of the poor, the extent to which private citizens can rely on public institutions to be supportive of their demands also varies greatly because political reforms are still on-going. Political mechanisms of participation are not fully in place and democratization is being resisted by some groups. The costs of a weak rule of law can also be very high. Institutional failures at all levels of government are often indicative of collective action problems resulting from social fragmentation and political polarization. Paying attention to governance problems means that to support the reform process of developing and transition countries, not simply the right policy instruments are needed, but also appropriate incentive structures so that credible public commitments are in place and agents can realistically be expected to implement policies that maximize social welfare.

Jean-Jacques Dethier, "Governance and Economic Performance: A Survey", ZEF Discussion Papers on Development Policy No.5. (Bonn, 1999).

A ZEF discussion paper serves as a stock-taking exercise and a stimulant for debate. Other outputs are in preparation including papers on both theoretical and empirical aspects of governance, one doctoral dissertation and the publication of a proceedings volume.



ZEF held a conference on "Governance and Development in China, India and Russia" on May 3-4, 1999 that focused on three dimensions of governance: the provision of local public goods and political reforms at the local level; fiscal reforms in intergovernmental relations; and legal reforms. Eleven original papers have been commissioned for the conference on these topics and a book is being edited from the material.

Future research will focus on applied economics (microeconomic surveys and empirical work) in collaboration with research institutes in China, India, Russia and possibly other developing or transition countries, on the following topics:

"Fiscal Federalism" and intergovernmental fiscal issues, examining tradeoffs between benefits of centralization in terms of policy coordination vs. costs in terms of diminished accountability; externalities between central and local government; and conflicts of interest between regions with high and low growth. Case studies will examine these issues in China, India and Russia in a context where the central government tax authorities have limited information about local-level enterprises, and local authorities do not generally, for social reasons, enforce a hard budget constraint.

Governance issues in the provision of local public goods, examining incentive schemes that are in place for democratic participation for local public goods; decision-making and financing for public goods and public investment programs; ac-

Workshop in May 1999 on "Governance and Development in China, India and Russia"



Emerging Future Research Agenda on Governance

countability of the authorities; reduction of transaction costs in the public sector and of corrupt practices. Case studies will examine the efficiency and welfare implications for rural and urban low-income groups of the provision of health care, education and local infrastructure by local governments.

ZEF research on legal systems and economic efficiency may focus on the poor, their access to legal systems. The effectiveness with which existing legal institutions support the market economy; the inadequacy of legal rules to the changing market economy, the need for new laws (or overhaul of existing legal codes) and the problems of possible misalignment of incentives posed by ‘transplanting’ foreign laws are also important developmental issues. The term “legal system” refers not only to the rules but also to their interpretation by judges, the independence of the judiciary and the operation of the judicial system; the alternative means of conflict resolution that are available and the speed of dispute resolution. The literature in this field is mainly concerned—understandably so, given the focus on the development of the private sector—with the regulation of businesses, utilities and infrastructure projects. The ZEF program will focus on some case studies of regulation but also on an under-investigated area: welfare legislation, its relation with insurance and its implications for poverty reduction.

■ Environmental and Social Standards and the World Trade Organization

Environmental and social issues are two key areas that are currently the subject of intensive debate at the World Trade Organization (WTO) in Geneva. Only little is known about the impact that trade liberalization, as promoted by the WTO, will have on the environment and on the social conditions of the population. The following questions arise: how do trade measures affect the environment and the social situation of workers, and vice versa, how do environmental and social policy affect trade and the competitiveness of countries? Should trade sanctions be used to combat child labor in developing countries, or to force other countries to pay more attention to the environment? Does trade liberalization lead to exploitation and thus further depletion of natural and human resources in developing countries? Should environmental and social standards be internationally harmonized? Do developing countries have to be afraid of losing market access to industrialized countries due to a new “green protectionism” which means that environmental standards will be abused as non-tariff barriers? Which policy instruments are available to promote sustainable development in a more liberalized world? Research into environmental and social standards has been started at ZEF in order to give policy advice and answers to these and other similarly important questions.



Trade sanctions ineffective in combating child labor

An international research group at ZEF looked into the effectiveness of trade sanctions to combat child labor. Their findings were published in a ZEF Discussion paper on “Child Labor and the International Policy Debate”. This paper provides an overview of the current academic and public debate on child labor. According to the latest estimates of the International Labor Organization (ILO), a quarter of a



Ulrike Grote, Arnab K. Basu, and Diana Weinhold, "Child Labor and the International Policy Debate", ZEF Discussion Papers on Development Policy No.1. (Bonn, 1998).

billion children aged between 5 and 14 throughout the world work, and about half of these work full time. The extent of child labor varies regionally, with about 40 % of children being engaged in economic activities in Africa, about 20 % both in Asia (excluding Japan) and Latin America (including the Caribbean), and 10 % in the Pacific region. In absolute terms, the incidence of child labor is highest in Asia with 54 million economically active children, compared to about 31 million in Africa. In addition, child labor exists in Southern Europe and increasingly in the transition economies of Central and Eastern Europe. The majority of the children (70 %) work in the agricultural sector. In the urban centers, the children are mostly employed in the informal sector and only 5-7 % are employed in the export sector. Therefore, only a very small proportion of the economy that depends on child workers is actually affected by trade sanctions. The impact on the informal sector, however, where most of the children are employed, is only low.

But even if trade sanctions improve the working conditions of a small percentage of child laborers in developing countries, this approach might ultimately do more harm than good. ILO research in India and also in Africa found that on average each working child contributes between 20-25 % of the family income. This is quite a considerable proportion which could make the difference between survival and starvation. A trade sanction affecting the formal sector would compel child laborers to seek employment in the unregulated, informal sector where jobs are generally more dangerous and lower paid as regulation of the formal sector increases.

The underlying economic conditions that lead poorer families to send their children to work must be addressed directly in the context of overall economic development policy if permanent and comprehensive solutions to the phenomenon of child labor are to be found. Instead of trying to influence the demand side of the child labor market, more attention should be paid to the supply side. That means that the concerned families have to be encouraged and must be enabled to send their children to school instead of work. This involves taking account of the interrelationship between the market for schooling and that for child labor. The supply of schools, learning centers and education facilities needs to be improved and the

access to them needs to be facilitated. Very often, child laborers who decide to go to school are excluded because of their age. This leads to the permanent integration of children into working life.

Other policy measures impacting on the supply side of the child labor market include microfinance projects that improve the income situation of the families and enable them to survive without the additional income of their children. Direct subsidies that cover school-related expenses, cash stipends to schoolchildren or food programs such as free lunches at school, have also proven to be very effective policy measures to impact on the supply of child labor. The paper emphasizes that with limited resources available for

combating child labor, it is important to carefully analyze the local causes of child labor so that alternative policy recommendations may better be evaluated.





Environmental standards and international competitiveness

In the new framework of liberalized trade worldwide, there is strong pressure from the industrialized world to impose trade measures on developing countries that neglect the protection of their environment. There is also the fear in the West of losing competitiveness, based on the assumption that the relatively high environmental standards there will result in higher production costs. Thus, farmers in the West are calling for the protection of their domestic markets. Developing countries, however, are afraid of losing their market access due to increased protectionism in the developed world.

To tackle these conflicting problems, a project on “Environmental standards and international competitiveness — in the context of WTO” which is financed by the Federal Ministry of Food, Agriculture and Forestry (BMELF) was launched in December 1998. This study looks into levels and enforcement of national standards and their impact on the environment and on the competitiveness of countries. Case studies in Brazil, Indonesia and Germany will compare the production/processing costs and the impact of domestic environmental standards on the cost structure of selected agricultural products (corn/wheat, soya oil/palm oil/canola oil and chicken). The consideration of production and process measures (PPMs) under GATT/WTO plays an important role in this context. Alternative measures like eco-labeling are also analyzed in detail. Based on the empirical results, some policy guidance can be given on the implications of trade liberalization for the environment and for international competitiveness.



ZEF Project on
“Environmental
standards and
international
competitiveness”

■ The Future of EU-ACP Relations

The Lomé Agreement, which links the EU with 71 developing countries in Africa, the Caribbean and the Pacific, is based on aid, trade and political dialogue. This treaty is currently under re-negotiation as Lomé IV expires at the end of 1999. Since its beginnings in 1975 the Lomé Agreement was regarded as a model for North-South relations because of its contractual nature. EU aid is granted on top of the aid from the 15 member states. As 46 of the 71 ACP countries belong to the category of least developed countries they are in the focus of ZEF interest. Because the success of the Lomé Convention is rather limited, various reform options are under discussion. The share of ACP exports in EU trade fell from 7.3 % in 1995 to 3.4 % in 1997. The European Community is now the world's fifth largest aid donor, providing 5.1 billion ECU in 1997. But as recent evaluation reports have shown, this aid is not always used efficiently. Further reasons for modifying EU development cooperation are the changes in the economic and political world order.

Workshop on post Lomé Agreement

To tackle the issues of the ongoing negotiations, a Policy-Workshop on “The Future of EU Development Cooperation – What deals between the EU and the ACP



states?” was held at ZEF on November 16-17, 1998. The workshop was attended by 70 representatives from politics, science and NGOs, coming from EU-member states as well as from ACP countries. It was organized jointly by ZEF, the

Friedrich-Ebert-Foundation (FES) and the European Center for Development Policy Management (ECDPM). The focus of this workshop was to foster policy dialogue by taking up current issues of the debate on future EU-ACP relations and to highlight differences as well as common positions.

With regard to future trade regulations, the EU proposes to establish free trade areas (FTA) between the different regions of the ACP states and the EU members. The main reason the EU gives for this proposal is to secure WTO compatibility. Currently, the WTO grants a waiver for non-reciprocal preferences, but this, too, will expire in 2000. However, most regional integration schemes in the ACP are not customs unions with an authority to negotiate FTA with third parties. Carl Greenidge, Deputy Secretary General of the ACP Secretariat pointed out that “the approach to trade needs to be viewed more creatively and needs to take into account the great dependence of ACP states on trade and on specific sub-sets of the EU market.”

The resources made available through the Lomé convention have not been sufficient to reduce poverty significantly. Therefore the other instruments of cooperation should also contribute to this aim. Programs that are designed to improve growth through investment could be beneficial for the poor, but they can also increase inequality. Organizations, which represent the most vulnerable and poorest groups of society, should be consulted in the negotiations in order to improve the outreach of cooperation. The need for capacity building at all levels of society was also stressed as a precondition for cooperation that will focus more on the specific needs of a country.

Furthermore, it was highlighted that a correlation exists between the level of human development as measured by the Human Development Index (HDI) and a country’s competitiveness. This again shows the linkages between the different issues of the negotiations. It was also stressed that measures to promote investment like cheap credits should not focus only on foreign investment, but that domestic investment is of special importance for the economies. Indeed, foreign investors need domestic partners with their know-how of domestic markets and conditions. Concerning the question of governance, a representative of the ACP states underlined that the EU can try to strengthen groups of the civil society but it cannot initiate the process of democratization. The imposition of conditionalities has some merits with regard to aid effectiveness, but is contradictory to the principle of ownership and partnership if the conditions are not mutually agreed upon. The EU should concentrate its support on areas where it has a comparative advantage, like the improvement of legal systems that are similar in many ACP and EU countries.

At the end of the policy workshop broad consensus reigned that a post-Lomé convention shall be signed in the year 2000 but it was also mentioned that this might be the last agreement of this kind. The next round of EU enlargement will change the interest of the EU further and policies other than Lomé will become increas-



Workshop: The Future of EU Development Co-operation: What deals between the EU and ACP-States?



ingly important for the ACP, especially the WTO negotiations. The ACP countries have to face a more liberalized world economy and the EU can help the ACP to adapt to this through a successor convention. The proceedings of the November workshop will be published in 1999.

Analysis of different trade policy options for the ACP states

The future provisions for EU-ACP trade are still being discussed widely and consensus is far from being reached. The EU mandate proposes Regional Partnership Agreements (REPAs) that mainly consist of free trade areas. Countries that do not want to negotiate REPAs will be graduated into the General System of Preferences (GSP). Currently the debate focuses on the length of the transition period, on the asymmetry of the FTA and on possibilities for compensation for losses of tariff revenue. Another alternative would be to integrate EU ACP trade relations into the WTO negotiations, which might lead to a revised GSP. The main issue is to determine the economic consequences of the different options for the ACP countries, especially with regard to employment and investment. These effects can be quantified using a computable general equilibrium model. The research does not only focus on trade relations of the ACP countries with the EU but also on alternatives, especially the promotion of intra-regional trade. This analysis will be continued in 1999.



