



Federal Ministry  
of Consumer Protection,  
Food and Agriculture

# Policies against Hunger VI

Bioenergy and Food Security



**International Conference**

**16 – 19 December 2007, Berlin, Germany**



# Policies against Hunger VI



# Greeting

**Dear Reader,  
Dear Conference Participants,**

The German Federal Ministry of Food, Agriculture and Consumer Protection's **Policies against Hunger** Conference Series is aimed at addressing topics which are of particular importance for global food security. In the past months, hardly any other issue has been debated as intensely and as controversially as bioenergy and food security.

In view of high energy prices and climate change, bioenergy today is seen as an important contribution to a secure and sustainable supply of energy in the future. It was the goal of this conference to explore the chances and opportunities arising from the "bioenergy boom" for the development of rural areas, and the necessary conditions under which it will be possible for many to profit from bioenergy production. The conference also allowed for an exchange of views on rising commodity prices and its implications for food security. Although there was consensus that bioenergy would for the time being only contribute to this phenomenon as one factor, the overall situation was perceived as serious and needs to be further discussed.

In spite of the fact that enough food is being produced, more than 850 million people still suffer from hunger. The question needs to be raised whether bioenergy production will compete with food production and put additional pressure on food prices or not. Germany therefore supports the FAO project *Bioenergy and Food Security* with its goals to assess the impact of bioenergy production on food security and poverty in developing countries, and to establish policy recommendations for developing bioenergy production in accordance with food security considerations. Worldwide efforts are being made to cut hunger and poverty in half by the year 2015, as projected in the United Nations' *Millennium Development Goals*.

The German government will continue to support the implementation of the *Right to Food* and the *Voluntary Guidelines to Support the Progressive Realization of the Right to Adequate Food in the Context of National Food Security*; both need to be considered for the development of agricultural markets and national bioenergy policies.

On the other hand, the increasing global demand for bioenergy should not result in unsustainable land use practices. Therefore, the German government has adopted a certification framework with the goal of ensuring minimum standards regarding sustainable production practices and reduction of greenhouse gas emissions.<sup>1</sup>

A broad and coherent policy approach for sustainable rural development is required, including food, feed and energy production. The German government, therefore, aims at reaching consent on sustainability standards for all agricultural commodities at an international level.

Regarding the multifaceted interrelationship between food security, reduction of greenhouse gases and rural development, there is not one solution which fits all. Thus, the conference outcomes are a significant contribution to the international policy dialogues and will serve to guide discussions within the expert community and among stakeholders working in the field of bioenergy and food security.

I would like to thank all of those who have actively contributed to the discussions and results of the conference.

*Ursula Heinen, Parliamentary State Secretary  
Federal Ministry of Food, Agriculture and Consumer  
Protection*

<sup>1</sup>Since the EU Commission is currently preparing its own legal standards, it has suspended the entry into force of the German Biomass Sustainability Ordinance until 15 December 2008.

# Further Greeting Notes



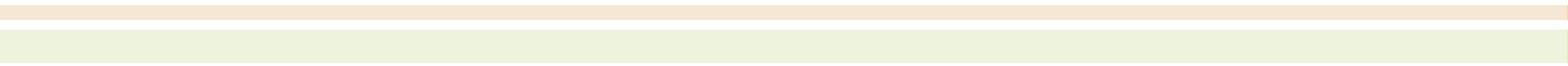
*Luiz Felipe de Seixas Corrêa, Karin Kortmann, Cheikh Sylla*

**Mrs. Karin Kortmann, Parliamentary State Secretary at the German Federal Ministry for Economic Cooperation and Development,** emphasized in her welcome speech that the intention to develop climate-friendly alternatives to fossil fuels should not be realized at the expense of food security. She cited Jean Ziegler, the UN Special Rapporteur on the *Right to Food*, saying that the production of 50 litres of bioethanol required 232 kg of maize – an amount that could feed a child in Zambia or Mexico for one year. She further raised attention to social and ecological risks, such as land conflicts, unacceptable working conditions or negative CO<sub>2</sub> balances in such cases where natural forests were destroyed and replaced by agrofuel plantations. Furthermore, the Parliamentary State Secretary called for the development of internationally-accepted and coherent policies, standards and regulations in order to reduce negative impacts on food security, and to ensure ecological and social sustainability.

**The Brazilian Ambassador Luiz Felipe de Seixas Corrêa** attended the opening session in place of Mr. Guilherme Cassel, the Brazilian Minister for Agricultural Development. The Ambassador defined the discussion on the interrelationship of bioenergy and food security as part of a broader international agenda which included social development, climate change and international trade. Based on the Brazilian experience, he emphasized the chances arising from bioenergy production for reducing hunger and poverty in developing countries by fostering economic development. The Ambassador presented a range of new instruments applied in Brazil in order to increase

food security, create employment and improve the generation of income for small farmers, while at the same time ensuring environmental sustainability. For example, the goal of the recently-launched biodiesel program is to include small farmers in sustainable and economically-viable production chains based on various oil crops. However, the Ambassador also brought attention to potential benefits from bioenergy production for rural population in developing countries largely dependant on trade policies adopted by industrialized countries, and called for a suitable global legal framework, open markets and fair prices.

**The Ambassador of Senegal, Cheikh Sylla,** brought the greetings and the speech of Christian Sina Diatta, Senegalese Minister for Biofuels and Renewable Energies, who was unable to attend the conference himself. According to Diatta, the advent of bioenergy has the potential to induce a new economic equilibrium between nations. Organising the international community toward renewable energy and bioenergy channels could give rise to a new balance, by reducing the asymmetry between nations and by practising international solidarity. In combination with other forms of renewable energies, bioenergy potentially offers new opportunities for the development of tropical and equatorial countries, thanks to growth toward energy self-sufficiency. However, the minister opts for active government measures to strengthen and protect local producers, with a special emphasis on defending land ownership and forming legal entities, and toward establishing adequate investment codes based on partnership and co-development.



# Table of Contents

<b>Introduction</b> .....	8
The Challenge: Securing the World’s Future Food and Energy Supply <i>By Alexander Müller, Assistant Director General of the Food and Agriculture Organization of the United Nations (FAO)</i> .....	8
<b>Presentation of Current Trends and the Respective Scenarios for Food, Feed and Renewable Resources for Bioenergy</b> .....	11
Trends on Global Food Markets: What is the significance of biofuels? <i>By Stefan Tangermann, Director for Trade and Agriculture, Organisation for Economic Cooperation and Development (OECD)</i> .....	11
Sustainable Biomass – Global Dimensions <i>By André Faaij, Task Leader IEA Bioenergy Task 40, Copernicus Institute, Utrecht University</i> .....	12
Biofuels and Global Food Security: Drawing the line between chances and threats to food security through the rapid development of biofuel markets <i>By Joachim von Braun, Mark Rosegrant and Claudia Ringler, International Food Policy Research Institute, Washington D.C.</i> .....	13
The Bioenergy “Boom” in View of Food Security, Equity Considerations, Human Rights and Ecological Sustainability <i>By Michael Windfuhr, Human Rights Director, Bread for the World, Stuttgart, Victor Orindi, Research officer at IDRC, Nairobi, and Stephen Obiero Anyango, Department of Environmental Sciences, Kenyatta University, Nairobi</i> .....	14
Key Points of the Discussion .....	16
<b>Stakeholder Positions: How to Ensure Sustainability in Food and Biofuel Production?</b> .....	17
<b>Working Group Results: Issues and Recommendations for Balancing Bioenergy Production and Food Security</b> .....	19
Working Group 1: Bioenergy and the <i>Right to Food</i> .....	19
Working Group 2: Balancing Bioenergy Use with National Food Security and New Challenges for Food Aid Architecture .....	20
Working Group 3: Certification of Bioenergy, Biomass and Biofuels .....	21
Working Group 4: Trade with Commodities for Bioenergy and Biofuels .....	22
Working Group 5: Renewable Resources and Bioenergy Production as a Chance for Rural Development – with a Special Focus on Small Farmers in Developing Countries .....	23
<b>Summary of Conference Recommendations</b> .....	25
<b>Outlook</b> .....	27
Closing Speech <i>By Klaus Töpfer, Former Head of the United Nations Environment Program</i> .....	27
<b>Annex</b> .....	29
Projects Presented at the Conference .....	29
List of Abbreviations .....	30

