
PALAWIJA

NEWS



The CGPRT Centre Newsletter

Volume 16, Number 4

December 1999

Trade Liberalization and World Food Prospects in the 21st Century

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Introduction

In the post-cold war world, global-scale issues of environment, food, resources and poverty take the place of East-West problems as the most important one for the future of the human race. While these problems are closely interrelated with one another, the greatest attention is given to the possible worldwide limitations of the agricultural environment and resources in meeting food demand for the increasing population in developing countries.

Until the 1980s, the world's food supply and demand structure was conditioned by the political structure of the cold war between the East and West. Each country protected its agriculture in an effort to increase domestic food production, considering that food would be the basis of people's stable life. Though there were exceptions, such as some countries in Africa, most countries throughout the world achieved higher increases in food production than population growth thanks to scientific and engineering achievements epitomized by the "Green Revolution."

However, as many as about 800 million people still suffer from malnutrition in developing countries, some of whom are starving. Africa has seen a rapid increase in people suffering from starvation. Recognizing that the global environment was faced with a serious crisis as the 21st century was just around the corner, the United Nations Conference on the Environment and Development held in 1992 in Rio de Janeiro, Brazil, proposed the theme "sustainable development" with the aim of simultaneously achieving the two difficult tasks, the conservation of the environment and economic development. The concrete policy directions or plans to attain the objective still remain to be worked out.

The world's population has now exceeded 5.7 billion and it is expected that it will be over 8.5 billion by the year 2025. The food supply and demand situation in the world towards the 21st century may be summarized as one in the process of system change when a market economy globally penetrates into traditional or socialistic planned economies, while economic developments face worldwide limitations of environment and natural resources.

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The unlimited introduction of market mechanisms will bring in its negative effects, including instability in the food market, widening gaps between the rich and the poor and the disruption of nature and the environment on a global scale. Thus the problem before the human race would be how those negative effects are checked and we overcome the destructive effects of the free market system while accepting it in principle.

Food problems: optimistic and pessimistic views

International organizations and agricultural institutions of major countries are generally optimistic about the world's food supply/demand situation in the future. For example, the Food and Agriculture Organization (FAO) forecasts that by the year 2010 the world's malnourished population will decrease and that international grain prices will tend to lower or remain on a similar level to the present ones. Conversely, Mr. Lester Brown of the World Watch Institute warns that food shortage, not war, will be the most dangerous threat in the future. A report of the International Rice Research Institute (IRRI) pointed out that rice yield increase will slow down in the future and it will cause a global rice shortage.

As noted, there are both optimistic and pessimistic views about the outlook of the world's food supply and demand. Which is right? Many people want to hear the answer.

While these projections about the future food situation in the world appear to be inconsistent at a glance, they are not necessarily so. In most cases, optimistic views are concerned with an outlook for a ten-odd year period or a mere extension of such a short or medium-term forecast. On the other hand, pessimists put emphasis on those many problems, which may grow serious several decades from now, and point out what will happen in such a long period if human beings do not change policies and take action to solve the problems. So pessimistic views are warnings, as it were. Which of the present or past trends you regard as major controlling factors and whether you look at the situation ten-odd years or several decades from now will change your projections greatly.

The trends in the past are deeply affected by the global political and economic structure. They are

changing in accordance with the change of the main current of the structure.

In the past three decades, the world's agricultural production showed an increase at a higher rate than population growth. The real prices of grains discounted by inflation rates were on the decline, except in the period of disorder in the 1970s. Most projections including those made by FAO and the World Bank extended these past trends to the future and they projected that the future food trade market will have an ample supply for effective demand. They forecast that until 2010 the real prices of grains would remain on a similar level to the present or become lower.

Table 1 Grain price projection (base year = 100).

	Base Year	Target Year	Wheat	Maize	Rice	Soybean
OECD	1990/94	2000	127	112	n.a.	119
FAPRI	1994/95	2004/05	98	113	114	113
USDA	1990/92	2005	63	66	87	67
MAFF, Japan	1992	2010	111	118	118	110
(IFPSIM model)			212	195	205	181
World Bank	1992	2010	67	79	69	n.a.

Note: MAAF, Japan Projection was estimated running Ohga's IFPSIM model.
 Upper line of MAFF, Japan was projected assuming trend yield increase.
 Lower line of MAFF, Japan was projected assuming gradual decline of yield growth rate to half of trends in 2020.
 Estimate in 2010 of IFPRI was made interpolating the projection to 2020.
 Estimate in 2010 of World Watch Institute was made interpolating the projection to 2030.
 "n.a." means "not available".

