



Biomass, Renewable Energy and Rural Poverty

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CAPSA recently took part in the Biomass-Asia 2005 workshop by providing a panelist for the session on Future Collaboration for Asian Biomass Utilization. This article presents the workshop's salient features in the first section and then the contribution made by CAPSA to this workshop where a paper entitled "Improving rural poor access to renewable energy through secondary crops' biomass production" was presented.

The Biomass-Asia 2005 Workshop

The Biomass-Asia 2005 workshop was held in Japan from January 19 to 22, the first day was held at JICA's Institute of International Cooperation in Ichigaya, Tokyo and then at the International Congress Centre Convention Hall in Tsukuba, Ibaraki. This event was co-hosted by JICA and AIST and co-organized by, or under the auspices of, 17 Japanese organizations, including 8 different minister and 7 research centres.¹

The rationale for organizing this workshop, according to the workshop presentation brochure², states, "The dependence on fossil fuels for mass production, mass consumption and mass disposal is causing environmental problems, such as global warming and flooding, to escalate. In this social circumstance, the importance of biomass utilization has come to be highlighted. Asian countries are facing concern about the increase in energy consumption and greenhouse gas emissions resulting from economic growth and population increase. On the other hand, abundant biomass resources are available in these areas.

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¹ Regarding the organizing and supporting organizations, see <http://unit.aist.go.jp/internat/biomassws/en/index.html>.

² <http://unit.aist.go.jp/internat/biomassws/en/aisatu.html>.

There is an urgent need for the following approaches based on a more global perspective as pointed out in the Biomass Nippon Strategy.

- *To exchange and disseminate biomass utilization technology to make full use of biomass resources for the prevention of global warming;*
- *To contribute to the creation of a sustainable recycling society in Asia by using reusable materials including waste;*
- *To foster environmentally friendly industries through the use of new energy resources and products; and*
- *To boost agriculture, forestry and fishery industries and communities through the effective use of biomass.*

What is required in these approaches is strong partnerships among Asian countries in energy and environmental fields."

More than 100 participants per day attended this three-day workshop and listened to not less than 50 presentations. Most participants came from Japanese research centres and the government. Other Asian countries' participants included China, Viet Nam, the Philippines, Thailand, Korea, Malaysia and Indonesia. Two participants from Switzerland and France (CAPSA) were present.

A focus on biofuel and biomass utilization technologies

As indicated in Table 1, the presentations and the general orientation of the workshop were strongly directed towards environmental concerns, with particular attention paid to Green House Gas, CO₂ and NH₄ emissions reduction, and the reduction of fossil fuel consumption in transportation. Therefore, many presentations

focused on technologies and in particular on the production of ethanol and related processes of biomass conversion. Most of these presentations were made by Japanese scientists (Japan holds 80 per cent of the world's patents in bio-gasification process for example).

Country presentations from China, Thailand, the Philippines, Malaysia, and Viet Nam provided more "grass root" information and basic data on the current status of biomass utilization for energy in these countries. These presentations primarily focused on the state of biomass resources in their respective countries and their potential for bioenergy production.

In summary, though sustainable development was at the centre of many presentations, its social dimension was generally overlooked, with a few exceptions.

Table 1. Distribution of workshop papers by country and topic

Geographic area	Biomass	Biofuel	Processes	Future	Other
General	2	1			2*
China	5				1
Indonesia	4				
Japan	2	4	7	1	2
Korea	1				
Malaysia	3				
Philippines	2				
Thailand	4	1			
Viet Nam	4				

* Paper with mainly socio-economic/management content.

Message from the Director

It is with great pleasure that I have assumed the post of Director of CAPSA. As the reader is likely to know CAPSA, until recently, was known as the CGPRT Centre, focusing on secondary crops and agriculture. In the coming years CAPSA will take its first steps under its new mandate of poverty alleviation. CAPSA's role is basically in serving the first of the Millennium Development Goals; the eradication of hunger and poverty. CAPSA is in the process of developing dynamic partnerships with national and local development and research institutes, and will conduct R&D on poverty alleviation practices and disseminate this to its audience. CAPSA will also devote resources to the further elaboration of its statistical database. The current database was developed thanks to long-term cooperation with development institutes in eight countries in Asia and contains the major agricultural resource allocation and production indicators. This database will presently be combined with poverty indicators, levels of incidence and

issues in order to serve policy formulation and programme implementation aimed at eradicating poverty. CAPSA will also strengthen its training programme to involve researchers and policy analysts for and from Asia and the Pacific. To this end, CAPSA is seeking long-term cooperation with national institutes and strategic partners as well as international organizations.