# The Challenge: Securing the World's Future Food and Energy Supply

*This text is based on the introductory speech of Alexander Müller, Assistant Director General of FAO, Rome, and Chairman of the conference Policies against Hunger VI. The slides which accompanied this presentation are available at <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/Mueller-Bioenergy-and-Food-Security.pdf>*



*Alexander Müller*

With “Bioenergy and Food Security”, the German government puts a highly-complex topic on the agenda of this conference. The following considerations should help give an initial overview toward better understanding the multifaceted interrelationship between bioenergy and food security. Many aspects which are shortly presented have been deeper elaborated in the further course of the conference.

## **Energy Markets and Bioenergy**

Our present economic system is based on a nearly linear correlation between energy consumption and income. Without a fundamental change of our model for economic development, we will have to face the challenge of how sufficient energy can be made available in the future. Thus, allowing for continued economic growth in those countries that are still poor and that have a lot to catch up on in this regard. It is assumed that the world's energy demand will be twice as high as today by the year 2050.

Per capita, the large differences between countries regarding energy consumption are reflected in their emission of CO<sub>2</sub> – a topic which was largely discussed at the United Nations Climate Change Conference in Bali (3-14 December 2007). In the year 2005, the EU and USA together were responsible for more than 50% of the global CO<sub>2</sub> emissions. Thus, the hope which is presently being invested in bioenergy stems from the need to reduce the global CO<sub>2</sub> emissions and at the same time allow global economic growth.

When considering biomass as a base for future energy supply, we should be aware that the present use of biomass varies a lot in terms of quantity, raw materials and technologies used. Whereas biomass accounted for about 8% of the world's total energy supply in 2004, traditional use of wood and manure have – in some regions – a very high importance for energy supply. In Africa, for example, the share of bioenergy is nearly 50% of the continent's total energy demand, and accounts for nearly 90% in some countries (Juergens, I. (FAO) 2006, unpublished work).

The importance of liquid biofuels (biodiesel and bioethanol) is still limited to 0.5% of global energy supply, but is expected to increase rapidly due to the policies adopted by the USA and the EU in view of reducing CO<sub>2</sub> traffic emissions. However, the actual potential of biofuels to CO<sub>2</sub> reduction has yet to be questioned, if the entire process chain is being taken into account. Furthermore, the production costs for biofuels vary widely between different raw materials and between countries. According to FAO data from 2006, ethanol from sugarcane in Brazil could compete with crude oil prices of 30-35 US-\$ per barrel, maize (USA) from 60 US-\$ upwards, and mixed feedstuffs (EU) at about 80 US-\$ (Schmidhuber, 2006). Thus, without tariffs and subsidies, biofuels were presently not at all economically-viable in the EU.

## **World Population Growth**

The world's population will continue to grow – from 6.5 billion people today to possibly 9.2 billion in the year 2050. Thus, roughly three billion people more than today will live on earth in 2050, and the majority

of them will probably live in cities and urban areas in developing countries.

Another important change will occur in the population structure. Along with economic growth and an increase of the per capita income, an increased demand for food and a change of consumption patterns is expected. For example, there is a trend towards more consumption of food from animal products with increasing income. It is obvious that not only the number of people, but also the population structure exert an influence on food demand, resulting in an expected increase of food demand of more than 50% compared to present conditions.

**Global Trends in Food Prices**

Global demand and supply for cereals have been more or less balanced due to agricultural EU and USA policy measures. Still, the prices for cereals, as those for oil crops and milk products, have increased recently and are expected to remain high, due to an increasing demand, reduced harvests, speculations and an additional demand for bioenergy.

The production of biofuels competes directly with growing food crops. It is estimated that 32% of the total maize production in the USA will be used for bioethanol by 2016. Bioenergy demand influences the price of agricultural commodities since it competes for production factors, such as agricultural land, water and other input.

Yet, different forms of bioenergy differ widely in terms of their influence on food prices. This depends on the raw materials used, the available area of land in the region, and many other factors. For example, some types of biomass – including forest residues or organic waste – exert much less or no competition on food production than cereals or oil crops.

**Perspectives for the Fight Against Hunger**

The efforts to combat hunger will have to be further increased. Hence, large investments in agricultural and rural development, as well as in agricultural research are necessary in developing countries. Today, the greatest number of hungry people lives in Asia and the Pacific region, followed by sub-Saharan Africa, Near East/North Africa, and Latin America (Table 1). More than 95% of the people affected by hunger live in developing countries. Along with the projections for population growth in developing countries, these figures illustrate that the agricultural commodity

markets will continue to be under pressure, and the growing demand for bioenergy will further add to this situation.

**Table 1:** Hungry people in the world

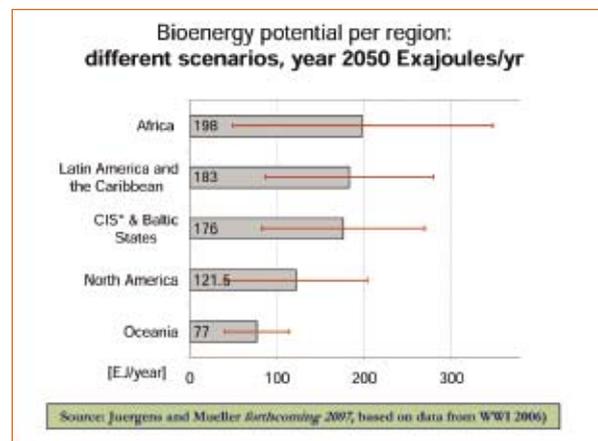
Region	Number of people affected by hunger [million]
Asia and the Pacific	524 (India: 212; China: 150)
Sub-Saharan Africa	206
Latin America and the Caribbean	52
Near East and North Africa	38
Countries in Transition	25
Developed market economies	9
Total (World)	860
Developing countries	830

Source: FAO

Figure 1 shows the bioenergy potential for different parts of the world, as estimated in various scientific scenarios for the year 2050, with quite a range of variability between the different prognoses.

According to these studies, a considerable share of bioenergy will probably be produced in regions where hunger will continue to persist, and where the population will continue to grow. These facts underline the need to develop policies which address hunger reduction, as well as bioenergy production.

**Figure 1:** Bioenergy potential per region





### Climate Change

Various scenarios exist for global warming. Depending on the measures adopted to reduce greenhouse gas emissions, the global surface temperature is expected to increase within a range from 2°C to 4-5°C. In most existing projections regarding bioenergy and food security, possible dramatic changes in harvesting crops due to global warming have not yet been considered.

