



Editorial

The cultural and political aspects of development processes have been neglected during the last decades of development research. It is only recently that the research community, as well as stakeholders within development institutions in North and South, have come to recognize that sustainable development can best be achieved in an environment of political stability where the state is capable of guaranteeing protection from violence, the rule of law as well as predictable and efficient government action in key strategic areas such as education and infrastructure. Furthermore, development efforts are most fruitful where they take into account and build on the population's routine ways of thinking and acting, i.e. their cultural background. Thus, the political and cultural aspects of development have become a greater focus for the development theory and practice of the nineties. However, we still lack an adequate understanding of the conditions that favor the emergence of stable and efficient governance and culturally sustainable paths of development. Much research is needed in order to arrive at convincing answers to these and other related questions. It is one of ZEF's foremost goals to contribute to these issues with theoretically sound, empirically solid, and politically sensitive research. It will be, however, only one piece in a mosaic of knowledge and experience that is slowly being assembled. The co-operation with other, already established research groups within academia, government departments, or NGO's is therefore of utmost importance to the Center's work and we are looking forward to a fruitful exchange over the coming years.

Andreas Wimmer
Director at ZEF

Agricultural Biotechnology: What are the Prospects for the Poor?

Matin Qaim

Biotecnology has the potential to boost global agricultural productivity in a sustainable way. Developing countries, where crop innovations are urgently needed, stand to benefit most. However, the socioeconomic repercussions of biotechnology applications in the South are still a matter of controversial debate, and up to now, actual empirical evidence is scarce. To improve the information base, ZEF has carried out different ex-ante economic case studies in Kenya and Mexico. Research support has been granted by the German Research Society (DFG) and the German Technical Cooperation (GTZ). The results have been published in collaboration with the International Service for the Acquisition of Agri-biotech Applications (ISAAA).

Sweet Potatoes in Kenya

There are different international research projects underway to develop genetically modified sweet potatoes with resistance to viruses and weevils for use in Kenya and other countries of Sub-Saharan Africa. Viruses and weevils are responsible for significant yield losses in farmers' fields, and conventional methods of pathogen control have been rather unsuccessful. The biotechnology projects involve the Kenya Agricultural Research Institute (KARI), the private company Monsanto, the US Agency for International Development (USAID) and other organizations. It is expected that the first transgenic sweet potatoes could reach the semi-subsistent farmers as early as 2002. The projected average yield gains are sizable: 18% for virus resistance and 25% for

weevil resistance. Sweet potato growers will be able to integrate the improved varieties easily into their cropping systems, because there is no need to adjust the traditional cultivation practices. The transgenic germ-



Sweet potatoes in Kenya are predominantly produced by small-scale women farmers

Foto: M. Qaim

plasm will be made available free of charge, and it can be reproduced by the farmers themselves. The ex ante economic evaluation discloses substantial benefits for both sweet potato producers and consumers. Since sweet potato is predominantly a poor people's commodity, the low-income house-

Doctoral Studies

First Course Module Concluded

ZEF conducted its first course module of the International Doctoral Studies Program from 18 October to 6 November 1999. Twenty-three doctoral students, including three students from other German faculties, participated in the interdisciplinary, full-day, English course program. After an introduction into context and theories of economic development as well as ecology and resource management, the course focused on generic tools and basic skills needed for the elaboration of research



Program Participants 1999/2000

Foto: ZEF

studies. The course was concluded with one course module on modelling as an interdisciplinary tool. Based upon this theoretical background, the presentation of case studies enabled the students to apply the acquired skills to the development

of problem-oriented solutions. Apart from the lecturers of ZEF, several external lecturers contributed to the success of the course: Dr. Jürgen Hahn (Fraunhofer Institute for Atmospheric Environmental Research), Prof. Daniel Hillel (University of Massachusetts), Dr. Jagdish C. Katyal (Indian National Academy for Agricultural Research Management), Prof. Ramon Lopez (University of Maryland), Prof. Oded Stark (University of Oslo) and Dr. Paul Winkler (University of Göttingen). After the course module was concluded, the students wrote term papers on topics

of an interdisciplinary scope. Each essay was prepared by two students from different disciplines, one economist and one natural scientist, to enhance the communication among disciplines. The aim of the second course module, to be held in spring 2000, is further

specialization. It will be offered separately for the doctoral students in Economics and Natural Science, respectively.

