



Increasing Biofuel Demand and its Impacts on Markets and Poverty – the Output of Two Recent Seminars and the BIOMASS Project

*Tomohide Sugino**

In the previous *Palawija News*, Robin Bourgeois suggested that we should link promoting Clean Renewable Energy (CRE) to poverty alleviation (*Palawija News* 23(4) p. 6-11). With that idea in mind, this article describes the output of two seminars recently held in Japan. Both seminars focused on how a rising demand of biofuel would affect the international agricultural commodity market. Then, the outline of the JIRCAS and CAPSA's collaboration project (BIOMASS) will be presented. The project focuses on the effects of an increasing biomass energy market on poverty alleviation and sustainable development.

Seminar one: Agriculture market outlook – special focus on biofuel development

The seminar was organized by the Policy Research Institute of the Japanese Ministry of Agriculture, Forestry and Fisheries (PRIMAFF). It was held on 19 June 2007 in Tokyo. Dr. Loek Boonekamp, Head of the Agrifood Trade and Markets Division, Directorate for Trade and Agriculture of OECD presented the paper "The Aglink Cosimo Model – Its Use in Market Outlook and Policy Analyses". Dr. Boonekamp has been responsible for OECD's agriculture market outlook since 1995. The Aglink Cosimo model is a large-scale partial equilibrium model of global agricultural markets. The Aglink Cosimo modelling system is presently one of the most comprehensive partial equilibrium models for global agriculture. The model is one of the tools used in generating baseline projections that underlie the OECD-FAO Agricultural Outlook¹.

The main conclusions of the 2007 Agricultural Outlook were presented during the seminar. They are summarized below.

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* Senior Researcher, Japan International Research Center for Agricultural Sciences (JIRCAS), Tsukuba, Japan.

¹ <http://www.agri-outlook.org/>

Expected world commodity prices

Price expectations for major agricultural commodities were calculated as the average of world prices of the coming ten years. This year's price projection (average price 2007-2016) is significantly higher than last year's projection (average price 2006-2015). The difference between the two projections is especially large for cereals (e.g. maize: +28 per cent), dairy (e.g. cheese: +25 per cent) and animal products (e.g. beef: +20 per cent).

Cereal demands for biofuel

It is anticipated that in 2016, around 60 per cent of Brazil's sugar cane production, and more than half of the EU's oilseed production will be used for bioenergy, bio-ethanol and biodiesel respectively. The biofuel industry will become a large consumer of cereals. Cereal demands for the biofuel industry will heavily depend on future feedstock and oil prices, and on the advent of new technologies and government policies. At this moment in time, it is therefore difficult to make precise predictions for future demands of the biofuel industry. This will cause the biofuel industry to act as a major uncertainty of cereal markets.

Increased world trade in agricultural commodities

Compared to the average figures of 2004-2006, the imports of agricultural commodities in 2016 will show a large increase. Above all, beef, vegetable oils and butter will increase with more than 40 per cent. As for the export, most growth will come from developing countries, especially Argentina and Brazil. OECD countries will decrease their share of world export but they will still remain dominant traders in the international market. Very few developing countries will dominate imports, except China with its oilseeds import, which will represent more than 70 per cent of the total world import in 2016.

Projections for world market commodity prices

Projections show a trend of rising commodity prices, as mentioned before. In fact, price increases already have been observed in several oil and starch crops. Some analysts warned that this might be a negative impact of the rising biofuel demand. Before testing this hypothesis, it is useful to refer to two basic facts. Firstly, declining global stocks of agricultural commodities provide a context for more volatile markets. Secondly, extraordinary weather patterns such as El-Nino have lowered global cereal production and exports. An increased ethanol production has surely also raised wheat and coarse grain consumption. However, the drop in supplies has been much larger than the rise in demand, at least during 2006-2007 world cereal markets. Therefore, the biofuel industry cannot be taken to be solely responsible for the higher crop prices.

Long-term market and trade impacts of growing bioenergy demand

Then, what about long-term impacts? We need to remember that currently without government support, ethanol is not an economically viable option in most countries. The economics of biofuel production is highly influenced by the crude oil prices. In 2004, when the oil price was around US\$40/barrel, sugar cane ethanol in Brazil was the only economically feasible option. With the oil price level of April 2006, around US\$70/barrel, maize ethanol was also economically feasible in the USA. However, US\$100/barrel is required for wheat and sugar beat ethanol, and rape oil biodiesel in the EU. It is anticipated that cereal based ethanol production will grow rapidly in the coming ten years and it will require a substantial quantity of maize and wheat. The consequences of this will be: (i) lower wheat and maize exports; (ii) land to be drawn out of oilseed production; and (iii) overall higher crop prices. In conclusion, crop prices are expected to be higher and more unstable on the long term. This situation will provide higher incomes for some farmers, but higher costs for others.

Seminar two: the 9th joint biomass seminar

The seminar was held in Tsukuba, Japan on 13 June 2007 and was organized by the Consultative Assembly of Independent Administration Agency for Biofuel Research and Development. One of the papers named "Enhancement of Bioethanol and its Implication to Cereal Trade in the USA and China" presented during the seminar will be described shortly here. The paper was presented by Dr. Ruan Wei, Senior Researcher, Norinchukin Research Institute, Agricultural and Forestry Central Bank.