The globally successful "Green Revolution", that is the introduction of high-yield varieties of wheat and rice and increased utilization of chemical fertilizers, made a great contribution to increased food production achieved all over the world in the 1960s and after. The high-level protection of agriculture in the U.S. and Western European countries also stimulated agricultural production and overproduction in these countries helped lower prices on the international trade market. These situations in the world grain market led to optimistic views about global food supply and demand among a lot of people.

In the 1980s, based on the recognition of this fact, the agricultural exporting countries and some other countries began to reduce agricultural protection and deregulate production control. They also started negotiation on agricultural trade in the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) to open the

Message from the Director

During the 18th session of the Governing Board of the CGPRT Centre held on 1-2 December 1999, an inquiry was raised by the board on how the Centre dealt with certain issues raised by the reviewers in the external impact evaluation of the Centre conducted last year. The question was answered as follows:

- (i) Strengthening of leading and coordination function in the programmes and widening of topic coverage: The Centre continued two R&D projects, "Effects of trade liberalization on agriculture in selected Asian countries with special focus on CGPRT crops (TradeLib)" and "Economic and policy analysis for the ecoregional approach in Southeast Asia (ECOPOL)", and started two new projects, "Food security strategies for selected South Pacific island countries (SouthPIC)" and "Avenues for agro-industrial development in Southeast Asia (AGRIND)". The Centre submitted to the ESCAP secretariat two R&D project proposals for 2000 and beyond, "Stabilization of upland agriculture and rural development in El Niño vulnerable countries (ELNINO)" and "Human resources development to enhance sustainability of upland agriculture in selected Southeast Asian countries (SUASA-3)". The Centre also submitted a proposal for a HRD project for funding, "Dissemination of ecoregional analysis and planning tools for the development of agricultural atlas in Asian monsoon countries (AgriAtlas)".
- (ii) Continuation and strengthening of training activities and dissemination of methodologies and information: Due to scarcity of funds, only one training course was held in 1999 on integrated database management. The Centre, on the other hand, invited as many participants as possible to the workshops under the "TradeLib" and "ECOPOL" projects and disseminated various knowledge, methodologies and information through

those meetings and the information services activities

- (iii) Strengthening of information services: In 1999, the Centre published and distributed fourteen country reports of the "TradeLib" project under the working paper series and two monographs, i.e. the proceedings of seminar on agricultural planning held in 1998 and the integrated report of the "SUASA-2" project jointly with the proceedings of the regional workshop. Four issues of the Centre's quarterly newsletter "Palawija News" were also printed and distributed. The accessibility to the Centre's information was further expanded through its website.
- (iv) Widening of region/country coverage and balancing participation opportunity: In addition to the continued projects, the Centre expanded the country coverage in its programme activities by inviting four Pacific island countries, Fiji, Papua New Guinea, Tonga and Vanuatu, to join the "SouthPIC" project which started in July this year. The Centre also invited six countries, Bangladesh, Cambodia, Lao PDR, Myanmar, Nepal, and Sri Lanka, as additional participants to the regional workshop of "TradeLib" held in October this year. One participant from Papua New Guinea was also invited to the one-week training course on database management along with 11 other countries last year.
- (v) Enhancement of the Centre's network: The Centre's network with partner countries and institutions was further strengthened mainly through the implementation of R&D projects, training courses and workshop. Frequent correspondence, visits and exchange of information also contributed to tightening and activating the networks.

As shown above, the Centre is always striving to work for the member countries and partner institutions even under the current limited capacity both in staff and finance. If you could provide the Centre with a little greater capacity the Centre would be able to further contribute to the developing member countries in the region.

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market further in order to reboot international food prices and increase trade. In December 1993, they finally reached an international agreement. The principle of free market economy was recognized worldwide as applicable to all commodities including agricultural products and a sole free global market was established. The road to this overwhelming free market system was opened first by the global food crisis of 1972 and was completed by the agreement of the Uruguay Round after the unstable period of the 1970s and 1980s.

With respect to the economic system, after the destruction of the East-West cold war system at the end of the 1990s, food has finally integrated into the global free commodity market and the world food system is now going through a structural change. In addition, for the first time after the inception of human history, many people have realized that the “Green Planet” has its limitations to economic development. The structure of the world’s food supply/demand system will see a further great change in the years ahead.