Whereas food production in temperate zones might initially increase slightly, if the main annual temperature increase does not exceed 2°C, it is likely to decrease in most developing countries. If global warming exceeds 3°C, negative effects on food production are expected throughout the world. Furthermore, extreme weather events leading to harvest reductions are expected to become more frequent in all regions of the world.

Even though the actual existing scenarios may still be superficial and their premises incomplete, all of them point in the same direction: starting at a global temperature increase of 2°C, there will be drastic negative effects in harvesting crops (20-50%), particularly in developing countries. For any prognosis on world food security, additional climate change effects need to be taken into consideration.

### Key References:

Schmidhuber, J., 2006: Impact of an increased biomass use on agricultural markets, prices and food security: A longer-term perspective. Paper presented at the "International Symposium of Notre Europe", Paris, 27-29 November, 2006  
<http://www.fao.org/es/ESD/BiomassNotreEurope.pdf>

# Presentation of Current Trends and the Respective Scenarios for Food, Feed and Renewable Resources for Bioenergy

## Trends on Global Food Markets: What is the significance of biofuels?

By Stefan Tangermann, Director for Trade and Agriculture, OECD.

The slides which accompanied this presentation are available at <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Tangermann.pdf>



Stefan Tangermann

The interaction between global food security and the actual developments on the biofuel sector has become a very hot public topic during the last few months. The reason behind this being a current high level of food prices, partly related to short-term factors. On the other hand, there are obviously a number of long-term factors, one of which an increased demand for biofuels as shown in the following table.

Table 2: Short term and long term factors influencing food prices

Factors influencing food supply	Factors influencing food demand
Extreme weather conditions, low harvests (short term)	Population growth (long term)
Production decline in some important exporting countries (short term)	Growing incomes and food demand in emerging economies (long term)
Low availability of stocks (short term)	Demand for biofuels (long term)
Higher production cost due to oil price increase (long term)	

The present price increase for cereals and other agricultural commodities is largely due to reduced harvests in some of the important countries exporting cereal, resulting in lower stock levels worldwide. In the long-term, population growth and increasing incomes in developing countries, for example in the Asia-Pacific region, will be an important factor also driving the demand for food of a higher quality.

Whereas food tends to drive the demand in the case of wheat, feed and increasingly biofuels are important sources of demand in the coarse grain sector (maize, barley, sorghum). For example, ethanol production is expected to double in the USA, while continued growth is expected in Brazil, China and the EU (biodiesel and ethanol).

Biofuels will thus turn into a major source of demand, if the political pronouncements become more or less reality. It is expected that in 2016, roughly 10% of the world's cereal production (excluding rice) will go into the production of ethanol. The price level for major food products is expected to increase by 20 - 40% in the

## CURRENT TRENDS

10-year period to come – relative to the past ten years – with biofuels being responsible for a significant part of that price increase.

However, the growing demand for biofuels is not market driven. It is a result of policy decisions: The biofuel policies of industrialized countries largely foster the development of this sector. The real costs of it will have to be carried by the net food importing countries, and the benefits will occur in the net exporting countries. But besides harming consumers, the OECD tariffs further affect biofuel producers in developing countries who could otherwise profit from the demand in OECD countries.

The benefits of these policies, even in view of the declared objectives, are questionable:

The biofuel sector will not be important enough to improve energy security, and environmental effects are small or even negative, when considering entire life cycles. A reduction of CO<sub>2</sub> emissions could be achieved at much less cost via other measures. More efficient means with less negative effects on global food security exist for addressing climate change, improving the environment and fostering rural development.

### Key References:

OECD-FAO Agricultural Outlook 2007-2016,

<http://www.agri-outlook.org>

Biofuels for Transport: Policies and Possibilities, OECD Policy Brief, 2007

<http://www.oecd.org/dataoecd/18/8/39718027.pdf>

## Sustainable Biomass – Global Dimensions

By André Faaij, Task Leader IEA Bioenergy Task 40, Copernicus Institute, Utrecht University

The slides which accompanied this presentation are available at <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Faaij.pdf>

In the first half of the century, various global problems will probably reach a critical peak: population growth, poverty, energy and water supply, soil degradation, biodiversity loss, and climate change. These problems are all interlinked, and possible solutions strongly depend on the future perspectives of agriculture and land use. The question to be explored in this conference is whether or not bioenergy has the potential to

contribute to developing solutions for these global problems, and under which conditions.



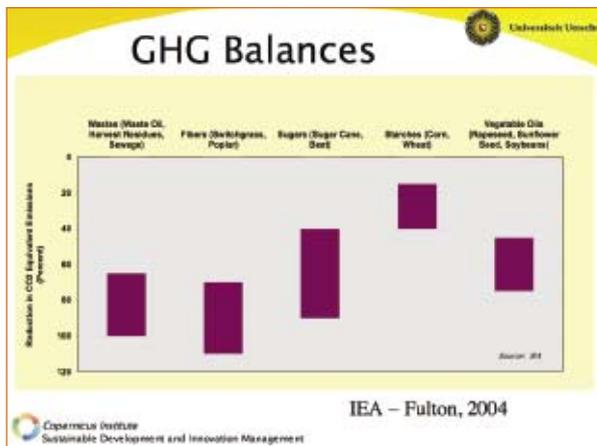
André Faaij

As the first generation of biofuels in Europe and USA rely mostly on annual crops, such as cereals or oilseeds, they increase the pressure on limited arable land resources and tend to drive up food prices. The so-called second generation of biofuels – a technology which still needs to be fully developed – requires woody and grassy lignocellulosic materials, which could also be produced on marginal land or derived from residues and waste. These future biofuels have a strong economic potential, could cover a much larger part of the global energy supply and could address more sophisticated policy needs. The key differences between the first and second generation of biofuels are summarized in Table 3 and Figure 2.

**Table 3:** Comparison of first and second generation biofuels

First generation biofuels	Second generation biofuels
Derived mostly from annual food crops (in EU, US)	Derived from lignocellulosic materials, residues and waste
Require arable land	Could be produced on arable land, pastures, marginal and degraded land
Poor to modest greenhouse gas balance and environmental performance	Good to excellent greenhouse gas balance and environmental performance
Based on existing, simple technologies	Technology development required
Potential constrained	Potential large

**Figure 2:** Greenhouse gas balances for various types of bioenergy raw material



Thus, the key factors for developing global bioenergy potentials in a sustainable way would be to use lignocellulosic raw materials from marginal and degraded lands, perennial crops, or agroforestry systems, and improve the efficiency of farming systems worldwide. Under such circumstances, modern bioenergy and biofuels could potentially cover one third of the world's future energy demand on a sustainable basis and provide a key mechanism for much needed rural development on a global scale. The main target for policies would be to foster technological development in the bioenergy sector and to drive investments toward the development of more efficient agricultural practices.

Bioenergy policies need to be redesigned to include various objectives across policy fields. A moratorium on policies pushing biofuels presently produced in temperate zones could help to avoid misallocation of an investment, saving it for more sustainable bioenergy options in the near future.

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 Smeets, E.M.W., A.P.C. Faaij, I.Lewandowski & W.C. Turkenburg, 2007. A Quickscan to Global Bioenergy Potentials to 2050. *Progress in Energy and Combustion Science* 33 (1): 56-106.  
 International Energy Agency, Biofuels for transport – an international perspective, Office of Energy Efficiency, Technology and R&D, OECD/IEA, Paris, 2004.

