



Zentrum für Entwicklungsforschung
Center for Development Research
Universität Bonn

ZEF news

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Editorial

Desertification: A Global Problem

If we intend to live on this globe for a few more millennia, it might be prudent to keep track of what is happening to our land resources. With the current focus on water and climate, there appears to be a reluctance to extend the agenda to include soils, and the international efforts to combat desertification are much behind what has been achieved, albeit slowly, in other fields. The FAO, in a study on desertification, has just published warnings that as many as 36 million km² of land face desertification. It is true that much of the threatened land is found in the dryer parts of the world, and few of the western and prosperous nations will be directly affected. But the effects of desertification will not be contained within the drylands. As their basis for subsistence is pulled from under them, people in desertified areas will seek better land and opportunities elsewhere. Those unable to leave will be displayed on television and their suffering will place demands on policy-makers in developed regions to provide aid.

The cost of regenerating soils is often prohibitive. In the field of desertification, an ounce of prevention is worth a pound of restoration. But either prevention in situ or restoration will cost far less than dealing with increasing migration. This awareness seems slow to take hold within the development community, as development assistance budgets continue to be curtailed.



Paul Vlek
Director at ZEF

"Zai" - A Traditional Technique for Land Rehabilitation in Niger

Dougbedji Fatondji, Christopher Martius and Paul Vlek

The *zai* technique, a traditional land rehabilitation technique from Burkina Faso, has the potential to rehabilitate degraded drylands effectively and to restore soil fertility to the benefit of farmers living in drylands. This was confirmed by a new study undertaken at ZEF in cooperation with ICRISAT (International Crop Research Institute for the Semi-Arid Tropics) in Niamey (Niger).

Scale of Land Degradation

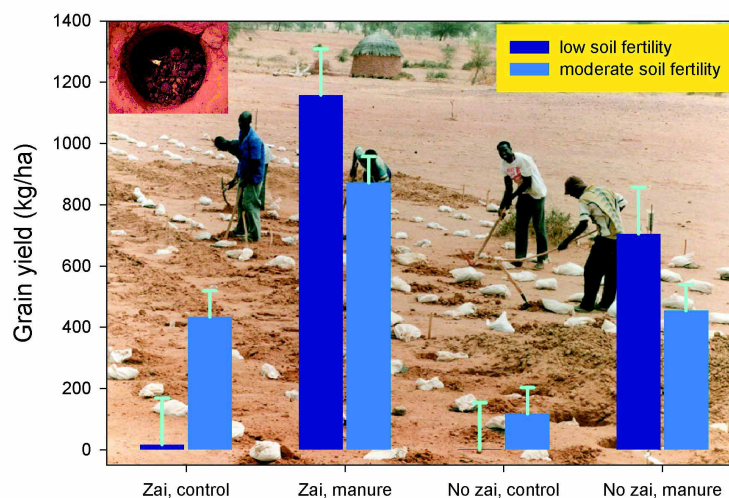
Land degradation is an alarming problem. About 36 million km² of cropland, 28 % of the world's total cropland area, have already been degraded since mid-century. In Africa, this represents as much as 65 % of the cropland. Farmers in the Sahel zone of West Africa have traditionally relied on the restoration of soil fertility through a long fallow period. With increasing population pressure and the resulting extension of land under cultivation, this system has become overexploited, resulting in extensive land degradation. The traditional way of restor-

ing soil fertility has thus reached its limits, and novel approaches to rehabilitate degraded lands are highly needed. Most degraded lands can still be recuperated if immediate action is taken.

The "ZAI" Technology

One promising option is *zai*, a traditional land rehabilitation technology that has been "invented" by farmers in Burkina Faso. Small pits 20-30 cm in diameter and 10-20 cm deep are dug into degraded soils, often hardpans. At the bottom of the pits farmers place about

Millet yield under the zai technique



two handfuls of organic material (animal dung or crop residues). Pearl millet or sorghum seeds are planted in these pits as soon as the rainfall starts. The technology has



several advantages: The poorly available organic matter is placed at the bottom of the pit and not broadcast over the whole field. In addition, the *zai* pits collect and concentrate water at the plant. This reduces the risk of water stress in a region of low and erratic rainfall. *Zai* therefore combines water and nutrient management into a technology that requires little external inputs and is financially accessible to and manageable by farmers.