World food outlook overview

Many organizations, such as FAO, the World Bank, OECD and U.S. Department of Agriculture, have published their projections for the global food situation up to 2010. The basic assumptions for them, including economic growth and population increase rates, are roughly the same and projected results are similar in general. The world food projection made by the Ministry of Agriculture, Forestry and Fisheries (MAFF), Japan produced a similar result to those of the international organizations or other governments, in a case where it was supposed that future yield increases of agricultural products would be the same as the past trends (Table 1). The MAFF projection used the International Food Policy Simulation Model (IFPSIM).

The fundamental factors affecting the world food demand in the long run are population increase, countries’ economic growth and changes in income distribution structure for the demand side. Those affecting supply are growth rates of cultivated area and yield.

Food demand

During the 1900-1995 period, the world’s population increased at a yearly rate of about 1.3% from 1.7 billion to 5.6 billion. The present growth rate is 1.7% per year. The UN’s median estimate (the estimate made on the assumption that the birth rate will decrease to 2.0% or less by 2050 worldwide) says that global population will grow to 8.5 billion by 2025 and 10 billion by 2050. It projected that the world will see an annual population growth of about 90 million, over 90% of which will take place in developing countries. Average population growth rate of developing countries is now about 2% per year although differing from country to country. So unless a higher growth rate of food production than this 2% is realized, there will be no improvement of nutritive level of people in developing countries on average.

The food demand structure changes in parallel with increase in income. While people remain at a lower income level, they take most of their nutrition from starchy foods and increase grain consumption with rising income. When their income level reaches a certain level, their grain consumption becomes stagnant or begins to decrease while their consumption of animal protein foods such as livestock products and fishes, fats and oil, fruits and vegetables grows rapidly. At this stage, stimulated by strong demand for animal protein foods, the production structure of livestock farming changes, too, and a greater amount of grains would be consumed for feed for domestic animals. As a result, the total demand for grains, including those

Table 2 Supply and demand projections of cereals in the world (10 million tons).

	Target Year	Production	Consumption	Developing Countries		
				Production	Consumption	Net Trade
Actual 1989-90 Average		172	172	86	95	-9
FAO	2010	233	233	132	148	-12
MAFF, Japan	2010	239	239	133	147	-14
IFPSIM model		221	221	114	135	-21
World Bank	2010	229	229	125	146	-21
IFPRI	2010	241	241	123	139	-16
World Watch Inst.	2010	215	268	China 30	China 49	China -19

Note: same as Table 1.

for human consumption and for feed, continues to increase. Japan reached this stage around the early 1960s. Of developing countries, many in Central and South America, the Middle East and Southeast Asia have reached this stage, and China is nearing this income level due to its rapid economic growth.

As outlined above, in most developing countries, rising income will lead to a rapid increase in the consumption of meat, dairy products and other livestock products. The projections made by MAFF, JAPAN and FAO's "Agriculture in 2010," a report presented to its general assembly in 1993, show similar results with the rate of increase of per capita income in developing countries to 2010 at 2.6%. They estimated that per capita consumption of meat will grow at a yearly rate as high as 2% while that of grains in these countries will show zero growth. But the level of meat consumption will remain far lower than that in developed countries, which will be about 20 kilograms or so per capita per year, about a quarter in 2000 compared with the figure for developed countries. By the type of meat, there will be a shift from beef to chicken and pork, which are less expensive and have a higher feed efficiency, mainly in developed countries. By region, Asia, which has enjoyed a high economic growth, will see a very high increase rate (about 5% per year) of meat consumption and production.

It is expected that with increasing production of livestock products in developing countries, demand for grains for feed will rise at a higher rate. At present, about 60% of grains is consumed for feed in developed countries and nearly 40% worldwide. The ratio for feed in developing countries will rise from about 30% now to about 40% in 2010.

The malnourished population is estimated on the basis of basal metabolic rates and is based on the calorie level which enables humans to maintain their weight and do light activities (basal metabolic rate x 1.54). FAO projects that the world's malnourished population will decrease from 780 million at present to 640 million in 2010. This figure assumes policy efforts, such as improvement in income distribution and measures to meet import needs, and it is a fairly wishful, optimistic one.