## Biofuels and Global Food Security: Drawing the line between chances and threats to food security through the rapid development of biofuel markets

By Joachim von Braun, Mark Rosegrant and Claudia Ringler, International Food Policy Research Institute, Washington D.C.

The slides which accompanied this presentation are available at <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Ringler.pdf>



Claudia Ringler

We see the actual debate on biofuels within the larger context of food systems under stress. Growing and more affluent populations demand more food of higher quality. On the other hand, few achievements have been made in reducing the number of people suffering from hunger and malnutrition. Scarcity of land and water resources, as well as underinvestment in agriculture, agricultural technologies and rural infrastructure further add to a much tighter world food situation. The energy crisis, the threats of climate change, and biofuel development as a response to these drivers put additional pressures on the global food system.

Biofuels have come into play as prices for fossil fuels increased. Presently, only Brazil is using a significant share of biofuels in the transport sector. However, rapid growth is expected, not only in the United States, the European Union and Brazil, but also in some

developing countries that can impact global food markets, for example, India.

Even under conservative biofuel development, prices for basic staple crops would increase. If national biofuel development plans would materialize, food prices would increase by a further 10-25 % by 2020. Poor consumers and net food purchasers are most affected by these price increases as they spend a considerable amount of their available income for food. Moreover, under higher food prices, people will not only reduce their intake of staples, but will particularly reduce the consumption of higher-value foods. This trend is already being observed even for poorer social groups in industrialized countries. Two billion people are nowadays suffering from micronutrient deficiencies, and this number could increase with rising food prices, with the known long-term irreversible negative effects on malnourished children.

How these problems will be addressed, and how the risks and benefits from biofuel production will be distributed, will depend to a large degree on whether innovation and technology investments will be sufficient to spur rapid production increases. Trade and macroeconomic policies should focus on building a global system for biofuel markets and trade (rather than on trade protection and tariffs). Moreover, pro-poor policies are necessary to reduce adverse impacts on the poor. Insurance and social policies should complement agricultural R&D and trade policy measures in order to protect the food insecure given existing large-scale food and nutrition insecurity and the growing complexities of food system changes with the expansion of biofuels. In any case, productive investments should have a clear priority over subsidies for biofuels.

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## The Bioenergy “Boom” in View of Food Security, Equity Considerations, Human Rights and Ecological Sustainability

By Michael Windfuhr, Human Rights Director, *Bread for the World*, Stuttgart, Victor Orindi, Research officer at IDRC, Nairobi, and Stephen Obiero Anyango, Department of Environmental Sciences, Kenyatta University, Nairobi

The slides which accompanied this presentation are available at <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Windfuhr-Anyango.pdf> and <http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Anyango.pdf>



Michael Windfuhr

How could the *Right to Food* help to develop approaches and policies for balancing chances arising from increased bioenergy use and the related risks for food security? Food security can be considered on different levels; there are global, national and household levels. From our perspective as an aid organization, the most relevant level is the household level. Which food is available depends largely on the family income. However, marginalization is also a typical phenomenon in the context of hunger and poverty. Half of the hungry worldwide are marginalized smallholder families. People can be marginalized geographically, but also politically. For example, many smallholder farmers do not have access to agricultural extension, marketing support or credits. Women are important food producers worldwide, and many of them suffer from double marginalization – as women and as smallholders.

The World Development Report recently suggested three strategies to reduce hunger and poverty; market integration for bigger farm units with assets and capital, and for a second group of better-off subsistence farmers a stabilization of their situation (i.e. through safety nets). Migration is suggested for the third group of marginal farmers (as last option). Whereas market integration is presently being largely promoted in development policies, those groups of people who will not have a real chance to profit from income generation schemes (for example through biofuels or other agricultural commodities), are neglected. Here, the *Right to Food* could come into play, as it focuses government policy attention particularly on these groups. The most principle aspect of this approach is that people have rights with regard to their governments and governments have duties. Governments are obligated to respect, protect and fulfill the *Right to Food*, thus refraining from all activities which have a negative impact on food security, and to allocate the maximum of available resources toward achieving it. The *Voluntary Guidelines* call governments to identify the most vulnerable groups, analyze the causes for food insecurity, monitor the impact of policies, and create recourse mechanisms. Only if these elements are all implemented can we really speak of pro-poor strategies.

With regard to biofuel policies, one practical option would be to assess the potential impact on vulnerable groups, and to identify potential policy responses (see example in Table 4).

**Table 4:** Impact of biofuel policies on vulnerable groups and potential policy responses (examples)

Impact	Policy response
Land conflicts	Secure tenancy, promote agrarian reform
Changes in land use limit resource base for pastoralists and other users of marginal lands	Secure access and user rights, protect indigenous communities
Food price increase harms urban consumers and poor rural consumers	Cash transfers, basic food income grant, public distribution shops, etc.
Government support to bioenergy production concentrates on better-off farmers	Develop and support process chains which focus on smallholders
Etc.	Etc.

Furthermore, the *Right to Food* implies an international dimension such as other countries' policies should not do harm to food security elsewhere. The FAO should help to develop and establish a checklist for national bioenergy policies – based on the *Right to Food* – and help to develop field-oriented policy-monitoring systems.



Stephen Obiero Anyango

Experiences from various existing bioenergy projects in Africa could serve as base for policy development. In Africa, driving factors for bioenergy development are fossil fuel prices and climate change. Africa is one of the most vulnerable regions to climate change (due to its dependence on natural resources and rain-fed agriculture) coupled with poverty and low adaptive capacity. Traditional biomass use is very important in Africa, but also related to environmental degradation. Thus, new approaches to bioenergy use could help to overcome these constraints, yet also pose new challenges with regard to technology and policy development.

Large scale Jatropha oil projects in Tanzania (20,000 hectares) caused difficulties for small farmers to keep hold of their land rights. The success of medium scale activities, for example those for using cotton by-product production for biodiesel, have so far shown limited success, partly through low profit margins and limited income generation, but also unclear expectations, roles and responsibilities. However, biofuel production on a community level, with crops that are well-known to the farmers, open up the possibility for additional income generation and help to cover the local energy demand. Such approaches are unlikely to have negative effects on food security; they may even produce additional benefits related to soil erosion control or diversification of farming systems.

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### Key Points of the Discussion

In the discussion already existing forms of bioenergy use, such as biogas, combined heat and power generation or direct combustion were mentioned as being much better in terms of energy efficiency per hectare. Yet, the opinions on second generation bioenergy varied. André Faaij argued that the promotion of second generation biofuel could start immediately with biomass from forestry, waste and residues and use them for advanced systems of combined heat and power generation or direct combustion. By these means,

people could learn to operate biomass supply systems and build on this experience in the future. Investment in conversion technologies for grasses and residues, and in business models for a variety of conditions, could take a step forward toward a wider application of the second generation biofuels. Whereas Claudia Ringler's opinion was, that it will be very difficult to get this type of technology to the ground. And, that besides technological development and rational trade policies, social safety nets will be a key policy issue which will have to be put into place in order to protect poor consumer groups.