An important area where the Centre aims to contribute is in safe guarding knowledge on rural agricultural development and policy for future generations. The Centre plans to do this as a member of networks in which senior and junior scientists, researchers and interested parties participate.

The Government of Indonesia, as host country, has placed both a supportive and stimulating role in helping the Centre realign itself with the provision of resources. The Centre needs more support from the member countries of UNESCAP to sustain the current drive, and with this support and that of UNESCAP the future of the Centre looks good indeed.

J. W. Taco Bottema

The workshop ended with a resolution to further strengthen the contacts that were established at this first venue. Japan will probably be organizing Biomass-Asia 2006 unless another country wishes to be a candidate. It was agreed that a network would be established with the support of the existing SABREN (Sustainable Asian Biomass Research Network)³.

Some suggestions were made for the next workshop relating to its organization, such as to lighten the programme, give more discussion time and group

work, invite more Asian countries (there was no presentations from India, though extensive research and development is carried out in this country), and structure the sessions by themes or topics. A final discussion touched on the issue of funding and policy commitments. The CAPSA envoy took this opportunity to emphasize the role organizations such as APEC or ESCAP could play in policy advocacy by directly reaching high-level policy makers, insisting on the fact that research results that can be turned into policy actions should

be the priority for all the participants.

Key issues

As more than 100 people participated in this workshop, it is almost an impossible task to summarize the content and discussions related to all the 50 presentations made during these three days. Most of the presentations should soon be posted on the workshop website for direct access⁴. The following paragraphs synthesize some of the reflections that seemed

³ <http://home.hiroshima-u.ac.jp/sabren/index.htm>.

⁴ <http://unit.aist.go.jp/internat/biomassws/en/index.html>.

particularly relevant for CAPSA's work.

- *Environment and poverty*
Though the workshop papers dealt with environmental concerns in relation with the MDG sustainable development goals, poverty alleviation was barely discussed and only mentioned once or twice until CAPSA's presentation. There is a lot of advocacy work to do in this field as most of the scientists and policy makers interested in biomass still concentrate mainly on the resources and technologies and not on the people who produce it.
- *Food versus Energy*
In some papers, the statement was made that the sources of biomass preferred for energy production were woody materials rather than starchy materials so as to avoid competing with food production. Some others argued that the use of starchy materials for renewable energy production was an opportunity for producers that added to existing markets. This debate reflected more generally quite basic differences between the situation of more developed and big-city countries such as Japan and Korea and other Asian countries and rural areas.
- *Waste and resources*
Agricultural waste is often considered as a free source of energy and therefore has no economic value. From a poverty alleviation and rural development perspective, this attitude will lead to the further exclusion of farmers

from sources of wealth. Several presentations, in particular in relation with oil palm, rice and cassava, mentioned that using "wasted" biomass for energy production results in losses of soil fertility that need to be replenished since large amounts of organic material are displaced from fields. Consequently, farmers lose twice: first because they are not paid for the by-products used for energy production, and second because they have to pay for compensating fertility losses through the purchase of fertilizers, organic materials, etc.

- *Intermediate technologies*
With the exception of some cases in China, most technologies discussed were directed towards the production of bio-fuels to substitute fossil fuels and recycling/processing organic waste mainly for industrial uses or urban areas. No research/development work on intermediate technologies or small-scale processing suitable for the conditions of rural areas and populations under CAPSA's mandate were presented.

Rural poverty, biomass and renewable energy

The following section is based on the paper and slide show presented by CAPSA during the workshop. It emphasizes the need for further policy commitment to support the pro-poor development of bioenergy in rural Asia as an additional means to help escape the poverty trap.

Why access to renewable, biomass-based sources of energy matters to rural poor populations?

The Millenium Development Goals (MDGs) clearly establish a link between poverty alleviation and sustainable development stating that the welfare of people depends upon, among others, the capacity to increase their income through improved access to resources and production factors. The livelihoods of poor rural populations greatly depend on the natural resources they can access from their immediate environment. Degradation of these resources leading to irreversible situations is often associated with extreme poverty levels. These negative environmental effects have in turn a disproportionate negative impact on the poor.

Conservation of environmental resources becomes, therefore, an important element of policies aimed at sustainable development, where meeting the needs of today's generation does not pre-empt meeting the needs of later generations. Growing concern for more sustainable development and poverty alleviation has focused attention on the potential role of renewable energies. This issue is of particular strategic dimension on two different scales. Firstly, in less developed countries, usually landlocked countries in Asia and the Pacific, the cost of imported energy is a limiting factor to general growth and development, a constraint further multiplied by the rising prices of oil in international markets. Secondly, access to energy is one of the basic needs

that is usually not met by poor people in all Asian and Pacific countries. Rural poor populations face the strongest constraints in access to energy. These constraints include:

- ❑ A hostile environment (slopes, altitude, remoteness);
- ❑ Poor infrastructure (transportation, communication, energy) and lack of attention from development institutions (education, health, investment); and
- ❑ Poor economic opportunities (agriculture, off-farm, markets).

