



## Short Article

# Potential Impacts of Bioenergy Development on Food Security

Bioenergy has recently become the most dynamic sector of the global energy economy. Modern bioenergy technologies are advancing rapidly with much of the interest focusing on liquid biofuels, in particular ethanol and biodiesel. Over the next 15 to 20 years we may see biofuels providing a full 25 per cent of the world's energy needs (UN-Energy, 2007). Bioenergy has a variety of benefits including rural infrastructure development, employment, diversification of biofuel feedstocks, and climate change mitigation. However, the rapid expansion of global biofuel and its potential impact on food security – food shortages or increased food prices, for example – has prompted calls for a close examination of the food security trade-offs of biofuel production, and for an international commitment to ensure that food security, natural resources and sustainability are not impaired.

Bioenergy is energy produced from organic matter or biomass. It can come from biomass that is burned directly, or further processed into solid, liquid or gaseous fuels. These fuels are produced from sugar, starch, vegetable oil, or animal fats, and are used for producing heat or generating power.

The driving forces behind bioenergy development include its ability to compete with petroleum prices, a reduction in global greenhouse gas emissions, and enhanced economic development in rural areas. Sugar cane biofuel in Brazil accounts for 4.2 million jobs, and palm oil in Indonesia is expected to create 2.5 million jobs in the next few years (Cassman and Liska, 2007). On the other hand, the use of food crops for biofuels could lead to an increase in food prices and consequent undernourishment of the poor, particularly in those countries which are net food importers or experience regular food shortages (Cassman and Liska, 2007).

The precise impacts of biofuels on food security are not clear, and the relationship between the two requires further illumination. UN-Energy warns that the current debate over the allocation of biomass production between food crops, food crop feed stock, and biofuel – the 'food-feed-fuel' debate – tends to be overly simplistic and fails to reflect the full complexity of factors that determine food security (UN-Energy, 2007).

There are four dimensions of food security: availability, access, stability, and utilization (FAO, 2007). Further expansion of biofuel production has the potential to affect each of these dimensions at household, national, and global levels. Whether the effects are positive or negative depend on many factors. For instance, whether biofuel development is beneficial or detrimental to the welfare of a

household or a country will basically be dependent on whether the household or the country is a net buyer or a net seller of energy services or food products.

The effects of increased bioenergy production have particular bearing on food availability, and access to food. The extent to which biofuel production could threaten the availability of food supplies depends on the extent of land, water, and other productive resources diverted away from food production. Since liquid biofuel and food production are currently substitutes, it is necessary that modern biofuel systems be well designed to augment local food production (FAO, 2007). For example, the inclusion of leguminous nitrogen-fixing crops (either as biofuel feedstock or as food crops) in crop rotations would enhance the overall productivity of the system.

Access to food, especially by low-income consumers, may also be compromised by rises in food prices due to biofuel production. Since price increases have already occurred in major feedstock markets of sugar, maize, rapeseed oil, palm oil, and soybean, the prices for crops are now determined by their value as a feedstock for biofuel rather than their value as human food or livestock feed (Cassman and Liska, 2007). Such price rises threaten the daily dietary intake of the poor. Thus, income gain to producers due to higher commodity prices may be offset by the negative welfare effects on consumers as their economic access to food is compromised. Nevertheless, widely and cheaply available energy services in rural areas resulting from biofuel development would encourage farm and non-farm productivity growth that would positively affect regional growth.

An important consideration in the future development of bioenergy is the planting of fuel feed stock on new areas of unused land to reduce the negative impact on food security.

UN-Energy recommends more research and analysis on the long-term impacts of bioenergy on food security. It suggests the development of an analytical framework based on country typologies and the four dimensions of food security (UN-Energy, 2007). It also recommends more agricultural research, and the enhancement of agricultural productivity and sustainability. This will reduce the tension among food, feed and biofuel production by increasing overall agricultural output in a sustainable manner. ■

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*(References available upon request)*

Flash **BREAKING**

### More Rural Chinese to Benefit from Basic Living Allowance System

This year, a basic living allowance system in rural areas was formally established in China, 10 years after a similar system was setup in urban areas. Over 23 million rural people already benefit from the system and an extra 10 million needy rural people will be covered by the end of this year. The current subsidy, 28 yuan (US\$ 3.68) per beneficiary is equivalent to the basic living costs minus the individual's average income. "The 28 yuan is not a huge amount of money, but it has different values to different people," Civil Affairs Minister Li Xueju said.