Considering the question of how biofuel policies should be designed instead, Stefan Tangermann stated that biofuel policy developments should start with clarifying the objectives. In order to improve energy security, energy consumption could largely be reduced by improving efficiency, for example in the area of transport. A general tax on greenhouse gas emissions would be a good policy instrument for addressing climate change. It was argued that there is not one policy which could address all objectives. Michael Windfuhr added that it is necessary to encourage the establishment of good policies and the governing thereof in the developing countries themselves; only then can trade policies and international sustainability standards be put into place to achieve the intended outcome.



# Stakeholder Positions: How to Ensure Sustainability in Food and Biofuel Production?



*Panel discussion*

Representatives of Brazil, USA, Germany and the European Commission discussed the topic of sustainability in biofuel production with other stakeholders, including FAO, a farmer organization from Kenya, a German aid organization, and a private biofuel enterprise operating globally.

A large part of the discussion was dominated by the question how an internationally agreed upon understanding of sustainability and related criteria could be achieved. **John K. Mutunga, Chief Executive Officer of the Kenya National Federation of Agricultural Producers**, emphasized the importance of economic sustainability for the farmers in producing countries. He expressed his concern whether or not consultations on standards were organized in such a way that they would be beneficial for all stakeholders, including the farmers. **Florence van Houtte, DG Development, European Commission** presented the plans of the EU and European Commission to develop the biofuel market by combining targets and sustainability criteria. Certification standards – which would be mandatory from a public authority – represented an innovative step, thus creating a positive precedent when made workable. Therefore, certification should concentrate on the most important and feasible aspects.

**Christoph Meyer, Head of Division for Bioenergy at the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV)** added that sustainability should not only be discussed for biofuels, but also for other agricultural commodities. He explained that Germany had decided, as a first step, to start putting forward sustainability legislation for the biofuels sector. This just passed parliament and has now been sent to the European Commission for notification. **Michael Windfuhr, Human Rights Director, Bread for the World, Germany** said that the social aspects of sustainability, such as labour rights, were often neglected; they were missing in the German sustainability legislation, even though it had initially been discussed that they should be included.

The difficulties in achieving a common and workable understanding of sustainability criteria on an international level were described by **Alexander Müller, Assistant Director General, Natural Resource Management Department, FAO**. He offered to use FAO as a platform to bring forward such criteria. This idea was supported by **Anne Ruth Herkes, Vice President Policies and Communication, BP Biofuels**. She called the FAO and other major international agencies to develop a concept of sustainability which would give the private industry the breathing space toward developing a technological foundation. With regard to the German sustainability legislation, she raised the question whether it could be successfully brought through WTO or not.

Trade distorting measures were counterproductive to the goal of achieving sustainability in global agriculture, said **Tovar da Silva Nunes, Minister Counselor, Brazilian Embassy Berlin**. The importance of trade liberalization for all agricultural commodities, including biofuels, was also underlined by **Bobby Richey, Counselor for Agricultural Affairs at the US Embassy in Berlin**. As a way to solve the dilemma between food security and biofuels production, he suggested continued research, particularly with regard to non-traditional biofuel resources, such as switch grass or cellulosic material. Moreover, technological gains could result in further increases in productivity,

## STAKEHOLDER POSITIONS

for example in cereal production.

Alexander Müller (FAO) outlined that the production of biofuels in the EU and North America was based on political decisions, including tariffs, subsidies and investment support. These policies had an impact on global food markets, with negative consequences for poor countries. He called for international safeguards, whereas Michael Windfuhr (Bread for the World) said that countries should also develop their own safeguard policies. The *Right to Food* could be an instrument for developing rights-based policies; a process which could be supported by the FAO. The importance of both multilateral agreements and domestic legislation was also underlined by Da Silva Nunes (Brazilian Embassy). He mentioned the ILO conventions in this context, most of which had already been transferred into national legislation in Brazil. He further mentioned the role of the civil society to raise awareness and promote open discussions and debates regarding issues related to environmental and social sustainability.



*From left to right: Michael Windfuhr, Anne Ruth Herkes, Alexander Müller, Bobby Richey, Tovar da Silva Nunes, Christoph Meyer, John K. Mutunga, Florence van Houtte*

# Working Group Results: Issues and Recommendations for Balancing Bioenergy Production and Food Security

To focus the discussions related to bioenergy and food security, five working groups discussed several policy fields (Table 5). As an introduction, invited resource persons shared facts and initial thoughts and presented institutional-, country- or project-related experiences to stimulate the discussions in the groups. Relevant issues were identified, discussed and ranked according to their importance. In the continued process, each group elaborated on a set of recommendations for the respective policy field.

**Table 5:** Working groups and policy fields addressed

Working group 1	Bioenergy and the Right to Food
Working group 2	Balancing bioenergy use with national food security and new challenges for food aid architecture
Working group 3	Certification of bioenergy, biomass and biofuels
Working group 4	Trade with commodities for bioenergy and biofuels
Working group 5	Renewable resources and bioenergy production as a chance for rural development – with special focus on small farmers in developing countries

The recommendations of all groups were presented in full and further summarized by the conference chairman, Alexander Müller (FAO), who handed them over to the Parliamentary State Secretary of the German Federal Ministry of Food, Agriculture and Consumer Protection, Ursula Heinen.



## Working Group 1 Bioenergy and the Right to Food

### Key Questions:

How is food security affected by the rising demand for bioenergy? What is the role of the *Right to Food*?

In her initial statement, Barbara Ekwall, Head of the *Right to Food* Unit at FAO, addressed the importance of the *Human Right to Food* for developing rights-based policies for bioenergy development. Flavio Valente, Secretary General of FIAN International presented cases and examples from Brazil, illustrating how the *Right to Food* may be affected by the emerging global market for biofuel and other bioenergy products. Expected effects of the rising demand for biofuel and other bioenergy products on the allocation of natural resources (particularly land and water), and the direct or indirect effects on food security resulting thereof were outlined by Gernot Klepper, Senior Researcher at the Kiel Institute for the World Economy. Stanfield Michelo, Chief Social Welfare Officer at the Ministry of Community Development and Social Services, Zambia highlighted the role of safety nets and cash transfers as one optional measure to secure the *Right to Food*.



The group concluded that the well-being and human rights of every person should be at the centre of any strategies, policies and programmes. The participants emphasized the importance of gender aspects. The impacts of policies on women have to be considered, and any discrimination needs to be avoided, for example with regard to land tenure. Land ownership and related rights were seen as an issue of central importance. Furthermore, different scales of bioenergy production require different approaches and strategies. Smallholder production and large commercial scale bioenergy production should rather be considered separately by policy-makers. Working Group 1 presented the following recommendations:

### Recommendation 1: Well-Being and Human Rights

The *Right to Food* and *Human Rights* are non-negotiable preconditions which need to be considered in all aspects of the promotion of sustainable biomass strategies. Bioenergy strategies, policies, and programmes are subservient to these rights. Therefore, any decision made regarding bioenergy development has to be guided by human rights principles.

### Recommendation 2: Land Reform as a Precondition

A precondition for facilitation and implementation of policies against hunger are seen in agrarian reforms which have to include aspects of the redistribution of land and other essential natural resources such as water, seeds, forests, as well as access to inclusive and participatory public policies. This will contribute to foster the democratic process and the access to energy by the 'people'.