Food supply

The World's agricultural production will exceed population growth, showing a yearly growth rate of 0.2% per capita until 2010. By region, East Europe and the former Soviet Union will see a growth rate

of -0.1% and other industrial countries 0.4%, with an average rate of 0.2% for all developed countries, whereas the average figure will be 0.8% in the developing world. But it is expected that sub-Saharan Africa will be unable to achieve a higher growth rate of food production than population increase, with a rate of -0.2%.

These figures are small compared with those in the past two decades and the main reasons for the lower rate projections are gradual decreases in population growth rates and saturation of food consumption in developed countries and some developing countries. Per capita grain production in developed countries is now three times as much as in developing countries and a major portion of grain is consumed as feed or exported. But the consumption of livestock products, including meat and dairy products, is stagnant or declining recently partly because of people's increasing awareness of unhealthy effects of too high an intake of these foods.

According to FAO, the world's total cultivated area showed only a small increase of 2% in 20 years from 1.41 billion hectares (approx. 3.58 billion acres) in 1970 to 1.44 billion hectares (3.56 billion acres) in 1990. This means that almost all of the increase in food production during these two decades was brought about by higher yield. While increase in yields can be divided into two factors, improved utilization rate of cultivated land and increased yield per harvested area, 80% of the growth in global grain production in the 20 years can be attributed to the latter factor, that is increase in yields. In particular, in the 1980s and after, the world's total planted area of grains has been declining and greater grain production has been attained only by higher yields.

Increase in yield has a high correlation with the introduction of high-yielding varieties (HYVs), fertilizer application and expansion in irrigated land and the combined effects of these factors brought the successful "Green Revolution" to many developing countries. But from the 1980s onward, as the introduction of HYVs came to a lull without any new HYVs developed, appropriate land for irrigation has decreased, international grain prices have been stagnant and government subsidies to farmers have been reduced. At the same time, the pace of increase in irrigated land and in fertilizer use has slowed down and the growth rate of yields has also slowed (IRRI Annual Report for 1993). In particular, it is expected that developing countries

Table 3 Growth rate of production, harvested area and yield of cereals.

3 years Average	Production Growth Rate		Harvested Area Growth Rate		Yield Growth Rate	
	million ton	%/year	million ha	%/year	ton/ha	%/year
1961-63 A	920	3.6	653.3	0.52	1.41	3.1
1969-71	1,221	2.6	680.8	0.53	1.79	2.0
1979-81	1,575	1.6	717.7	-0.25	2.19	1.9
1991-93 B	1,11		696.1		2.75	
B/A	2.1 times				2.0 times	

Source: FAO AGROSTAT PC.

Note: World Population increased 1.7 times from 1962 to 1992 and the annual growth rate was 1.9%.

will experience a slower increase in yields in the years ahead.

Food balance or food trade

According to projections made by various organizations about the supply/demand balance and trade of grains by region for the year 2010 (see Table 2), the U.S. and a few other exporters will continue to meet the import needs of developing countries. Thus developing countries will be more dependent on the supply from these countries.

The developing world will see a higher growth in demand than in production and so will have greater net imports, their grain self-sufficiency rates lowering to 90% by 2000. FAO forecasts that the net import of developing countries will be 120 million tons in 2000 and 150 million tons in 2010. It takes no account of limitations of trade balance and foreign currency reserves of these countries. Thus, it is just the import needs of these countries and whether they will be actually able to import these amounts will depend on availability of food aid and other factors of future international trade.

Food aid in recent years is about 15 million tons worldwide. It is internationally regarded just as assistance for contingent local food shortages and as such it is almost ineffective in coping with any chronic and long-term shortage. The U.S. is the supplier of most food aid and offers it mainly as part of disposal measures to deal with excess agricultural products. But if excessive food stocks decrease in developed countries as a result of reduction of subsidies for farmers, food aid will be cut, too.

Food situation by major countries and regions: present and future

From the 1980s onward, the international food situation has tended to be an oversupply as a whole mainly because the former Soviet Union, which had

been the largest food importer, reduced imports. But in the future, the international price of grains and other agricultural products is likely to rise higher than in the 1980s. Main factors causing this are the adoption of more market-oriented agricultural policies by developed countries with the aim of reducing agricultural protection and the impact of high economic growth mainly in Asia. The U.S., the world leader in grain export, will gradually withdraw from market intervention. As a result, the stock level of grains and other commodities which has the function of adjusting short-term supply and demand balance will be lower and the international market will become unstable. A temporary tight food market situation would happen occasionally.