Reform options for EU aid policy

The EU mandate for a successor to the Lomé convention also includes changing criteria for the allocation of financial aid to improve its effectiveness. The approach to shift these criteria from needs to merits is also followed in the other EU aid programs. As there is wide agreement that some of the Lomé instruments such as STABEX did not reach their aims, the set of instruments is also under review. Preliminary findings show that EU aid is only partly allocated according to needs that can be measured by the level of GDP per capita or the Human Development Index. The project investigates the consequences that a changed EU aid policy will have for different countries.

Another problem of EU development cooperation is the lack of coordination between the Commission and the member states. ZEF gave some policy advice to the German Ministry for Economic Cooperation and Development on how coordination could be strengthened by making use of comparative advantage.

■ Economies in Transition: ZEF Research on Russia

While the share of agriculture in Russian GDP slumped from 10.9 % in 1990 to 7.3 % in 1994, a different picture emerges when looking at the food expenditure shares of Russian consumers. Food expenditure by Russian households has risen in the transition period and in the mid-90s added up to almost two thirds of total expenditure when own garden production is included, the latter usually being underestimated in official statistics.

Empirical findings on income, food expenditure shares and poverty of Russian households in the transition period were one area in which important insights were

Workshop:
Russia's Food
Economy: To-
wards Truly
Functioning
Markets



gained from a project on Russia's agro-food economy in transition, funded by the Volkswagen Foundation. The project has four major parts: household economics, vertical and spatial food market integration, food policy and links between the agro-food sector and the macro-economy. The results were summarized at an international conference held in July 1998 at ZEF in Bonn. The conference was jointly organized by ZEF and national and international counterparts, namely the Institute for the Economy in Transition, Moscow and the Institute for Agricultural Development in Central and Eastern Europe, Halle.

Increasing food production by private households

The analysis of the situation of Russian households is based on a survey carried out together with the Center of Economic Analysis, Moscow, in two consecutive rounds in 1995 in three Oblasts (i.e. subnational regions) in the European part of the country. The results stress the significance of home gardening as a safety net for Russian households, and as a neglected segment of the Russian food economy where considerable resources are employed in an informal economy. On average, 49 % of the total income of all surveyed households stems from paid employment, while the share of home gardening accounts for 31 %. A similar pattern is depicted for food expenditure. If home production is included, poor households as well as rich households spend more than 60 % of their income on food commodities and beverages. 74 % of all surveyed households manage a garden plot. Household-based food production increased substantially during transition, but agro-food policies neglect this important sub-sector and the poor institutional setting further hampers better integration of this segment into the formal economy. Widespread opinion still held among Russian economists and politicians is that these small-scale producers can be neglected as they represent only a temporary phenomenon.

Regional market disintegration

While surveys of households and enterprises were concerned with the market structures emerging among different institutional players in the economy, another important issue was the spatial integration of the Russian food economy. Since the natural conditions for agricultural production reveal very high regional differences, it is clear that an adequate regional food supply crucially depends on well-functioning interregional and international market and trade connections. In Russia, the exact opposite is going on these days: surplus regions like the black soil region have a greater reduction in grain production than less suitable regions. This means that regional productivity advantages are not exploited and production structures are moving towards regional self-sufficiency. This particularly hits remote and naturally disadvantaged food-deficit areas where forced subsistence production activities of the population are distracting the labor force from employment in mining, industry and services.

The role of agriculture in the macro-economy

The financial crisis in Russia has highlighted the overwhelming importance a more stable macro-economy will have for the evolution of a more efficient domestic agri-food sector. The significant devaluation of the ruble in mid-August 1998 had an immediate and significant impact on the agri-food economy: declining real in-

Peter Wehrheim, "Institutional Change in the Russian Food Marketing System," in: Frohberg, K. and P. Weingarten (eds.): *The Significance of Politics and Institutions for the Design and Formation of Agricultural Policy* (Vauk-Verlag: Kiel, 1998).



come of the population (approximately 10 %) together with rapidly rising prices particularly for superior food commodities caused stockpiling of food commodities by Russian households in the short term. The crisis is likely to induce further substitution of superior products by inferior ones and increased household production in the medium term. Similar to other financial crises, in Latin America for instance, the situation will lead to greater price competitiveness in domestic agriculture and the food industry. However, the poor institutional setting lowers the potential generated by the crisis for positive adjustments to all price signals. The high amount of barter activities in the agri-food trade is another feature in which the Russian situation differs from other countries having to cope with a financial crisis.

Trade issues and spatial aspects of the food economy in Siberia

ZEF is continuing its research on the Russian agro-food economy by focusing more on spatial issues of economic geography, interregional trade and the spatial competitiveness of the agro-food sector in Russia. The objective of this project is to investigate how the vastness of space in Russia and its economic implications interact with the economic evolution of a market-oriented agro-food sector in the transition period. During the Soviet era, production locations often neglected comparative advantages and this led to an inefficient allocation of production capacities and trade patterns compared to those of a market economy. The restructuring processes in regional production and interregional trade in a world region characterized by very large transportation costs are at the core of this new project. In cooperation with regional partners the spatial restructuring is now to be mapped and its determining factors analyzed.





Modern Technologies and Resource Use for Development

■ Information and Communication Technologies for Development

Goal and objective of the research focus

Views on the role that information and communication technologies (ICTs) can play in encouraging growth in low-income countries range from whole hearted endorsement to deep skepticism. The wide range of views suggests a shortage of sound analytical research and empirical information on which to base decisions about investment in ICT. Furthermore, despite their potential importance it appears that these technologies are not considered an integral part of the development debate.

ZEF therefore committed resources to research on the role of ICTs in economic development and established a working group devoted to this issue. The group's work focuses on the effects of information technology, with a special focus at the microeconomic level (e.g. small enterprises and households). During 1998, the group started to emerge, gained members and unfolded a range of activities.

Conceptual framework for ICT research

One of the first steps was to critically review recent studies on the impact of ICT on development. This review focused on (1) the various channels through which ICT can affect economic development, (2) the existing evidence on the link between these technologies and development, and (3) the directions for further research.

Empirical research

The effects of ICT use at the micro-level will be examined by means of country studies. Each study could involve :

- a description of the economic, institutional and infrastructural issues of the individual country;
- empirical analysis of the effects of ICTs on household and individual welfare, farm and firm productivity and access to markets; and
- country studies to be carried out in collaboration with partners in South America (Peru), sub-Saharan Africa (Ghana) and Asia (India, Bangladesh, China).

Further topics will depend on discussions with the contributors of case studies and the explicit framework in the partner countries.

Several ZEF publications, including two review papers and a country study on Bangladesh have been completed. The review papers define the issues involved and discuss the relevant literature, while the country study reports on some empirical results. The studies aim at sensitizing policy-makers and the development community. In addition, a workshop was organized in May 1999. The workshop was at-

Sabine Seibel, Dietrich Müller-Falcke und Romeo Bertolini, "Informations- und Kommunikationstechnologien in Entwicklungsländern. Trends und Potentiale", ZEF Discussion Papers on Development Policy No.4. (Bonn, 1999).

Arjun S. Bedi, "The Role of Information and Communication Technologies in Economic Development. A Partial Survey", ZEF Discussion Papers on Development Policy No.7. (Bonn, 1999).

Abdul Bayes, Joachim von Braun and R. Akhter, "Village Pay Phones and Poverty Reduction: Insights from a Grameen Bank Initiative in Bangladesh", ZEF Discussion Papers on Development Policy No.8. (Bonn, 1999).



Workshop "Information and Communi- cation Tech- nologies and Economic Development"

tended by over fifty participants from 17 countries. The workshop allowed interaction and dialogue between representatives from the private sector, the academic community, and international development institutions. A wide range of issues was discussed. The workshop was useful in allowing ZEF to develop its future research agenda in this area, and in establishing contact with other institutions involved in the debate on the role of ICTs in the development process.

■ The Economics of Biotechnology in Low-Income Countries

On the threshold to the 21st century there are still over 800 million people worldwide suffering from inadequate access to food. Although hunger and malnutrition are not a problem of global food scarcity alone, projections of demographic and economic developments indicate that sustainable food security will not be attainable without substantial growth in agricultural output. In this respect, biotechnology is considered to be a powerful expansion of the traditional toolbox for crop improvement. Plant genetic engineering in particular promises to accelerate the success in biological research and to bring forth crops with desired yield and quality traits, many of which could not be achieved with the tools of conventional breeding alone. Recent developments in agricultural biotechnology are breathtaking, and its commercial application has increased exponentially during the last few years. In 1998, already around 30 million hectares of transgenic crops were grown over the globe, however, most of them in the industrialized world. The suitability of biotechnology for low-income countries is still a matter of heated debate. Apart from environmental and health considerations, the socioeconomic repercussions are a controversial topic dividing up biotechnology advocates and opponents. As empirical evidence is lacking, the discussion is mostly led by emotional beliefs. Indeed, intelligent national and international technology policies will be needed to optimize the benefits for the poor in developing countries, but due to the lack of sound information, decision-makers are hesitant about the right strategy to choose.



ZEF's research project

The research project at ZEF, initiated in 1997, attempts to contribute to a rationalization of the debate by providing timely and policy-oriented information about the economic implications of biotechnology in low-income countries. For that purpose, a conceptual framework has been developed with the help of which welfare and distribution effects of specific biotechnologies can be assessed quantitatively before the innovations are actually introduced in a country. The influence of different policy alternatives on future technological impacts can be tested within scenario considerations. This framework is applied for various case studies. Furthermore, the project at ZEF investigates institutional issues and challenges imposed by the international biotechnology evolution with a view to developing countries' access to appropriate innovations. On account of the increasing privatization of agricultural research, new models of international cooperation and transboundary technology transfer have to be identified.

Policy Alterna- tives on Future Technological Impacts



Matin Qaim and Joachim von Braun, "Crop Biotechnology in Developing Countries: A Conceptual Framework for Ex Ante Economic Analyses", ZEF Discussion Papers on Development Policy No. 3. (Bonn, 1998).

Matin Qaim, "Transgenic Virus-resistant Potatoes in Mexico: Potential Socio-economic Implications of North-South Biotechnology Transfer", ISAAA Briefs No. 7, International Service for the Acquisition of Agri-biotech Applications (Ithaca, NY, 1998)

Matin Qaim and Cesar Falconi, "Agricultural Biotechnology Research Indicators: Mexico", ISNAR Discussion Paper, No. 98-20, International Service for National Agricultural Research (The Hague, 1998).

Matin Qaim, "Assessing the Impact of Banana Biotechnology in Kenya", ISAAA Briefs No. 10, International Service for the Acquisition of Agri-biotech Applications (Ithaca, NY, 1999).

First country-level case study

The conceptual framework for economic biotechnology analyses was used for the first time in 1998 to evaluate transgenic virus-resistant potatoes in Mexico. The gene material and related know-how for the genetic transformation of potato was made available to Mexico by the private US company Monsanto under a royalty-free licensing agreement brokered by the International Service for the Acquisition of Agri-biotech Applications (ISAAA). After public Mexican research institutes have adjusted the technology to local needs, virus-resistant potato varieties are expected to become available to domestic farmers in the year 2000. The projections on the costs and benefits of this specific technology involved comprehensive interview surveys with national and international potato researchers as well as with Mexican farmers and rural extensionists in different regions of the country. Logistic assistance for the field studies was provided by the Autonomous Metropolitan University in Mexico City and the Postgraduate College in Montecillo.

The analysis at farm level demonstrates that the benefit potential of the virus resistant varieties is highest for small and resource-poor potato growers. Whereas large-scale farmers could raise their total factor productivity by 13 %, the corresponding increase for small-holders was as high as 32 %. Due to resource shortages, small-scale farmers often use degenerated tuber seeds, so that their current virus-induced yield losses are much more severe than those of larger producers. Notwithstanding this bias towards the poorer farmers, aggregate model projections for the national potato sector demonstrate that the technology could exacerbate income concentration among the growers. The reason is that small-holders would have only limited access to the innovation under the given seed potato distribution system in Mexico. The study highlights policy options that could considerably improve both income distribution and the efficiency effects of transgenic technology.

Summarizing the first case study experience it can be stated that transgenic crop technology offers broad economic potentials for low-income countries. However, public support and institutional adjustments might be required to avoid negative social externalities. Given appropriate policies, biotechnology could benefit the poor even more than the rich. Socio-economic studies are needed to supply decision-makers with sound information. With respect to developing countries' access to suitable technologies, private enterprises of the industrialized world – who hold the lion's share of biotechnology patents – can and should play a more important role in the future.

