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### Short Article

## Food or Fuel: Basic Question of Biomass Use and Ways of Improving Farmers' Income

"Biomass" is all the vegetation on earth such as plants, trees, algae and products that come from them, excluding fossil resources like petroleum. Biomass is principally an environmentally friendly resource and renewable as it comes from solar energy through photosynthesis. Based on these characteristics, bio-fuel is one of the most promising ways to utilize biomass. Bio-fuel is a liquid fuel for transportation made from biomass. The most common types of bio-fuels are ethanol made from carbohydrates and bio-diesel made from vegetable oil.

Biomass as an energy resource is classified into waste and crops. Wastes are used as fuels in electric power generation with refuse incineration. Food crops which are rich in carbon dioxide or oil are also used for energy, especially as bio-fuel. Sugarcane and other sugar- or starch-rich crops are fermented by yeast and other microorganisms and ethanol is produced, which can be purified into fuel-grade ethanol. Vegetable oils can be transformed into bio-diesel through chemical reactions, which can be used by most conventional cars without alteration of the engine.

However, there is a common objection to bio-fuel produced from food crops, called "food versus fuel controversy". Skeptics believe agricultural production will be diverted away from food crops in developing regions which suffer from hunger. Here we will introduce two views on this issue, both from pro-bio-fuel policy organizations but with differing opinions.

The Foundation for Alternative Energy (FAE), a Slovakia based non-governmental organization, expresses an optimistic view regarding this controversy saying it has been exaggerated in many cases. It stresses the argument should be based on "the real situation of food supply and demand" including under-utilized agricultural production potential, the increased potential for agricultural productivity, and the advantages and disadvantages of producing bio-fuels. They exemplified the case of Brazil, which is famous for its pro-alcohol fuel program. The food shortages and price increases that Brazil suffered a few years ago were blamed on the pro-alcohol program.

However, a closer examination doesn't support this view because of the 55 million ha of land area devoted to primary

food crops, only 1.7 million ha was used for ethanol production. Furthermore, crop rotation with sugarcane, the principal material for bio-fuel production in Brazil, has led to an increase in food crop production, while some by-products such as hydrolyzed bagasse (residue of squeezed sugarcane) and dry yeast are used as animal feed.

The U.S. Department of Energy (DOE) provides a different opinion to this issue. They say, although ethanol production from maize can be expanded greatly, its primary use is for animal feed and food products. Starches such as those in the maize kernel and sugars make up only a very small portion of available biomass materials. Cellulose and hemicellulose form the bulk of most plant materials including many materials now regarded as waste. Making ethanol from cellulose and hemicellulose dramatically expands the types and amount of available feedstock for bio-fuels. Currently, cellulosic ethanol is kept from commercial availability due to high costs and technological uncertainty. However, after these hurdles are overcome, it is expected to become an important supplement of food crop origin bio-fuels.

Demand for bio-fuel is growing rapidly. In 2003, 6.9 per cent of the cars purchased in Brazil functioned with alcohol (NEDO, 2004). U.S. bio-diesel use increased from about 7 million gallons in 2000 to more than 20 million gallons in 2001 (DOE). Increasing bio-fuel demand can result in greater benefits not only for the environment but also for the agricultural economy by improving farmers' income because the most common food crops which are used as materials for bio-fuel are secondary crops, which can be grown in marginal areas where there is no comparative advantage for growing major crops. One major bottleneck of these secondary crops' production, is the lack of appropriate demand. If bio-fuel demand can stimulate secondary crop production and if there is under-utilized land suitable for these crops, then the controversy can be solved by using potential productivity in marginal areas. As the market is immense (just think about current petroleum fuel consumption), starch ethanol will be able to coexist with cellulosic ethanol ■

Written by Tomohide Sugino, Project Leader, AGRIDIV Project, UNCAPSA, Bogor, Indonesia.

*(References available upon request)*

## FlashBREAKING



## Increasing Farmers' Income: Rural Reform in China

The average net annual income of farmers has increased 16-fold, from 134 Yuan in 1978 to 2,366 Yuan in 2001. According to Li, a scientist from the Institute of Agricultural Economics, Chinese Academy of Agricultural Sciences, this tremendous achievement is due to rural reform implemented by the Chinese government since 1978. The main reform has been the change from the commune system to individual freedom for farmers to make their own decision on production and marketing.

Li, S., 2003. Government Measures to Increase Farmers' Income and Develop the Rural Economy in China. Value Addition to Agricultural Products, JIRCAS International Symposium Series, No. 11 (March 2003).

## Poverty and Population Fertility

There is good evidence that lower fertility in high fertility countries does contribute to economic growth and poverty reduction. At the household level, however, high fertility rates contribute to the inter-generational transmission of poverty.

Jones, G., 2003. Population and Poverty in Asia and the Pacific, Fifth Asian and Pacific Population Conference.