Further information is available via E-Mail (docp.zef@uni-bonn.de) or from the ZEF homepage (<http://www.zef.de>).

holds will be the main beneficiaries. Moreover, a cost-benefit analysis shows that the technologies will create remarkable returns on project investments: According to the underlying assumptions, the internal rates of return (IRRs) for technology development and transfer rank between 60 and 80%.

Virus-resistant Potatoes in Mexico

In the early 1990s, a biotechnology transfer project was launched between Monsanto and Mexico, brokered by ISAAA and funded by the Rockefeller Foundation. The project involves Monsanto's donation of recombinant virus resistance technology for potatoes, based on which a public Mexican institute, the Center for Research and Advanced Studies (CINVESTAV), is transforming local potato varieties. Transgenic virus-resistant potatoes could become available to domestic farmers in 2001. Since the potato growers are a heterogeneous target group,

the economic evaluation was based on a grouping by farm size. Interestingly, the potential yield gains are highest for the small-scale farmers (46% compared to only 15% for the large-scale farmers), because they are currently suffering the biggest virus-induced yield losses. The economic projections, however, show that the smallholders' access to the transgenic technology might remain limited due to institutional constraints in seed distribution. Thus, the innovation could intensify the income disparities between small and large farms, unless particular support programs remove these constraints. A scenario simulation reveals that a targeted seed distribution program would not only change the technology's income distribution effects from negative to positive, but would also improve the overall efficiency at the same time. Mexican potato consumers will profit regardless of the underlying assumptions.

Lessons Learned

The studies confirm that modern biotechnology can offer cost-effective solutions to a range of problems of poor agricultural producers and consumers in developing countries. Given the low setup costs associated with adopting new transgenic varieties, the technology can easily be integrated into traditional farming systems, including the semi-subsistence sector. Yet especially the Mexican case highlights that institutional bottlenecks in the dissemination of the improved germplasm might restrict technology adoption by certain groups of farmers. Such constraints have to be eliminated through adequate policies.

More generally, a serious question is also who will provide biotechnology products to the poor in a broader context. Widespread market failures narrow the interests of private commercial technology suppliers. Public institutes, on the other hand, find it increasingly difficult to conduct independent research on account of the concentration of relevant patents in the private sector. Hence, institutional adjustments are essential at national and international levels to make sure that biotechnology does not bypass those who need it the most. Against this background ZEF together with ISAAA, Hoechst Schering AgrEvo GmbH and the German Foundation for International Development (DSE) convened a workshop entitled "Agricultural Biotechnology in Developing Countries: Towards Optimizing the Benefits for the Poor", which was held in November in Bonn. Around 100 experts and stakeholders from all over the world discussed related challenges for policy and research. It became obvious that a tightened collaboration between the public and the private sector based on comparative advantages is required. Although there are already some promising examples (e.g., the above described projects), a re-orientation of strategies will be necessary for all involved parties to facilitate innovative partnerships. Moreover, the communication systems have to be improved for dismantling the mutual mistrust between the diverse interest groups. The voice of developing countries should be given a higher weight. More policy-oriented research is particularly needed on two fronts: First, on quantifying the benefits of biotechnology to counterbalance the public debate often being biased towards the technology risks. Second, on better understanding the complex ramifications of intellectual property rights for the developing countries' access to biotechnology.



Matin Qaim is economist and fellow at ZEF.

World Axes 2000 – International congress discusses future challenges

Ulrike Grote and Christopher Martius

What are the global challenges for humankind on the threshold to the 21st century and what can be done to face these challenges?

In order to discuss these questions the international congress “Weltachsen 2000” (World Axes 2000) was held in Bonn on 11 and 12 November 1999. Close to 1.000 participants from Germany attended the conference, which was organized by ZEF together with the Center for European Integration Studies (ZEI) and the city of Bonn. They listened to outstanding personalities from the international development scene and discussed how to provide humane living conditions for all human beings in the near future. The event was, in the words of Bonn’s mayor Bärbel Dieckmann, “a special premiere” in that it was the first conference held in the former plenary assembly hall of the German parliament.

Universality of Human Rights

Mary Robinson, United Nations High Commissioner for Human Rights and former President of Ireland, discussed the ‘Universality of Human Rights’. A constant dialogue between different cultures and religions has to be maintained. Important improvements in the international monitoring of human rights have been achieved. “The emphasis now must be on implementation...and on practical results” she stated, to avoid an erosion of the credibility of human rights. The nature of human rights drastically differs between rich and poor countries: Whereas in the rich countries basically civil liberties are addressed, in the latter, human rights often mean simply the right to develop, to leave absolute poverty behind. But, according to the High Commissioner, all countries have problems with human rights: “I want to see human rights observed everywhere”. Prevention at the level of the root causes of human rights violations has to be emphasized. In this context, the adoption of the Rome Statute providing for an International Criminal Court represents a major step forward.