Future activities

Within similar case study approaches, future biotechnology applications for banana and sweet potatoes are being evaluated in Kenya in collaboration with ISAAA. These analyses will be completed in 1999. Together with the Mexican potato study will render a more comprehensive picture of biotechnology implications under different framework conditions. Furthermore, it is planned to extend the research team of the project and to develop and refine methodologies to assess additional economic aspects of biotechnology in low-income countries, particularly the effects of genetically-modified quality characteristics in agricultural crops. Project activities in 1999 will also focus on the presentation of the findings obtained to date and their dissemination to policy-makers and researchers. A biotechnology conference with international participation is planned to be held at ZEF in November 1999.



Biodiversity and Ecosystems in a Development Context

■ Conservation and Utilization of Biodiversity

At local, national and international levels, numerous groups concerned about the loss of biodiversity are trying to conserve the various facets of the earth's biological diversity. International and national organizations, NGOs, parastatal groups as well as individuals are all actively involved. ZEF is contributing to these efforts by conducting applied and interdisciplinary research with the overall aim of providing decision-makers at different levels with information on how to set priorities in biodiversity policies. At present, ZEF is developing a database on the conservation of migratory animals. In addition, ZEF's research is developing and conceptualizing more efficient conservation strategies by discussing the various economic and institutional aspects of genetic resources conservation and focusing on the cost aspects.



The Global Register of Migratory Species (GROMS)

The Global Register of Migratory Species (GROMS) aims to summarize our state of knowledge about migratory species. It consists of a relational database connected to a Geographical Information System (GIS) and will serve both scientific as well as conservational goals, trying to bridge existing gaps. GROMS supports the Convention on Migratory Species—also known as CMS or the Bonn Convention—which is an intergovernmental treaty for the protection of migratory animals.

Migratory species as defined by CMS include “*the entire population or any geographically separate part of the population of any species or lower taxon of wild animals, a significant proportion of whose members cyclically and predictably cross one or more national jurisdictional boundaries*”. To include large range migration within states, a minimum migration distance of more than 100 km has been selected. Bibliographic databases and the Internet were searched for relevant information to assess the present state of knowledge. While comprehensive online data is available for most red-listed species, data is deficient for many other species.

A relational database model was designed in line with the requirements of potential users. The basic taxonomic unit is the population because distinct populations (subunits) of a single species might exhibit distinctive migratory behavior. They are the “managing unit” relevant for conservation. Additional tables contain information about vernacular names, migratory behavior, habitat, threats, population numbers and protection status, as well as addresses of monitoring organizations and experts. All information is fully referenced by an integrated bibliographical module.

GROMS is financed by the Federal Ministry of Environment (BMU) through the Federal Agency for Nature Conservation. It is being implemented in close cooperation with the Zoological Research Institute and Museum Alexander Koenig in Bonn, which provides a huge library and staff expertise. Innovative GIS-tools are developed in cooperation with the Department of Geography, Bonn University.

International cooperation partners include:

- UNEP/CMS Secretariat, Bonn
- ICLARM (International Center for Living Aquatic Resources), Philippines
- BCIS (Biological Conservation Information Network)

Klaus Riede, “Acoustic monitoring of Orthoptera and its potential for conservation”. *Journal of Insect Conservation* 2, pp. 217-223 (1998)



A prototype for a user-friendly information retrieval system containing interactive maps has been developed in cooperation with the Department of Geography and is accessible via the GROMS website (<http://www.biologie.uni-freiburg.de/data/riede/groms.html>).

In June, ZEF organized an international workshop on migratory species on the occasion of the 20th anniversary of the Bonn Convention, intensifying contacts between GROMS and major biodiversity database projects.

Economic aspects of biodiversity conservation

Since the beginning of the century, immense human capacity and financial resources have been spent on the collection and conservation of plant genetic resources. Estimates indicate that there are 6.2 million accessions of 80 different crops stored in 1,320 gene banks and related facilities in 131 countries. However, the call to conserve the maximum of genetic diversity is based on its valuation from a purely environmental-ethical point of view. In contrast, the economic valuation of plant genetic resources for food and agriculture (PGRFA) based on anthropocentric grounds, encounters valuation problems because of the intergenerational existence and the problem of intermittent scarcity and irreversible loss. Consequently, conventional economic instruments are of limited use when it comes to assessing the value of genetic resources.

The development and conceptualization of more efficient conservation strategies are preconditions for the effective utilization of PGRFA for food security and a productive world agriculture in the long run. The first step towards an economically efficient approach to diversity conservation is to calculate the costs of all conservation activities.

Based on expenditure data of 39 countries, overall expenditure was estimated both at national and international levels. According to this estimation, US\$ 733 million were spent on domestic expenditure in PGRFA conservation management. US\$ 83 million were estimated to be contributed by countries to international organizations and their PGRFA conservation projects. It is estimated that at least US\$ 106 million were contributed directly from country to country on a bilateral or multilateral basis.

No remuneration has been offered so far; neither for farmers who are maintaining PGRFA diversity in their fields nor for the conservators who are conserving germplasm in various conservation facilities. The conservation system and an optimal level of agrobiodiversity will, however, only be sustained if sufficient incentives are granted for all players involved.

The importance of genetic resources as a production factor is receiving increasing attention in economic analyses, chiefly due to the growing demand as a consequence of technology developments, coupled with a declining natural supply of genetic resources. Further improvements of technologies will significantly impact on the future value of genetic resources, and also on the future development of the demand and supply side. Moreover, institutional developments, mainly the issue of property rights, will also influence the value of genetic resources. Unless property rights are improved, no adequate incentives will exist for farmers and countries to maintain genetic resources.

Detlef Virchow, "Conservation of Genetic Resources: Costs and Implications for a Sustainable Utilization of Plant Genetic Resources for Food and Agriculture" (Heidelberg: Springer-Verlag, 1999).



Sustainable Land Use Systems

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

The study of decomposition processes in forest ecosystems is essential for an understanding of the dynamics of nutrient cycles. Such investigations are especially important in tropical forests. These forests are converted at very high rates into agricultural systems which mostly turn out to be unsustainable and end up as degraded areas, thus further increasing the pressure on primary forests. Agricultural systems which destroy the litter cover, soil surface structure and the root systems lead to the degradation or destruction of the decomposer community (microorganisms, meso- and macrofauna). Tropical soils are generally poor in nutrients, nutrient retaining ability is low and the largest portion of mineral nutrients is stored in the plant biomass. A severe disturbance of the nutrient cycles causes a further decrease of soil organic matter and the nutrient absorbing capacity and leads to a productivity breakdown. Fertilization restores soil fertility only at very high costs which cannot normally be met by the poor farmers. By studying the structure and dynamics of the nutrient cycles in natural and agroforestry systems it is possible to understand the basic features of the processes needed to design ecologically and economically sustainable land use systems.

Based on a long standing cooperation between individual researchers from Brazil and Germany, the Federal Ministry of Education, Science and Research and the Brazilian Research Council CNPq initiated a research program called SHIFT (Studies of Human Impact on Floodplains and Forests in the Tropics). Within this framework a qualitative and quantitative study of the role of the soil fauna in the nutrient cycles was jointly elaborated by several institutions in Germany and Brazil in 1995 and 1996 and started at the end of 1996. ZEF became a project partner in 1998. The activities of the project are closely related to other projects of the BMBF-funded SHIFT program in Manaus, aiming to develop methods for sustainable land use in Amazonian rain forests. These projects are built around an experiment on the recultivation of a fallow rubber plantation with mixed plantations of annual and perennial plants (polycultures). The project is evaluating the litter quantity and quality and decomposition rates. A comparative study is being made of the abundance, biomass, and respiration of soil-inhabiting microbes, arthropods and earthworms in one of the polycultures (a forestry plantation consisting of four commercially-used tree species) and in nearby secondary and primary forests. The aim is to evaluate the specific contribution that the soil microflora and the different functional soil fauna groups make to the decomposition of organic matter and the resulting nutrient supply to the plants. The basic hypothesis is that a functional soil fauna is of extreme importance for the maintenance of "healthy" nutrient cycles in the systems, and that biotic and abiotic factors of the sites can be managed in order to optimize the cycling of nutrients. In view of the high variability in the distribution of the fauna in tropical soils, an exhaustive and very time-consuming sampling scheme is the only way to address these questions and provide a model of the un-

A project in cooperation with:

- State Museum for Natural Science Karlsruhe (SMNK) (lead institution)
- Empresa Brasileira de Pesquisa Agropecuária - Centro de Pesquisa Agroflorestal da Amazônia Ocidental (Embrapa-CPAA), Manaus
- Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus
- II. Zoological Institute of University of Göttingen
- ECT Oekotoxikologie GmbH, Flörsheim

Amelung, W., Martius, C., Garcia, M., Kueper, U., Ullbrich, D. and W. Zech, "Organic matter in termite mounds of an Amazonian rain forest", in: Proceedings of the Third SHIFT-Workshop, Manaus, March 15-19 (1998).

Hanne, C. and C. Martius, "Impact of Amazonian termite populations on the carbon cycle of differently used forest systems: CO₂ production of different termite food-guilds", in: Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, March 15-19 (1998).

Martius, C., "Potenciais para o controle biológico de cupins", in: Revista Brasileira de Entomologia 41 (2-4), pp. 79-194 (1998).



Römbke, J., Höfer, H., Martius, C., Förster, B., Franklin, E., Garcia, M. and L. Beck, "The role of the soil fauna in the litter decomposition process in primary forests, secondary forests and a polyculture plantation in Amazonia. Methodological considerations", in: Markert, B. and J. Oehlmann (eds.), "Ökosystemare Ansätze in der Ökotoxikologie." 3. Deutschsprachige SETAC Europe-Tagung. (Jena: G. Fischer-Verlag, 1998).

derlying processes which will be applicable in similar situations. An additional aim of the project is to test and develop short-term methods to assess the "operative health" of the soil biota and the functionality of the decay processes with less labor-intensive sampling in future studies.

Major findings

First results indicate that the sites differ considerably with respect to microclimatic conditions, soil fauna assemblages and decay rates. In the more openly structured plantation sites, solar irradiation is higher and soil temperature and air humidity near the ground reach higher peak values and are subject to larger variation. The highest soil fauna densities were found in the primary forest site.

The decomposition rate of the forest litter (which is an indicator of the dynamics of nutrient cycling) is strongly and significantly affected by the presence of large soil fauna ("macro" fauna like termites and earthworms), and less by smaller "meso" fauna and microorganisms. Macrofauna is the most important accelerator of decomposition rates in all sites, despite the observed large differences in community structure. Litter decomposition rates are also highest in the closed forest site. It was also found that the colonization of the open plantation areas with termites is not limited by the density or diversity of termites that take part in the swarming, but rather determined by the unavailability of suitable sites for colony foundation, food or inadequate microclimatic conditions on these sites. In the next project phase, it is intended to experimentally assess the conditions for the establishment of macrofauna in the plantations and study methods for the manipulation of the soil fauna in order to enhance the productivity and the sustainability of the sites.

■ Policies for Improved Land Management in Uganda

Soil-nutrient depletion is one of the most critical land degradation problems in Africa. In Uganda the mountainous regions are seriously threatened. Average farm size has declined to less than 0.1 ha due to the very high population pressure of more than 200 inhabitants per square kilometer. The traditional fallow period during which soil fertility could be restored has disappeared from the land-use system as farmers are forced to cultivate their land permanently.

Major losses of soil nutrients from the field occur not only at harvest but also through erosion due to heavy rain storms. Input of nutrients rarely occurs. In many parts of Uganda mineral fertilizers are either not available or too expensive for small farmers, and application of animal or green manure is not common. In summary, the export of nutrients in large areas exceeds the input by more than three times.

During the 90s, the negative nutrient balance has reached a most alarming extent in these areas. Diminishing yields due to the decline in soil fertility increase rural poverty. Lacking the means to counteract nutrient depletion, poor farmers are compelled to enhance the exploitation of natural resources, thereby exacerbating the problem of land degradation.

A new research project will assess the impact of different factors and identify effective policy strategies for combating the vicious cycle of soil degradation now occurring in Uganda.

The project is conducted in cooperation with

- International Food Policy Research Institute (IFPRI)
- National Agricultural Research Organization (NARO), Uganda
- Makerere University Kampala (MUK), Uganda
- Agricultural Policy Secretariat (APSEC)



This research will utilize household, community, and market surveys to quantify impacts of past and present policies on soil nutrient management in different “pathways of development”. Market and household-level models will be developed to evaluate the impact of alternative policy scenarios on land management and the implications for soil quality, agricultural production and poverty. Nutrient balance studies will be carried out to assess the dynamics of soil fertility degradation.