Transformation of US energy policies and increasing maize demand

The USA plans to reduce its reliance on Middle East oil by 75 per cent by 2025. To reach this, the government is trying to increase ethanol production to 7.5 billion gallon under the 2005's new Energy Law. Most analysts suggest, however, that the target is set too low, considering that the ethanol production in the USA already reached 4 billion gallon in 2005. This amount equals 3 per cent of total gasoline sales in the country. Maize demand for ethanol production is increasing and represented 14.4 per cent of the total maize production of 2005, while the share of maize export is 19.3 per cent. However, it is anticipated that maize demands for ethanol production will as soon as 2007 surpass export amounts.

From 'alternative energy' to 'price support'

Until recently, cereal production in the USA heavily depended on the export market. Exports presented sometimes more than 40 per cent of total maize

Message from the Director

In the last month an increasing flow of news items originating from Western Europe and the USA have indicated that prices for major food commodities are rising, some commentators go so far as to state that a reversal of the long-term trend of decreasing prices of agriculture products is now upon us.

The scarcity in maize, wheat and rice is largely attributed to two sets of factors; first, increased production risks and partial harvest failure as a result of global warming; and second, increased demand for starch commodities, land and investment due to the boom in bioenergy, especially for crops such as maize in the USA but also palm oil.

The major question in the news is whether the secular trend of constantly declining prices of agricultural commodities is coming to an end. It would be very good news indeed for the farming community if this were so, but not so nice for poorer consumers. Another thought which one frequently encounters is that the bioenergy boom will benefit the poorer segments of the farming community.

There are many reasons to regard the idea of a trend reversal with deep caution. The process of globalization and opening of national economies is for agriculture still in an early stage. The benefits of globalization are slow in coming, one hears everywhere. Agriculture remains the main area of contention in WTO negotiation, and is subject to huge allowances in the developed world. For agriculture, globalization simply means that products are increasingly sourced from an expanding number of production centres supplying (growing) consumer centres, ending with more

competitive prices. This process has been on going since the 18th century and its roots, in the form of regional trading networks, can be traced back even further. Although there is indeed pressure on production centres, there are countless new production centres with potential to be involved more intensively in production and trade.

The second reason to be careful with the idea of reversal of agriculture commodity prices is also structural, and relates to the current phase of structural transformation, which is an on-going and global process. The gap between labour productivity in agriculture and other sectors is still huge, only in countries such as the USA labour productivity compares to productivity in industry.

There are reasons to hypothesize that the short-term pressure exercised by the biofuel industry is in fact very much a part of an attempt of some governments to transfer welfare to the farming community, either in-country or through trade. In developing countries, however, there are as yet no signs that this leads to an increased rate of rural poverty alleviation, although it is perhaps too early to tell.

The current spike in commodity prices is likely the result of interplay between increased climatic uncertainty and start-up demand for the dynamic bioenergy sub-sector.

The question of whether we are experiencing a reversal of the long-term decline in agricultural commodity prices needs to be addressed with empirical and factual research, so as to avoid unnecessary expectations and develop appropriate policy responses.

Taco Bottema

production. However, due to shrinking export market in late nineties the cereal price dropped much. The first ethanol plant led by farmers started in 1992 in Nebraska, USA. It was just after the establishment of tax incentives for small-scale ethanol producers and the compulsory use of ethanol based gasoline combustion by the Clean Air Act in 1990. Though the objective of ethanol development was to develop alternative energy, it also aided rural development and created price support through stimulating domestic maize demand. It also contributed to reducing farm subsidies. Some people however criticize that only the primary recipients of subsidies have changed from farmers to the biofuel industry.

USDA agricultural baseline projection to 2015

According to prospects made by USDA (United States Department of Agriculture) for the next decade, US maize export will continue to be only around 20 per cent of its total production. Farm gate price of maize will remain relatively high during the same period. The total planted area of major cereals will be stable, but maize will occupy a larger area mainly due to the increase of continuous maize cropping. As genetically modified maize becomes more popular, the yield of maize will be continuously improved. The competitiveness of US maize production in the world market will be overwhelming during the prospected period. Maize production is anticipated to catch up with its growing demand due to yield increases.

Ethanol production in China

China enlarged its ethanol production in 2002, because of the increasing amount of maize in stock. In 2005, four ethanol plants supported by the government produced one million ton of ethanol from 3.3 million ton of maize, which is 2.4 per cent of the total maize production. In nine provinces of China, 8 to 12 per cent of ethanol is added to gasoline making gasohol (alcohol mixed gasoline). The total amount of gasohol consumption is around 10 million ton, which is around 20 per cent of the total gasoline consumption in the whole country. It is targeted that the ratio would reach to 50 per cent in 2010. To attain this target, 10 million ton maize will be required for ethanol production. This reflects 7.8 per cent of total maize production of 2005.

Restriction of maize based ethanol plant

Recently, the demand of maize for industrial use increased very rapidly, by more than 20 per cent per year. The reason of expansion is not only ethanol production but also growing cornstarch demand. In response to the decreased sugar cane exports from Brazil, China is replacing sugar cane by cornstarch. In December 2006, the Chinese government restricted the establishment of new maize ethanol plants. They are now recommending using alternative raw material for ethanol production such as sweet potato, cassava and maize stalks. Government's subsidies for maize ethanol production were reduced from 1,883 yuan/ton in 2005 to 1,628 yuan/ton in 2006, and 1,373 yuan/ton in 2007.