As a result the rural poor usually rely on resources they can gather from their immediate environment, a practice that is considered to be damaging to health and the environment⁵. The World Energy Council for instance argues that the use of traditional energy sources by the poor (mainly the combustion of wood fuels) combined with using inefficient technologies and appliances results in wastage of wood resources. In addition, the use of crop residue and animal waste as fuels can be to the detriment of soil quality, and agricultural and livestock productivity, as these resources often have alternative applications as soil conditioners, organic fertilizers and livestock

fodder. Furthermore, the significant time spent by women and children collecting and using traditional fuels could be spent on more productive tasks or education⁶. Finally, adverse health effects of the smoke from the burning of traditional fuels in inefficient appliances are significant, especially among women and children. A Greenpeace-ITDG report states that more than two million children and women die every year from domestic pollution from cooking fires⁷.

Some organizations argue that to some extent shifting from burning biomass to commercial hydrocarbons would reduce, rather than increase, local ecological impacts and therefore advocate for not systematically seeking to avoid fossil fuel. What really matters is poor people's access to better cooking fuels, electric power and fuels for productive activities and transportation needs. The argument in favour of fossil fuel is that it would not materially affect the greenhouse gas balance of the world, but it could make a huge difference to the quality of life and economic prospects of poor nations. The challenge is thus also to eliminate indoor biomass and coal combustion because of their severe health impacts and to produce agricultural biomass to provide a source for clean

synthetic fuels for cooking and heating and/or electricity for lighting and other basic uses.

This is a question of technological development targeting the production of efficient and economic fuels from traditional biomass energy sources. For the rural poor, one key issue for escaping poverty is easy access to good quality, safe and low cost energy, but focusing on only one type of energy is not enough: "..., *it is essential that renewable energy technologies expand the choice of energy for poor people. By focusing on renewables alone we are in danger of restricting the already very limited choice of poor people. If renewables are promoted to the exclusion or detriment of expanding other options for the poor, then we are limiting development options for the poorest people on earth*"⁸.

As progress in the rural poor's access to clean energy has been rather limited in Asia over the last twenty years, with the exception of China, a fundamental question raised recently at the ECOSOC Ministerial Roundtable in an Issue Paper needs to be answered: "*It has been pointed out that modern ways of using biomass more efficiently could go a long way towards meeting the basic energy*

⁵ <http://www.earthinstitute.columbia.edu/sop2004/consensus.html>. The Earth Institute. State of the Planet 2004.

⁶ http://www.worldenergy.org/wec-geis/publications/reports/rural/rural_development_and_energy/1_2.asp. World Energy Council. The Challenge of Rural Energy Poverty in Developing Countries.

⁷ www.itdg.org/docs/advocacy/itdg-greenpeace-study.pdf. Greenpeace-ITDG: Sustainable Energy for Poverty Reduction: an Action Plan.

⁸ http://www.itdg.org/?id=powering_poverty_reduction. ITDG, Powering Poverty Reduction, 2004.

services needs of rural populations. Would there be merit in creating a consortium for the promotion of modern biomass in developing countries that would assist with the adaptation of existing biomass technologies to local needs and would foster local industries for the manufacture, assembly and maintenance of biomass installations?⁹

The services provided by sustainable clean energy sources based on biomass alignment of all three economic, social and ecological dimensions of development as indicated in Figure 1 can significantly contribute to improve many

aspects of the harsh life of the rural poor such as:

Halving extreme poverty and hunger: Easy access to clean and sustainable energy frees up time spent gathering fuel for other activities, furthermore it provides the possibility to undertake productive work that requires energy. It also improves food production and processing; activities that require energy.

Achieving universal education: Extended study opportunities in the evening for children allows access to information and communication.