The global food system is now in the midst of change after disruption of the cold war structure. From this standpoint, let's look at the food and agricultural situation in major countries and regions.

The most uncertain factor for the future world food situation is the food supply and demand of the former Soviet Union. It used to be a food exporter in the 1960s, but turned into a great importer of grains and other foods after the 1972 harvest. During the 1970s and 1980s, it remained an unstable market participant, importing over 40 millions of grains in some years. At present, however, it is in no position to fund a large-scale grain purchase, because of destroyed domestic economy and resultant lack of foreign currency reserves, though it suffers inactive agricultural production at home. The former Soviet Union has a greater per capita grain output than European countries. If it can switch to a market economy and raise the efficiency of distribution, shortage and processing and livestock farming production, it (and East European countries) may become a food exporter again in the long run. But it is not certain yet when and at what pace these countries will be able to overcome the difficulties caused by transition to a free market mechanism.

China has about one-fifth of the world's population and contains within its boundaries all of

the climatic and topographical characteristics on the earth: from the tropics to deserts and the frigid zones and from mountainous areas to vast plains. By introducing a market mechanism, the country is realizing rapid economic growth and increasing its consumption of vegetables, fruits and livestock products. The Chinese are now shifting stress in rice consumption from quantity to products having a better taste. China has cultivated area per capita twice as large as Japan and will continue food self-sufficiency in general for some time. But its yield is approaching Japan's level and it is doubtful that it will increase at a pace as fast as in the past. On the other hand, in a rapid economic growth, China's agricultural land has been converted into urban use such as industrial land, housing land and roads or abandoned and resulted in decline of cultivated area.

Considering that declining agricultural land and stagnation in yield growth will be the main trends in China, Mr. Lester Brown predicts that the country's grain output will fall by as much as 20% by 2030, causing grain shortage of 220 million tons. He does not take into account the indirect demand for grains for feed into consideration, but it is expected that this demand will grow to be a heavy one in the long run in the livestock farming sector. A recent report jointly compiled by the Rural Economy Research Center, a policy study agency of China's Department of Agriculture, and Japan's Overseas Economic Cooperation Fund says that China will see a grain shortage of 136 million tons in 2010.

Besides the emerging tendency of grain shortage in recent years, China is experiencing a widening gap between agriculture and industries as a result of rapid economic growth, giving rise to grave problems of relative dullness of agricultural production and larger regional gaps. There are both optimistic and pessimistic views among researchers as to whether China will be able to secure enough feed to support livestock farming in the long term and whether it will succeed in obtaining sufficient resources for domestic food production in the above-mentioned situation of widening gaps between agriculture and industries and among regions.

In South Korea, Taiwan and many countries in Southeast Asia, high economic growth has changed the food demand structure from grains to vegetables, fruits and livestock products, making the diversification and modernization of agricultural production an important issue. In particular,

increasing demand for livestock products will lead to a greater import or less exporting ability of feed grains and protein materials for feed. The problems of food supply are also growing more varied, from increased production to improvement of transportation, storage, distribution and processing systems. In addition, these countries are faced with the problems of how to develop areas less advantageous to farming and how to cope with destruction of the natural environment, such as neglected agricultural and forest areas. These issues need to be settled as soon as possible.

While Asia has changed its food consumption patterns to follow Western ones, it is unlikely to reach the Western level in the future. At present, developed countries consume about 60% of their grain output for feed. Rather than trying to attain such a high level, Asian countries will form their own, Asian-type consumption patterns instead.

Let's suppose that the consumption of livestock products in China and other Asian countries will reach the present level in Japan, though it will not attain the Western level. Let's suppose, too, that these countries' agricultural production will follow a development pattern similar to Japan's. In such a case, considering that Japan now imports nearly 30 million tons of grains and oilseeds for feed, a simple calculation shows that the Asian countries will have to import more than ten times, that is, over 300 million tons of grains and protein crops for feed. Needless to say, this is just an exaggerated figure presented to show the problem and Asian countries have a variety of ample resource stocks for agricultural production, including agricultural land. But if countries in East and Southeast Asia continue rapid economic development and take a similar route to Japan, they will have a serious issue of food supply and demand. Who will supply the feed for the production of livestock products to meet the demand of richer people in Asia? Will Asian countries consume rice for feed or will they convert paddy fields into the fields of feed crops or will they rely on imports? These questions, which once confronted Japan, are now in front of agriculture in Asia on a far larger scale.