Effectiveness of "ZAI"

To help improve our understanding of the processes of nutrient release from the manure and its uptake by plants, experiments on *zai* were conducted both on the experimental station of ICRISAT and at two on-farm sites in Niger. The intention was to determine the effectiveness of the *zai* technique in comparison with an application of the organic amendment on the soil surface without digging. In short, the question asked was: "Is it necessary to undertake the considerable effort to dig the *zai* pits?"

In the experiments, millet straw and cattle manure were applied at a rate of 3 t ha⁻¹, a quantity that is available to many farmers in the region. At a site with relatively low native soil fertility no grain was produced when millet was planted without pits and any amendment. Planting in pits without adding any organic matter produced a very low grain yield of 20 kg ha⁻¹. In contrast, the pit amended with cattle manure produced 1200 kg of grain per hectare. This shows that on the very bad soils typical for the Sahel the amendment of organic manure is more important than the water harvesting in the *zai* pit. At a site of better soil fertility, a higher yield was obtained without *zai* and amendments, but providing pits and manure still considerably increased the grain yield.

The quality of the organic material used in the system is very important: The grain yield from the planting on flat soil (no *zai*) amended with manure was above the average millet yield in Niger of about 400 kg ha⁻¹, but a much lower yield of 180 kg ha⁻¹ was obtained when crop residues were used instead of cattle dung.

In order to understand the nutrient delivery to the plants in the *zai* system, the decomposition of the added organic matter and the nutrient uptake by the millet plants were studied. The planting technique (*zai* versus no-*zai*) had no effect on the decomposition of the cattle manure. But consid-

erable differences were observed between two study sites, one with a better soil than the other. The decomposition was much faster at the site of low soil fertility (55 % decomposition after 40 days of incubation) than at a site where a modest soil fertility could still be observed (15 % decomposition). At the end of the experiment almost all of the manure was decomposed at the "infertile" site. This difference might be due to termites, soil animals that were more active at the first site. When termites were

Conclusions

It is safe to conclude that a grain yield far above average is possible when using the *zai* technique in the Sahel, particularly on highly degraded sandy soils. An additional 500 kg grains ha⁻¹ were obtained by digging the pits, which is an important gain to the farmer. A good-quality organic amendment is essential on the highly degraded soils. A very good crop yield was obtained when the *zai* pit was amended with manure. As

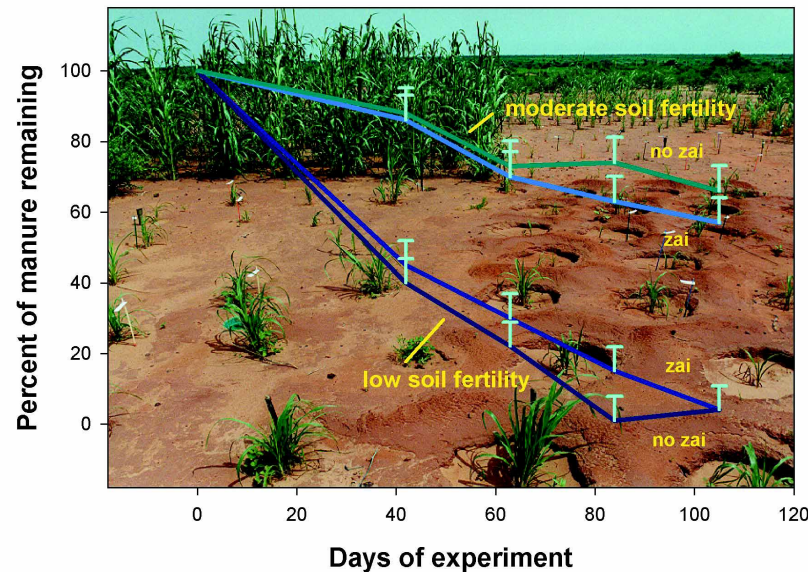
animal dung is scarce, this might be a constraint to the use of the *zai* technology. But farmers are able to prepare good quality compost using home wastes, weeds and leguminous residues before and during the onset of the rainy season. *Zai* is a simple technique, but it requires hard work. However, as the pits are dug during the off-season when farm-

ers do not engage in other field activities, labor is less of a constraint. *Zai* offers a good potential to both increase the livelihood of the rural population in the Sahel and, at the same time, combat desertification.



Dougbedji Fatondji is a scientist from ICRISAT in Niamey, Niger, who is pursuing his PhD at ZEF. Dr. Christopher Martius is a scientist at ZEF and has supervised the study. Prof. Paul Vlek is director at ZEF.