Current food production in China and future prospects

Cereal yields in China are much lower than that of other major cereal producers like the USA. If yields can be improved, this large yield gap presents a potentially large production increase. The Chinese government declared to want to maintain its high level of self-sufficiency (approximately 95 per cent) for three major cereals (rice, maize and wheat) while it will depend on import to meet the rising soybean demand. A higher production of rice, maize and wheat will be achieved mainly through increases in yields, and not by expansion of arable land. However, USDA warns that in spite of China's effort, China will become a maize importing country and it may be a possible factor of price hike in the international market.

Outline of the BIOMASS-project

The above two seminars reported the emerging biofuel production and suggested possible disturbances to the international market in the long run. Though the tangible proof of this impact is not yet given. For poor

rural households in developing countries, both positive and negative impacts of expanding biofuel are anticipated. These households commonly produce secondary crops, which are the major stockpiles for biofuel production. Therefore, they might enjoy better prices and a better income due to a raise in commodity demand. Rising food staple prices will however harm small-scale farmers who are net food consumers.

In 2006, JIRCAS and CAPSA started a collaborative research project "Impact Analysis of Expanding Biomass Energy Use to Rural Poverty in Tropical Asia (BIOMASS)" through Special Co-ordination Funds for Promoting Science and Technology of the Ministry of Education, Culture, Sports, Science and Technology of the Japanese Government. Before the start of the project, some data was collected to determine the focus of the project. This determined that the project will focus on socio-economic aspects of biofuel development, especially its implication to poverty alleviation and sustainable development.

After the Kyoto Protocol came into effect in 2005, more attention has been paid to the development of the biofuel industry. This was not only seen in industrialized countries that have an obligation to reduce green house gas emission under the Kyoto Protocol, but also in developing countries such as Indonesia. Indonesia became a net oil importer and suffers from a huge burden of subsidies for transportation fuels.

Various mechanisms approved under the Kyoto Protocol are planned to initiate a capital flow to developing countries for investments in renewable energy projects. The Clean Development Mechanism (CDM) is proposed as a part of the 'flexibility mechanisms' of the Kyoto Protocol. CDM is expected to promote investments in the development of renewable energy in developing countries, especially in disadvantaged areas where secondary crops, the raw materials for biomass energy, are produced.

The tropical countries in Asia have a large potential for biomass production. It is expected that various large-scale projects concerning the production of some major energy crops (e.g. cassava, oil palm, sugar cane etc.) will be implemented in near future. Initiatives are expected to be taken by both industrialized countries through CDM schemes and by tropical Asian countries themselves. The Indonesian government targets for biofuel to account for about 10 per cent of the country's energy portfolio by 2010. They also expect the sector to create around 3 million jobs and cut foreign-exchange expenditure from importing fuel by US\$10 billion by 2010².

Since most of the energy crops are mainly produced by small-scale farmers, we can say that the expanding use of biofuel will probably provide precious

² The Jakarta Post, 25 July 2006.

opportunities for rural people to improve their welfare. An increased demand for energy crops can contribute to increase the price of these products. Moreover, the installation of biofuel plants will create job opportunities especially for the rural population. The bulkiness of the raw material makes transportation to processing sites expensive. Therefore processing sites are commonly placed near the production sites, meaning that jobs created are mainly for rural people.

On the other hand, if the government fails to manage the biomass development appropriately, some negative impacts will occur such as deforestation, conflicts with food production and negative effects such as water contamination of an increased use of chemical inputs.

To ensure sustainable biofuel development, which is compatible with rural poverty alleviation, it is crucial to analyse how the expanding demand of biomass energy will affect rural society, especially small-scale farmers and poor people who are the potential beneficiaries. The Indonesian government has established a national body in charge for issuing an approval of a CDM project in Indonesia, based on the Environmental Ministry Decree of 2005, namely the National Commission for CDM in Indonesia. Once the application of CDM is submitted, the commission evaluates the project proposal. The evaluation is based on national sustainable development criteria and indicators, which reflect environmental, economic, social and technological aspects. These criteria and indicators can work as practical benchmarks to design the sustainable biomass resource management systems. Estimating possible impacts of biomass energy use in some specific areas will provide useful information and lessons. Lessons that can be used in the policy formulation process to support more sustainable use of local resources and larger contribution to poverty alleviation.

After the completion of the BIOMASS study, all findings will be integrated and published as a working paper. It will be disseminated to policymakers through CAPSA's channels such as country seminars and CAPSA's website. At regional level, the outcome is expected to feed into current regional studies of JIRCAS. JIRCAS has been co-ordinating a research project that aims at developing analytical tools for biomass resource management systems in tropical Asia. Such tools enable policy planners in Asia's developing regions to design sustainable and pro-poor biomass resource management policies. JIRCAS has also been one of the co-organizers of the Asian Biomass Workshops, which have been held three times since 2004. The information collected in the project will be delivered to the participants of these workshops.

Participants include researchers and policy planners in Asia's developing countries that work for rural poverty alleviation by expanding the production of biomass raw material.