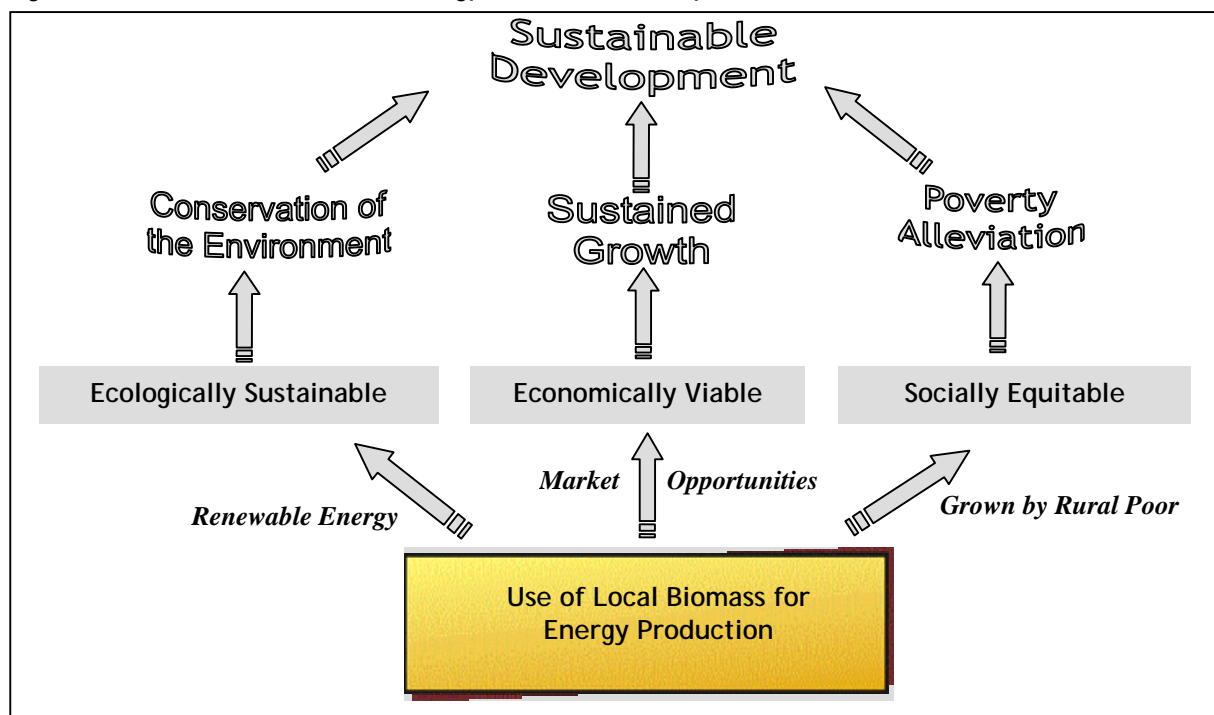
Promoting gender equality: As harsh tasks such as fuel gathering, manual grinding and food preparation are mostly

undertaken by women and children, easy access to energy significantly improves their living conditions.

Reducing mortality/improving health: Reduction of indoor air pollution from household smoke and easy access to energy improves health service facilities such as refrigeration, vaccination and hospital equipment.

Ensuring environmental sustainability: Newer, cleaner technologies provide an alternative to greenhouse gas emissions and local environmental and social degradation caused by conventional energy¹⁰.

Figure 1. Contribution of biomass based energy to sustainable development



⁹ www.un.org/esa/coordination/ecosoc/hl2003/issuespaperUNIDO.pdf. Issues paper for ECOSOC Ministerial Roundtable discussion on: "Rural development and rural energy development", UNIDO, 2003.

¹⁰ Adapted from www.itdg.org/docs/advocacy/itdg-greenpeace-study.pdf. Greenpeace-ITDG: Sustainable Energy for Poverty Reduction: an Action Plan, page 15.

A strategy to address the issue at policy level

A CAPSA work programme proposal intends to foster international cooperation in this field. This programme, called “Secondary crops’ contribution to the substitution of fossil fuel by renewable biomass” (RENEW), intends to advocate policies promoting modern biomass use from secondary crops in disadvantaged areas. Indeed, secondary crops - coarse grains, pulses, roots and tubers - are known to be the crops of the Poor, but they receive little attention from research organizations and policy makers, and yet have among the highest biomass generation potential per hectare and make one of the cheapest sources of easily renewable biomass. Energy policies rarely address environmental preservation as a core objective and even more seldom target the rural poor as primary beneficiaries of infrastructure development for access to energy, let alone concerning secondary crops.

Secondary crop biomass utilization, however, shows promising avenues, though focusing development policies and research on biomass-based energy in rural poverty prone areas is a tremendous challenge. This requires in particular (i) to assess the socio-economic and technical feasibility of growing these crops and processing them into renewable energy; (ii) to ensure that benefits can be

obtained without adverse agro-ecological effects on the environment, and (iii) to ensure that the use of secondary crops as sources of renewable energy can contribute to poverty reduction, through adequate policies focusing on poverty-prone areas where access to energy is a limiting factor in fighting poverty and improving the livelihoods of the poor.