Simply put, one of the key questions to be answered by the project is: “If a farmer [or community or state] has land of different quality and limited resources, which pieces of land should he invest in, those of good quality or the marginal lands ... not only for his best interest, but also that of the next generation?”



The project started in April 1999 and will last for three years.

It will be implemented by an interdisciplinary team of researchers from IFPRI (lead institute), ZEF and the Ugandan organizations NARO (National Agricultural Research Organization), MUK (Makerere University Kampala) and APSEC (Agricultural Policy Secretariat). Collaboration with other organizations in the region, such as ICRAF (International Center for Research in Agroforestry), CIAT (International Center for Tropical Agriculture), AHI (African Highland Initiative) and TSBF (Tropical Soil Biology and Fertility Program) has been initialized.

As a result of the project, recommendations for investments and improved strategies of land use management will be made in 2002. The capacity of study collaborators and clients in Uganda to conduct policy research related to land management will be strengthened. As a catalyst, these findings are expected to effectively support empowered human capacity to promote more productive, poverty-reducing, and sustainable development in Uganda.

■ Secondary Forests and Fallow Vegetation in the Eastern Amazon Region, Brazil

In the scope of a GTZ project on the utilization and conservation of soils in the Bragantina region of Eastern Amazonia, dating back to 1984, a cooperation arrangement was initiated between EMBRAPA Amazônia Oriental, former CPATU, and the University of Göttingen. As a result of this project it became clear that many issues relating to secondary vegetation and the shifting cultivation practices remained obscure and consequently hampered efforts to modify the land-use system in order to optimize its functions.

A fundamental issue was the low and often decreasing productivity of the traditional land-use system, forcing farmers to migrate and claim new territory by clearing primary forest. The birth of the SHIFT program, funded by the Federal Ministry of Education, Science and Research (BMBF) was an opportunity to reactivate the above-mentioned cooperation arrangements and make a more fundamental analysis of the local agro-ecosystem. A joint project proposal was drawn up aiming at a better understanding of a number of (agro)-ecological

The research on secondary forests and fallow vegetation in the Eastern Amazon Region is conducted in cooperation with

- University of Göttingen
- Empresa Brasileira de Pesquisa Agropecuária - Amazônia Oriental (EMBRAPA)



factors, both abiotic and biotic, that earlier studies had recognized as playing a critical role in the functioning of the traditional fallow system.

The project started in September 1991. It served to generate initial ideas on the available options to modify the land-use so as to avoid burning and degradation of the fallow system. The subsequent second phase (1995-1999) investigated ways of practically applying the results of the first phase. The third phase (1999-2003) is currently being prepared.

The first project phase (1991-1995) involved close cooperation with the University of Giessen. The research was exploratory in nature and covered the following topics:

- The structure and species composition of fallow vegetation;
- The regeneration process of secondary vegetation;
- The water and nutrient balance of the fallow/cultivation cycle;
- The role of biological nitrogen fixation in secondary vegetation;
- The role of soil-nutrient limitations in regeneration;
- The effect of burning on soil biological functions;
- The effect of agricultural practices on crop productivity and fallow regrowth.

A common result shared by all topics of this phase was that the fallow vegetation, the "*capoeira*", plays an important role in maintaining biodiversity in the agricultural landscape. Biodiversity, a function of land-use intensity, is a strong argument for the preservation of *capoeira* as a component of the traditional land-use system. The root system of the *capoeira* is the key to its regeneration, whereas the seeds of trees and shrubs play only a minor role. The root system also plays an important role in supplying the vegetation with water from a greater soil depth and helps prevent loss of plant nutrients through leaching. The nutrient losses due to burning in the slash-and-burn system suggest that this practice should be eliminated, because considerable quantities of the above-ground nutrient stocks can be lost. Leguminous trees contribute to the regeneration of soil fertility through biological nitrogen fixation following the abandonment of cropped land, a process that comes to a halt as the vegetation ages. Phosphorus is the principal limiting element in the regeneration of the secondary vegetation, followed by nitrogen.

Building on this information, the agronomists initiated preliminary experiments in which the traditional land preparation system was modified by 1) eliminating the fire in land preparation, 2) the introduction of green manure crops, 3) enrichment planting of the fallow vegetation, and 4) different soil tillage methods. These experiments were carried out to assess the effects on crop productivity, regeneration dynamics of the secondary forest, soil chemical and biological characteristics and carbon sequestration in the system. Using multivariate methods to analyze the soil characteristics, soil degradation could be clearly demonstrated following cultivation, but it regenerated during the fallow phase. With enrichment plantings the regeneration process can be accelerated and within two years the above-ground biomass reaches levels equivalent to natural seven-year-old fallow vegetation. The carbon sequestered in the soil (down to 6 m) and above-ground biomass strongly depends on land use, and there is a rapid depletion of soil-carbon stocks in soils under permanent cropping. Fallow systems differ little from primary forests in this regard.

Denich, M., Block, A., Lücke, W. and P.L.G. Vlek, "A bush chopper for mulch production in fallow-based agriculture and resource conservation", in: Proceedings of the Third Shift-Workshop, Manaus, Brazil, March 15-19 (1998).

Gehring, C., Denich, M., Kanashiro, M. and P.L.G. Vlek, "Response of secondary vegetation on Eastern Amazonia to relaxed nutrient availability constraints", in: Biogeochemistry 45, pp.223-241 (1999).

Vielhauer, K., Kanashiro, M., Adreu Sá, T.D. and M. Denich, "Technology Development of slash and mulch and of fallow enrichment in shifting cultivation systems of the Eastern Amazon", in: Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, March 15-19 (1998).



Halfway through the first phase of the work, which largely took place on small-holdings in the Northeast of Pará state, it became clear that manipulation of the farming system would require a much better knowledge of the behavior and motives of the farmers. Contact with the Free University of Berlin and the Núcleo dos Altos Estudos Amazônicos (NAEA) in Belém led to the drafting of a socio-economic project to closely cooperate with own studies.

The second phase (1995-1999) was elaborated between the University of Göttingen and EMBRAPA Amazônia Oriental. The objectives of this phase were to:

1. elaborate practical means of dealing with the secondary-vegetation biomass if burning of this material was to be eliminated;
2. identify suitable crop management systems with fire-free land preparation methods;
3. screen and identify suitable crop cultivars that are adapted to fire-free systems;
4. assess the effect of eliminating burning on the movement of water and nutrients through the soil profile;
5. screen and identify suitable leguminous trees for enrichment planting and assess their contribution, both in carbon sequestration and in biological nitrogen fixation.



The second phase, which will run until late 1999, has already generated essential information. It became rapidly evident that slashing and chopping the secondary vegetation – instead of burning - would lead to drastically reduced yields unless fertilizer were applied. A fertilizer would not only make such a mulch system more productive, but the conserved nutrients would also permit the fallow period to be shortened and the cropping period to be doubled thus considerably increasing land productivity. Weed pressures are reduced by mulching. Without fertilizer, the mulch system becomes phosphorus starved and crop productivity is not economically viable. Since manual chopping of the vegetation is impractical, a tractor-driven prototype bush chopper was developed together with the Institute for Agricultural Engineering at the University of Göttingen. Initial trials have shown the concept to be functional and improvements are now underway to optimize the equipment. Cultivars of rice, maize, cow-pea and cassava from all over Latin America have been screened for adaptation to a slash-and-mulch system in which no fertilizer is to be used, but, with the exception of cassava, hardly any promising cultivars seem to be available for these systems. However, most of the tested cultivars can be used in slash-and-mulch with fertilizer.

Enrichment plantings carried out with different leguminous trees in the fallow vegetation showed that the chosen species had no difficulty in establishing themselves in competition with the natural fallow. They rapidly contributed to the biomass accumulation of the fallow, indicating that there are many options for enrichment planting. The planting density of the introduced trees should not exceed a spacing of 1m x 2m, so that the natural vegetation is not suppressed and its biodiversity maintained.

By the end of the second phase a workable bush chopper is expected to be developed and ready for pre-serial testing. Contacts have been established with a compe-

Kato, O.R., Kato, M.S.A., Denich, M. and P.L.G. Vlek, "Fire-free alternatives to slash-and-burn for shifting cultivation in the Eastern Amazon region: the role of fertilizers". in: *Field Crops Research* 62, 1999, 225-237.



tent local machine/equipment producer who has shown interest in working with the project and the Agricultural Engineering Department of the Federal University of Pará (UFPA) in order to prepare the serial production of this machine. A German doctoral student and several M. Sc. students from UFPA will work with the company on this aspect of the project.

For the technology to be adopted by the farmers, further work is necessary with the farmers in optimizing its deployment. Experiments will be conducted on-farm throughout the year in order to allow farmers to gain experience and confidence in the technology and design the best cropping strategies for slash-and-mulch agriculture. Special focus will be placed on verifying the land productivity of the system and assessing the returns on labor investment in the various strategies farmers opt for. Leadership in this part of the third phase will be assumed by the Brazilian partners, particularly the EMBRAPA Amazônia Oriental. Agronomic and socio-economic aspects of the adoption process will be studied. One or two CNPq-sponsored doctoral research workers will be employed on the project and assisted by other M. Sc. students, both from UFPA and Germany.



The last component of this final phase (1999-2003) returns to address the ecological aspect of the SHIFT program. The aim of the project was to minimize environmental damage related to the slash-and-burn practices. The assessment of the benefits of slash-and-mulch agriculture will be

based on comparatively small watershed analyses. A series of small watersheds have been selected and instruments will be installed to measure their water and nutrient balance as well as changes in the biodiversity of the fallow vegetation. The

project is intended to demonstrate that slash-and-mulch agriculture allows the biodiversity to be maintained in the agricultural landscape and the water and nutrient cycles to be better closed, and hence, that this cultivation system is more sustainable than the traditional one.





Atmosphere and Water Management

■ Water in Developing Countries

In this century global water withdrawals have increased more than sevenfold. The major driving forces behind such an enormous expansion of water use are rapid population growth, urbanization, industrial development, and increasing agricultural production. Globally, agriculture is the largest water user. Agricultural water use accounts for about 72 % of total withdrawals, and 86 % of water withdrawn in developing countries. In many developing countries, the largest share of water is used to irrigate basic staple crops, a major factor in meeting the food demands of a growing population. Between 1900 and 1995, the world population has grown from 1.6 billion to about 6.0 billion people. It is estimated that about 1.2 billion people live without access to clean water, many of whom inhabit the 20 developing countries which are classified as “water scarce”. The World Health Organization (WHO) estimates that 5 million people die each year from illnesses due to unsafe water and lack of sanitation.

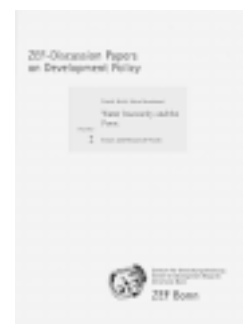
Water insecurity and the poor

Within the last decade, awareness has risen that humanity will have to deal with water in new and different ways. At several international conferences (Dublin 1992, Stockholm 1996, Washington D.C., Petersberg/Bonn and Paris 1996), future water policies were discussed and priorities were set. One of the priorities of international development cooperation is to meet basic needs in drinking water supply, sanitation and to control water-related diseases. This requires research in order to find strategies to overcome the high water insecurity of poor households. The ZEF water program helps to define these research needs. A ZEF discussion paper, published in October 1998, gives an overview of questions and problems of household water security and identifies areas where further research is needed in order to meet the basic water needs of the poor.

Integrated water research

Strengthening integrated resource development is of crucial importance to secure sustainable water use. Although this opinion is gaining world-wide acceptance, the research needs for an integrated approach still have to be explicitly defined. ZEF brings different disciplines together to advance an integrated approach in water research. The task is to improve the understanding and knowledge of the interrelations between water resources and water usage and to better assess the dynamics and feedback loops between and within the environment and the various water-using sectors. Water research can contribute to finding solutions for increasing water scarcity and unequal global water allocation. Because water insecurity is a pressing problem in developing countries, there is a large need to improve and develop new strategies for a sustainable water policy. Therefore, ZEF defined research activities in the following key research areas: household water demand and supply; optimal intersectoral water allocation and river basin management; water rights; impact of land-use change on the hydrological cycle; water harvesting as a

Global Water Crisis?



Patrick Webb and Maria Iskandarani, “Water insecurity and the poor: Issues and research needs”, ZEF Discussion Papers on Development Policy No.3. (Bonn, 1998).



method of combating desertification and improving food security; and impact of climate change and sea-level rise on deltaic systems.