## Safer Cassava for Human Consumption

When the cyanide content of cassava consumed as food exceeds 40 ppm it can endanger human health. To overcome this, the Bogor Biotechnology Research Institute, Indonesia, together with the Centre for International Agricultural Research, Australia, developed a fast and practical method of measuring cyanide content. It is so practical and fast that it can be applied easily in the field without requiring special analysis skills.

Sinar Tani, 2004. Cara Cepat Mengukur Kadar Sianida Ubikayu (10-16 March 2004 edition).

## DFID Support to Agricultural Research

The Department of International Development (DFID) of the UK will provide an additional £30m commitment to the Consultative Group on International Agricultural Research (CGIAR) over the next 3 years. Through scientific research CGIAR works to achieve sustainable food security and reduce poverty in developing countries. DFID is also committing £5m over 3 years to the new African Agricultural Technology Foundation (AATF), which aims at delivering affordable technology to African farmers.

DFID, 2003. DFID Announces New Commitment to Agriculture, DFID Press Release (17 December 2003).

## Reducing Poverty: Agriculture Matters

In most countries in Asia and the Pacific, it would be difficult to achieve a more pro-poor pattern of growth without increased agricultural prosperity. Those countries, such as China and Viet Nam, which have been most successful during certain periods in reducing poverty, have emphasized agricultural and rural development. The economic transitions in China and Viet Nam started with agricultural reforms and the early success of Indonesia in dramatically reducing poverty had a great deal to do with channeling resources into rural areas, such as for basic infrastructure, social services and intensification. The importance of agricultural and rural development to reduce poverty is justified by the fact that the rural population still represents a large share of the total population in many countries. In Nepal this share was 88 per cent in 2001 and in Cambodia 83 per cent. In Bangladesh, Sri Lanka and Viet Nam it was about three-quarters. However, some countries do not provide sufficient resource allocation to promote agricultural and rural development. For example, the lack of public investment in irrigation has impeded agricultural growth in many countries ■

Based on McKinley, T., 2003. The Macroeconomics of Poverty Reduction, Initial Findings of the UNDP Asia-Pacific Regional Programme, Bureau for Development Policy, New York (August 2003).

## Empowering Women: Food Security and Poverty Reduction

Empowering women through gender equality in the developing world is one of the most daunting measures to reduce poverty identified by the Millennium Development Goals (MDGs). The strong correlation between the unequal treatment of women and global poverty is irrefutable. In particular, women's access to land, water, trees and other resources is critical for achieving household food security in many ways, but rights over these resources tend to influence women's incentives and authority to invest in the land. Furthermore, because services such as credit or extension are also likely to be directed to male landowners, the agricultural productivity of women without land rights, the poorest of the poor, is further restricted by a lack of complementary inputs. Women cannot escape poverty and are forced into a cycle that can extend to children and generations of families, a phenomenon that increasingly calls for mainstreaming gender issues across development sectors and throughout all eight MDGs ■

Based on Meinzen-Dick, R., 2004. Women's Property Rights and Food Security, International Food Policy Research Institute, [www.developmentgateway.org](http://www.developmentgateway.org).

## Trade-offs in Groundnut Trade Liberalization

As with other agricultural products, groundnut markets are distorted. China and India are found to have the largest distorting effects on world prices for groundnut, and groundnut oil. Their apparent competitiveness is artificial. If the groundnut markets were liberalized, producers in Argentina and sub-Saharan Africa would gain benefits. Complete trade liberalization could lead to welfare gains of US\$ 72 million and rural income of US\$ 124 million for African countries. On the other hand, trade liberalization would make China and India net importers. Consumers in OECD countries would pay higher prices for these products but with little implication on poverty effects. Consumers in India and China would be better off. The major challenge in successful negotiations to open groundnut product markets is to overcome the entrenched protected interests in China and India ■

*Based on* Beghin, J.C. And Aksoy, A., 2003. Agricultural Trade and the Doha Round: Lessons from Commodity Studies, Briefing Paper 03-BP 4, (July 2003), Centre for Agricultural and Rural Development, Iowa State University.

## Effective Collaborative Research for Sustainable Rural Development

Japan International Research Centre for Agricultural Sciences (JIRCAS) in cooperation with the Department of Agriculture, Thai Ministry of Agriculture and Cooperatives, and the Centre for Applied Economic Research, Kasetsart University, held an international workshop in Bangkok on February 19-20, 2004, to exchange views and innovations emerging from various international collaborative agricultural research activities for development, to explore the possibilities of developing new partnerships with institutions in both developing and developed countries, and to establish a more effective and efficient project/program. The ideas developed in the workshop were (i) to increase dialogues in order to identify focal points of interest, benefits for participation in collaborative work, and needs and niches of research; (ii) to develop an information centre including an inventory of research and development programs as well as existing databases from FAO, Asia Pacific Agricultural Research Information System and other relevant websites; (iii) to develop a common platform and to combine it with existing research networks, and (iv) to integrate capacity building for young scientists into research programs. The President of JIRCAS, Dr. Iwamoto, concluded the workshop by announcing his plan to upgrade the JIRCAS office in Bangkok to a regional office as an initiative towards realizing the proposed actions ■

*Sent by* Miyata, Satoru, 2004. Japan International Research Centre for Agricultural Sciences, Japan.