Manure decomposition under zai



eliminated with an insecticide, the decomposition was much slower. Despite these differences, however, after 40 days of incubation more than 85 % of the N and P bound in the organic material was released on both sites. Under *zai* conditions, the crop could make better use of these nutrients than without the pit, which was shown by the better nutrient uptake by the crop under *zai*. This resulted in the higher yield obtained in the *zai* pits amended with cattle manure.

facts and news

In September 2001 ZEF is publishing its Annual Report 2000/2001. The Report, only available in English, describes the central areas of research conducted at ZEF as well as the activities carried out in areas of policy advice and public affairs. The Annual Report can be ordered free of charge by contacting ZEF (Phone: +49 228 73 1811, E-mail: zef@uni-bonn.de).

The project proposal *Economic and Ecological Restructuring of Land- and Water Use in the Region Khorezm (Uzbekistan): A Pilot Project in Development Research* has been evaluated by a scientific reviewing committee during an in-house hearing held at ZEF on 10 July 2001 and was recommended for funding through the German Ministry for Education and Science (BMBF). The 4-year project will start in 2002.

Joseph Intsiful, doctoral student at ZEF was given the highest award for his presentation "Study of the Impact of Land Cover Change on Soil-Vegetation-Atmosphere Interactions" at this year's summer colloquium at the International Centre for Theoretical Physics in Trieste, Italy. Joseph Intsiful is from Ghana and works within the framework of the GLOWA Volta Project



What Do the Chinese Eat? Current and Future Food Consumption Trends

Mingzhi Sheng and Joachim von Braun

The Chinese population is growing. Can food production worldwide cope with this development? How are consumption patterns changing in China? A ZEF study projects the trends through the year 2020.

International interest in what and how much China will consume in the future is growing in light of the increasing importance of the Chinese economy, and the fact that China is home to one-fifth of the world's population. ZEF, in cooperation with the Chinese State

the economic and social development of China and will continue to do so. Middle and high income groups were able to increase their consumption of animal products, and decrease consumption of staple foods, while poor urban consumers had to reduce their consumption of

crease in income inequality, population growth of 0.7 % per annum and increased urbanization.

The results show that between 1995 and 2020 poor urban households will increase their meat consumption by roughly 30 % to over 40 kg per capita per annum, without reducing their cereal consumption significantly. In the same period, middle and high income households will increase their meat consumption by 80 %, and decrease cereal

Tab. 1: Chinese household's food consumption (kg per capita per annum) according to income group

	Lowest 20 %		Uppermost 20 %	
Urban households:				
	1992	1996	1992	1996
Cereals	118	101	109	99
Meat, Fish	42,5	38,1	58,9	61,1
Rural households:				
	1990	1995	1990	1995
Cereals	176	166	215	206
Meat, Fish	12,9	15,4	25,5	32,3

Source: Own calculation using household data from the State Statistical Bureau of China (SSB):

Statistical Bureau, has conducted a comprehensive analysis of food consumption and consumption trends in China. Urban and rural household data from the provinces of Jiangsu and Sichuan were used as a basis for extrapolation.

Rich and poor, urban and rural

One of the main findings of the study is that the already different consumption patterns of the rich and poor, urban and rural populations have diverged further in course of

meat and fish consumption by some 3 kg per capita per annum. It should be noted that initial meat and food consumption levels were very low.

Demand for value added foods

Food consumption levels and patterns up to the year 2020 were estimated for China econometrically, using the "Almost Ideal Demand System." The following assumptions were included in the model: a 3 % per annum increase in average income, an in-

Tab. 2: Predicted food consumption levels (1995/6 - 2020, kg per capita and percentage change from the base year)

	Urban households			Rural households		
	Lowest 20%	Highest 20%	Average	Lowest 20%	Highest 20%	Average
Cereals						
Base year 1995/96	100,9	99,4	99,2	166,4	205,6	189,4
Predicted 2020	100,5 (+0,4%)	75,7 (-24%)	89,5 (-11%)	166,1 (-0,2%)	136,9 (-33%)	168,5 (-12%)
Meat						
Base year 1995/96	32,5	46,7	41,0	14,8	23,5	18,9
Predicted 2020	41,9 (+28,9%)	88,7 (+89,9%)	64,7 (+57,8%)	24,3 (+64,4%)	50,4 (+114%)	33,9 (+79%)
Fish						
Base year 1995/96	5,6	14,4	10,5	0,6	9,8	3,4
Predicted 2020	6,6 (+18,2%)	22,6 (+57,1%)	14,8 (+41,6%)	1,02 (+70%)	15,0 (+53,1%)	5,3 (+54,6%)