A Case Study on Intergenerationally Transmitted Poverty

Masdjidin Siregar*

To reduce the number of Indonesian population living under poverty line, the government has been implementing various poverty reduction programmes such as the poor village development programme (IDT), infrastructure development in poor villages (P3DT); sub-district development programme (KDP); urban poverty alleviation (P2KP), and other sectoral poverty reduction programmes, as well as Social Security Net (JPS) during economic crisis, and direct cash transfer (BLT) and rice for the poor (*Raskin*) after the increase of oil price. In spite of the fact that these programmes have reduced the number of the poor to some extent, the number of people living under the poverty line is still high. Based on the World Bank's definition of the poverty line, that is \$2 per capita per day, nearly half of the Indonesian population is poor.

Recently, the Vice President said that Indonesia would need at least US\$111 billion in new investments in order to achieve higher economic growth, essential to significantly reduce the country's currently high poverty and unemployment rates. However, while growth still matters because it may provide significant benefits overtime (for example through creating jobs), growth promoting policies may in certain instances also harm some of the poor. The overall results depend on the extent to which benefits of growth are allocated appropriately and delivered effectively¹.

Since the nature of poverty is complex, more information concerning poverty is required. There are three reasons why studies on intergenerationally transmitted poverty are essential. Firstly, our knowledge on poverty is still limited. Secondly, many poor people are chronically poor, that is, they remain under the poverty line for long periods of time. Thirdly, chronic poverty tends to be transmitted from one generation to another. For these reasons, CAPSA is carrying out a case study using a life history approach. One study takes place in a village located in Central Java. The objective of the study is to gain experience with the methodology, and identify what causes people to move into poverty, why they stay in poverty and how they can get out of poverty.

* Consultant

¹ See also: Andrew Shepherd, 2007. Understanding and explaining chronic poverty: an evolving framework for Phase III of CPRC's research. Overseas Development Institute (ODI), London. CPRC Working Paper 80.

Data collection

In order to have samples of three generations from each family tree, it is first necessary to have the samples from the 'current' generation, those who were born in the time period of 1940 and 1950. Information on this and the categorization of households into poor and non-poor households can be obtained from the village office². This information is then used to carry out a stratified sampling of poor and non-poor households. In this study, these sample individuals are called the 'first selected individuals of the second generation'.

From each of the first selected individuals of the second generation, the study team then traces his/her parents, brothers and sisters to draw the family tree. His/her parents then become the individual/household sample of the first generation, while his/her brother(s) and sister(s) along with himself/herself become individual/household samples of the second generation. In case where both his/her father and mother have died, the information on life history of the first generation is collected from the second generation, i.e. their son(s) and daughter(s), and neighbour/relative of the first generation who is still alive. All children of the second generation become the samples of individuals/households of the third generation.

Using a set of semi structured questionnaires, the study team directly interviews as many as possible individuals/households of three generations from each sample family tree about individual life history. In the case that a respondent is not reachable as she/he lives far away from the sample village, her/his life history is gathered from her/his relatives.

Analytical Method

1. Identifying factors affecting mobility of individuals/households:

Factors that may cause individuals/households move into poverty, remain in poverty or move out of poverty can be classified into transmitted capital (such as material, human, environmental/natural, socio-economic, and socio-cultural capital) and institutional related opportunities and constraints (such as government, community, household, and market opportunities and constraints)³. In this study, however, it is hypothesized that the most important factors affecting upward or downward mobility are transmitted material and human capital. The main reason is that material or physical capital and human capital are among the easiest to measure⁴. This does not imply that other factors will not be taken into consideration, since

even transmitted material and human capital itself are affected by the other factors. For example, the way a father bequeaths land to his children might be affected by the transmitted socio-cultural capital. Another example relates to how parents decide on who among the children can continue education to a higher level given their limited resources. Such a decision might be affected by the consensus among the members of household.

It is also important to find out the extent to which each government's poverty-related programmes have resulted in an upward mobility of an individual/household across poverty line in the sample village. The other important things to scrutinize are how input, output, labour, land, and credit markets might become the opportunities or constraints for upward mobility of individuals/households.

2. Categorization of the sample individuals/households:

Individuals/households can be grouped into four categories of poverty dynamics, namely those who are (i) moving into poverty; (ii) remaining chronically or transitory poor; (iii) moving out of poverty; and (iv) not poor. In most cases, the categorization of individuals/households into the four categories is usually determined by comparing the level of individual/household income for a relatively long period of time with the poverty line. However, the collection and computation of data on individual/household income for a relatively long period of time is extremely expensive and time-consuming. This is particularly true when we consider that income level for the entire life of an individual/household fluctuates. Therefore, the categorization of individuals/households in this study is carried out on the basis of information given by village officials, relatives and the individual herself/himself.

An example of the results of the life history interview

Ambal Village, the sample site, is located on a hilly area of Banjarnegara District in Central Java. Its elevation is about 900 metres above sea level. Farmers in this village usually grow maize for their staple food and chilli as a cash crop. Another important source of income is livestock (cows and goats), but recently farmers have difficulty in finding grass to feed the livestock, because they have scarce land resources. In the last ten years for additional income farmers have been growing trees (*Albazia*) which can be cut down and sold five years after planting.