### Recommendation 3: Two Levels of Bioenergy Production

Different strategies are necessary for fostering smallholder and large scale commercial bioenergy production as follows:

Small scale bioenergy production is unlikely to be competitive in the world market, so that it would mainly cover local demand. As a by-product of agricultural production, smallholder bioenergy production would not necessarily compete with food production. Consequently,

- Governments should look more toward decentralised energy options
- Government-funded research should focus on decentralised technical solutions on bioenergy production which stimulate synergies with food production. Large scale commercial production should be taxed and contribute to an established food security support fund
- Governments should create a legal framework for biofuel production that considers food security and have to enforce compliance with legal obligations
- Certification systems must be elaborated to ensure sustainable biomass production (climate, soil, environment) and compliance with the *Right to Food*

## Working Group 2 Balancing Bioenergy Use with National Food Security and New Challenges for Food Aid Architecture

### Key Question:

How can local food production and food availability for low-income food-deficient countries be secured, and how can food aid interplay?

Josef Schmidhuber, Senior Economist with the Global Perspectives Unit of FAO addressed the economic effects of the expected increase in bioenergy production on low-income food-deficit countries. A country-based experience was contributed by Essaid Assouzi, Head of the Division of Projects and Programs Monitoring and Evaluation at the Ministry of Agriculture, Morocco. He presented how net food importing countries, like Morocco, were affected by the expected price increase for food and agricultural input which was partly due to a rising demand for biofuels and bioenergy. Henk-Jan

Brinkman, Chief of the Economic Analysis Service of the UN World Food Program, gave a statement on the consequences for food aid policies and exposed which national and international obligations would apply in this situation. John K. Mutunga, Chief executive officer of the Kenya National Federation of Agricultural Producers, addressed challenges and implications for food production and the promotion of rural development, giving examples of the effects of an increased bioenergy demand on the agrarian structures and farming systems in his country. The group discussed that particularly with regard to low-income food-deficit countries, a broader perspective has to be taken in order to analyze their situation. Also to identify opportunities to maintain their food security and to secure energy supply in the future. Long-term preventive strategies – including the various policy fields involved – need to be developed for each country. However, food security will be difficult to address through agricultural and energy policies alone; safety nets will become a necessary element for achieving food security, particularly for poor consumers. Given the fact that the market for biofuels is largely policy driven, the issue was raised whether or not these policies should better be revised in order to minimize harmful effects on developing countries.

#### Recommendations 1 & 2: US and EU Policies

- Revise policy on biofuel promotion in view of its negative impact on low-income food-deficit countries
- Reallocate subsidies to promote research on second generation biofuel technologies (cellulosic) instead of the current form of subsidies

#### Recommendations 3 & 4: Long-Term Strategies

- Assess potential benefits and risks of national bioenergy production and if appropriate design a national strategy for sustainable bioenergy with a global perspective (e.g. global energy demand / linkage energy and food prices/ population increases)
- Develop a national strategy in order to minimize the negative effects of bioenergy on food security (such as increasing food prices and increasing competition on natural resources) including the following preventive action:
  - implement a bioenergy monitoring system
  - improve food production systems for higher productivity
  - establish necessary safety nets (including food assistance)
  - consider micro insurance against food price fluctuations

#### Recommendations 5 & 6: Safety Nets

- Governments need to create sustainable, cost-effective, targeted national safety nets now (!) to guarantee food security in a world of rising food costs in order to mitigate negative impacts of bio-energy production on food security
- Governments have to act on their responsibility for the *Right to Food* within the international community to support food-deficit countries' national safety nets through needs-based commitments

### Working Group 3 Certification of Bioenergy, Biomass and Biofuels

#### Key Question:

How could certification systems contribute to the development of sustainable biomass / biofuel markets and food security?

Uwe Fritsche, Coordinator of the Energy and Climate Division, Institute for Applied Ecology, Germany, outlined the present state of the art of the international development of certification systems for biomass products, including the ongoing processes in countries like Germany and on a European level. Experiences regarding the elaboration of internationally-accepted certification systems for different types of commodities and with different stakeholder groups involved were contributed by Philipp Schukat, responsible for the GTZ Program Office for Social and Ecological Standards. Camila Moreno, Agro Energy Research Coordinator at the human rights organisation "Terra de Direitos", Brazil, shared her assessment whether or not existing certification systems for social and ecological standards were successful in her country and whether this approach had proved to effectively address social inequalities and environmental concerns or not. Frank Petzold, Head of the Department of Energy Policy of the German Farmers' Association outlined the state of the debate in his organisation and among the German farmers regarding the certification of biomass for social and ecological sustainability standards. Finally, the compliance of bioenergy-related certification standards with international law, and the importance of the *Right to Food* in this regard, were exposed by Andreas von Brandt, Coordinator of the Bioenergy and Food Security Project, FAO.

## WORKING GROUPS

In this working group, there was a controversial debate on the issue of certification and if it was at all a recommendable instrument for ensuring sustainability and human rights. Finally, the group decided to regard certification as just one possible tool. Preferable would be a combination of an international agreement – possibly under UN leadership – and sustainability standards. The participants discussed that a more integrated approach to certification would be required, not only for biofuels, but also for other forms of bioenergy, and with regard to biomass for all other uses. A further important issue discussed was whether certification should focus on just a few key issues, or take a broader view, also including social aspects and food security. Visibility, in the sense that standards should be measurable and could be monitored, was also an important key topic in this debate.

### Recommendation 1: Integrating not only Biofuels

Certification systems should not only focus on biofuels

- in order to avoid shifting problems into other production sectors and to other land areas
- because the market for agricultural commodities cannot be separated according to use, therefore certification cannot be separated and eventually should include all crops

Certification systems have to consider the impact of agricultural production systems on nature and social issues.

### Recommendation 2: A Broader Approach to Policies is needed

Sustainable production and trade of bioenergy needs support through a broad range of policy instruments. This includes certification, standards for project financing and bilateral agreements based on internationally-adopted criteria and standards.

Germany with G8 should support the Global Bioenergy Partnership of the G8+5 (GBEP) to develop harmonious applicable standards. This process has to take advantage of private sector initiatives.

Obligations of the relevant international treaties (ILO, the 3 Rio conventions) need to be taken into consideration and the respective UN institutions are to be actively involved.

### Recommendation 3: Certification

The broad definition of sustainability – which includes issues of climate change, biodiversity loss and the respect of human rights – requires the development of feasible certification criteria to include all these aspects.



### Recommendation 4: Ensuring Visibility

When adopting certification systems, it should be ensured that standards are measurable, required data can easily be collected and that the data is available to scrutiny.

## Working Group 4 Trade with Commodities for Bioenergy and Biofuels

### Key Question:

What are the opportunities and risks related to the promotion of trade with regard to food security and bioenergy use?

In her initial statement, Anne Ruth Herkes, Vice President of the Policy and Communication Department at BP Biofuels, UK, addressed perspectives of international bioenergy and biofuel markets and her company's related strategies. Hermann Hansen works in the area of Public Relations and Bioenergy Consultancy at the Agency for Renewable Resources, Germany. He gave examples of the increasing production and demand for bioenergy products, such as wood pellets and biofuels, related to the question whether a regulatory mechanism for trading biomass and bioenergy products was required or not. Charlotte Hebebrand, Chief

Executive of the International Food and Agricultural Policy Council, USA, had to cancel her journey to Berlin at short notice, but shared her insights on trade regulations that apply for biomass and bioenergy products and their potential impact on developing countries by sending a written outline of her statement.

The group discussed potential benefits from new trade opportunities arising through the development of global bioenergy markets. This could contribute to food security by creating a positive income. A thriving agricultural sector could also slow down migration from rural to urban areas within a country, as well as migration to other countries. However, food security concerns have to be addressed specifically by national and international policies. Public and private large scale investments in the bioenergy sector should be screened according to their impact on food security.