Source: Own calculations using household data from the State Statistical Bureau of China (SSB):

cereals, meat and fish. Thus, the purchasing power of the urban population decreased during the 1990s. The rural poor also reduced consumption of cereals between 1990 and 1995 by approximately 10 kg per capita per annum, but unlike the urban poor they were able to increase their

consumption to a greater extent than low income households. Food consumption for rural households is expected to develop along similar lines.

With respect to average consumption, demand for cereals will decline steadily, from 99 kg per capita per annum to 89.5 kg in urban areas, and from 189 kg to 168 kg in rural areas. Average urban meat consumption will increase from 41 kg per capita per annum to 64 kg, and rural consumption will increase from 19 kg to 33.9 kg per capita per annum.

Overall this study shows that Chinese demand for value added goods has increased, in line with international trends. This provides both opportunities for the international and national food industry, but also challenges for the small-scale agricultural sector, transport infrastructure, and regional division of labor.



Mingzhi Sheng completed her doctorate at ZEF in June 2001. Prof. Dr. Joachim von Braun was the supervisor of her thesis and is director at ZEF.



„Small is Beautiful“ – Bioenergy in Developing Countries

Heidi Wittmer and Thomas Berger

Due to their regenerative property, bioenergy sources, such as wood, oil plants and biogas, have a large potential for sustainable development. Their increased use in developing countries can play an important role for climate protection through the so-called ‘Clean Development Mechanism’ (CDM), part of the Kyoto protocol. The financing of energy projects in developing countries can be used to fulfill the commitments of industrialized countries for CO₂ reduction as was finally agreed upon at the climate conference in Bonn in July 2001.

On behalf of the *Deutsche Bundestag*, ZEF researched the possibilities of and constraints to the extended and improved use of bioenergy sources in developing countries. Exciting new opportunities for developing countries arise due to three factors: first, bioenergy’s potential for CO₂ reduction might provide additional financing through the CDM; second, from a technological point of view the introduction of small-scale combined cycle gas generation makes smaller-scale power plants highly competitive; and third, from an institutional perspective opportunities arise due to the general trend to liberalize energy markets.

However, many of the old constraints remain, when it comes to expanding small-scale decentralized energy provision based on biomass. Typical economic barriers are lack of credit or subsidies still provided to fossil fuels. Political and institutional barriers are related to the regulation of the energy markets as well as unclear property rights in bioenergy production. Ecologically, land use and waste disposal problems might restrain a successful implementation of bioenergy technologies. To overcome these constraints, “demand-oriented” policies have to be implemented. This means that only if bioenergy options are more attractive to energy consumers can new opportunities be taken advantage of.

A specific focus of the study was placed on energy utilization by poor households in developing countries. Though biomass is the most important energy source of these households, its rather traditional use mainly for cooking is not *per se* environmentally friendly. The access to modern and sustainable energy for the poorer households will remain a challenge for the next decades. However, due to the new competitiveness of smaller-scale power produc-



tion, providing such access especially in rural areas seems much more feasible than in the past. Therefore, small is not only

beautiful – because it implies fewer greenhouse gas emissions – but is also becoming more efficient, technically as well as economically. 🌱

Dr. Heidi Wittmer was a research fellow at ZEF during 2000. Dr. Thomas Berger, research fellow at ZEF, coordinated the project commis-

sioned by the Büro für Technikfolgenabschätzung in Berlin (Office of Technology Assessment of the German Parliament).

Spheres of Law and Legal Security in Development Processes

Joanna Pfaff-Czarnecka and Reinhart Kössler

Development cooperation and development research are increasingly focusing on legal issues. The growing importance of law is due to three coinciding factors. The first factor lies in the growing volume of legal frameworks. The number of international (WTO, Human Rights) and regional (EU, ASEAN, NAFTA, etc.) legal norms is expanding, while being refined and differentiated. The larger their spheres of influence, the greater the tendency for legal pluralism. Different areas of international law – for instance the ILO conventions and the WTO norms - as well as national legislation and collective rights, which are once again gaining momentum, tend to collide with one another. Third, from the point of view of local societies in towns and villages, this plurality, as well as the quick shifts in legislation in the course of legal reforms, increase insecurity regarding questions like: Which laws are valid? Through which judicial authorities and procedures people can realize their rights?