# FlashEVENT



### Scaling Up Poverty Reduction: A Global Learning Process, and Conference

25 - 27 May, 2004  
Shanghai, China

Contact:

Kim Cuenco

Phone: (202) 458-9107

E-mail: [Ecuenco@worldbank.org](mailto:Ecuenco@worldbank.org)

### Training Programme Organic Farming Systems, Analysis, Design, and Management

21 June - 02 July, 2004  
International Agricultural Centre (IAC)  
Wageningen, the Netherland

Contact:

Mrs C.A. Alblas-Burton

Head of Student Affairs

Phone : +31 317 495 495

Fax : + 31 317 495 395

E-mail : [training.iac@wur.nl](mailto:training.iac@wur.nl)

Website : [www.iac.wageningen-ur.nl](http://www.iac.wageningen-ur.nl)

## Book Review

# Rural Development and Poverty in South Asia

ESCAP Development Papers No. 23, United Nations, New York, ISBN 92-1-120323-7, 2003

"For the predominantly agricultural economies of South Asia rural development is the core issue of development. Unfortunately in the rush to achieve other political and economic objectives, it has received a generally low priority in national development. As a result, South Asian rural societies have suffered a steady erosion in the living conditions and productive infrastructures, as evidenced by the high incidence of poverty."

In three introductory sentences, the author, with acute precision, defines his topic: the lack of attention to rural development resulting in higher poverty in societies where agriculture is still predominant. In the "Overview" section, he investigates the reasons for such abandonment: a bias in favor of rapidly growing urban areas, and the determination of development policy by those who do not live in the rural communities. Exploring history, he raises several other points, from the influence of the British imperial rule that widened social disparities to the inability of post independence and nationalist governments plagued by influential feudal-like elements, or the growth oriented vision favoring large farmers with marketable surpluses.

Another argument used to explain why rural development failed in South Asia is its multiplicity of objectives and related lack of a central focus. Reviewing these objectives such as raising agricultural productivity, alleviating poverty, providing employment opportunities, promoting a suitable environment for community uplift, providing access to basic facilities, bridging the rural-urban gap in income and economic opportunities, or enhancing the role of technologies, the author conducts a critical appraisal of what went wrong and why. For instance, productivity gains mainly concerned grains, but edible oils, milk, and animal proteins remained inaccessible to the undernourished poor. These gains also benefitted wealthier classes of farmers. As far as poverty alleviation is concerned, while recognizing international concern the author advocates a stronger focus in the national agenda, where poverty alleviation should no longer be considered as a "by-product of rapid growth".

In the third chapter, a survey concerning how far some rural development programmes in South Asia have fulfilled the above-mentioned objectives is presented. After introducing a conceptual vision of major development approaches, it goes through 50 years of rural development programmes. The 1950-1975 period is characterized by Community

Development, Integrated Rural Development or Infrastructure Development. Then, structural adjustment reform significantly reduced the capacity of the State to lead big development schemes in a context where economic growth, so far a key factor in poverty reduction, suffered severe setbacks. Thus, a new paradigm emerged with lesser State and more community intervention and was implemented thanks to the commitment of individuals or groups willing to spend time working for, and with, the rural poor.

The author points out some new and common features of these programmes: participatory approach, social mobilization, location in unpromising areas, minimum foreign assistance, charismatic leaders followed by institution building, and overall a focus on genuine problems specific to the programme area.

The following, brief chapter in the book highlights the reduction of public expenditure on agriculture and agricultural research, the leakage of funds, and the fact that direct beneficiaries have been little involved in design and implementation. Finally, in the concluding chapter, the author criticizes the micro dimension of poverty alleviation projects that are "incapable of generating the synergy needed to eliminate poverty"; it stigmatizes the political disregard to land and land tenancy issues, and advocates rural industrialization and rural governance.

While focusing on South Asia, this book is sound for a larger audience. The points made are strong and valid, not only for other predominantly agricultural countries in Asia and the Pacific, such as Lao, Viet Nam, Cambodia, Bhutan, Myanmar, Papua New Guinea and Mongolia but also for countries where there is a marked imbalance between the rural and urban sectors such as China, the Philippines, Thailand and Indonesia. It shows very clearly that poverty reduction is conditioned by the success of sound rural development programmes resulting from pro-poor policy orientations. It is priority reading for scientists, policymakers and development workers concerned with the fate of the rural poor in the region ■

*Reviewed by* Dr. Robin Bourgeois, IS/DB Programme Leader, UNCAPSA, Bogor, Indonesia.