India is also pursuing the policy of promoting a free market economy, but unlike China, its economic development is slow. The increased production of basic foodstuffs, mainly grains, will be the country's prime problem for a long time. While India will be able to meet the basic demand for food

at home, it will have only a limited role in international food trade.

The Middle East, Central Asia and Northern Africa are mostly arid or semi-arid land and have increased dependence on imports, since food and agricultural production has been unable to satisfy an increasing demand for food resulting from population increase and economic growth. Agricultural land use in these regions is based on the historical experiences for many years and irrigated farming, grain production, grassland for mainly sheep raising, etc. are carried out according to land conditions. Once the ecosystem is destroyed by careless land use, agricultural land will be easily devastated and turned into desert. In these conditions, it is a very difficult task to realize an expansion in sustainable agricultural production and so these areas will have to increase food imports for many years in the future.

Latin American countries and the Philippines are experiencing wider gaps between the rich and the poor as a result of introduction of free market economy policies and structural adjustments led by the World Bank and other organizations. Under a heavy burden of debt accumulation, these countries are unable to depend on a large amount of food imports. The most important problem for them is how to continue to increase the agricultural production of mountainous areas and other disadvantageous districts and the output of small farmers.

During the past three decades, many countries in sub-Saharan regions have had a declining food output per capita and have not been successful in raising nutritional levels despite a substantial increase in food imports. The World Bank-led structural adjustments, that is free market economy policies, have failed in many countries, which are more and more dependent on international aid and imported foods. No full-scale policies of food self-sufficiency and independence to feed at least increasing population have been found yet.

The EC, the U.S., Canada, Japan and other developed countries are further opening their agricultural product markets and reducing protective measures for agriculture in compliance with the agreement reached in the Uruguay Round. Because of this, these countries will be unable to avoid the lowering of farmers' income levels and the slowdown of growth in agricultural production.

As outlined above, many developing countries have achieved improvement in

their food situation as a whole since the 1960s. But the introduction of a free market economy and structural adjustment led by the World Bank, etc. have resulted in widening gaps between the rich and the poor. In many cases, as seen in sub-Saharan regions, there has been no meaningful betterment in people's nutritive level despite a substantial increase in food imports.

Effect of trade liberalization on food security

Trade contributes to food security in a number of ways: through making up the difference between production and consumption needs; reducing supply variability; fostering economic growth; making more efficient use of world resources; and permitting global production to take place in those regions more economically suited to it. However, reliance on trade may also bring some risks. These include uncertainty of supplies, world market price instability, increasing environmental stress, and deteriorating terms of exchange on world markets (falling prices for agricultural exports, higher prices for food imports), if appropriate policies are not in place.

Most countries could meet more of their domestic food needs from national production if food prices were allowed to increase to a high enough level or sufficient alternative incentives were provided to domestic producers. However, the cost of pursuing food self-sufficiency policies can be economically high, as shown by the differences between domestic and world cereal prices in some countries. The differences must be borne by the government or consumers of the country. Trade plays the role of allowing domestic food consumption to be cheaper by less costly imported supplies. Trade also increases consumer choice by providing access to a greater range and diversity of foods. This is particularly important in high-income countries, where food trade includes the exchange of broadly similar but differentiated products. Much of the one-third of world food trade which takes place within OECD countries is of this kind.

While food imports can make a vital contribution to food security, countries relying on food imports have two key concerns: their capacity to maintain food imports at desired levels and reliability of access to these imports.

Food import capacity depends on the prices and other terms on which food can be imported, as

well as on the foreign exchange situation. Those countries whose dependence on food imports has been increasing are now more vulnerable to shocks arising in food or other markets. Another fear associated with opening up a country's food markets to trade is that it will lead to increased competition for food supplies between rich consumers in high-income countries and low-income consumers in developing countries.

As developed countries usually subsidize their agricultural sectors while developing countries often tax them, the net effect of policy reforms on world markets is ambiguous.