² Although not entirely reliable, the list of poor households is available at the village office as the list is required in government programmes for the poor such as the direct cash assistance for the poor, rice for the poor, and health services for the poor.

³ See: Karen Moore, 2001. Framework for understanding the intergenerational transmission of poverty and well-being in developing countries. International Development Department, School of Public Policy, University of Birmingham. CPRC Working Paper 8.

⁴ For discussion on transmitted assets including social, cultural and 'psychological' assets, see Agnes R. Quisumbing, 2006. Investments, bequests, and public policy: Intergenerational transfers and the escape from poverty. International Food Policy Research Institute. Washington D.C.

Ten family trees consisting of about 90 individuals are interviewed using a life history approach. Each individual in a family tree is classified into a category according to movements in and out of poverty. For example, Table 1 indicates there are three categories of poverty dynamics from one particular family tree:

- Remaining in poverty (five individuals/households),
- Moving out of poverty (two individuals/households), and
- Not poor (four individuals/households)

education than primary school. His two sons, (1.2.2.F) and (1.2.3.F), migrated to Jakarta. However, since their income in Jakarta was low, the father asked them to come back to the village to help him in farming and work as daily-wage farm labourers.

2. Individuals who have moved out of poverty

The youngest child, (1.3.F) finished middle school with the support of her parents and brother. Having finished she worked in a large city to help her parents.

Table 1. Individuals of three generations in a particular family tree sample by category of poverty dynamics

Category	First Generation.	Second Generation			Third Generation						
	1 (M, F)	1.1 (F)	1.2 (M)	1.3 (F)	1.2.1 (F)	1.2.2 (M)	1.2.3 (M)	1.3.1 (F)	1.3.2 (M)	1.3.3 (M)	1.3.4 (M)
1. Moving into poverty	-	-	-	-	-	-	-	-	-	-	-
2. Remaining poor	X	X	X	-	-	X	X	-	-	-	-
3. Moving out of poverty	-	-	-	X	X	-	-	-	-	-	-
4. Not poor	-	-	-	-	-	-	-	X	X	X	X

Notes: F=female; M=male; 1.2.3 (M), for example, denotes the third grandson from the second child (a son) of the first generation in this particular sample family tree.

1. Individuals who remain in poverty

All individuals who remain in poverty have extremely limited transmitted material and human capital. Although the first generation (1.M) was aware of the importance of education, only the third child (1.3.F) could go to middle school, while the first child (1.1.F) and the second child (1.2.M) could not even attend primary school due to limited resources.

That the first generation (1.M) was hard-working can be seen from the fact that he cultivated 4,000 m² of village official compensation land⁵ under a shared cropping arrangement with a village official in addition to his own land (1,250 m²). However, he was disheartened when he realized for the first time that his first daughter had a mental illness. For this reason, his son (1.2.M) had to come back from working as construction worker to help him in farming and support his daughter (1.2.F) to finish her middle school of teaching.

As the only son, (1.2.M) received the inherited land of 1,250 m² from his father (the first generation). Since the size was too small, he also cultivated additional 3,500 m² of land under a shared cropping agreement. As a key person in his community, he really understood the importance of education for his children, but he could not support his children to go to a higher level of

After her father and mother died, she married a relatively affluent widower, a government employee, who had already had five children. Encouraged by her husband, she finished high school and become a teacher in a public kindergarten. Being aware of the importance of education, she could support her daughter and three sons until they accomplished their education up to college levels. She also assists her elder sister who has a mental illness and provides opportunity for her nephews, (1.2.2.M) and (1.2.3), to cultivate her lands under shared cropping arrangement.

Another individual who has moved out of poverty is (1.2.1 F). Initially, she worked as a housemaid in a city after she completed primary school. Her first husband died not long after she gave birth to a child. While working in another city, she married someone who owned a car workshop. As a result, she managed to move out of poverty and built a house on land she inherited in the village and assisted her father and two brothers.

3. Individuals who are not poor

All children of (1.3.M) could pursue their education up to college level. Since her only daughter, (1.3.1.F), who works for the local community health centre, is a hard working woman, she could buy agricultural land, cattle, and goats for her husband to cultivate and raise,

⁵ Depending on his/her position, a village official has the right to cultivate a piece of village land (*bengkak*) instead of having salary.

and she also has built a private health centre before her father died.

The first son of (1.3.M), that is (1.3.2.M), is also a hard working person, working as a shoe seller after he finished his technical high school for several years regardless of the high status of his mother and father. He even became a bus driver while studying at college. He is now a teacher in a public primary school.

The second son, (1.3.3.M), accomplished his health college after his father died. He is now working for the local health centre. The third son, (1.3.4.M) has also accomplished his college and now he is teaching at a middle school. Both sons are still living with their mother. They are waiting to gain permanent status as government employees.

General findings

While the analysis is still in progress, some preliminary findings are already apparent. It is worthwhile to present a conceptual framework and conclusions from a national-level study on pathways out of poverty by McCulloch, Timmer, and Weisbrod (2007)⁶. Thus we can compare the micro-level and qualitative results of the case-study with macro-level, quantitative results and determine if the policy recommendations from the national study are applicable to the sample village. According to the conceptual framework of McCulloch, Timmer, and Weisbrod, there are two paths out of poverty.