People's Daily Online, 2007, More Rural Chinese to Benefit from Basic Living Allowance System, <http://english.people.com.cn/> (23 August 2007).

### China Suspends Farmland Reforestation Plan

The Chinese government has decided to suspend its plan of converting 1.07 million hectares of farmland into forest, in order to meet its pledge of reserving a minimum of 120 million hectares of land for farming during the 11th Five-Year Plan (2006–2010). The rapid rate of farmland losses forced the reforestation plan to be suspended. The government will continue to compensate farmers who have already converted their farmland into forest. The farmland reforestation has so far converted 24.3 million hectares of fragile farmland on hillsides into forests. Currently China has 122 million hectares of farmland, an area very close to the minimum that should be maintained to ensure the country's food supply.

People's Daily Online, 2007, China Suspends Farmland Reforestation Plan, <http://english.people.com.cn/> (11 September 2007).

### 250 Billion Rupee to India's Farm Sector Announced on I-Day

India will increase its spending on the country's ailing farm sector by at least Rs 250 billion (US\$ 6.14 billion) in a bid to boost agricultural output and ensure inclusive growth. This was announced by Indian Prime Minister Dr. Manmohan Singh in his Independence Day speech in New Delhi on August 15. The government will also spend more on education, healthcare and rural development. Dr. Singh said that the ambitious programme, which focuses on drought-prone areas, would enhance the livelihoods of Indian farmers and increase food production. India's US\$ 854 billion economy has grown at an average rate of 8.6 per cent in the past four years, making it the world's second fastest growing major economy after China.

OneWorld South Asia, 2007, 250 Billion to India's Farm Sector Announced on I-Day, <http://southasia.oneworld.net/> (21 August 2007).

### More Crop per Drop

A report delivered by Mr. Greg Hunt, Australia's Parliamentary Secretary for Foreign Affairs, titled "More crop per drop" shows that research funded by Australia's overseas aid programme is helping countries such as China, Pakistan and India to save 1,000 billion litres of water per year and has the potential to save Australian farmers a further 2,000 billion litres a year. The water management projects conducted by the Australian Centre for International Agriculture Research (ACIAR) are joint research projects by scientists from Australia and developing country partners, focused on efficient use of water for crop development. Over the past 25 years, ACIAR has invested in 98 projects that improve water productivity in the

Asia-Pacific region.

ACIAR, 2007, More Crop per Drop, <http://www.aciar.gov.au/> (6 September 2007).

## Bangladesh Advised to Expand Safety Net for Ultra Poor

In Bangladesh 27 million people live in extreme poverty and are severely undernourished. A further 29 million people are below the 'calorie-intake-based' poverty line. At a recent international conference on the dynamics of food and cash transfers, a selection of experts spoke out about the importance of safety net programmes for helping the ultra poor combat nutritional deficiencies. A variety of views and recommendations were put forward at the conference. It was noted, for example, that despite a general decline in poverty there are still alarming levels of food poverty in Bangladesh. Calorie intake has not improved despite increased expenditure in non-food sectors, so it was suggested that food transfer under the safety net programmes is a preferable option to the transfer of cash. Nevertheless, it was also pointed out that a combination of food and cash is the preferred approach because cash is the best option in certain circumstances and food is the best option in others. The government and donors were encouraged to give more attention to the comprehensive expansion of the safety net programmes. The conference recommended more efficient and timely cash distributions, targeting of specific pockets of poverty, transferring resources from dysfunctional to functional safety net programmes, and the use of high-nutrition foods such as *atta* (flour) which are more effective than rice in safety net programmes. The conference was organized by the Bangladesh Ministry of Finance in collaboration with World Food Programme and the UK's Department for International Development. ■

Based on The Daily Star, 2007, Expand Safety Net to Help Ultra Poor Cross Poverty Line, <http://www.thedailystar.net/> (11 September 2007).