Good Governance

In his speech on “good governance”, the former President of Costa Rica and 1987 Nobel Peace Laureate Oscar Arias Sánchez, first highlighted what he called the actual moral crisis: Nearly 1 billion people are illiterate, 40.000 children die each day from malnutrition and disease, and 1.3 billion people live on an income of less than 1 US\$ per day. The assets of the three richest people in the world exceed the combined GDP of the world’s poorest 43 countries. US\$ 80 billion, only 10 % of world military spending, would be enough to provide basic social services and an income above the poverty line to the poorest people. Sánchez



Wole Soyinka, winner of the nobel prize for literature 1986
Foto: ZEI

stressed that only highly participative democracies will be capable of overcoming this paradoxical situation. “Too often, democracy is discussed only in the most formal

sense”, he stated, but it “can only work when all people have access to educational, financial and economic resources”. He further advocated an expansion of debt forgiveness programs, the increase of foreign aid budgets and the containment of military expenditure. During the Asian economic crisis, rich countries and international institutions raised US\$ 100 billion within a few months; only US\$ 7 billion would suffice to finance debt forgiveness programs in 20 African countries.

Dialogue of Cultures

Wole Soyinka, the Nigerian poet and 1986 Nobel Laureate for Literature, gave vivid insight into the twists and turns of the ‘dialogue of cultures’ in times of globalization. “Communication *is* culture”, he pointed out, but culture should not be confounded with the regimen of conformism, often coming disguised as cultural renovation - as in Afghanistan recently. And although different cultures have many times hybridized through commerce, today’s globalization should not be automatically equalized with dialogue. Often enough, however, the world has seen that intersecting cultures successfully metamorphosed into new ones.

A meaningful dialogue of cultures must be based on egalitarian interaction, on the platform of freedom and human dignity. “It is to accept that while humanity is varied, it nevertheless remains indivisible”.

Further speakers were Lech Walesa, Nobel Peace Prize Laureate in 1983 and former President of the Republic of Poland who evoked the ‘Evolution of Ethics’; Karan Singh, a member of the Club of Rome who looks back at an outstanding political career in India and viewed ‘Poverty as a Global Challenge’, stressed the need for a sense of urgency and commitment for alleviating poverty in this century of technological innovation; and Olivier Blanchard, director of the Economics Department at the Massachusetts Institute of Technology (MIT), who gave insights into the question of ‘Global Markets and the Future of the State’.

Klaus Töpfer, the UN Under-Secretary-General and the Executive-Director of the United National Environment Programme closed the conference outlining the environmental problems the world will face in the coming century.

He pointed at the potential danger of conflicts resulting from the shortage of natural resources like water, and stressed two causes of environmental problems: the poverty of a majority of the population, and the high life-style of a minority. Vulnerability indices for early warning systems and environmental impact assessment are instruments that, in his view, need to be further developed.

The meeting with its various thematic discussion fora provided an excellent framework for the strategic planning of ZEF and ZEI that is currently underway at the two centers.



Dr Ulrike Grote and Dr Christopher Martius are senior scientists at ZEF.

ZEI - Window

News from the Center for European Integration Studies (ZEI)

The Research Group 'EU Accession' at ZEI is going to direct a project, under the Stability Pact for South Eastern Europe, establishing European studies at South East European universities. In addition, a 'Stability Pact Monitoring Group' is currently formed, a 'SEE Monitor' will be published quarterly and, yearly, a 'SEE Forum' will take place.

ZEI and the Hermann and Marianne Straniak Foundation have jointly developed a "Straniak-Fellowship on the Philosophical Dialogue between East Asia and the West". The Straniak-Fellowship will include a one month in-residence research at the Center for European Integration Studies. The Straniak-Fellowship is eligible for scholars - primarily from Asia, but also from the West - who are working on comparative philosophical issues in the context of Western and Asian traditions. Applications should be sent to ZEI by 15 March 2000. Details on application and admission are available on the Internet (<http://www.zei.de>).

The Center for European Integration Studies (ZEI) closely cooperates with ZEF. The two centers together constitute the International Academic Forum Bonn (IWB). The work of ZEI integrates legal, economic and social, cultural and political issues of European integration in an interdisciplinary context. Further information: <http://www.zei.de>

Does Eco-Labeling Promote Sustainable Development?