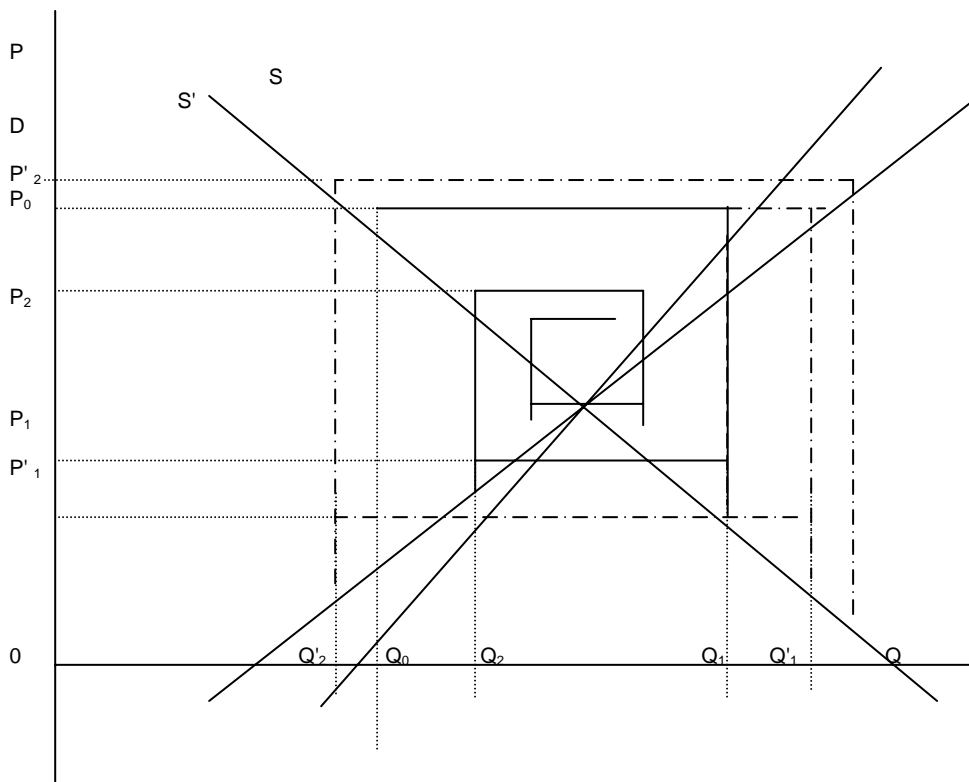
The effects of the Uruguay Round of agricultural trade can differ for agricultural importers and exporters, but all countries have an interest in greater global price stability. The Uruguay Round will influence price stability in at least three ways.

Production will shift from high-subsidizing regions to low-subsidizing regions, with differing likelihood of production variability. If the shift results in a concentration of some products to a specific area vulnerable to climatic change, the effect of production fluctuation of that area will bring about disruption of global price stability.

The Uruguay Round will also influence world price stability through the tariffication process. As tariffication causes prices in all countries to be more responsive to changes in world market conditions, the magnitude of world market price changes needed to absorb supply or demand shocks is likely to be reduced. While most agricultural tariffs are now bound, countries may apply lower tariffs at any time. Where non-tariff measures were replaced by tariffs, use of that clause would also make imports responsive to changes in world prices. Furthermore, as improved information systems are put in place to monitor harvests on a global basis, market surprises, such as the effect of cereal purchases by the former USSR in 1972, are now less likely to happen.

On the other hand, most producers will respond to the world price change in the same direction. These responses will be more elastic when producers are involved deeper in the global market economy, even though the synchronization of responses may be mitigated by the offsetting effect of erratic production fluctuations in various countries. The supply elasticity change would lead to larger price fluctuation. The well-known cob-web model

Figure 1 The cobweb model.



model (Figure 1) illustrates this effect. When the world supply curve becomes more elastic and shifts from S_0 to S_1 , price fluctuation will change from P_0 , P_1 , P_2 , ... to P_0 , P_1' , P_2' ... Thus it would become bigger and the duration of it would be longer.

A demand curve shift to a more elastic one would have the opposite effect of mitigating the price fluctuation. Overall, the total effect of trade liberalization is ambiguous, but it may make the price fluctuations worse or at least prolong them when the change of production elasticity is bigger than that of demand elasticity.

Another way in which the Uruguay Round could influence the extent of world price instability is through changed incentives for stockholding. The reduction in market intervention, particularly by exporters, makes it less likely that government stocks will accumulate in the same way in the future as seen in the past, and thus the size of global stocks may fall. With limited global stocks, the world is less able to buffer adjustments of consumption to changes in production. Even though substitution of private for public stocks could make some contribution to stability, on balance, price stability may deteriorate for cereals and for some livestock products because of the stockholding effect.