This proposal aims at providing operational models of pro-poor sustainable development policies and measures as well as knowledge on related best practices in support of various MDG goals. The strategy developed in the RENEW proposal is to generate specific knowledge on rural poor populations and appropriate technologies for clean energy. This knowledge will be used to support concrete and efficient energy development policies in Asia and the Pacific taking advantage whenever possible of secondary crop-based biomass products as sustainable sources of renewable energy in poverty-prone and less developed areas.

The geographic focus of the activities gives priority to landlocked, less developed countries facing energy supply problems and landlocked, less developed regional areas within large countries¹¹ in Asia and the Pacific with limited access to energy. Tentatively, countries such as Cambodia, Lao People’s Democratic Republic, Nepal, and Bangladesh are prioritized, as

well as forsaken areas in India, Pakistan, Viet Nam, and the Philippines. This large-scale proposal is expected to cover 10 countries and to produce a higher impact on sustainable development and rural poverty through increasing the awareness and capacity of policy makers and civil society to address these issues.

The work includes the identification of priority target rural areas, the socio-economic assessment of appropriate biomass transformation technologies for resource poor farmers, stakeholder analysis, project proposals and related policy orientations for the local development of renewable sources of energy based on secondary crops. It will also seek to identify successful cases and translate them into best practices for the design of pro-poor renewable energy development patterns through the dissemination of information and knowledge to direct target groups and beneficiaries.

A results-based logical framework for performance assessment

The presentation of this framework uses the following sequence: Objective, Outcome, Output and Activities. Objective and Outcome relate to the impact of the proposal on the undertakings of the target group and related changes in its behaviour, Output and Activities

¹¹ In countries such as India, Indonesia, the Philippines, Viet Nam, and Pakistan, huge portions of the territory present the same difficulties as those faced by the less developed, landlocked countries. The number of rural poor in these areas may even exceed those living in the latter. Therefore, a strategy for greater impact and consistency has to integrate also large poverty pockets that present similar problems to the priority countries in the framework of the proposal.

relate to the results obtained by the organization implementing this proposal and the ways to achieve these results.

Objective: Poverty-prone and less developed areas in ten Asian and Pacific countries receive more policy attention for the development of renewable energy sources, based on the sustainable use of secondary crop biomass products.

Outcome: Policy makers and high level research managers (Target Group) actively support the development of renewable energy sources in poverty-prone and less developed areas, through the sustainable use of secondary crop biomass products

Outputs and Activities

Output 1: A comprehensive approach to the development of secondary crop biomass products for the production of renewable energy is available.

Related Activities:

Identification of priority target rural areas.

Socio-economic assessment of secondary crop based biomass production and transformation technologies for resource poor farmers.

Policy orientations for the local development of renewable sources of energy based on secondary crops.

Output 2: The target group has knowledge of effective measures for improving rural poor populations'

access to renewable sources of energy based on the sustainable use of secondary crop biomass products.

Related Activities:

Translation of successful cases into best practices for the design of pro-poor renewable energy development policies.

Dissemination of policy orientation and good practices on renewable energy development for less developed areas.

Output 3: The target group implements projects in selected poor, rural areas for the development of renewable energy through the sustainable use of secondary crop biomass.

Related Activities:

Identification of projects with the participation of local communities.

Policy advocacy with policy makers and donors.

Management arrangements and partnerships

In order to perform this work, a core team at CAPSA provides inter-organizational coordination, develops training modules in the various disciplinary domains involved, promotes the exchange of information and provides overall scientific supervision to the national teams. One major output will be the provision of support to national policy advocacy and dissemination of information on best practices.

This core team includes a senior agricultural economist, a sociologist, a biomass transformation specialist, and an agronomist. Country fieldwork will be conducted by a national team of scientists showing the same composition and manned by staff from the national research system. The national teams and target groups of policy makers are responsible for the implementation of fieldwork and the generation of knowledge regarding opportunities for rural poor populations from secondary crop agriculture, processing and trade. They will organize in-country policy advocacy events (workshops, forums), relay back to the core team for the national diffusion of results and best practices, and strengthen linkages with the civil society, in particular through participatory approaches in field work and policy analysis.

This initiative requires the collaboration of various institutions bringing resources and expertise. First it is needed to secure the institutional commitment of ten ESCAP member countries for the implementation of this coordinated research and development programme and the related resources for field work. As the approach is by definition multi-dimensional, various fields of expertise have to be combined and experience from various international organizations will be called for. Tentatively, the following potential partners are considered in this initiative: ESCAP member countries with particular emphasis on Bangladesh, Cambodia, India, Lao People's Democratic Republic, Nepal, Pakistan, the Philippines,

and Viet Nam; international donors and/or technical partners such as World Bank, ADB, European Union, IFAD, WEC, ITDG, CIAT, CIP, ICRISAT, UNESCAP, APEC.