Ulrike Grote and Manfred Denich

The first eco-labeling program, the 'Blue Angel', was launched in Germany some twenty years ago. Nowadays, eco-labeling programs are operating in most developed countries and also increasingly in developing countries.

Eco-labels inform the consumer that a product, its production or processing is - compared with conventional products and processes - especially environmentally-friendly. While some programs promote product attributes like 'recyclable', 'degradable' or 'ozone-friendly', others evaluate whether the process and production methods (PPMs) have been environmentally friendly. 'Dolphin-safe' tuna, for example, is caught with methods which avoid putting dolphins in danger by fishing nets. Tropical wood is certified when produced in sustainably managed tropical forests. The price premium which the consumer pays for the labeled product functions as an incentive for the producer to pay attention to the environment during production or processing. Does eco-labeling offer a solution for environmental problems?

Positive and negative impacts

According to a new ZEF publication¹, certification is indeed an attractive solution for the problem of non-ecological methods of production, because it is a voluntary and market-driven approach. Positive environmental effects have been found in the textile and leather tanning industry in India. For example, the exports of jute from Bangladesh increased - jute is used to make eco-bags as an environmentally-friendly alternative to plastic packages. And finally, due to eco-labeling, the fertilizer- and pesticide-intensive flower production has become more sustainable not only in industrial coun-

tries like the Netherlands, but also in countries like Ecuador, Kenya or Tanzania.

Adverse trade impacts, however, have been identified as a consequence of eco-labeling programs for foreign producers and suppliers of input materials, especially in the pulp and paper, footwear, textile and timber markets in Brazil, Bangladesh, Maldives and Laos. Some Colombian textile companies stopped exporting products to certain developed countries due to the high costs of obtaining the label and the recognition that without the eco-label, the products could not compete anymore.

The role of the WTO

Eco-labeling is generally acknowledged by the World Trade Organization (WTO) as an effective instrument of environmental policy. However, this tool is likely to result in conflicts under the WTO, as there is no agreement on the extent to which eco-labeling applies to non-product related PPMs, like the deforestation or the slash-and-burn agriculture. Eco-labeling is covered by the WTO Technical Barriers to Trade (TBT) Agreement, but WTO generally considers non-product related PPMs as not conforming with its rules. To reduce the risk of conflict, the transparency of eco-labeling schemes must be increased. An active participation of developing countries in the design of eco-labeling schemes must be ensured with the help of financial and technical support. The criteria selected for eco-labeling should not be based on the environmental priorities and standards of industrial countries alone, but should reflect also the constraints in developing countries. In addition, independent monitoring is needed to guard against falsification in eco-labeling.

¹ Grote, U., Basu, A.K. and N. H. Chau, *The International Debate and Economic Consequences of Eco-Labeling. ZEF Discussion Papers on Development Policy, No. 18.*



Dr Ulrike Grote is an economist and inter alia works on environmental and social standards at ZEF. Dr Manfred Denich is a biologist; his research is focused on natural resource management.

The Impact of Global Change in River Deltas

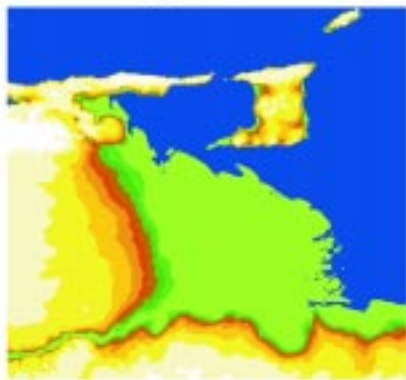
Luis José Mata

One of the most certain consequences of the global climate change is a notable rise in the level of the oceans. Even if the atmospheric CO₂-concentration would stabilize now at its level of 1990, the sea-level would still be increasing by the year 2100. This is due to the high thermal inertia of the oceans (their reduced ability to adjust to temperature changes). The Intergovernmental Panel of Climate Change (IPCC) has indicated a 'best guess' for the expected rise of about 5 cm per decade, which means a total sea level rise of 20 cm by the year 2050, and of about 50 cm by 2100. Rising sea-level causes erosion, submergence, salinization, salt water intrusion, higher groundwater tables, loss of agricultural and wetlands, and a greater risk of impacts from flooding and storms.