1. The first path is the move from low to high productivity farming, including both intensification of traditional crops and diversification of higher value crops. This pathway also includes individuals who exit poverty by gaining better paid employment on higher productivity commercial farms.
2. The second path is when some people exit poverty because of increases in the productivity and profitability of their non-farm enterprises, or by finding better-paid employment in such enterprises. This pathway applies to both rural and urban non-farm activities.

The two pathways are complemented by two 'transition phases' through which individuals may reach the second route out of poverty.

1. Transition Path A is a shift out of subsistence agriculture towards petty trading and manufacturing, as well as local non-tradable service provision. This corresponds to the long-term *sectoral* shift from agriculture to non-agricultural activities as countries develop.
2. Transition Path B is rural-to-urban migration. In this transition, the migrants may come from both households currently engaged in low-productivity

agriculture and those currently engaged in petty trade, manufacturing and services. This relates to the shift in *location* of economic activity seen during the structural transformation.

Using panel data from Indonesian Family Life Survey, they come to several conclusions as follows: (1) boosting agricultural productivity is an important pathway out of poverty; (2) engagement of farmers in rural non-farm enterprises is an important route out of rural poverty; (3) the non-farm sector acts as a stepping stone between rural agricultural work and more productive non-farm employment in urban areas; (4) improved education is one of the most effective routes out of poverty, for two reasons. First, better education enables people to participate in higher productivity activities. Second, better education raises the probability of being able to make changes that give access to the other pathways out of poverty.

The section below is aimed at identifying the extent to which the findings from this case study are consistent with the findings of McCulloch, Timmer, and Weisbrod.

1. Land as the basic physical asset

The general situation in the field indicates that poor people in the sample village are struggle to find ways out of poverty due to their limited assets particularly in the forms of farmland and livestock (cows and goats). The average farm landownership in the village is only around 0.2-0.4 hectares of dry land. Average landholdings will become smaller after land is distributed to several children when passed on from one generation to another.

They usually grow maize for their staple food and chilli as a cash crop. In the last ten years farmers have been growing trees (*Albazia*) for additional income. Another important source of income is livestock. Farmers who raise cows and goats usually keep them in their house for safety reasons. The typical holdings are 1-3 cows and/or 2-5 goats. Unlike goats that are usually raised for reproduction, cows are raised for fattening and sold after several months or so, depending upon needs for cash. Recently, however, farmers in the village have difficulties in finding grass to feed the livestock. In such a situation, it is difficult for the farmers to increase their livestock holdings, for example through a better access to formal sources of formal credit, unless they can access alternative feed sources.

2. Is boosting agricultural productivity is a pathway out of poverty?

Given the limited physical assets in the village, it is unlikely that agriculture through improved productivity can be a pathway out of poverty even if

⁶ Neil McCulloch, C. Peter Timmer and Julian Weisbrod, 2007, Pathways out of poverty during an economic crisis: an empirical assessment of rural Indonesia. Center for Global Development, Working Paper No. 115.

farmers have access to formal credit, competitive inputs and output markets, and improved agricultural technology. Instead, the non-farm sector seems to be the only pathway out of poverty. Thus far, however, non-farm activities in this village are still limited to palm sago processing and small-scale production of bamboo baskets. Identification of other possible non-farm activities in this village requires further study.

3. Is migration a pathway out poverty?

Using a life history interview approach, this study failed to confirm that migration to large cities such as Jakarta, Bandung and Semarang is a significant pathway out of poverty. Most migrants from the sample village are unskilled and obtain work as construction workers (for male migrants) or housemaids (for female migrants). Their wages are just enough to cover their daily expenditures in urban areas and a small amount of remittances. In other words, to some extent migration has increased income but does not represent an important pathway out of poverty. This study also fails to show that rural non-farm sector acts as a stepping-stone between rural agricultural work and more productive non-farm employment in urban areas.

4. Is education a pathway out of poverty?

In general, farmers in the sample village are aware that education is important for their children's future. Nonetheless, most parents cannot afford to pay the

costs of education above primary school level mainly due to their low income and limited physical assets but also due to the fact grown-up children are expected to help their parents in farming. From the few cases where children were able to attend further levels of education, however, it may be concluded that education is a pathway out of poverty.

Conclusions

Four tentative conclusions can be drawn from the above discussion:

1. The methodology is useful to gain an in-depth understanding of poverty-dynamics and various causal factors. It does not lend itself well to standard statistical analysis and more creative methods of analysis need to be developed.
2. For those poor with scarce physical assets and farmland it is difficult to find pathways out of poverty. Additionally, for these poor, increasing farm productivity does not seem to represent a significant pathway out of poverty. Therefore, a thorough study on the development of non-farm enterprises is required to identify alternative pathways out of poverty.
3. The ability of rural-urban migration to provide a pathway out of poverty depends critically on the skill level of migrants.
4. Education is a pathway out poverty, but is still out of the reach of most of the poor.

CAPSA News and Activities

Food Security and Community Development in the Decentralization Perspective (SECOD)

The SECOD project is a collaborative study between UN-CAPSA and the Bureau of Planning, Ministry of Agriculture of Indonesia. The substantive work of the project was completed in December 2006.