Conclusion

As CAPSA's mandate has evolved to focus on poverty alleviation through the development of secondary crop agriculture, a work programme on poverty alleviation through the use of secondary crops as a source of energy for improving the livelihoods of rural poor populations concentrated in marginal areas is now under design. Its target group consists of high level research managers and policy analysts/planners who are able to contribute to the elaboration of appropriate pro-poor policies but the rural poor remain the ultimate beneficiaries of CAPSA's work, via policies and actions designed and implemented by the primary target group.

The Biomass-Asia workshop represented an excellent opportunity to establish and develop contacts with potential partners, to raise awareness and give more visibility to CAPSA and its activities. The workshop also provided updated information about the current status of biomass in some Asian countries as well as indications about the current state, strengths and weaknesses of research on biomass utilization in Asia. This information will be used to improve and strengthen the content of the proposal and the contacts made will play an important role in securing

financial support for this initiative. ■

Enhancing Sustainable Development of Diverse Agriculture in Bangladesh

*Jahangir Alam**

Introduction

Agriculture is the most important sector of the economy of Bangladesh contributing about 23 per cent of the country's GDP and employing about 62 per cent of the country's total labour force. The agricultural sector is composed of crop, livestock, fisheries and forestry sub-sectors. The crop sub-sector dominates the agricultural sector accounting for 57 per cent of agricultural GDP. The main crops of the country include rice, wheat, pulses, oilseeds, sugarcane, potato, vegetables, jute and tea. Rice is the staple food of the country, which is grown on over 74 per cent of the total cropped area.

Bangladesh has been a food deficit country for several decades. Therefore, emphasis was given to rice and wheat production to achieve self-sufficiency in food grains in the country. During the green revolution of the 1970s and

since, the government has promoted rice and wheat production through the adoption of new seed-fertilizer-irrigation technology. As a result, some secondary crops including coarse grains (CG), pulses (P), roots and tubers (RT) (CGPRT or secondary crops), which occupy about 6 per cent of total cropped area became less attractive. These crops in less favoured environments were largely untouched by the growth process. Some, for example pulses and tubers, exhibited a declining trend. The country became more dependent on imports of maize and pulses. It was, therefore, necessary to examine possibilities of import substitution and export promotion through diversification of crop agriculture. It was also necessary to find ways to shift from rice monoculture to diverse agriculture through the increased production of secondary crops. This diversification is required to improve soil health, increase productivity, ensure food security, mitigate risk and protect the environment. This would also increase employment opportunities and income of the poor people in Bangladesh.

A study was undertaken in 2003 to examine the possibilities of enhancing the sustainable development of diverse agriculture in Bangladesh. The study was sponsored by UNESCAP-CAPSA and was implemented by the author under a MOU between ESCAP and BARC. Specific objectives of the study were as follows:

- To investigate the current status of secondary crops in terms of area, production,

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yield, consumption and marketing;

- To determine the magnitude of agricultural diversification and analyze the existing policies of the Bangladeshi government in relation to diversification;
- To determine the profitability and comparative advantage of producing secondary crops;
- To calculate marketing costs and margins of products of secondary crops;
- To analyze the impact of recent economic reforms and trade liberalization on upland secondary crops;
- To explore the potentials of alleviating poverty through the development of secondary crops;
- To assess the demand for secondary crops and explore the potentials to meet the changing demand;
- To investigate the nutritional and /or industrial importance of secondary crops as well as diversified ways of consuming them and to explore the potential of product diversification to meet changes in demand;
- To examine the constraints to and prospects of crop diversification with secondary crops; and
- To recommend policies for enhancing the production and consumption of secondary crops in Bangladesh and elsewhere in the region.

Methodology

An attempt was made to collect and analyze both primary and secondary data to fulfil the objectives of the study.

Secondary data available in various statistical bulletins, reports and official records was assembled and primary data was collected from the field to complement the secondary data. An analysis of historical data collected from secondary sources was made to determine the effect of policy changes on production and diversification of secondary (CGPRT) crops. At the same time primary data was made available from the field surveys to inform about the recent structure of incentives in agriculture. The study collected primary data from 400 samples selected randomly from 12 districts of the country representing the concentrated areas of secondary crops. The data collected was analyzed to determine the financial and economic profitability of producing secondary crops in Bangladesh. A measure of comparative advantage was employed to examine the efficiency of using resources for producing secondary crop products at home instead of importing them from abroad. To evaluate quantitatively the diversity of crop production, a diversity index was used. The future demand for secondary crop products was determined by using an anticipated population growth rate, growth rate of income, and income elasticity of demand for these crop products. The income elasticity of demand was computed from cross-section consumption figures obtained through the HIES 2000.