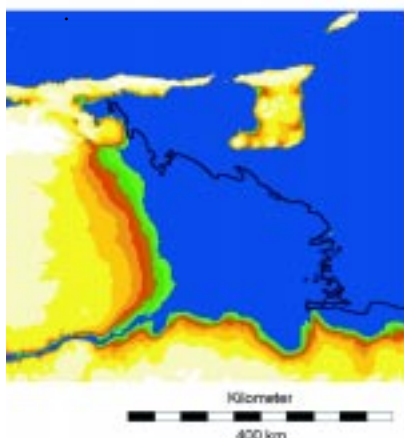
A pilot project on the impact of global change has recently been started at ZEF in cooperation with Prof. G. Menz of the Geography Department at the University of

Lower Orinoco River

Situation today



In the Year 2030 (projected)



New Publications from ZEF

ZEF Discussion Papers on Development Policy

No. 10 - Nasr, M., Assessing Desertification and Water Harvesting in the Middle East and North Africa: Policy Implications, pp. 59, Bonn, 1999.

No. 11 - Stark, O. und Y. Wang, Externalities, Human Capital Formation, and Corrective Migration Policy, pp. 17, Bonn, 1999.

No. 12 - Msuya, J., Nutrition Improvement Projects in Tanzania: Appropriate Choice of Institutions Matters, pp. 36, Bonn, 1999.

No. 13 - Junhai, L., Legal Reforms in China, pp. 90, Bonn, 1999.

No. 14 - Menkhoff, L., Bad Banking in Thailand? An Empirical Analysis of Macro Indicators, pp. 38, Bonn, 1999.

No. 15 - Lal, K., Information Technology and Exports: A Case Study of Indian Garments Manufacturing Enterprises, pp. 24, Bonn, 1999.

No. 16 - Virchow, D., Spending on Conservation of Plant Genetic Resources for Food and Agriculture: How much and how efficient?, pp. 37, Bonn, 1999.

No. 17 - Heuermann, A., Die Bedeutung von Telekommunikationsdiensten für wirtschaftliches Wachstum, pp. 33, Bonn, 1999.

No. 18 - Grote, U., Basu, A.K. and N.H. Chau, The International Debate and Economic Consequences of Eco-Labeling, pp. 37, Bonn, 1999.

No. 19 - Zeller, M., Towards Enhancing the Role of Microfinance for Safety Nets of the Poor, pp. 30, Bonn, 1999.

ZEF Discussion Papers on Development Policy are available for downloading on the ZEF homepage (www.zef.de).

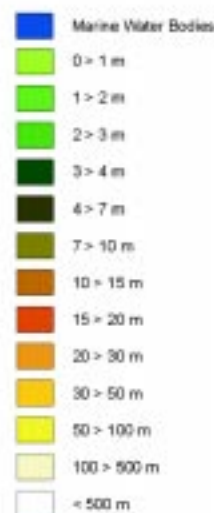
Other Publications

Dixon, R.K; Smith, J.B; Brown, S; Masera, O; Mata, L.J; Buksha, I., Simulations of forest response and feedbacks to global change: experiences and results from the U.S. Country Studies Program. *Journal of Ecological Modelling*, Vol: 122(3), October 20, 1999.

Wolf, S. (ed.), The Future of EU-ACP Relations, Peter Lang Publishers, Frankfurt/Berlin/Bern/Brüssel/New York/Wien, 1999.

Qaim, M., Potential Benefits of Agricultural Biotechnology: An Example from the Mexican Potato Sector. *Review of Agricultural Economics*, Vol. 21 (2), 1999.

Jütting, J., The Role of the Agricultural Sector in the Development Process of African Countries: Balance and perspectives. In: *Economics*, Vol. 60, pp. 74 - 89, 1999.



Legend



Bonn, in order to characterize the effects of global change in low-lying areas such as the delta of the Orinoco river in Venezuela. Staff and scientists from the Ministry of Environment and the Simon Bolivar University in Caracas, Venezuela, are also participating in the project. The Orinoco delta extends over an area of more than 40,200 km², and more than 110,000 inhabitants live in the area. Among them are 15,000 Indians from the Warao tribe. A

sea-level rise of about 50 cm would make most of the delta area disappear (see diagram left).

The main objectives of the pilot project are: (1) to examine the main progress of the global warming effects in sea-level rise including a delineation of a regional scenario for the sea-level and climate change; (2) to identify key factors regarding the impact of sea-level rise on ecosystems, on the population, and in the socio-economic sector; (3) to study the potential losses of agricultural land and wetlands; (4) to develop fundamental modelling of the hydrology, ecology and land cover in the delta. Remote sensing technologies and tools such as digital elevation models and GIS will also be incorporated into an Integrated Impact Assessment of the Orinoco Delta.