From 10 May until 12 May 2001, ZEF hosted a workshop on the conceptualization of law in a development context, bringing together about sixty scholars and practitioners from Germany, Austria and Switzerland. During this workshop, organized jointly by ZEF and the association Development Sociology and Social Anthropolo-

gy of the German Society of Sociology, twenty presentations on the following topics were given: *global and local perspectives on legal pluralism; legal pluralism and rights to natural resources; law, power, and ownership; and development, administration, and legal security.* Several presentations focused on the question of how the global changes in the legal orders can be observed in concrete situations, when such different partners as state administrations, development experts, non-governmental organizations and different interest groups from among local populations come together in the course of development cooperation.

During the sessions, it became apparent that the expansion of the manifold legal norms into the local life-worlds might set in motion processes conducive to conflict and thereby influence development interventions. Development projects, the implementation of which are often mediated through local constellations of power, may enhance the potential for conflict. Hence, clashes may come about regarding ideas as to what *law* means, which judicial authorities are legitimate, and through which mechanisms legal security can be enhanced. The participants of this workshop agreed that a greater understanding of such conflict-producing processes is necessary for policy that seeks to build strong and stable legal orders in developing countries.



Dr. Joanna Pfaff-Czarnecka and Prof. Reinhart Kössler are both research fellows at ZEF and jointly organized the conference.



Doctoral Studies Program

The International Doctoral Program for Development Studies is growing. In September 2001, another 30 new students from 17 countries join the program, bringing the total to almost 100 participants from more than 35 countries.

While the new students participate in a course program and prepare their research projects in developing countries or with international organizations, the students from the first academic year (1999/2000) return to Bonn, having finished their field research. One of them is Tadesse Gole from Ethiopia, who is studying the conservation of the biodiversity of *Coffea arabica*



in Ethiopia.

The future of the world's most popular coffee is under threat because of deforestation. Ethiopia is not only the place of origin but possesses the world's largest genetic diversity of *Coffea arabica*. The spread of Arabica coffee (90% of the world coffee market today) around the world was based on a very limited number of trees, which suggests that the whole genetic base of the coffee planta-

tions outside of Ethiopia is very narrow. Therefore the ability to develop new varieties that can overcome disease and improve quality and yield depends on the survival of the wild varieties of *C. arabica* in Ethiopia. The genetic pool of Arabica coffee once covered vast areas of the Afromontane rain forest of Ethiopia, which is being deforested at an alarming rate. At present only 2000 km² of such forest is left, in a highly fragmented form.

Tadesse Gole studied the distribution patterns of the plant communities of the forest ecosystem and coffee population in the forest landscape and analyzed the impacts of land use on the forest coffee ecosystem. His aim is to identify priority sites for *in situ* conservation of wild coffee populations and formulate recommendations on management options and policy issues for conservation.

Tadesse Gole and the other students from the first academic year will now start to analyze their data and to write their theses.

Young scientists from all over the world who interested in the program which begins in September/October 2002 are asked to apply now. The deadlines for applications to the doctoral program are: for non-EU citizens, 30 September 2001; for German and EU citizens 31 May 2002. Further information is available on the ZEF homepage (<http://www.zef.de>).

rent rift between the two that exists in the popular mind. Similarly, Jocelyne Cesari pointed out that religion had ceased to be a strong factor among Muslim immigrants in Europe and the USA and that the large majority partook meaningfully in the liberal democratic traditions of their new countries. Klaus von Beyme argued that culture mattered less than formal political institutions, highlighting lessons from the European experience in which institutions mediated cultural incompatibilities.

Secondly, some scholars examined case studies from the Mediterranean area. Paul Salem and Theodor Hanf stressed the instrumentalization of culture by political elites as a cause of conflict. Ergun Özbudun used political opinion data from Turkey to argue that political culture was a stronger determinant of political life than institutions, as various recent institutional experiments have failed to yield the desired outcomes. Erich Weede argued that the so-called 'clash' between Western and Asian values might be overridden by economic factors, given the strong empirical evidence in favor of a liberal, 'capitalist' peace.