#### Recommendations 1 & 2: Potential Benefits of Trade

- Trade should be used as a method to create a positive income in poor rural households. Thus, improving food security and preventing migration. This pertains to migration within a country as well as between countries
- Trade could help to use global resources efficiently and reduce greenhouse gas emissions by making use of comparative advantages in different countries. This pertains to raw materials as well as processed products

#### Recommendations 3 & 4: Bioenergy Trade and Food Security

In order to seize opportunities offered by biofuel trade for the benefit of the people suffering from malnutrition in developing countries

- Governments should formulate specific policy frameworks on bioenergy that include food security concerns. For this to happen, countries should enter in national consultations. Assistance can be offered in order to document best practice and cases
- The promotion of investments in export-oriented bioenergy production should proactively take into consideration food security and sustainability requirements, such as the involvement of small scale farmers. From that perspective, guidelines should be developed and based on a large variety of policy options and cases. Development agencies such as the World Bank and EIB should be required to comply with this requirement

#### Recommendations 5 & 6: Research and Monitoring

- Research and monitoring in and by the country of origin should be encouraged in order to optimize trade policy toward food security
- As a first step, a set of indicators should be elaborated on to assess the benefits of biomass / bioenergy trade and the risks for food security at the local level (i.e. secondary administrative level)

### Working Group 5 Renewable Resources and Bioenergy Production as a Chance for Rural Development – with a Special Focus on Small Farmers in Developing Countries

#### Key Question:

How can biomass production and bioenergy usage best serve the development of rural areas?

Zhang Yuhua is Vice President of the Center of Energy and Environmental Protection of the Chinese Ministry of Agriculture. She gave a statement on the opportunities arising from the substitution of fossil energy in China and how these opportunities could be seized, particularly with regard to the development of rural areas. Arnaldo da Silva Walter, Researcher and Lecturer for the Energy Planning Group, State University of Campinas, Brazil, addressed the question whether bioenergy could be an “engine” for the development of rural areas by referring to the Biodiesel Programme of Brazil. He outlined the need for an enabling and conducive policy environment. The focus of G.N.S. Reddy, Vice President of BAIF Development Research Foundation, India, was on the integration of smallholders into decentralized energy production and supply systems based on biomass production and utilisation. Lastly, James Shikwati, Executive Director of The Inter Region Economic Network, Kenya, shared ideas and cases regarding the possible impact of bioenergy production on the income of smallholder farmers and the relevance for rural development.

According to the group, bioenergy production has to be embedded in an overall strategy for rural development, including empowerment and participation directly targeting poor small-scale farmers (not hoping for

## WORKING GROUPS

the “trickle-down-effect”!). In this context, the existing “joint rural development donor concept” was mentioned, which should be further developed to include bioenergy and biofuel issues. Furthermore, the importance of technological development targeting smallholder production of bioenergy for local use, and decentralised energy supply systems in rural areas was discussed. The issue of safety nets for mitigating adverse effects of bioenergy development on poor people was raised also in this working group.

### Recommendations 1-4: Bioenergy as Part of an Overall Strategy for Rural Development

It was recommended to:

- enlarge the “joint donor concept for rural development” with a special emphasis on the assessment of potentials and risks for bioenergy options at local, regional and national levels while not compromising food security and ensuring all three dimensions of sustainability (social, economic, environmental)
- apply principles of a joint and comprehensive rural development concept toward harmonious national policies and strategies
- harmonize relevant policies areas and regulatory frameworks (agricultural, energy, environment, transportation)
- ensure effective participation of rural stakeholders’ interests in decision-making processes

### Recommendations 5-8: Social Safety Nets

In view of the fact that high energy prices and high level subsidies for biofuels have contributed to higher food prices, and considering the problem of displacement of rural population as a result of the establishment of large-scale biofuel plantations, it was recommended to:

- reinforce the need for safety nets to ensure the *Right to Food* (e.g. minimum food income)
- provide international support to national governments to enforce or develop safety nets (e.g. national buffer stocks)
- apply certification or other appropriate monitoring mechanisms which should include *Voluntary Guidelines* provisions regarding the *Right to Food*
- conduct research in order to support monitoring and policy decisions

### Recommendation 9: Development of Appropriate Technologies

Ensuring the commercial development of efficient and appropriate production and processing technologies, targeting smallholder farmers, rural population and energy supply in rural areas through enhanced private and public investments.



# Summary of Conference Recommendations



Ursula Heinen receiving the conference recommendations from Alexander Müller

The conference recommendations were summarized by the conference chairman, Alexander Müller. The following is a summary of his final presentation to the plenary meeting. It can be downloaded in full from the website below:

[http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Mueller\\_final\\_conclusions.pdf](http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Mueller_final_conclusions.pdf)

Bioenergy is a market that is growing dynamically and is largely policy driven. In order to ensure sustainability and global food security, this market requires an international agreement for a regulatory framework. Certification of bioenergy production could be one approach, which requires political support and special efforts. Furthermore, bioenergy production should be embedded as part of a broader concept for sustainable, pro-poor rural development with a clear focus on the alleviation of poverty.

The recommendations of the conference **Policies against Hunger VI: Bioenergy and Food Security** could be summarized as follows:

1) The actual increase in food prices has various causes, one of which is the increasing production of bioenergy from cereals and other agricultural commodities.

Various other factors, such as reduced harvests, depleted stocks, an increasing demand due to population growth and changed consumer habits, and rising fossil energy prices have contributed to the actual situation on global food markets. However, bioenergy production is an additional factor which will rapidly gain importance with regard to its effect on food prices.

2) The contribution of biofuels to energy security and reduction of greenhouse gas emissions is limited.

Due to its relatively low importance for global energy supply (with a share of only 1% of the market for liquid fuels for the transport sector) the contribution of biofuels to energy security will remain very limited. Thus, the costs of reducing greenhouse gas emissions by promoting the first generation biofuels are relatively high. The development of more advanced technologies will have more potential in this regard; however, it is still unclear when such second generation technologies will become available and what their overall impact will be.

3) The human *Right to Food* and global food security has to have priority over energy production from agricultural resources.

The conference participants stated a clear need to implement the *Right to Food* and the *Voluntary Guidelines*. A "*Right to Food Checklist*" for developing bioenergy sector policies was suggested as a measure to support policy development – both on a national and multinational level. Furthermore, the impact of bioenergy production on food security should be assessed and monitored with a particular focus on gender aspects, land use and land tenure.

**4)** Energy production from agricultural resources should be based on an internationally agreed upon definition of sustainability and rural development which focuses on the alleviation of poverty.

Special importance has to be given to the need to reach an international agreement on sustainability criteria as a base for certification of biomass and bioenergy products. Such criteria have to include economic, ecological and social aspects of sustainability. Certification is seen as one instrument, which could not fully address the issues of sustainability and food security alone, but needs to be accompanied by broader policy measures.

**5)** Bioenergy production has to be embedded as part of a broader rural development concept which is adapted to local conditions and focuses on the reduction of poverty.

It was concluded that the focus of bioenergy production must distinguish between local and regional markets on the one hand and global bioenergy markets on the other. Hence, different strategies are required which should clearly allow one to envision the needs and opportunities of smallholder farmers. The need to establish national strategies for bioenergy development was identified based on the assessment of bioenergy potentials. Its goal is to achieve more coherence across various policy fields including agricultural, environmental, economic and social policies.