Luis José Mata, senior scientist at ZEF, is coordinating the pilot project

Viewpoints

**Prof. Andreas Wimmer,
Director at ZEF is head of
the department "Political
and Cultural Change"**



ZEF: Prof. Wimmer, since the start of October you have headed the 'Political and Cultural Change' department of ZEF. Which central issues do you intend to focus on in your future work?

Wimmer: The central question of our research program goes as follows: What is the role of politics, or more precisely, of state institutions and their relations to society in the development process? As far as I can see at the moment, there will be four research teams dealing with different aspects of this overall theme. A first group will deal with issues such as the democratic transition, good governance, lean government, etc. A second group will research into the question of how the dynamics of ethnic conflicts can be managed peacefully in periods of political transition. The role of human rights, especially minority rights, in the development process will be the focus of a third group, and the fourth one will try to understand more precisely how and to what extent specific cultural patterns of perception and meaning define and narrow the room of political decision making during the development process.

ZEF: You stated that one of your central issues will be democratic transition and good governance. What will your work exactly involve here? What projects are you planning and in which regions?

Wimmer: This depends very much on the composition of the future team, since most of the researchers will be at senior level and therefore have a record of research accomplishments and experiences that will be integrated into the program of ZEF. At the moment the recruitment process is still not completed. However, it is clear that we will work on a comparative basis, e.g. comparing countries with similar structural conditions but different experiences with regard to democratization. A second characteristic of the department's research will be its sensitivity for historical dimension – for the fact that past developments mould the horizon of possibilities for future change.

ZEF: ZEF pursues a process which aims to integrate research, policy and practice. What is your assessment of this process and how do you envisage it being put into practice?

Wimmer: In principle, I very much favor such an approach and it has been part of my job in my previous position at the Swiss Institute for Migration Research to integrate research and policy advice. However, these experiences have shown to me that there are limits to such integration because policy and research represent two different discursive worlds with their own respective rules of thinking and acting. A meaningful question for a scientist may be of no relevance at all for a policy maker. To build a bridge between the two worlds is therefore much more difficult than most of those imagine who nowadays advocate the political

relevance of scientific research. Nevertheless, I am convinced that ZEF disposes of the very best conditions for such a bridge to be constructed successfully.

ZEF: What prompted you to take up a management position at an institute also devoted to policy advice, particularly at a time when the political center has moved away from Bonn?

Wimmer: Perhaps it is useful to distinguish different forms of policy advice with the help of a continuum. At one end, we have policy advice stricto sensu: Decision makers are given advice on urgent and immediate problems to be resolved, e.g. on the question: "Should German development cooperation retreat from Pakistan or not?". At the other end of the continuum, it is not so much the help in decision making but in general orientation that is provided by research. It is thus situated on the strategical rather than the tactical level. Take the example of research that shows to what extent there is a possibility for development cooperation to influence certain developments. It may be useful for a policy maker to know to what extent conditionality in DC really helps to foster good governance. It is this kind of policy advice that is more important for ZEF's daily work. Correspondingly, it is less dramatic for an institution as ZEF to lose physical closeness to decision makers, which makes daily contacts much more difficult.



Rights and Productivity of Women Farmers in Developing Countries

Katinka Weinberger

It is increasingly being recognized that women play an important role in the production and processing of foodstuffs, however, they are often not adequately considered as a target group in development cooperation.

To gain a greater insight into the access of women to production factors, their legal situation, and adapted technologies, a conference on "Women Farmers: Enhancing

Rights and Productivity" took place at ZEF from 26-27 August 1999. For a long time, this topic has been the subject of hot debate, but as the participants of the meeting found, a scientific conference about this problem was well overdue. The conference was organized by ZEF in cooperation with the Tufts University Boston and the University of Hohenheim. About 90 researchers, representatives of NGOs and policy-makers came together to discuss current knowledge and to highlight 'best practices' from research and development cooperation which may be of practical importance to development in the next decade.



Speciosa Wandira Kazibwe, Vice President of Uganda Foto: ZEF

Speciosa Wandira Kazibwe, Vice-President of Uganda, stressed in her opening speech that a major challenge is to apply holistic approaches in order to improve the situation of women. Developing new technologies is insufficient, if no access to education is provided for girls and women. The important role of education either in schools or through vocational training was generally emphasized. In India, a study on the effects of the introduction of the *panchayati raj*, a constitutional amendment act which reserves one third of all seats in legislative bodies on village and district levels to women, showed that the seats had to be partly filled by illiterate women. The adult literacy rate of women in India amounts to only 38 %, while the male literacy rate accounts for 66 %. Hence, if such a quota is introduced, the newly elected female representatives must receive the opportunity to participate in training activities. Experience shows, however, that if they are given this chance, then women benefit from their empowerment. In addition, it has been found in one district that since the introduction of the new law, the enrolment rates for girls in primary education have increased tremendously.