A first hurdle was taken in establishing an interdisciplinary river basin team at ZEF. Within the framework of the Global Change and the Water Cycle project (GLOWA) of the Ministry of Education, Science and Research (BMBF), a pre-proposal for integrated research in the Volta Basin was approved. The Volta Basin covers 400,000 km² of West Africa, mainly in Ghana and Burkina Faso. At present, the main use of water is for generating hydropower at Lake Volta, the largest man-made lake in terms of surface area. The population in the region doubles every 23 years which puts enormous pressure on the natural resource base especially for food production.

It is generally understood that sufficient food can only be produced locally if the water resources are better used for irrigation. Upstream irrigation development and landuse intensification will have an unknown impact on the capacity of Lake Volta while at the same time the demand for hydropower is still on the rise. These developments play against the backdrop of a very large and poorly understood variability in rainfall.

The Volta Project

The proposed research analyzes the impact of socio-economic development, landuse change, and climate patterns on the longer term availability of water resources throughout the Volta Basin. Building on the analysis, a decision support system will be constructed which will help the respective governments to optimize resource use and address conflicting interests. Given the interdisciplinary nature of the project, a research network has been established with partners from Germany, Ghana and Burkina Faso. German partners at Bonn University and the Fraunhofer Institute for Atmospheric Environmental Research (IFU) cover remote sensing, hydraulic development, and meteorology, while ZEF focuses on landuse, economy, and cross-disciplinary integration. Especially strong is the Ghanaian part of the network because of the large demand for ground data and the need to institutionalize research results. Preparatory research produced a CD-ROM with extensive data coverage for the Volta Basin, a long-term water balance, and an overview of historic and potential use of Lake Volta. The present challenge of research on water resources is to address the real-world complexity by integrating findings from social, ecological, and geo-physical sciences. The Volta project would face this challenge and bring state-of-the-art tools to a region where water is a primary concern.

International Water Congress

One of the joint activities of the interdisciplinary group of water researchers at ZEF was the participation in the International Water Congress organized by the Federal German Art and Exhibition Hall in Bonn from 21 to 25 October 1998. One session of the conference focused on the use and impacts of water in developing countries. In line with the various areas of research, ZEF scientists contributed to the interdisciplinary discussion on water by outlining different aspects and problems of water resources in developing countries. Among the main issues covered were problems of drinking water supply to the poor, competition in water use, river basin management, developments in agricultural water use in the Middle East and North Africa

International Water Congress



and the causes and impacts of erosion. Policy implications were derived and recommendations drafted.

Impact assessment of global change on land cover in deltaic tropical systems

A pilot project on the impact of *Global change* in deltaic systems has recently been undertaken in order to evaluate the effect of climate change and sea-level rise in low-lying areas such as the Orinoco and the Mekong deltas. Climate change and sea-level rise are among other potentially critical factors involved in the global change issue. Regional changes in precipitation induced changes in the deposition zone of river basins. Sea-level rise is a predicted effect of global warming or a predicted consequence of the enhanced greenhouse effect. It is primarily due to thermal expansion of ocean water, as well as the melting of continental ice. The Intergovernmental Panel of Climate Change (IPCC) has predicted that continuation of current trace gas and aerosol emission rates will cause *mean* sea-level to rise at the rate of about 2 to 9 cm per decade in the coming century, with a *best guess* of about 5 cm per decade. Such a rate of sea-level rise could result in a total rise of 20 cm by the year 2050 and about 50 cm by 2100. Thus, low-lying areas, such as the deltas, are most vulnerable to climate change, especially in the tropical zones. This study attempts to evaluate the vulnerability and impact of global changes in land covers such as agricultural land and natural resources as well as in the population. Subsidence, salinization and socio-economic problems which are important consequences of these global change factors are being analyzed. Remote sensing and digital elevation models, developing regional sea-level scenarios are basic tools to be used in this study. A comparison of the impact and vulnerability between these two deltas is expected to provide new knowledge and insight into this important global issue.

Global Change in Deltaic Sys- tems



Policy Dialogue and Public Awareness



Heidemarie Wieczorek-Zeul,
Federal Minister for Economic Cooperation and Development

The research and advice activities at ZEF are supported and accompanied by a series of seminars, workshops and dialogues.

ZEF organizes weekly a *ZEF Research Seminar* where guest fellows of ZEF and from other national and international institutes and organizations give presentations on up-to-date theoretical and methodological questions and policy-relevant topics of development research. A list of the Research Seminar series can be found in the annex "ZEF — in Brief".

Several times a year, ZEF invites distinguished speakers to its "*Bonn Dialogue on Development Policy*". The Bonn Dialogue calls upon prominent guests such as Ministers and heads of international agencies to present their ideas and visions on development issues and to enter into debate with the German development policy and research scene. The former and the current Minister for Economic Cooperation and Development, Carl-Dieter Spranger and Heidemarie Wieczorek-Zeul, have addressed the Bonn Dialogue. A complete list of "Dialogues" can be found in the Annex "ZEF — in Brief".

A series of speeches "*Dialogue on Ecology and Development*" has been inaugurated with the presentation of Prof Dr Daniel Hillel, Emeritus of the University of Massachusetts, entitled "*Terra Aqua Vitae: The Role of Land and Water in Supporting Civilization*" in June 1999.

Workshops

Several international workshops, in which the results of ZEF-research are discussed, take place at ZEF every year. Workshops organized by ZEF in 1998/1999 focused on Food Security, Economic Transition (Russia), the Future of EU Development Policy, Information Technologies and the Poor, Good Governance in China, India, Russia and Migratory Animals, as well as Management of Soil Organic Matter. Typically, ZEF Workshops are organized with research partners.

www.zef.de

To publicize the Center externally, a number of information materials have been designed, in particular, the ZEF homepage (www.zef.de), accessible worldwide via internet since mid August 1998. The ZEF homepage, available in both English and German, is updated frequently and provides information on all of the Center's activities.

Since 1998, ZEF promotes itself with its new logo. The colorful logo evokes the planet with earth, atmosphere and water. The motive and the colors signal the content of the research at ZEF. By adding "ZEF Bonn" to the logo, ZEF shows its close relation to the city of Bonn and supports its transformation into an international scientific center.



In May 1999, the first edition of "ZEFnews" was published. This external newsletter is published three times a year in both English and German and provides news on current developments at the Center for Development Research. "ZEFnews" is distributed in printed form and can also be downloaded directly from ZEF's homepage.

In addition, informative material about the Center and the "International Doctoral Studies Program for Development Research" has been developed during the period under discussion.

Media representatives are informed regularly of ZEF activities. By way of interview, article, or commentary, ZEF staff members presented their views on economic as well as political, social, and ecological aspects of the development process to regional, national and international papers, as well as on radio and in specialized journals.

ZEF research results are published as individual articles in major journals or as monographs. Since autumn 1998, ZEF has been publishing the *ZEF Discussion Papers on Development Policy*. These papers mostly reflect work in progress and are intended to stimulate discussion among researchers, practitioners and policy makers on current and emerging development issues. A list of discussion papers published so far can be found below, in the chapter titled "ZEF – in Brief."

„Globalisierung gestalten, nicht bremsen“

Von Lutz Warkalla

Bonn. Bundesentwicklungsminister Carl-Dieter Spranger hat die Entwicklungsländer dazu aufgerufen, die Chancen der Globalisierung mit Einfallsreichtum, Initiative und Zuversicht zu erfassen und zu nutzen.

„Wir können diese Entwicklung nicht aufhalten, selbst wenn wir wollten“, betonte Spranger zum Auftakt des Bonner Entwicklungspolitischen Dialogs, einer neuen Veranstaltungsreihe des Zentrums für Entwicklungsforschung (ZEF) der Universität Bonn. „Deshalb müssen wir unsere Anstrengungen darauf richten, sie zu gestalten und nicht, sie zu bremsen.“

Spranger skizzierte eine optimistische Prognose für die kommenden Jahrzehnte: Wachstum und Wohlstand weltweit könnten sich einer OECD-Prognose zufolge in den nächsten 20 bis 30 Jahren verdoppeln bis verdreifachen, was vor allem den Entwicklungsländern zugute kommen werde. Voraussetzung sei, daß die wirtschaftlichen und politischen Rahmenbedingungen stimmen. „Globalisierung“, so Spranger, „engt den Spielraum für schlechte Politik ein.“ Auf die Entwicklungszusammenarbeit komme die Aufgabe zu, den Partnerländern zu helfen, ihre Politiken so zu gestalten, daß sie am Globalisierungsprozeß teilhaben und von der Globalisierung profitieren können.

Das Ohr an der Basis

Der Minister ließ keinen Zweifel daran, daß der Markt allein die Steuerung dieses Prozesses nicht bewältigen kann. Den ökonomischen, ökologischen und sozialen Rahmen muß die Politik setzen: Nicht „Markt statt Staat“, sondern „Markt plus Staat“ laute die Leitlinie der Globalisierung – wobei sich absehen läßt, daß über das notwendige Ausmaß staatlicher Rahmensezung noch heftig gestritten werden wird.

Zu der Diskussion, wie die Entwicklungsländer für die Globalisierung fit gemacht werden können, soll das ZEF noch einiges beitragen. Rektor Klaus Borchard hob gestern den ambitionierten Anspruch des Zentrums hervor: „Neue Denk- und Forschungsansätze sind gefragt.“ Das ZEF habe sich ergebnis- und praxisorientierte Wissenschaft auf die Fahnen geschrieben und solle so auch einen wichtigen Beitrag zur Politikberatung leisten.

„Wir haben unser Ohr an der Basis“, bekräftigte ZEF-Direktor Joachim von Braun. Das ZEF werde nur solche Forschung und Weiterbildung betreiben, die einen konkreten Beitrag zur Lösung von Entwicklungsproblemen verspreche; ZEF-Forschung sei vor allem auch Feld-Forschung mit Partnern vor Ort.

Gut 150 Persönlichkeiten aus Politik, Wirtschaft, Wissenschaft und entwicklungspolitischen Nichtregierungsorganisationen waren gestern der Einladung zum ersten Bonner Entwicklungspolitischen Dialog im ZEF gefolgt. Der nächste Termin steht schon fest: Am 5. Mai stellt Laurence Tubiana, Beraterin des französischen Ministerpräsidenten Lionel Jospin für Umwelt- und Entwicklungsfragen, die neue entwicklungspolitische Konzeption Frankreichs zur Diskussion.



Teaching

■ International Doctoral Studies Program for Development Research

The Doctoral Studies Program at ZEF is a new initiative starting in October 1999 to provide a high qualification for young scientists especially those from developing countries. ZEF's interdisciplinary nature is also reflected in the program areas of its Doctoral Program.

The Doctoral Program is jointly funded by the German Academic Exchange Service (Akademischer Austauschdienst, DAAD) and ZEF Bonn

The program offers Ph.D. degrees of a top academic standard for young scientists engaged in policy, economics, ecology and management of natural resources. The program is targeted at young scientists, either from universities, or who are already employed in national or international research institutions, government, or the private sector, with a keen interest in interdisciplinary approaches to problem solving. International and German experts are invited as lecturers.

ZEF admits qualified participants who are able to finance their Ph.D. studies themselves or have obtained a scholarship from their government or from any sponsor. ZEF grants scholarships to a limited number of students that are made available by DAAD and other sponsors of the program. Those ZEF scholarships are primarily provided to students from developing countries. In addition, ZEF will also support individual students with research funds. The candidates for the Doctoral Program are selected on the basis of applicant quality, criteria and experience.

Structure and topics of the courses

A) Interdisciplinary Courses with Case Studies (for students from all disciplines)

- Theories of development
- Relationship between economics and natural resources
- Modelling as an interdisciplinary tool
- Generic tools and basic skills for project planning

B) Special Courses (see box)

The Doctoral Program at ZEF is designed to give particular consideration to the academic needs of students from developing countries. ZEF provides intense study counseling and academic support services by tutors and mentors. The limited number of participants (max. 20 to 25 students) in the courses allows for intensive interaction. The students learn to work in teams and to identify and analyze problems of development and to elaborate possible solutions.

Courses start annually in October. They are preceded by a two-month German language course. A phase of 6-12 months at ZEF follows for preparation with a tightly organized course program, and then the candidates conduct their field research abroad, in developing countries or in association with an international organization or national institution with a high reputation. After this phase (generally 1-2 years), the candidates return to ZEF for the writing of their thesis. The whole program lasts 3 years.