Major results

Analysis of the data shows that there has been a significant

increase in agricultural production in Bangladesh over the last four decades. The production of food grains increased from 9.7 million tons in 1960-1961 to 10 million tons in 1972-1973 and to about 27 million tons in 2002-2003. The production of rice has increased by about 3.5 per cent per year over the last decade. The production of wheat has experienced a significant increase of 5.5 per cent per year over the same period. But the production of minor grains declined by 0.93 per cent, pulses by 3.72 per cent, oilseeds by 1.9 per cent, and sweet potato by 2.8 per cent over the same period. However, the production of maize and potato have experienced a respectable growth rate during the last decade. Moreover, the production of vegetables and spices have also shown increasing trends over the said period. The calculated Simpson Index of diversity for the allocation of land to different crops revealed a slow improvement of crop diversification over time in Bangladesh.

The improvement in diverse crop production was accompanied by considerable diversification in consumption. The share of rice and wheat in the total food basket has declined, while the shares of potato, vegetables and pulses have increased over the reference period. This may lead to further diversification of crop agriculture in future if there are enough incentives to cultivate minor grains and non-cereal crops.

A field study conducted in 12 districts on maize, millets, potato, sweet potato, lentil and

mungbean suggests that both financial and economic returns to production of these secondary crops are positive. The financial incentive for production of these crops was examined by calculating Nominal Protection Co-efficient (NPC), Nominal Rate of Protection (NRP), Effective Protection Co-efficient (EPC) and Effective Rate of Protection (ERP). Results showed that there are reasons for protecting these crops from import substitution.

A measure of comparative advantage was used to examine the efficiency of using resources to produce secondary crops at home instead of importing them from abroad. Calculated DRC (domestic resource cost) values for maize, millets, lentil and potato suggest that the country would gain from producing more units of these crop products at home instead of importing them from other parts of the world. The DRC values were positive for potato even at export parity level during the most recent years implying that Bangladesh has the potential for export promotion through the production of more potato. The study reveals that the country has substantial potential for diversifying crop agriculture through the expansion of secondary crops (CGPRT crops).

The marketing of secondary crop products is inefficient. Over 80 per cent of major CGPRT products are marketed, but they suffer from significant seasonal price fluctuations. Farmers do not receive the benefits of higher prices as the time from harvest grows. The grower's share of consumer price during harvest is above 60 per cent for maize, millets and pulses. It is relatively

low however, for potato and sweet potato. Farmers are likely to benefit from a reduction in marketing costs and margins of tubers.

Recent market liberalization has resulted in a reduction of tariff rates and the withdrawal of production subsidies. As a result, imports of some major CGPRT products, particularly maize and pulses have increased. It is possible to significantly increase the production of these crops provided new technologies are researched and disseminated and policies are framed conducive to technology adoption. In view of the above circumstances, more investment on yield increasing technology generation and adoption is necessary to meet the current deficit in secondary crop products and accelerate the speed of diversity in agriculture.

Bangladesh is a poor country with low per capita income. About 50 per cent of the population live below the poverty line. Most of them suffer from chronic malnutrition. Secondary crop products are less expensive than major food items and even the poorest of the poor have access to coarse grains, pulses and tubers. These products have a higher nutritional value than major cereals. These products are rich in protein, fat, minerals and fiber and are also used as livestock feed. These crops are cultivated by relatively poor farmers under harsh environmental conditions. Expanding the production of these crops will intensify the farming system, create additional employment, and reduce the magnitude of poverty and nutritional deficiency in the country.

The demand for secondary crops is likely to increase with increases in population. The demand will increase further with the expansion of processing facilities and industrial uses of these crops. However, farmers are unaware of many processing techniques and the linkages between production, processing and utilization are weak. The increase in purchasing power of the common people and urbanization have increased demand for processed secondary crop products. This will encourage farmers to grow more of these crops for higher consumption and income.

There are, however, some constraining factors that hinder progress in the production of secondary crops. They include low yield rates, lack of price incentives, lack of credit, poor knowledge of nutritional value and limited industrial uses. An increase in cold storage, credit, processing and marketing facilities would stimulate industrial uses and consumption of these products. Intervention from the government in product markets is also necessary to encourage production of CGPRT products and crop diversification.