As women are under heavy pressure concerning labor force, their access to new technologies and innovations needs to be increased. Technologies, however, must be adapted to women and their available labor force. A study from Benin showed that women do not accept soil fertility improving technologies, if these do not match their labor availability even if this leads to a sub-optimal household income. With more adequate technologies, the workload of wom-

en could be reduced and productivity in the agricultural sector increased. The FAO conducted a study showing that a large scope for productivity increases exists. However, one of the impediments is that the tools industry is male-dominated in many countries, and women are not recognized as important clients. Therefore, tools are either too heavy for women, or too difficult to handle. For example, tools like picks which are mainly used by women in many African countries, have too short a handle, making it unnecessarily difficult for women to work with them. The FAO study recommends to facilitate connections between the private sector and women farmers, so that more adequate tools are produced.

Was the last decade a "lost" decade for women, given the little new knowledge which has been produced about their situation? Certainly not. A large number of detailed studies on the microlevel have become available, and only now, many intuitively

known factors affecting the situation of women can be truly assessed. However, more studies have to be conducted on the macrolevel, so that results and policy implications can be discussed on a broader basis. It was also concluded that research will have to focus more strongly on technology development, e.g. in the field of water management. The impact of new technologies, such as information and communication technologies and biotechnology has hardly been investigated so far. In addition, women should engage more in lobbying and networking.

The contributions of the conference can be downloaded from the ZEF homepage: http://www.zef.de/zef_deutsch/veranstaltung/kw_women.htm.



Katinka Weinberger is a fellow at ZEF, department 'Economics and Technological Change'.

Klaus Töpfer elected chairman of the international Advisory Board of ZEF

The international Advisory Board of ZEF met in Bonn on 12 November 1999 at its inaugural board meeting. The Rector of the Rheinische Friedrich-Wilhelm University Bonn, Professor Klaus Borchardt, welcomed the board members* on behalf of the University and emphasized once again the role of the board in the future activities of ZEF. On the strength of its members' professional competence and reputation the board is to actively follow the activities of ZEF as well as advise and support the Center in its future strategy. The board members expressed a keen interest in assuming these responsibilities. The numerous comments and perspectives concerning the future activities of the Center are to be further consolidated in the coming months in an iterative process among board members as well as directors and

research staff at ZEF and reflected in a medium-term strategy paper.

During the board meeting, Professor Klaus Töpfer, Executive Director of the United Nations Environment Program (UNEP) was elected chairperson of the Advisory Board for the next two years. Dr. Margarita Marino de Botero, Senior Advisor, National Fund for Science and Technology, Colombia and Erich Stather, State Secretary, Federal Ministry of Economic Cooperation and Development (BMZ), were each appointed vice-chairperson. At the closure of the meeting, the board members had the opportunity to become more familiar with the current research work and planned activities of ZEF in informal discussions with research associates at ZEF.

** Current members of the international Advisory Board of ZEF are: Georg W. Adamowitsch, State Secretary, State Chancellery of the Federal State of North-Rhine Westphalia; Jürgen Asshauer, Member of the Executive Board of Aventis Crop Science; Klaus Borchardt, Rector at the University of Bonn; Margarita Marino de Botero, National Fund for Science and Technology, Colombia; Yehuda Elkana, Central European University Budapest; Hans R. Friedrich, Director General, Federal Ministry of Education, Science and Research (BMBF); Dong Fu-Reng, Institute of Economics of CASS, Beijing; Sir Marrack Goulding, St. Anthony's College, Oxford; Robert D. Havener, USA; Donald L. Horowitz, Duke University North Carolina; Volkmar Köhler, former State Secretary, Federal Ministry of Economic Cooperation and Development (BMZ); Erich Stather, State Secretary (BMZ); Monkombu Swaminathan, Swaminathan Research Foundation, India; Klaus Töpfer, Executive Director UNEP, Nairobi; Willi A. Wapenhans, Member of the International Board of the Overseas Development Council (ODC), Washington, D.C.*

facts and news

In December 1999, ZEF started a research project on "Micro-insurance schemes and health care provision in developing countries", which is funded by the ILO-STEP program. In collaboration with local research partners the impact of community based health insurance schemes in rural areas of Senegal will be analyzed.