The instruction is exclusively in the English language, with the Ph.D. thesis also being written in English. In consultation with ZEF, the Ph.D. thesis may be submitted to any co-operating faculty in Germany or abroad (as sandwich-models). The



doctoral degrees may be in Social Science, Economics, Agricultural Economics, Agriculture or Natural Science. The Doctoral Studies Program is organized in modules of fundamental courses (theory and methodology) and modules based on case studies about topics of current development research.

Special Courses with Case Studies in the Program Areas of

Development Economics and Policy

For students from the disciplines Economics, Political Science, Agricultural and Resource Economics

- Quantitative Analysis of Development Policy
- International Organizations/ Governance
- Public Expenditures and Social Services
- Labor & Employment
- Development and Culture
- Trade & Development
- Macroeconomics and Finance

International Resource Management and Policy

For students from the disciplines Engineering, Geography, Natural Science, Agriculture, Resource Economics

- Ecosystem Modelling
- Geographical Information System/ Remote Sensing
- Erosion Control
- Land Use Optimization
- Marginal Land
- Nutrient Management
- Watershed Management
- Genetic Erosion & Conservation
- Scaling and Extrapolation
- Soils and Civilization



Management and Central Facilities



Within the framework of the International Academic Forum Bonn (Internationales Wissenschaftsforum Bonn - IWB), ZEF and the Center for European Integration Studies (ZEI) are operating under one management which is instrumental in the development of both Centers. A joint Coordinating Committee of ZEF and ZEI constitutes an organizational set-up which ensures that best use of inter-center cooperation is made. The management unit supports and advises the Centers on planning and operational matters concerning personnel, administration and finances, procurement, organization of events, documentation, information and communication.

Since mid 1997, ZEF—along with ZEI—has been housed in a building owned by Bonn University and located in the Bonn governmental district. The building is equipped with a conference and library area as well as a canteen on the ground floor.

At the beginning of 1998, ZEF started to develop its own research library. The library is an essential factor in providing for an attractive surrounding conducive to scholarly work. By the end of 1998, 3,000 books and documents had been acquired by the library. In all, the facility will be able to house some 50,000 monographs. Moreover, the library has several data bases at its disposal and a periodical section which already contains a wide variety of publications dealing with development issues. In 1999, ZEF received a donation of around 25,000 books and documents from the Council for Tropical and Subtropical Agricultural Research (Arbeitsgemeinschaft Tropische und Subtropische Agrarforschung, ATSAF e.V.). These documents are an important basic stock of literature dealing with agriculture in developing countries and will be catalogued and integrated into the ZEF library during the year 1999. The library reading room provides research space for 50 persons and, in a separate media room, additional computer terminals with internet access. Since 1999, the library has been open to visitors on set days.



Since May 1998, ZEF and ZEI jointly, with the assistance of the Studentenwerk Bonn (Student Service Institution of Bonn University), have been able to rent an apartment house in the center of Bonn to accommodate their guest scholars. The house consists of eight modern one- and two-room apartments with furnished kitchen, telephone, and television. Further accommodation for guests of ZEF is available in student residence halls, in the guest house of Bonn University in Ippendorf, the guest house of the University Club in central Bonn and in apartments of the Alexander von Humboldt Foundation.



ZEF—in Brief

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Director: Prof. Joachim von Braun



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Admassie, Assefa, Dr.	Research fellow	since 10/98	Human resources, poverty, child labor in Africa	Ethiopia	
Asfaw, Abay	Junior fellow	since 01/99	Economics of rural public health systems: the case of Ethiopia	Ethiopia	
Basu, Arnab K., Dr.*	Research fellow	since 06/98	Social standards and trade; eco-labeling	India	College of William and Mary, Williamsburg, USA
Bayes, Abdul, Prof. Dr.*	Senior fellow	since 12/98	Information and communication technologies and poverty	Bangladesh	University of Jahangirnagar, Bangladesh
Bedi, Arjun, Dr.	Research fellow	since 09/98	Development of science and knowledge systems and information and communication technologies in developing countries	India	
Bertolini, Romeo	Junior fellow	since 04/98	Information and communication technologies in developing countries	Germany / Italy	
Chau, Nancy, Dr.*	Research fellow	since 06/99	Governance	Hong Kong, PRC	Cornell University, USA
Dethier, Jean-Jacques, Dr.	Senior fellow	since 09/98	Governance and the role of the government	Belgium	World Bank, Washington DC, USA
Dev, Mahendra, Prof. Dr.*	Senior fellow	since 05/99	Labor, income and migration in low-income countries: a South Asian perspective	India	Indira Gandhi Institute of Development, Mumbai, India
di Baldassare, Fiorenza	Assistant	03/98–06/99		Italy	
El-Mikawy, Noha, Dr.*	Research fellow	since 04/98	The role of the state in Egypt and its policy implications in the age of globalization	Egypt	University of Erlangen, Germany
Feldbrügge, Torsten	Junior fellow	since 01/98	Food security, disasters; violent conflicts	Germany	
Finger, Katja	Assistant	02/98 – 01/99		Germany	
Grote, Ulrike, Dr.	Research fellow	since 01/98	Trade and environmental and social standards; eco-labeling	Germany	Asian Development Bank, Manila, Philippines
Gruszinkat, Claudia	Assistant	since 04/99		Germany	
Hambrecht, Daniela	Assistant	since 12/98		Germany	
Handousa, Heba, Prof. Dr.*	Senior fellow	since 05/98	The role of the state in Egypt and its policy implications in the age of globalization	Egypt	Economic Research Forum, Cairo, Egypt
Heidhues, Franz, Prof. Dr.*	Senior fellow	since 8/98	Food security, rural financial systems	Germany	University of Stuttgart-Hohenheim, Germany
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Jütting, Johannes, Dr.	Research fellow	since 11/98	Social security in developing countries	Germany	
Kirchhoff, Stefanie, Dr.*	Research fellow	since 05/99	WTO, environmental standards	Germany	Universidad de Los Andes, Colombia;
Köhling, Wolfgang	Junior fellow	since 09/98	Governance and the role of the government	Germany	
Kuhn, Arnim	Junior fellow	since 09/97	Economies in transition: Russia and neighboring regions	Germany	
Lampe, Klaus, Dr.*	Senior fellow	since 03/98	Strategy for international agricultural research in Germany	Germany	
López, Ramon, Prof. Dr.*	Senior fellow	since 06/98	Economic development, environmental sustainability and poverty reduction	Chile / Canada	University of Maryland, College Park, USA

Mechlem, Kerstin	Junior fellow	09/98 - 11/98	EXPO 2000-planning – Global Dialogue	Germany	
Mehlitz, Johannes, Dr.	Research fellow	09/98 - 12/98	Role of the village in 21 st century	Germany	
Menkhoff, Lukas, Prof. Dr.*	Senior fellow	since 11/98	Asian crisis; banking in Thailand	Germany	University of Aachen, Germany
Msuya, John M., Dr.*	Research fellow	since 10/98	Economic aspects of preventive health care in Tanzania	Tanzania	Sokoine University of Agriculture, Tanzania
Müller-Falcke, Dietrich	Junior fellow	since 08/98	Economy of supply-relationships in developing countries with focus on information and communication technologies	Germany	
Nasr, Mamdouh, Prof. Dr.*	Senior fellow	since 09/98	Water policies and river basin management, desertification	Egypt	Ain Shams University, Cairo, Egypt
Qaim, Matin	Junior fellow	since 09/97	Biotechnology and genetic engineering in low-income countries	Germany	
Reichert, Tobias	Junior fellow	12/98 - 12/99	WTO issues; environmental standards	Germany	
Riede, Klaus, Dr.	Research fellow	since 11/98	Biodiversity	Germany	
Ringler, Claudia*	Junior fellow	since 02/98	Optimal intersectoral water allocation and use in river basins	Germany	International Food Policy Research Institute, Washington D.C., USA
Ritter-Pilger, Gisela	Secretariat	since 08/98		Germany	
Schleier, Alexandra	Junior fellow	since 06/98	Economies in transition: Russia and neighboring regions	Germany	
Schultze, Uta, Dr.	Research fellow	09/98 – 12/98	Insights from modern physics in the understanding of development processes	Germany	
Seibel, Sabine C.	Junior fellow	11/97 – 04/98	Communication and information technologies	Germany	
Sheng, Mingzhi	Junior fellow	since 09/97	Food consumption in China	China	
Stark, Oded, Prof. Dr.*	Senior fellow	since 6/99	Economic development theory	Israel	University of Oslo, Norway
Stegmann, Susanne, Dr.	Research fellow	01/99 – 12/99	Environmental standards and international competitiveness	Germany	
Torero, Maximo, Dr.*	Research fellow	since 09/98	Information and communication technologies in Latin America	Peru	University of California Los Angeles (UCLA), USA
Virchow, Detlef, Dr.	Research fellow	since 01/98	Economics of biodiversity; EXPO 2000 Global Dialogue	Germany	
Wang, Wensheng	Junior fellow	since 09/98	Information and communication technologies – possibilities and constraints of connecting the poor in rural areas in China	China	
Webb, Patrick, Prof. Dr.*	Senior fellow	since 07/98	Water policies in developing countries	USA	Tufts University, Boston, USA
Wehrheim, Peter, Dr.	Research fellow	since 10/98	Economies in transition; WTO; regionalism	Germany	
Weinberger, Katinka	Junior fellow	since 01/98	Economics of participation: women's participation in local organizations of Kashmir and Chad	Germany	
Weinhold, Diana, Dr.*	Research fellow	since 03/98	Social standards and trade, child labor	USA	London School of Economics, UK
Wiesmann, Doris	Junior fellow	since 10/98	Economic aspects of public health promotion in low income countries, analyses at the household and community level	Germany	
Wilcke, Angelika*	Project coordinator	since 09/98	EXPO 2000 Global Dialogue	Germany	
Wolf, Susanna, Dr.	Research fellow	since 12/97	Future of EU-development cooperation, ACP-Lomé	Germany	
Zhang, Xiaoshan, Prof. Dr.*	Senior fellow	since 10/98	Chinese rural institutions and organizations during the transitional period	China	Chinese Academy of Social Sciences, Beijing, China
Zhou, Hong, Dr.*	Senior fellow	since 07/98	European studies; development policy of industrialized countries	China	Chinese Academy of Social Sciences, Beijing, China
Zhu, Ling, Dr.*	Senior fellow	since 10/98	Aspects of social security reforms in China	China	Chinese Academy of Social Science, Beijing, China

* Collaborating with ZEF temporarily; main affiliation see column 6 “Affiliation”.



Staff, Guest Researchers and Fellows of the Department "Ecology and Natural Resource Management"



Director: Prof. Paul L.G. Vlek

Name, Title	Position	Period of Collaboration with ZEF	Area of Research	Country of Origin	Affiliation
Aengenendt-Baer, Sabine	Secretariat	since 10/98		Germany	
Attiogbevi-Somado, Eklou*	Junior scientist	since 1996	Green manuring in rice culture in West Africa	Togo	WARDA, Ivory Coast
Berg, Andrea	Secretariat	since 11/98		Germany	
Brienza, Silvio*	Junior scientist	since 04/98	Fallow management	Brazil	EMBRAPA, Brazil
Bünemann, Else	Junior scientist	since 09/98	Botany; cultivated plants of the tropics and subtropics; plant nutrition; land use	Germany	
Cattiano, Henrique*	Junior scientist	since 10/98	N dynamics in slash and mulch systems	Senegal	EMBRAPA, Brazil
Cissé, Madiama	Junior scientist	since 1996	Azolla and efficiency of urea applied to rice	Senegal	
de Macale, Maria*	Junior scientist	since 04/98	Role of Azolla in improving nitrogen efficiency in lowland rice	Philippines	PhilRice, Philippines
Denich, Manfred, Dr.	Senior scientist	since 04/98	Land-use systems, alternatives to slash & burn, fallow management, agrobiodiversity	Germany	
El Waraki, Sonia	Secretariat	since 04/99		Germany	
Fatondji, Dougbedji*	Junior scientist	since 06/98	Nutrient cycling, traditional land use systems for soil conservation in Niger	Niger	International Crop Research Institute for the Semi-Arid Tropics (ICRISAT), Niamey, Niger
Fosu, Mathias*	Junior scientist	since 1996	Role of cover crops in cereal production in Northern Ghana	Ghana	SARI, Ghana
Fugger, Wolf-Dietrich	Junior scientist	1994 - 1999	Soil degradation in West African semi-arid tropics	Germany	
Gehring, Christoph	Junior scientist	since 04/98	Ecosystems and biodiversity	Germany	
Gorfu, Amanuel*	Junior scientist	1996 - 1998	N-efficiency in wheat	Ethiopia	CIMMYT, Mexico
Karimuna, La*	Junior scientist	since 1997	Recuperation of secondary forests	Indonesia	Kendari University, Sulawesi, Indonesia
Kato, Osvaldo*	Junior scientist	04/98 – 12/98	Mulch systems	Brazil	EMBRAPA, Brazil
Kato, Socorro*	Junior scientist	04/98 – 12/98	Mulch systems	Brazil	EMBRAPA, Brazil
Katyal, Jagdish, Dr.*	Senior fellow	since 06/99	Desertification and land degradation	India	Indian Council of Agricultural Research, NAARM at Hyderabad, India
Kuehne, Ronald, Dr.*	Senior fellow	since 1998	Land use systems, modelling	Germany	University of Göttingen, Germany
Kurzatkowski, Dariusz*	Master student	05 – 06/99	Soil fauna activity / respiration	Poland	University of Göttingen, Germany
Le, Phuong Thi*	Junior scientist	since 1996	Weed competition in direct seeded rice	Vietnam	IRRI, Philippines
Luki, AbdullahŪ	Junior scientist	since 1998	P dynamics in slash and mulch systems	Indonesia	IPB, Bogor, Indonesia
Manske, Günther, Dr.	Senior scientist	since 04/98	Food security	Germany	
Martius, Christopher, Dr.	Senior scientist	since 07/98	Soil fauna, soil organic matter, ecosystems	Germany	