The concluding panel was devoted to the implications of the relevant discussions for policy and on questions of academic research. Stephen Calleya lamented the inadequate attention given to the development of cultural understanding within the Barcelona Process for promoting fundamental values of mutual respect. Others, such as Udo Steinbach and Frank Biancheri, also stressed the need to promote education by supporting the exchange of students

and implementing programs. Steinbach advocated greater crosscultural dialogue within Western European societies. In general, there was support and dissent concerning the issue of the degree of culture's importance in political life but overwhelming agreement that it was a central issue for continued academic research given the misconceptions in popular discussion and policy.

Does Culture Matter? Politics and Governance in the Mediterranean

Indra de Soysa and Peter Zervakis

From 19 to 20 June 2001 ZEF, in cooperation with the Center for European Integration Studies (ZEI), organized an international conference dealing with the relationship between culture and politics. The keynote address of the conference, which was sponsored by the Volkswagen Foundation, was held by His Royal Highness Prince Hassan of Jordan, the President of the Club of Rome and UNESCO's ambassador on intercultural dialogue. He spoke on the importance of promoting crosscultural understanding in the Mediterranean region.

The academic discussions comprised three distinct dimensions. First, a group of leading scholars view culture as a determi-

nant of political life. However, it was pointed out that long-term structural change, such as that which took place in East Asia, made democratization possible. Specialists of the Mediterranean region conceptualize culture in broader civilizational terms. Lawrence Harrison suggested that much of what determines successful democracy might be traced to culture rather than political institutions. Mohammed Arkoun argued that a common humanistic tradition shared by Islam and Christianity could be traced back to the Middle Ages but that political manipulation accounts for the cur-



Prince Hassan of Jordan (right side) talking to Andreas Wimmer, Director at ZEF Photo: E. Lichtenscheidt

Dr. Indra de Soysa is research fellow at ZEF,

Dr. Peter Zervakis is research fellow at the Center for European Integration Studies (ZEI).

Viewpoints

The former German Minister for the Environment, Nature Conservation and Nuclear Safety Prof. Dr. Klaus Töpfer has been Executive Director of the United Nations Environment Program (UNEP) in Nairobi since February 1998. Since November 1999 he has been chairperson of ZEF's International Advisory Board.

ZEF: Dr. Töpfer, you are a busy man, in great demand internationally. What led you to accept the chair of ZEF's board and to make such a commitment to ZEF?

Töpfer: The sustainable development of our world is one of the greatest global challenges that we face together. I believe that development research in general and ZEF in particular have a very unique role to play here. ZEF has the opportunity, not just to describe the need for sustained development in touching phrases, but to find concrete solutions - or the beginnings of solutions - to implement them, and to hand on the experience gained. That's why my commitment to ZEF is not a waste of time. On the contrary, it's an investment in the future. Ultimately, my work at the United Nations will also benefit from it.

ZEF: ZEF intends to become a think tank of international magnitude in development research. How do you view ZEF's work in this regard? Can ZEF even play a role in the international theater?

Töpfer: Someone once said that only something that is wrong can be altogether new in this world. Naturally the questions that ZEF deals with are being examined and discussed intensively elsewhere. There are endless publications about development policy and development research. Looked at this way, we can of course ask ourselves if we really need another institute. But I am convinced that ZEF has already - in its short existence - demonstrated the importance of establishing this very institute. Sustainable development is such a complex field that far too little applied research has been undertaken to date. I would like to stress the practical approach to which ZEF has



committed itself. From my own experience at UNEP, I know how often the liaison between scientific research and practical application is lacking. In my view, ZEF has - despite some initial birth pangs, which are always present - found its way very quickly. I am thus very confident that ZEF will not be deflected from this path and will make its mark in development research.

ZEF: You mentioned your own work at the United Nations. How do you assess ZEF's position from this standpoint? Is the Center receiving enough international recognition?

Töpfer: When I was still federal minister, I did not realize the breadth of the problems regarding development and poverty. Now, after nearly four years at the United Nations, I can appreciate far better just how important these issues are. It's obvious that ZEF, in its relatively short existence, cannot be as well known as another institute that has dealt with the subject matter for years. But this is no disadvantage, just the opposite. Here is a new institute that need not show undue respect for traditional thinking. ZEF can and should go somewhat against the grain. I think ZEF's doctoral program is fantastic: to bring young people from all corners of the world and with all different areas of specialization together here in Germany, in order to pursue their research together, before going out again into the world as multipliers of their newly acquired ideas. Through this alone ZEF will quickly gain in international repute.