On 30 November 1999, a UNIFEM-Award for sustainable women's self help projects was conferred by the German Committee of the United Nations Development Fund for Women, UNIFEM, at ZEF. 103 project descriptions from Africa, Asia and Latin America were received. First prize was awarded to the "Eastern Province Women Development Association", a rural network which promotes the political empowerment of women in Zambia. Second prize was shared by "LIMDOVESA", a street cleaning company in



Heidemarie Wieczorek-Zeul, Minister for Economic Cooperation and Development, Brunhilde Fabricius, German Committee of UNIFEM, Eleni Banda and Tangu Nyirenda, Zambia (from left) Foto: ZEF

Peru organized and operated by women, and the "Society for Rural Education", a project for women in India who are not integrated in the caste system.



The project "Secondary Forests and Fallow Vegetation in the Agricultural Landscape of Eastern Amazonia – Function and Management" was approved in Octo-

ber 1999 by the German Federal Ministry of Education and Science (BMBF) and by the Brazilian Research Council (CNPq). The project is part of the joint Brazilian-German research program "Studies of Human Impact on Forests and Floodplains of the Tropics" (SHIFT) and has been developed jointly by ZEF with the Brazilian Agricultural Re-

search Cooperation Embrapa in Belém (Pará State, Brazil). It is based on a cooperation between partners of both institutes that started in 1991 and will continue for another period of four years.



José Lutzenberger, former Brazilian Minister for the Environment, and President of the "Fundação Gaia" (Gaia-Foundation) in Porto Alegre, Brazil, visited ZEF on 23 November, 1999 and was informed about ZEF's project activities in Brazil.



An international conference "Global Development Network (GDN) 99 – Bridging Knowledge and Policy" was held in Bonn in December 1999 to launch the GDN network. About 500 scientists, politicians, and development workers came together to start this initiative in which worldwide capacities for science and research will be strengthened, and the transfer from knowledge to policy will be fostered. More information is to be found on the GDN homepage www.gdn.net.org.



The Impact of Information Technologies in Indian Enterprises

Dietrich Müller-Falcke

The importance of modern information technologies (IT) for enterprises in developing countries is rising. This is shown by a study conducted by ZEF on the use of telecommunication and IT in small Indian enterprises.

A total of 295 enterprises, mainly belonging to the metal processing and engineering industry, were interviewed in an industrial estate near Madras. With an average of 28 employees and 10.8 million Rupees turnover (about US-\$ 250,000), the enterprises belong to the upper range of the Indian small-scale industry sector. They also have good access to the information infrastructure due to their location. Nevertheless, the extent of IT use was surprising. Sixty-five percent of the interviewed enterprises were using computers. Basic applications are above all word processing, book keeping and cost accounting. However, one third use the computer also for design purposes.

Thirty-four percent of the interviewed enterprises have access to e-mail. Consid-

ering that e-mail has only been available in India since 1995, this indicates a high speed of diffusion within the small enterprise sector. The intensity of e-mail use is, however, still low. A large majority of enterprises does not send more than two business mails per week.

Only slightly more than half of all e-mail users also use the World Wide Web (WWW). The main reason is the poor condition of the telephone network. Easy access to information on new technical developments is considered by entrepreneurs the main benefit of the WWW. Few other positive examples of WWW use were given. In one case, the WWW helped to find a producer of an urgently required spare part; in another, it helped buying a used machine.

The impact of IT on Indian enterprises has been also analyzed in a new publication at ZEF. Kaushalesh Lal from the Institute for Economic Growth in Delhi examines the factors determining the export performance of Indian garment manufacturers. Seventy-four medium-sized enterprises near Delhi from the highly segmented garment sector were investigated. With a few exceptions the enterprises produce either completely for export or for the domestic market. IT is mainly used at the pre-production stages, like in the design, or at the management level. Like in Madras, IT penetration in Delhi was very high. Only very few enterprises use IT neither in man-

agement nor in production. The majority uses IT as a management tool, about 20 percent use IT additionally in the production area. Besides, the quality of used materials, the flexibility of design and the wage rate, the use of IT turns out to be a highly significant distinguishing factor between exporting and non-exporting enterprises. This indicates that all over the world, the increasing use of information technologies is necessary to maintain international competitiveness.



Dietrich Müller-Falcke is scientist at ZEF and conducted the IT study in Madras.

Impressum

Zentrum für Entwicklungsforschung
Center for Development Research
University of Bonn
Walter-Flex-Str. 3
D-53113 Bonn, Germany
ISSN: 1438-0951

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ZEFnews is published three times a year in English and German. It can be ordered free of charge.