CAPSA plans to publish the results of the project in the form of working papers on food security, poverty alleviation, and food-insecure household empowerment. These reports are presently in process of being translated.

Linking Small-Scale Mango Producers to the Dynamic Supply Chain in Indonesia: The Bimandiri Business Partnership Model (Regoverning Markets - REMARK)

The field work for the REMARK study was carried out in Asem Doyong village, Taman Sub-District in Pemalang, Central Java, from 12 to 20 April 2007 by a joint team from UN-CAPSA and the Center for Agricultural Policy and Agribusiness Studies, University of Pajajaran, Bandung, West Java. Through individual

interviews as well as focus group discussions in-depth information and data was collected from farmers, wholesalers, and local government officials in the area to develop a comprehensive picture of the unique marketing system developed by Bimandiri.

To complete the data collection, the team visited the Ministry of Agriculture of Indonesia, Directorate for Fruit Crops of Director General of Horticulture. In addition, the team visited Pasar Induk Kramat Jati, the traditional market and biggest vegetable and fruit centre in Jakarta.

A meeting was conducted in Bandung, 26-27 May 2007 to evaluate and arrange the available data and information, and to discuss the outline of the study report. The report was finalized by the end of June.

Outlook and Prospect of Secondary Crops Development in Wetland Area (OUTLOOKSEC)

A detailed project document for the OUTLOOKSEC project has been formulated, based on the planning meeting of 14 February 2007. In addition, the research implementation guidelines was prepared and discussed

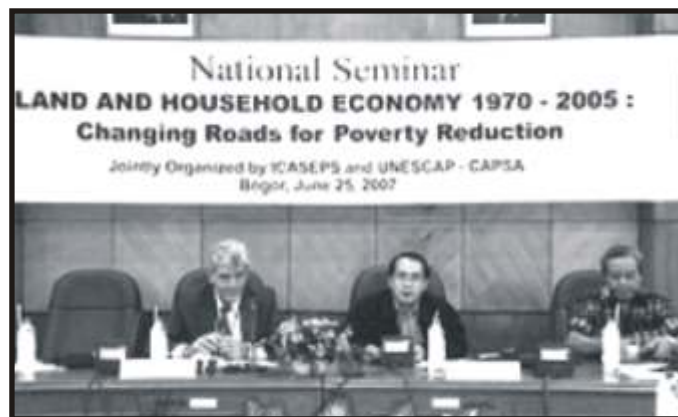
in July 2007. It mainly consists of the structured and semi-structured questionnaires and secondary data relevant to the research objectives.

The field study was carried out in July through September 2007 by the research team in Garut, Sumedang and Kuningan in West Java. The study focuses on the three main secondary crop commodities, namely maize, soybean and groundnut.

The project report is expected to complete in November and will be followed-up by a one-day seminar organized in December 2007 in Bogor.

A National Seminar on “Land and Household Economy 1970-2005: Changing Roads for Poverty Reduction”

A seminar was organized by the Indonesian Center for Agricultural Social Economic and Policy Study (ICASEPS), Ministry of Agriculture of Indonesia, in cooperation with the UN-CAPSA, on 25 June 2007, at the ICASEPS office, Bogor, Indonesia. It was aimed: (i) to disseminate the approach and results of the study on long-term dynamics of rural poverty; (ii) to gain feedback from policymakers and research managers on



the improvement of the research agenda on the long-term dynamic in rural poverty; and (iii) to advocate policymakers and research managers to formulate policies and programmes for land and household economy for rural poverty reduction,

The seminar was attended by more than fifty participants consisting of the representatives from the Co-ordinating Ministry of People's Welfare and the National Development Planning Board; policymakers from the related directorate generals, research and development centres of the Ministries of Agriculture and Home Affairs; National Land Agency; universities; and international organizations.

The seminar was officially opened by Dr. Achmad Suryana, Director General of the Indonesian Agency for Agricultural Research and Development (IAARD).

Seven papers were presented and discussed during the seminars, included: (i) Effect of the Land

Certification Project on the Land Market and Smallholders; (ii) Family and Life Histories: the Case of Karangobar Sub-District, Central Java; (iii) Land and Household Economy: Analysis of National Panel Survey; (iv) Land and Household Economy: Analysis of Agriculture Census 1983-2003; (v) Pathways Out of Rural Poverty: the Role of Land and Labour Markets in Three Villages in East Java (1969-2006); (vi) A Brief Quarter Century Overview of Indonesia's Agrarian Policies; and (vii) Recent Agrarian History in Indonesia: Social Conflict and Violence. The proceedings of seminar will be jointly published by the ICASEPS and UN-CAPSA.

Impact Analyses of Economic Integration on Agriculture and Policy Proposals toward Poverty Alleviation in Rural East Asia (ECOIN)

Impact Analyses of Economic Integration on Agriculture and Policy Proposals toward Poverty Alleviation in Rural East Asia (ECOIN) is a collaborative research project between UN-CAPSA and Japan International Research Center for Agricultural Sciences (JIRCAS), conducted in seven countries and started in 2006.

The PAM analysis has been in progress for five study sites in Indonesia. The tentative results have shown that although the domestic production of target crops (three kinds of vegetable and cassava) has comparative advantage and is generally profitable, the degree of advantage and profit is different among production areas and the groups of farmers, regardless of participation in contract farming. Further analysis will be conducted to identify the reason for these differences and will be compiled as practical information to improve small-scale farmers' production cost structure in the era of regional economic integration.