ZEF: As a member of the government, you helped initiate the move to Berlin. Do you think that ZEF belongs in Bonn?

Board Meeting 2001

On 21 and 22 June 2001 ZEF's International Advisory Board met for the third time. The meeting represented another important step in the institutional history of ZEF. During the first day, board members listened to the presentation of some of the research projects currently undertaken by ZEF staff. The selection included natural science, economics, and social science projects, small and large ones, basic research as well as activities where knowledge transfer is paramount. Discussions were very intense and of high calibre. This first afternoon provided board members with a good impression of what ZEF is doing on a day-to-day basis and served as excellent background for next day's business agenda. On the second day and chaired by Prof. Dr. Klaus Töpfer (see interview above), the board discussed the annual report 2000/2001 and very

much welcomed the new structure that makes the link between a year's activities and the strategic goals set by ZEF more visible. The board also discussed the long-term strategy of ZEF, which sets as a strategic goal the further integration of ZEF's three departmental research programs around crosscutting themes of interdisciplinary character. The three themes will be: poverty and equality; governance and governability; natural resource scarcity. The board welcomed this approach of the Center and the efforts and progress that has been made over the last year in bringing ZEF's comparative advantages and its profile to the forefront. It gave important advice with regard to possible future research themes and encouraged the directors to further pursue a clearly defined strategy of knowledge transfer. The meeting again showed the high value of the critique, advice and support of a board of eminent persons and highly respected scientists.



Töpfer: I can answer in the affirmative without a single reservation. Of course the decision to move the capital was at first a shock for Bonn. After all, Bonn had done an outstanding job as capital for decades. Even back then the federal government had been aware that Germany could not restrict itself to purely German or European concerns. Germany also bears a responsibility for global development. It by all means made sense that the Compensation Settlement laid down the goal of expanding Bonn as a center for research and international cooperation. Bonn can also demonstrate considerable achievements in this regard. I need only point to the U.N. institutions like the Secretariat of the Convention to Combat Desertification or the Secretariat of the Framework Convention on Climate Change. Direct links arising from their work to ZEF's make Bonn by all means an advantageous location. Too, the relocation of development policy institutions from Berlin to Bonn leads us to ex-

pect reciprocal synergistic results with global signal effects. ZEF in turn contributes through its work not only to the prestige of the city but to that of the state of North Rhine-Westphalia and the nation.

Permit me to say something in this connection about ZEF's tie to the university. There are many good reasons for this relationship. But we need as much flexibility as possible for such research institutes as ZEF, which are concerned with practical implementation and for which third-party funding plays a large role. University structures do not always provide a framework of sufficient flexibility. This is a challenge for the university – to meet the partly very specific demands of an internationally-oriented research institution in an unbureaucratic and truly flexible manner. Comparative institutions in the U.S.A. and many other countries can act in many spheres much more freely and are therefore much more attractive to researchers from other countries.



Termites – Unrecognized Beneficial Insects



Cäcilia Hanne and Christopher Martius

Termites are often seen solely as pests – which is not justified as a ZEF study shows.

Termites play a crucial role in the carbon cycle of tropical rain forest ecosystems. They are an important part of the soil fauna in tropical forests, as they are capable of metabolizing one-third of the soil carbon of these ecosystems. Thus, they contribute up to 3% of the global atmospheric net carbon emissions, twice as much as has been estimated earlier. These are the results of a new study, in which the role of termites in the nutrient cycle of rain forest ecosystems was quantified in order to develop sustainable and suitable land use systems in rain forest areas. Carbon dioxide release through respiration of 24 termite species was measured, which is one-fourth of all presently known neo-tropical rainforest termite species. These data were integrated in a carbon model, where the release of carbon by termites was distinguished according to their food guilds (wood and organic material feeders, as well as specialists and generalists). With this approach the calculation of the contribution of termites to the soil carbon budget as well as to global net carbon emission could be stated more precisely than in previous studies. Wood feeders release up to

twice as much carbon as the other groups. Nevertheless, rain forest termites are neither a primary source for atmospheric carbon dioxide, where emission is 3% of the global total, nor for methane, even though in this case the annual contribution is 18% of the global net emission. Considering the lack of data for savannas and other important ecosystems inhabited by termites, the carbon release of termites might be a more important source for these gases than previously assumed. Their importance for a healthy soil status quo is shown by the fact that up to 28% of the soil carbon is metabolized by termites. They are thus essential to the organic carbon cycle in these ecosystems.