## Asia in a Paddy Over Rice

As the average annual temperature rises in many part of the world, one of the biggest concerns is the impact on agriculture. This issue is of special concern to Asia where rice is the dominant food crop and relies heavily on fresh water. Rice is the staple food for half of the planet's population and most of its poorest people. The advances in plant breeding and farm management that sustained the Green Revolution are now facing new challenges such as high rice prices, difficulty maintaining yields, local demand outstripping supply, and increasingly expensive rice imports. In addition, climate change is already affecting Asia's ability to produce rice and this could slow or even undermine efforts to reduce poverty. To address this problem, the International Rice Research Institute is already working on ways to help Asian rice farmers adapt to adverse circumstances, establishing a group of experts to assess the consequences of climate change on rice production and find ways of overcoming or mitigating them. New management systems are being developed to optimize water and nutrient inputs and to ensure long-term sustainability. But given the scale of the challenges facing Asia's rice industry and its food security, more money is needed to fund expanded research. ■

Based on Richardson, Michael, 2007, Asia in a Paddy Over Rice, The New Zealand Herald, <http://www.nzherald.co.nz/> (27 August 2007).

## Achieving Pro-poor Development in a Globalizing World

The world's ten richest people earn about as much from their wealth in a year as the annual earnings of the entire population of Tanzania. What can be done to curb this excessive inequality and reduce poverty? Research from Cornell University, USA, examines the relationship between globalization, inequality and poverty. The researcher shows that the way globalization is currently being managed prevents the benefits reaching some sections of the world's poorest people. Key findings of the research include: inequality within countries is often high, but the global income gap between the richest and poorest people is far greater; examining the per capita income of the poorest one-fifth of the population provides a better measure of a country's well-being than the traditional focus on per capita income of the entire population; country-level efforts to reduce inequality and poverty can lead to the flight of capital and skilled labour; and international co-ordination problems in the area of anti-poverty and anti-inequality policies are acute. The researcher puts forward, among others, several policy proposals. First, workers should be given a stake in the equity earnings of companies. Second, governments should own a fraction of equity in all firms, with the equity income being used to fund compensation schemes for workers losing out from globalization. Third, a new international agency should be established to co-ordinate global, cross-country anti-poverty strategies. Finally, this agency should also be charged with co-ordinating the equity income scheme outlined above. ■

Based on ID21 Global Issues, 2007. Achieving Pro-poor Development in a Globalising World, <http://www.id21.org/> (15 August 2007).

## Foreign Investors not Keen on Viet Nam's Agriculture

The lack of a long-term foreign direct investment (FDI) drawing strategy, together with poor rural infrastructure, low labour skills and high risks, are still big barriers preventing foreign investors from accessing Viet Nam's agricultural sector. Out of US\$ 63.7 billion of FDI only \$3.78 billion (5.6 per cent) is for agriculture. Foreign investors focus their money on projects that allow them to quickly recover their investment. Consequently, 76 per cent of the total FDI in agriculture is in projects such as producing animal feed and processing agricultural products, rather than developing biotechnology and creating new plant varieties. Investors and local governments also face the problem of accessing the vast areas of land required for their projects. This is due to the lack of a clear policy on compensation, tariff, and investment incentives. Some state agencies are developing a strategy to attract and raise the effectiveness of foreign investment in agriculture. The strategy has three major aspects: raising the effectiveness and quality of planning tasks and development plans of each agricultural branch; promoting foreign investment in agriculture; and making complete mechanisms and policies to facilitate this investment. The strategy recommends that official development assistance (ODA) capital should be used to develop rural infrastructure, implement vocational training programmes for farmers, scientific research, and technology transfer in agriculture. Foreign investors will be encouraged to invest in agro-forestry processing, afforestation-wood processing, animal husbandry and animal feed production. ■

Based on VietnamNet Bridge, 2007. Foreign Investors not Keen on Vietnam's Agriculture, <http://english.vietnamnet.vn/> (19 August 2007).

## Flash EVENTS



### CAIWA 2007: International Conference on Adaptive and Integrated Water Management

12 - 15 November 2007

Radisson SAS Hotel Basel, Switzerland

Abstract Deadline: 31 August 2007

Info:

<http://www.newwater.uos.de/caiwa/>

### South Asian Conference on Water in Agriculture: Management Options for Increasing Crop Productivity per Drop of Water

15 - 17 November 2007

Raipur, Chhattisgarh, India

Abstract Deadline: 28 September 2007

Info:

<http://www.igkvvia.in/>

### United Nations Climate Change Conference

3 - 14 December 2007

Nusa Dua, Bali, Indonesia

Info:

[http://unfccc.int/meetings/cop\\_13/items/4049.php](http://unfccc.int/meetings/cop_13/items/4049.php)

### International Forum on Potato Science for the Poor – Challenges for the New Millennium Preliminary Announcement

25 - 28 March 2008

Hotel Libertador, Cuzco, Peru

Info:

[http://www.cipotato.org/Cuzco\\_conference/index.asp](http://www.cipotato.org/Cuzco_conference/index.asp)

## Book Review

# The Future of Small Farms for Poverty Reduction and Growth

Peter Hazell *et al.*, 2020 Discussion Paper No. 42, International Food Policy Research Institute (IFPRI), Washington, DC, USA, 2007.  
ISBN 0-89629-764-0.