Mata, Luis Jose, Dr.	Senior fellow	since 06/98	Task group on regional climate scenarios of the IPCC; research group on "Water"	Venezuela	
Nguyen, The Dang*	Senior fellow	since 05/99	Soil scientist; land use systems; soil organic matter; soil erosion and rural development	Vietnam	Thainguyen University of Agricultural and Forestry, Thainguyen City, Vietnam
Paparcíková, Lubica	Junior scientist	since 01/99	Biological nitrogen fixation	Slovakia	
Rücker, Gerd	Junior scientist	since 08/98	Soil nutrient balances; sustainable land management; geographic information systems	Germany	
Schultz, Claudia	Junior scientist	since 1996	The role of vesicular-arbuscular mycorrhizal fungi in the weaning stage of micropropagated oil palm clones	Germany	
Sommer, Rolf	Junior scientist	since 03/99	Water and nutrient balances, water movement modeling in slash and burn systems	Germany	
Tiessen, Holm, Prof. Dr.*	Senior fellow	since 03/99	Organic matter and nutrient dynamics in tropical ecosystems	Germany / Canada	University of Saskatchewan, Canada
Tinnefeld, Barbara	Secretariat	04/98–10/98			
Thielen-Klinge, Antje, Dr.	Senior scientist	since 05/98	Biology, ecology of the tropics, resource management, sustainable agricultural land use systems, biological N ₂ -fixation	Germany	
van de Giesen, Nick, Dr.	Senior scientist	since 08/98	Hydrology; effect of land use changes on water resources; geographical information systems	Netherlands	
van Edig, Annette	Junior scientist	since 07/98	Water law in the Near East	Germany	
Wiesenmüller, Jan	Junior scientist	04/98 – 05/99	Root systems of fallow vegetation	Germany	

* Collaborating with ZEF temporarily; main affiliation see column 6 "Affiliation"





ZEF Events 1998/99

■ Workshops / Conferences

28.05.98

Strategies for Improving the Nutritional Situation in Developing Countries

12. - 13.06.98

New Growth Theories

ZEF in cooperation with Verein für Sozialpolitik

13. - 14.07. 98

Russia's Food Economy: Towards Truly Functioning Markets

ZEF in cooperation with the Institute for the Economy in Transition (IET), Moscow, and the Institute for Agricultural Development in Central and Eastern Europe (IAMO), Halle

21. - 25.10.98

Water Resources in Developing Countries: Challenges and Limitations

German Art and Exhibition Hall, Bonn in cooperation with ZEF

16. - 17.11.98

The Future of EU Development Co-operation: What deals between the EU and the ACP-States?

ZEF in cooperation with Friedrich-Ebert-Stiftung (FES), Bonn, European Centre for Development Management (ECDPM), Maastricht

03.- 04.05.99

Governance and Development in China, India and Russia

ZEF

31.05. - 01.06.99

Information and Communication Technologies and Economic Development

ZEF in cooperation with DETECON and German Watch

07. - 10. 06.99

Managing Organic Matter in Tropical Soils: Scope and Limitations

ZEF in cooperation with IACR Rodhamsted, UK

23. - 26.06.99

New Perspectives for Monitoring Migratory Animals – Improving Knowledge for Conservation

ZEF in cooperation with the Zoological Research Institute and Museum Alexander Koenig and CMS

■ Dialogue on Ecology and Development

07.06.99

Terra Aqua Vitae-The Role of Soil and Water in Supporting Civilization

Dr. Daniel Hillel, University of Massachusetts



■ The "Bonn Dialogue on Development Policy"

22.04.98

No.1: Globalisierung: Chance und Herausforderung für die Entwicklungspolitik

Carl-Dieter Spranger, Minister for Economic Cooperation and Development

08.10.98

No.3: If you Don't Count It, It Doesn't Count- Counting On Volunteers For Development

Dr.h.c.Sharon Capeling-Alakija, Executive Coordinator, UN Volunteers

23.3.99

No.4: Die Entwicklungspolitik der Bundesregierung im europäischen und internationalen Kontext

Heidemarie Wieczorek-Zeul, Minister for Economic Cooperation and Development

05.05.98

No.2: Where is the French Development Policy Headed?

Laurence Tubiana, Policy advisor to the French Prime Minister

08.06.99

No.5: WFP's Emerging Strategy in the Context of Continuous Food Crises

Catherine Bertini, Executive Director, World Food Programme of the United Nations

■ ZEF Research Seminar

16.03.98

Explaining Agricultural and Agrarian Policies in the Developing World

Dr. Hans Binswanger, World Bank

04.06.98

Endogene Wachstumstheorie – als Reaktion auf Erklärungsdefizite der traditionellen neoklassischen Wachstumstheorie

Prof. Dr. Hans-Rimbert Hemmer, University of Gießen

24.06.98

Considering the Determinants of Child Labor

Dr. Diana Weinhold, ZEF/London School of Economics

23.04.98

The World in 2020 – Policy Scenarios Based on a CGE Modell

Dr. Ulrich Hiemenz, OECD Development Centre

25.06.98

Biotechnology from an Economic Perspective

Dr. Cesar Falconi, ISNAR/IBS, The Hague, Netherlands

30.04.98

Transformation in China und Rußland im Vergleich

Prof. em. Dr. Willy Kraus, Ruhr-University Bochum

18.06.98

Poverty – Environment Linkages in Latin America

Prof. Dr. Ramon Lopez, University of Maryland, USA

15.07.98

Education-Child Labor Trade-Off and the Consequences of Trade Sanctions

Dr. Arnab K. Basu, ZEF/College of William & Mary, USA



21.07.98

***Games against Nature:
Abating Pollution
through the Enforcement
of Environmental
Standards?***

Dr. Arnab K. Basu, ZEF/College of
William & Mary, USA

21.09.98

***Labor Mobility from
Academia to Commerce/
the Case of Biotechnology***

Dr. Maximo Torero, ZEF/UCLA,
USA

28.09.98

***Bilateral and Multilateral
Aid Policy—A Per-
spective from China***

Dr. Hong Zhou, ZEF/Chinese
Academy of Social Science,
Beijing

19.10.98

***The Second-Generation
Pension Reforms in Lat-
in America***

Dr. Monika Queisser, OECD De-
velopment Centre, Paris

02.11.98

***Productivity, Eco-Effi-
ciency and Development
Towards Integrated
Strategies for Economic***

Dr. Raimund Bleischwitz,
Wuppertal Institute

23.11.98

***One World or (How)
Many Worlds? Theoretical
Conceptions of Glo-
bal Differentiation after***

***the End of the “Third
World”***

Dr. Cord Jakobeit, University of
Hamburg/ Stanford Study Center,
Berlin

30.11.98

***Technology Conver-
gence and Income
Growth in Open Econo-
mies***

Dr. Erich Gundlach, Institute for
World Economics, Kiel

07.12.98

***World Freshwater Prob-
lems: Water Scarcity and
Water Use***

Dr. Luis Jose Mata, ZEF/
Universidad Central of Venezuela

14.12.98

***Change of Land Use
Pattern in Semi-Arid
North Tanzania: Indica-
tor of Sustainable De-
velopment***

Dr. Sven Schade, Department of
Regional Geography of Africa,
University of Bayreuth

11.01.99

***Capacity Building for
the Management of
Chemicals in Develop-
ing Countries – Imple-
mentation of Agenda 21,
Chapter 19, in Toxic
Chemicals***

Dr. Matthias Kern, GTZ Eschborn

25.01.99

***Telecommunication and
the Poor in Bangladesh***

Prof. Abdul Bayes, ZEF/Dhaka
University

01.02.99

***Governance and Eco-
nomic Performance***

Dr. Jean-Jacques Dethier, ZEF/
World Bank, Washington, D.C.

01.02.99

***Famine in Africa: Caus-
es, Responses and Pre-
vention***

A Book Launching: Joachim von
Braun with Per Pinstrup-Andersen
(Director General of IFPRI) and
Uschi Eid (State Secretary, Minis-
try of Economic Cooperation and
Development)

08.02.99

***Combating of Desertifi-
cation and Utilizing Dry
Lands through Water
Harvesting in the Mid-
dle East and North Afri-
ca Region***

Prof. Mamdouh Nasr, ZEF/Ain
Shams University Cairo

08.03.99

***Externalities, Human
Capital Formation, and
Corrective Migration
Policy***

Prof. Oded Stark, Department of
Economics, University of Oslo

12.04.99

***Non-Conventional In-
frastructure Finance
and the EIB Experience
in Eastern and Central
Europe***

Dr. Gianni Carbonaro, Senior
Economist, Projects Directorate,
European Investment Bank (EIB),
Luxemburg



19.04.99

Poverty and Social Exclusion in North and South

Simon Maxwell, Director of the Overseas Development Institute (ODI), London

26.04.99

Urban Poverty in Developing Countries: Strategies and Policies of the World Bank to Overcome it

Dr. Magret Thalwitz, World Bank, Washington, D.C.

17.05.99

Bad Banking in Thailand? An Analysis of Macro Indicators

Prof. L. Menkhoff, Rheinisch-Westfälische Technische Hochschule, Aachen

25.05.99

Windows of Sustainability

Dr. Jürgen Carls, Advisory Group for Development-oriented Agricultural Research (BEAF), Bonn and Dr. Gerardo Escudero, Instituto Interamericano de Cooperación para la Agricultura (IICA), Costa Rica

10.06.99

Is Globalization good for Development?