Development of a Methodology for Analysing the Sustainability of Biomass Resource Use in Tropical Asia (BIOMASS)

Development of a Methodology for Analysing the Sustainability of Biomass Resource Use in Tropical Asia (BIOMASS) is a collaborative research project between UN-CAPSA and Japan International Research Center for Agricultural Sciences (JIRCAS), conducted in four countries and started in 2006.

The annual planning meeting of the project was held in the Institute of Strategy for Sustainable Solutions, Tokyo, Japan on 26 April 2007, followed by the subcommittee meeting in Forest and Forestry Production Research Institute, Tsukuba, Japan on 8 June 2007, to discuss the results of previous year's

study and work plan in FY2007. It was agreed that analysis will be done under several different scenarios of biomass energy development in the selected tropical Asian country. The expected changes on rural society and environment will be identified in each scenario. The overall results will be evaluated by using the national CDM sustainability criteria and indicators. All the findings will be integrated as a working report and other media and disseminated to policy planners as practical information to design pro-poor biomass resource management systems through CAPSA and JIRCAS's schemes. The project will cover selected sub-regions in Indonesia, considering its large potential of biomass production and policy concerns to alternative energy development.

Eco Summit Conference, Beijing, China

The Eco Summit 2007 was held in Beijing, China, from 22 to 27 May and was organized by the Ecological Society of China and Elsevier. The subject of the conference was "Ecological Complexity and



Sustainability: Challenges and Opportunities for 21st Century's Ecology".

More than 1,400 scientists from 70 countries participated. Through a multitude of plenary sessions, symposia, oral sessions, poster presentations and workshops they discussed how ecology can help mitigate global climate change, ecosystem degradation, and to find ways to improve human well-being in the context of the UN Millennium Development Goals. They sought ways of sharing their ecological knowledge with the world's peoples and decision makers.

Erika Speelman from CAPSA attended the conference and presented the paper: "An Educational Simulation Tool for Negotiating Sustainable Natural Resources Management Strategies Among Stakeholders with Conflicting Interest". The tool presented helps to better understand the concept of sustainability in the context of Natural Resource Management (NRM).

Through an interactive story, exercises and role-playing difficult-to-grasp concepts are introduced and explained. The tool is suitable for NRM stakeholders such as researchers and policymakers.

Country visit - Mongolia

Erika Speelman from CAPSA made a visit to Mongolia, at the end of May 2007. So far, CAPSA has had minimal to no contact with Mongolia and thus this visit was to establish contact with institutes, ministries and people working in the field of secondary crops and/or poverty alleviation.

Meetings were held with the Mongolian Ministry of Agriculture, the Mongolian State University of Agriculture and UNDP. Research topics for possible collaboration projects were discussed and statistical data was collected for the purpose of adding Mongolia to CAPSA's online statistical database.

For more information:
erikaspeelman@uncapsa.org.



UNESCAP-CAPSA

Jl. Merdeka 145

Bogor 16111, Indonesia

Telephone: (62-251) 343277, 356813

Fax: (62-251) 336290

E-mail: capasa@uncapsa.org

Website: www.uncapsa.org

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New Publications

Pengembangan Agribisnis Berbasis Palawija di Indonesia: Perannya dalam Peningkatan Ketahanan Pangan dan Pengentasan Kemiskinan (Prosiding Seminar Nasional, Bogor, 13 Juli 2006)

Edited by I Wayan Rusastra *et al.*

CAPSA Monograph No. 49. 2007. 156 pp.

ISBN 979-9317-68-1

CAPSA

The Centre for Alleviation of Poverty through Secondary Crops' Development in Asia and the Pacific (CAPSA) is a subsidiary body of UNESCAP. It was established as the Regional Co-ordination Centre for Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) in 1981 and was renamed CAPSA in 2004.

Objective

CAPSA promotes a more supportive policy environment in member countries to enhance the living conditions of rural poor populations in disadvantaged areas, particularly those who rely on secondary crop agriculture for their livelihood, and to promote research and development related to agriculture to alleviate poverty in the Asian and Pacific region.

Functions

1. Co-ordination of socio-economic and policy research on secondary crops.
2. Networking and partnership with other international organizations and key stakeholders.
3. Research and analysis of trends and opportunities with regard to improving the economic status of rural populations.
4. Production, packaging and dissemination of information and successful practices on poverty reduction.
5. Dissemination of information and good practices on poverty reduction measures.
6. Training of national personnel, particularly national scientists and policy analysts.
7. Advisory services.

Palawija News

Contributors are invited to submit summaries that cover recent socio-economic or policy aspects related to research or development of secondary crops and rural poverty alleviation in Asia and the Pacific. Submitted summaries should be sent by e-mail to library@uncapsa.org or by regular mail. Articles must be in English.

Submitted summaries should not exceed eight pages, including graphs, tables, references and author information.

Palawija News is distributed free of charge to interested individuals and institutions. Please send address corrections and additions to: Publications Section, UNESCAP-CAPSA, Jl. Merdeka 145, Bogor 16111, Indonesia.