In conclusion, it appears that maize, millets, pulses, potato and sweet potato (CGPRT or secondary crops) have enough potential for crop diversification, employment creation, income generation, reducing malnutrition and poverty alleviation in rural Bangladesh. These crops are profitable and have comparative advantage in production. The demand for these crops is likely to increase with urbanization and increases in per capita income, and the scope of industrial uses

of these crops is high in the country. Therefore, farmers should be encouraged to produce more of these crops through area expansion and the adoption of improved technologies in the process of production and consumption. Specific recommendations for the promotion of production and utilization of secondary crops are summarized below in order to guide policies and research in the country in future.

Recommendations

- Special subsidies should be provided for inputs to be used in secondary crop farming to encourage production;
- Farmers should be protected from international competition through the imposition of high tariffs on imports of secondary crop products. (The rate of tariff on secondary crops is very low, only 7.5 per cent and this is the main reason for higher imports and discouragement of domestic production of secondary crops, although Bangladesh has comparative advantage in production);
- Breeding and agronomic research for the generation of improved technologies in the production of secondary crops should receive high priority. This will call for high budgetary provisions for research on secondary crops;
- Attention should be given to cropping system research with emphasis on secondary crops;
- Appropriate irrigation measures and pest control policies have to be designed carefully for secondary crops;
- Cold storage facilities should be extended to sweet potato;
- Farmers producing secondary crops should be provided with production loans and small processors should be brought under the network of micro credit;
- The storage-cum-credit scheme should be extended to secondary crops;
- More processing plants and mills should be established in the intensive secondary crop growing zones to shorten the marketing channel and reduce marketing costs;
- Better transportation, communication and information systems should be developed to minimize spatial price difference;
- Traditional processing devices need to be improved. Also, attention should be given to modernization and capacity utilization of processing mills and plants. Commercial use of secondary crop products for animal feed and as raw materials for industry has to be explored and encouraged;
- A rational price policy should be formulated to ensure remunerative prices to secondary crop growers. This can be made effective through the procurement of produce by the government from the growers. A price commission should be established;
- Most people in Bangladesh do not know the high calorie and protein content of secondary crops. They need to be made aware of this through extension agents and mass media; and
- Regional cooperation is required to carry forward research and development activities for the promotion of diversification through secondary crops. ■

CAPSA News and Activities

IS/DB

CAPSA introduced its revamped web site (www.uncapsa.org) in early December 2004. The website is intended to provide visitors more

convenience when accessing information regarding CAPSA.

One new feature of the web site is the addition of a data level in the database on-line. As you know, data for eight countries (Bangladesh, Indonesia, India, Pakistan, the Philippines, Sri

Lanka, Thailand and Viet Nam) at the national level has been available for free downloading for some time. Now, **provincial** level data for four countries (Indonesia, India, the Philippines and Thailand) on production, area harvested and yield for the past

five years (1998-2002) is available for viewing and downloading. Data for the remaining four countries will be available soon.

The library catalog on-line has also been upgraded. Now, visitors can see not only the collection of books but also journals. The articles from CAPSA periodicals (Palawija News and CGPRT Flash) are also available in full-text format. ■

Announcements

Market Access and Sustainable Development

Improving local livelihoods through market participation

Wageningen, the Netherlands
31 October – 11 November, 2005

Course focus

Poverty reduction through enhancing market access is one of the hot topics for development organizations and governments alike. It forms a major challenge to policy makers and programme officers. Over the past decade governments and development organizations have seen their roles and responsibilities change from direct interventions towards indirect activities so that markets can function better. Of course, this has implications for the required capacities and skills of their staff. In fact, they often need to acquire new sets of competencies to formulate

appropriate policies and strategic plan and to facilitate the implementation of programmes within the market-economic domain of development.

Enhancing market access for local economic development is about promoting outputs of various industries of agro-economic (sub) sectors to domestic and foreign markets. The promotion of market access of goods and services from local agro-industries can boost local economic development and help developing market economies to develop in a more balanced and sustainable manner.

The course focus is, thus, on policy and programme development to promote market access within a general framework that is focused on supporting market driven sustainable economic development.

Aims and objectives

The course aims to support organizations fostering local economic development in their changing role as facilitators in the development process. To be able to draft effective policies, plans and programmes a thorough understanding of relevant trends and developments is needed. This course provides participants with a suitable conceptual framework to analyze the current context and to determine the most promising options therein. Moreover, it provides practical tools and instruments to be used to develop appropriate policies and programmes. ■

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OBITUARY:

All CAPSA staff wish to express their deepest sympathy to Dr. Okabe for the passing of Mrs. Mokoto Okabe. Our thoughts go out to Dr. Okabe and his family. We wish him strength.