Many researchers propose the adoption of agroforestry systems as an alternative to the traditional slash-and-burn land use in tropical ecosystems. The optimization of the nutrient cycle in these land use systems raises the question of how termite activity can be exploited to the advantage of the soil while avoiding damage to cultivated crops.



Cäcilia Hanne carried out her Ph.D. at the University of Frankfurt. Her study has been funded by a scholarship of DAAD. Dr. Christopher Martius is a senior scientist at ZEF.

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No. 39 – Grote, U., S. Kirchhoff: Environmental and Food Safety Standards in the Context of Trade Liberalization: Issues and Options, Bonn, June 2001.

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Berger, T.: Objektorientierte Implementierung eines Programmierungsansatzes mit Verhaltensheterogenität und betrieblichen Interaktionen. Zeitschrift für Agrarinformatik 9/2, 2001, pp. 26-33.

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Citizens in Uniform? Military and Legal Reform in Latin America

Anja Schoeller-Schletter

The integration of the armed forces into the institutional system and the restriction of their political activity is widely understood to constitute a crucial factor in the transition to democracy in Latin America. What is apt to foster a successful integration process?

In countries like Paraguay, Chile, Bolivia and Peru the military has always played an influential role in politics and society, a role defined to a great extent by the political history of these countries. Having assumed a pivotal role during the struggles for independence and in the processes of nation-building, the military gained additional power during the Cold War because of its role in combating communism and what the governments defined as “internal enemies”. As a result of the present transition to democracy, the self-proclaimed role of the armed forces as the “guardian of the nation” is increasingly contested and considered incompatible with the requirements of a democratic system based on the separation of

powers. To counter the tendency of the military to act unchecked by democratically legitimated institutions, to assume powers beyond its constitutionally assigned role, and to become entangled by party affiliation, the above-mentioned countries have introduced a variety of reforms which differ in aims, measures and success. In each case, reformers concern themselves with such crucial issues as the extent to which the armed forces are organized through legislation passed by congress, the separation of the police from the military, the judicial review of rulings handed down by the military courts through civil courts, the competences of these military courts, and the political rights of the members of the armed forces.

For instance, in order to contravene the influence on the political decision-making process by the military, the constitutional assembly of Paraguay voted for the limitation of the political rights of the military. In this case, members of the armed forces on active duty were denied the right to participate in any political activity. In Peru, members of the military may neither vote nor stand for election.

Considering the possibilities of abuse, such measures may be justifiable. However, in the long run, the question arises as to

whether the restriction of the political rights of the members of the armed forces would result in the military’s segregation from society. This might render them prone to manipulation by other powers. Along these lines, Alberto Fujimori, long-term president of Peru, employed the military for his own purposes in a way which would have been impossible before the reform of the armed forces in the past decades - the very reforms aimed at removing the army from politics.

These and other problems take different shapes in each country and therefore call for solutions tailored to specific circumstances. Still, on a more abstract level, certain regulatory measures appear more suitable than others to achieve specific aims or to prevent an undesired outcome. Proceeding from these assumptions, the project *Public Law and Governance* investigates and compares the weaknesses of the different national systems with respect to composition, organization and procedures of the institutions involved in the political decision-making process. Which are the feasible reforms in the legal structure that are suitable for and capable of fostering political decision-making according to the democratic principles laid down in a specific constitution? These questions will be closely related to the implementation of so-called “good governance” concepts, which are based on ensuring the rule of law as a precondition for a stable political and economic environment.

Dr. Anja Schoeller-Schletter, a public law specialist and historian, works at ZEF on democratization and rule of law issues.

The Constitution of the Republic of Paraguay

The overthrow of General Stroessner after more than three decades of dictatorial rule marked the beginning of a democratization process in Paraguay, manifested by the development and approval of a new constitution in 1992. The book *Verfassungstradition und Demokratieverständnis, Paradigmenwechsel und Reform. Die Verfassung der Republik Paraguay vom 20. Juni 1992* addresses normative and

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institutional change, reform approaches and alternatives, as well as the problems and successes, against a background of the constitutional and political tradition of Paraguay. It examines the constitutional history of the country, closely looking at all former constitutions and the respective political reality.

The analysis of the democratic principle formulated in the constitution includes the exceptionally clear Paraguayan model of constitutional amendment, the institutionalization and depoliticization of the military, as well as the reorganization of the Supreme Court.

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