The topic of this paper is challenging and contextual. It is published by the International Food Policy Research Institute (IFPRI) which established the initiative, "A 2020 Vision for Food, Agriculture, and the Environment" to develop a shared vision and consensus for action on how to meet future world food needs while reducing poverty and protecting the environment. The paper consists of five main chapters including: an introduction; a discussion of the role of agriculture; a deliberation of the case for and against small farms; a presentation of strategies for small farms; and conclusions. It is supported by not less than seventy references on small farms and rural development for poverty reduction.

Of the developing world's three billion rural people, more than two-thirds or nearly 500 million, reside on farms of less than two hectares. A challenge of rural development is whether developing countries should continue investing in their agricultural development particularly in small farms. Even in countries where good prospects for agricultural growth remain, it may no longer be the case that small farms have a promising future. Important questions include: what is the role of agriculture? should the agricultural development efforts emphasize small or large farms? and, what are the policy implications for decision-making?

Agriculture is likely to become more important to rural development and rural poverty alleviation. Farming has high potential to create jobs and to increase returns on the assets of poor people. Recent comparisons made across countries show that increases in agricultural productivity are closely related to poverty reduction. In most rural areas, moreover, there are few alternatives to farming as a large-scale source of jobs. However, changing global conditions, donor policies, and the characteristics of today's poor countries, are now widely acknowledged as making this task much more difficult. Additionally, current policy preferences prevent the State from taking as active a role in fostering agricultural development as it has in the past. In most cases, agriculture proves central to development efforts, either as a leading sector or as a supporter of other sectors.

IFPRI's paper develops a typology of country contexts that considers the differing roles and needs of small-scale agricultural development. This typology helps clarify current debates regarding the potential for small-farm development as a driver of growth and poverty reduction, and the roles of governments and the private sector in promoting such development.

In terms of efficiency, small farms typically make intensive use of land by extensive use of labour. With regard to equity and poverty

reduction, therefore, small farms are preferred to large. On the other hand, external economic shocks affect both small and large farms. But other developments may pose more severe challenges for smallholdings. New technologies requiring more capital inputs, mechanization, or high levels of education, may disadvantage smaller farms. More worrying are the implications of changes to marketing chains. Supermarket operators are becoming increasingly important in parts of the developing world. Supermarkets impose very strict standards for the quality, consistency, and timeliness of supply.

An explanation of policy implications of promoting small-farm development is the most interesting section of this paper. Policies for smallholders need to vary according to context. Looking at smallholder development for growth and equity, a contemporary agenda would have three central elements including: (i) ensuring the stability of the macro economy and state funding on agricultural and rural infrastructure; (ii) encouraging farmers to follow demand and to improve marketing systems in order to access a greater share of the market; and (iii) initiating institutional innovations to provide inputs and services for the benefit of small farmers. Successful intervention on behalf of small farm-led agricultural development requires governments' interest and capacity to mobilize the required support.

Finally, the authors conclude that the case for smallholder development as a primary means to reduce poverty remains compelling. The policy agenda, however, has changed. The challenge, they suggest, is to improve the workings of markets for outputs and inputs, and provide financial services that overcome market failures. Meeting this challenge calls for innovations in institutions and a new thinking on the role of the State in agricultural development. But unless key policymakers adopt a more assertive agenda toward small-farm agriculture, there is a growing risk that rural poverty could increase dramatically and waves of migrants to urban areas could overwhelm available job opportunities, urban infrastructure, and support services.

In general, the paper is easy to digest. In addition to a straight forward narrative and a comprehensive conclusion and executive summary, it is supported with informative tables and figures. The subject matter is particularly relevant to developing countries, providing guidance on how to set up small farms for sustaining agricultural development leading to growth, and alleviating poverty in rural areas.

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