Dr. Keith Bezanson, Director of the Institute for Development Studies, Sussex, UK

14.06.99

Impact of Financial Crisis on Russia's Agro-Food Sector

Dr. Peter Wehrheim, ZEF

21.06.99

Risk Assessment of Pesticides in Tropical Countries. Adaption of Current Guidelines from the EU Context

Dr. Jan F. Moltmann, ECT Oekotoxikologie GmbH, Flörsheim

28.06.99

The Economic and Social Costs of Conflict

Prof. Frances Stewart, University of Oxford, Queen Elizabeth House

05.07.99

A Systems Analyst's Approach to Global Environmental Management and Sustainable Development

Prof. Schnellhuber, Director of the Potsdamer Institute for Climate Research (PIK), Potsdam

■ Bonn South-East Asia-Seminar

06.05.98

Rationalität im multikulturellen Kontext in Indonesien

Prof. Dr. Christoph Antweiler, University of Trier
Seminar für orientalische Sprachen in cooperation with ZEF

13.05.98

Kredite für die Armen: Almosen oder Geschäft? –Indonesische Erfahrungen

Prof. Dr. Hans Dieter Seibel, University of Cologne
Seminar für orientalische Sprachen in cooperation with ZEF

17.06.98

Einheit in der Vielfalt? – Nationalsprache und Religionsansichten Indonesiens

Prof. Dr. Bernd Nothofer, University of Frankfurt
Seminar für orientalische Sprachen in cooperation with ZEF

01.07.98

Die rituelle Konstruktion von Multikulturalität in Luang Prabang, Laos

Prof. Dr. J. D. M. Platenkamp, Universität Münster

Seminar für orientalische Sprachen in cooperation with ZEF



Publications of ZEF 1998/99

■ ZEF Discussion Papers on Development Policy

No. 1: Grote, U., Basu, A. K. and D. Weinhold, “Child Labor and the International Policy Debate - The Education/Child Labor Trade-Off and the Consequences of Trade Sanctions”, September 1998

No. 2: Webb, P. and M. Iskandarani, “Water Insecurity and the Poor: Issues and Research Needs”, October 1998

No. 3: Qaim, M. and J. von Braun, “Crop Biotechnology in Developing Countries: A Concep-

tual Framework for Ex Ante Economic Analyses”, November 1998

No. 4: Seibel, S., Müller-Falcke, D. and R. Bertolini, “Informations- und Kommunikationstechnologien in Entwicklungsländern”, January 1999

No. 5: Dethier, J.-J., “Governance and Economic Performance: A Survey”, April 1999

No. 6: Sheng, M., “Lebensmittelhandel und Konsumtrends in China”, May 1999

No. 7: Bedi, A., “The Role of Information and Communication Technologies in Economic Development - A Partial Survey”, May 1999

No. 8: Bayes, A., von Braun, J. and R. Akhter, “Village Pay Phones and Poverty Reduction: Insights from a Grameen Bank Initiative in Bangladesh”, May 1999

No. 9: Jütting, J., “Strengthening Social Security Systems in Rural Areas of Developing Countries”, May 1999

■ Book and Monograph Publications of ZEF-Staff and Collaborators

Bokros, D. and J.-J. Dethier, “Public Finance Reform during the Transition. The Experience of Hungary”, The World Bank, Washington D.C. 1998

von Braun, J., Bellin-Sesay, F., Feldbrügge, T. and F. Heidhues, “Verbesserung der Ernährung in Entwicklungsländern: Strategien und Politikempfehlungen”, Forschungsberichte des Bundesministeriums für wirtschaftliche Zusammenarbeit und Entwicklung 123, Weltforum-Verlag, Köln 1998

von Braun, J., Teklu, T. and P. Webb, “Famine in Africa: Causes, Mitigation and Prevention”, John Hopkins University Press, Baltimore and London 1998

Herdegen, M. and H.-P. Schwarz (eds.), “Bonner Botschaffertvorträge, No. 4, Lateinamerika auf dem Weg ins 21. Jahrhundert”, Bouvier-Verlag, Bonn 1998

Ling, Z., Zhongyi J. and J. von Braun, “Credit Systems for the Rural Poor in China”, Nova Science Publishers, New York 1997

Msuya, John M., “Nutrition Improvement Projects in Tanzania”, Peter Lang, Development Economics and Policy, Frankfurt, 1998

Owens, G. and U. Grote, (eds.), “Central Asian Environments in Transition”, Asian Development Bank, Manila 1998

Peters, G. H. and J. von Braun (eds.), “Food Security, Diversification and Resource Management: Refocusing the Role of Agriculture?”, Proceedings of the XXIII International Conference of Agricultural Economists; Ashgate Publ. Aldershot, UK 1999

Virchow, Detlef, “Conservation of Genetic Resources – Costs and Implications”, Springer Verlag, Berlin Heidelberg 1999

Zeller, M., Schrieder, G., von Braun, J., and F. Heidhues, “Rural Finance for Food Security of the Poor: Implications for Research and Policy”, Food Policy Review, No. 4, International Food Policy Research Institute, Washington, DC. 1997



■ Published Articles of ZEF-Staff

- Admassie, A. and A. Asfaw, "The Impact of Education on Allocative and Technical Efficiency of Farmers: The Case of Ethiopian Smallholders", Proceedings of the Seventh Annual Conference on the Ethiopian Economy, Ethiopian Economic Association, Addis Ababa, pp. 56 – 85, September 1998.
- Adis, J., da Fonseca, C. R. V. and C. Martius, "Mecanismos que mantêm a diversidade tropical – um projeto de pesquisa bilateral teuto-brasileiro 1991-1996", Acta Amazonica 28 (3), pp. 205-215, 1998
- Amelung, W., Martius, C., Garcia, M., Kueper, U., Ullbrich, D. and W. Zech, "Organic matter in termite mounds of an Amazonian rain forest", Proceedings of the Third SHIFT-Workshop, Manaus, pp. 493-496, March 15-19, 1998
- Bationo, A. and P. L. G. Vlek, "The Role of Nitrogen Fertilizers Applied to Food Crops in the Sudano-Sahelian Zone of West Africa," in: Renard, G., Neef, A., Becker, K., and M. von Oppen, (eds.), Soil Fertility Management in West African Land Use Systems. Proc. Regional Workshop Univ. Hohenheim, ICRISAT Sahelian Centre and INRAN 4-8 March 1997, Niamey, Niger. Margraf, Weikersheim, pp. 41- 51, 1998
- Beck, L., Gasparotto, L., Förster, B., Franklin, E., Garcia, M., Harada, A., Höfer, H., Luizão, F., Luizão, R., Martius, C., de Moraes, J. W., Oliveira, E. and J. Römbke, "The role of soil fauna in litter decomposition in primary forests, secondary forests and a polyculture plantation in Amazonia (SHIFT Project ENV 52): Methodological considerations", Proceedings of the Third SHIFT-Workshop, Manaus, pp. 471-481, March 15-19, 1998
- Beck, L., Höfer, H., Martius, C., Garcia, M. B., Franklin, E. and R. Römbke, "Soil fauna and litter decomposition in primary and secondary forests and polyculture system in Amazonia - study design and methodology", Proceedings of the Third SHIFT-Workshop, Manaus, pp. 463-469, March 15-19, 1998
- Bedi, A., Sector Choice, "Multiple Job Holding and Wage Differentials: Evidence from Poland", Journal of Development Studies 35 (1): pp. 162-179, 1998
- Bedi, A. and N. Gaston, "Using Variation in Schooling Availability to Estimate Educational Returns for Honduras", Economics of Education Review 18 (1): pp. 107-116, 1999
- Bedi, A. and J. Marshall, "School Attendance and Student Achievement", Economic Development and Cultural Change 47 (3): pp. 657-682, 1999
- Bedi, A. and A. Cieslik, "Foreign Direct Investment and the Level and Growth of Wages in Poland", in: Ten Years after the Shock, University of Warsaw Press, 1999
- Bertolini, R., "Telekommunikation in ländlichen Gebieten - Erste Internationale Konferenz in Washington, DC", Entwicklung und ländlicher Raum, H. 1/99, S. 34-35, 1999
- Boger, S., Bronzel, M. and P. Wehrheim, "Strukturen und Tendenzen in Polens Ernährungsindustrie", Berichte über Landwirtschaft, Band 77 (2): pp. 291-324, 1999
- Boje, G., Rucker, G., Senzige, S. and A. Skowronek, "Land Suitability for Crop Diversification and Yield Potential of a Drained Swamp Area in NW-Tanzania", Der Tropenlandwirt, 99. Jahrgang, Witzenhausen, pp. 65-75, 1998
- von Braun, J. and D. Virchow, "Pflanzengenetische Ressourcen zwischen Angebot und Nachfrage. Entwicklung institutioneller Rahmenbedingungen für Konservierung und Nutzung", Berichte über Landwirtschaft. Band 76 (1), Landwirtschaftsverlag, Münster-Hiltrup, pp. 74-86, März 1998
- von Braun, J. and T. Feldbrügge, "Institutional Aspects of the Handling of Crises and Disasters in Developing Countries", Economics Vol. 57: pp. 95-114, 1998
- von Braun, J., tho Seeth, H., Chashnov and Surinov, "Russian Poverty: Muddling through transition with garden plots", World Development, 10, 1998
- von Braun, J., L. Box and J.-J. Gabas, "Looking Beyond Lomé IV: Towards Practice-oriented Policies", Policy Brief, ECDPM, Maastricht, March 1999.



Brienza Jr., S., Santos, W.E.S., Costa, V.O., Pantoja, R.F.R., Vielhauer, K., Denich, M. and P. L. G. Vlek, "Changing the slash-and-burn agriculture in Brazilian Eastern Amazonia by enriching the fallow vegetation", Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, pp. 109-112, March 15-19, 1998

Bünemann, E., Denich, M., Vielhauer, K. and P. L. G. Vlek, "Fertilizer response of maize and cowpea under conditions of fire-free land preparation in NE Amazonia", Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, pp. 157-159, March 15-19, 1998

Cruz, P. I., Molina G. E., Cruz-Flores, G., Ortiz-Monasterio I. and G. G. B. Manske, "Colonización Micorrizica arbuscular, actividad de fosfatasa y longitud radical como respuesta a estrés de fósforo en trigo y triticale cultivados en un Andisol", Terra 16 (1), pp. 55-62, 1998

Denich, M., Block, A., Lücke, W. and P. L. G. Vlek, "A bush chopper for mulch production in fallow-based agriculture and resource conservation", Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, pp. 61-66, March 15-19, 1998

Denich, M. and W. Lücke, "Buschhäcksler – Eine Entwicklung zur nachhaltigen Ressourcennutzung durch Mulchproduktion als Alternative zur Brandrodung in tropischen Brachsystemen", Landtechnik 4/98, pp. 250-251, 1998

Denich, M. and M. Kanashiro (eds.), "Potential land-use and management of altered and abandoned areas in the Brazilian Amazon region", MCT/CNPq, Brasília (Studies on Human Impact on Forests and Floodplains in the Tropics-SHIFT), p. 153, 1998

Denich, M., Sommer, R. and P. L. G. Vlek, "Soil carbon stocks in small-holder land-use systems of the Northeast of Pará state, Brazil", Proceedings of the Third SHIFT-Workshop, Manaus, Brazil, pp. 137-140, March 15-19, 1998

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Strategies and policy recommendations for the improvement of the food situation in developing countries

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Federal Ministry of Economic Cooperation and Development (BMZ) through German Agency for Technical Cooperation (GTZ), Eschborn, Germany

global

Economic evaluation of agricultural biotechnologies

01/98 – 12/99

Federal Ministry of Economic Cooperation and Development (BMZ) through German Agency for Technical Cooperation (GTZ), Eschborn, Germany

Mexico, Kenya

Global Dialogue Expo 2000

06/98 – 10/2000

Expo 2000-GmbH, Hannover, Germany

Global

Liberalization and decentralization within the transformation: Regional disintegration of the agro-food economy in Russia

1997 – 1999

Volkswagen-Foundation, Germany

Russia

The economics of conservation and utilization of plant genetic resources and of biotechnology for food and agriculture in low-income countries

1997 – 1999

German Research Society (DFG), Germany and Center for Development Research (ZEF)

Colombia, Mexico, India, Uganda, Ethiopia, Kenya

Secondary forests and fallow vegetation in the agricultural landscape of the Eastern Amazon region – Function and management (SHIFT Project 25)

09/96 – 08/99

Federal Ministry of Education and Research (BMBF), Bonn, Germany

Brazil

Soil fauna and litter decomposition in primary and secondary forests and a mixed-culture system of Amazonia (SHIFT Project 52)

07/98 – 09/99

Federal Ministry of Education and Research (BMBF), Bonn, Germany

Brazil

Influence of termites on litter decomposition humification with special reference to the C-, N- and P-pools

07/98 – 09/99

German Research Society (DFG), Germany

Brazil

Environmental standards and international competitiveness - An analysis in the context of WTO

12/98 – 11/99

Federal Ministry of Food, Agriculture and Forestry (BML), Bonn, Germany

Brazil, Germany, Indonesia

Influence of land-use on the spontaneous vegetation in abandoned agricultural fields of South-east Sulawesi, Indonesia

until 12/99

Asian Development Bank (ADB), Manila, Philippines

Indonesia

Importance of the N₂-Fixation in primary and secondary vegetation in the Amazonas-Region

07/98 – 06/2000

Federal Ministry of Education and Research (BMBF), Bonn, Germany

Brazil

Global analysis of migrating endangered species with the aim of establishing a world information register

11/97 – 10/2000

Federal Ministry of Environment (BMU) through the Federal Agency for Nature Conservation (BfN), Bonn, Germany

World wide

Name of the Project

Duration of the Project

Funding Organization

Country of Implementation



Organic fertilizer decomposition, nutrient release and nutrient uptake by millet crop in a traditional land rehabilitation technique (Zäi), in the Sahel

1998 - 2000

International Crop Research Institute for Semi-Arid Tropics (ICRISAT), Sahelian Center in Niamey
Niger

Policies for improved land management in Uganda

until 12/2002

International Food Policy Research Institute (IFPRI), Washington D.C., USA
Uganda

Governance and economic development

1998 - 2001

Center for Development Research
China, India, Russia

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1997 - 2001

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India et al.

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Egypt

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