**6)** Bioenergy is a product with a strong potential for future international trade. This requires a regulatory framework which guarantees food security for the most vulnerable parts of the population.

International trade with bioenergy products requires the development of new trade policy instruments, which include taking global food security into consideration. The WTO framework should be respected, but should also be used to develop new policy options.

# Outlook

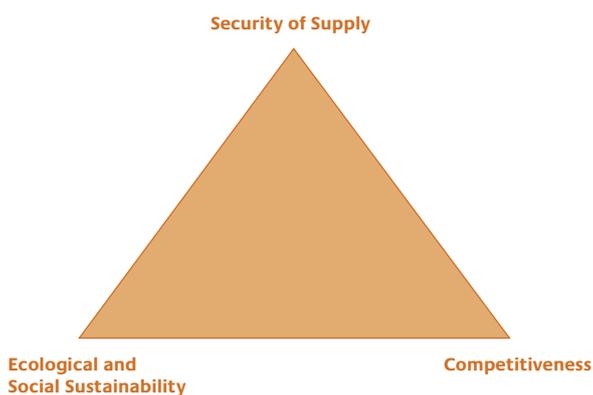
The closing speech was held by Klaus Töpfer, former Head of the United Nations Environment Program. The key points of the speech are summarized below.

## Bioenergy and Food Security: A highly-dynamic topic

A lot of movement has recently occurred regarding topics pertaining to bioenergy and climate change. The publications of IPCC and Sir Nicholas Stern, along with unusual meteorological phenomena, induced a change of opinions and mentalities worldwide, which was in fact overdue. It's always the same: when you start too late, you have to run faster. Action is required, but there should still be enough time to reflect on how to set the right priorities in order to avoid negative consequences in the future.

## Conflicting Goals: The Magic Triangle

As to energy policy in general, the “magic triangle” of potentially conflicting goals could also be applied to the bioenergy sector.



Coming closer to one of the goals automatically means being farther from another. Instead of focussing on just one goal, several goals need to be considered simultaneously.



*Klaus Töpfer*

## Questioning Energy Demand and Consumption

Instead of asking how much additional energy could be gained from biomass, the focus should be on the demand. A lot more energy would be available, if energy consumption was effectively reduced. This is even more important, as bioenergy use in the present form tends to drive food prices up and implies negative effects on biodiversity.

In this context, the idea of “carbon justice” can serve to illustrate how extensive CO<sub>2</sub> emissions lead to continued injustice. It is estimated that an average CO<sub>2</sub> emission of 2 t per capita would help to limit climate change to 2° C. In India, the CO<sub>2</sub> emissions per capita amount to 1 t, in Africa 0.3 t and in Germany 10.5 t. “Carbon justice” implies that emission rights beyond the average 2 t would need to be purchased from people elsewhere in the world – at high cost for those causing disproportionate CO<sub>2</sub> emissions.

## The “Harvest” of Bioenergy to Limit Climate Change

A solid valuation of the real contribution of renewable energies (including biomass) to climate protection is urgently required. This sort of assessment should be based on a “life cycle analysis”, thus including the entire production process.



# Projects presented at the Conference

## Policies against Hunger VI – Bioenergy and Food Security

Project Title	Country	Presented by	Organisation	Weblink
Mainstreaming food security concerns into assessments of bioenergy potential through targeted analysis and field activities that support rural development	Peru, Thailand, Tanzania and others	Andreas von Brandt and Irini Maltsooglou	FAO	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/vonBrandtFAO.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/vonBrandtFAO.pdf</a>
Jatropha-Biodiesel from Eroded Soils in India	India	Eberhard Holder	Daimler AG	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Holder.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Holder.pdf</a>
Decentralized electricity generation and biomass gasification with community participation in southern India	India	G.N.S. Reddy	BAIF India	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Reddy.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Reddy.pdf</a>
GTZ Peru: activities in biofuels	Peru	Dagmar Joerdens-Röttger	GTZ	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/JoerdensRoettger.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/JoerdensRoettger.pdf</a>
Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems- Africa (COMPETE)	Africa	Veronika Dornburg	Utrecht University, The Netherlands	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Dornburg.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Dornburg.pdf</a>
Brief presentation of ERA-ARD with a focus on 1st Coordinated Call for a transnational Research Activity Food & Energy		Alex Percy Smith, Marc Bernard	ERA-ARD	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/PercySmith_Bernard.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/PercySmith_Bernard.pdf</a>
Social, economical and ecological standards for sustainable biogas production: A pilot study from the UNESCO Man & Biosphere Reserve Rhön in central Germany	Germany	Joachim Jenrich	UNESCO Man & Biosphere Reserve Rhön	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/JenrichRhoen.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/JenrichRhoen.pdf</a>
Biofuels and food security: Case of non-edible oils in India. Experiences of German Technical Cooperation	India	Divya Kashyap	GTZ	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/KashyapIndia.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/KashyapIndia.pdf</a>
Eco Biofuel Integrated Complex (EBIC) & Palmoil Industrial Cluster (POIC) for food and fuel security and sustainable development	Thailand	Suriya Ayachanun	Chumporn Palm Oil Ind. (Public) Co.	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Ayachanun.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Ayachanun.pdf</a>
Pro-Poor Bioenergy Crops and Systems for Developing Countries – The case of Sweet Sorghum	India and other countries	Mark Winslow and K. Purnachandra Rao	Alliance Bioenergy Platform/ ICRISAT	<a href="http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Winslow.pdf">http://www.policies-against-hunger.de/fileadmin/redaktion/dokumente/dokumentation/Winslow.pdf</a>

# List of Abbreviations

<b>BAIF</b>	BAIF (Bharatiya Agro Industries Foundation) Development Research Foundation, India
<b>COMPETE</b>	Competence Platform on Energy Crop and Agroforestry Systems for Arid and Semi-arid Ecosystems- Africa
<b>DG</b>	Directorate-General
<b>EBIC</b>	Eco Biofuel Integrated Complex
<b>EIB</b>	European Investment Bank
<b>ERA-ARD</b>	The Agricultural Research for Development (ARD) Dimension of the European Research Area (ERA)
<b>EU</b>	European Union
<b>FAO</b>	Food and Agriculture Organization of the United Nations
<b>FIAN</b>	FoodFirst Informations- und Aktions-Netzwerk
<b>GBEP</b>	Global Bioenergy Partnership of the G8+5
<b>GHG</b>	Greenhouse Gas
<b>GTZ</b>	Deutsche Gesellschaft für Technische Zusammenarbeit GmbH
<b>ICRISAT</b>	International Crops Research Institute for the Semi-Arid Tropics
<b>IDRC</b>	International Development Research Centre, Nairobi
<b>IEA</b>	International Energy Agency
<b>IFPRI</b>	International Food Policy Research Institute
<b>ILO</b>	International Labour Organization
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>OECD</b>	Organisation for Economic Co-operation and Development
<b>POIC</b>	Palmoil Industrial Cluster
<b>R&amp;D</b>	Research and Development
<b>UK</b>	United Kingdom of Great Britain and Northern Ireland
<b>UN</b>	United Nations
<b>UNESCO</b>	United Nations Educational, Scientific and Cultural Organization
<b>USA</b>	United States of America
<b>WTO</b>	World Trade Organization

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