Policy direction to attain world food security

In developing countries, about 800 million people are still suffering from chronic hunger and malnutrition. This serious problem needs to be urgently tackled not only from a humanitarian point of view but also for stabilizing world food supply and demand. The question of how to ensure, through concerted national actions, stable world food supply which meets the basic approaches towards achieving food security.

Reflecting the multifaceted nature of world food security, it is necessary for each country to deploy a variety of measures in accordance with its respective position.

For major food importing countries, the basis for a stable food supply should be an appropriate combination of three elements, namely, the maintenance and expansion of sustainable domestic food production, the securing of stable imports, and the maintenance of proper stockpiles, depending on the situation of each country. An anticipated large increase in food demand is an important mid- to long-term issue.

In devising their strategies, countries should bear in mind that although the use of stockpiles is effective to meet the demands in an emergency situation, it is by nature a temporary measure because of quality and cost constraints. If we consider a large population increase in the future, it would be most important to maintain and increase domestic food production, within the framework of international rules, making effective and sustainable use of existing production resources in an economically, socially and environmentally sound manner.

Trade is an important element for achieving food security, as its stable development would lead to building a smooth and effective supply system. But it should be noted that sustainable food production in the country is the most reliable basis for securing stable food supplies to meet the growing demands. We still live in an unstable and uncertain world where sovereign countries put first priority on securing a stable and safe life of their own people. It is not appropriate to refer to trade liberalization as being the sole guideline for the achievement of food security. Trade and domestic production should be carried out in an appropriately balanced manner.

Food exporting countries, considering the important role of trade in securing stable food supplies for importing countries, need to strive for stable production and export responding appropriately to trends of demand, and to ensure continued and stable food export to importing countries even during periods of food shortage.

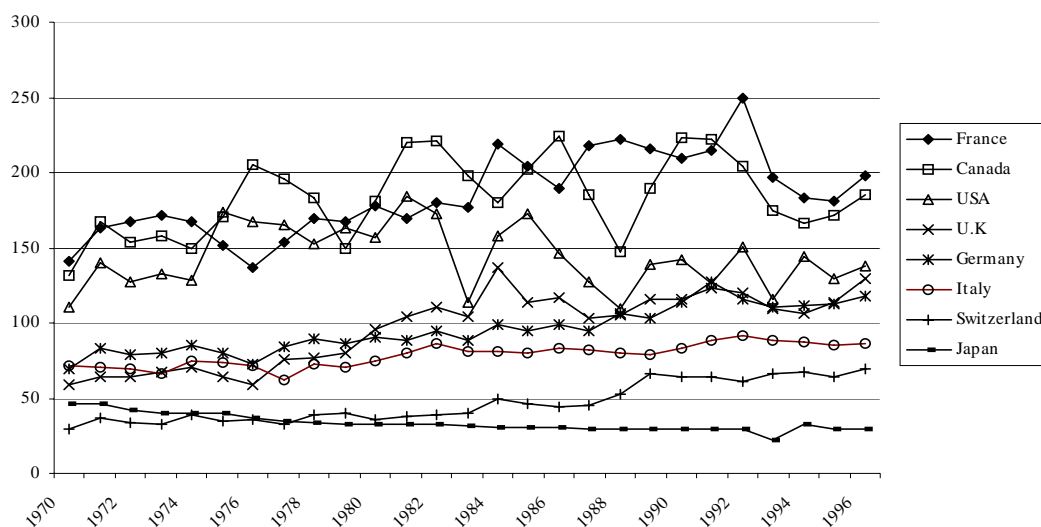
Tackling current hunger and malnutrition

Considering that there still are more than 800 million people suffering from hunger and malnutrition in developing countries, our urgent task is to find ways to secure stable food supply in these developing countries, especially low-income food-deficit countries. To this end, in addition to food aid as an emergency response measure, it is important to eradicate poverty through creating a political, economic and social environment conducive to improving access to food. Moreover, in order to provide a fundamental solution to the hunger and malnutrition problem of these developing countries, the strengthening of sustainable food production capacity in each of these countries is important. It is also important to provide technical and policy assistance, along with the efforts mainly by

developing countries themselves to improve infrastructure and strengthen investment in agriculture.

In addition, population problems should also be tackled, and steady implementation of the Program of Action adopted by the International Conference on Population and Development is necessary.

Figure 2 Cereal self-sufficiency ratio of major developed countries.



Source: Calculated from FAO, AGROSTAT.

Table 4 Cereals self-sufficiency (%) of major developed countries.

Year	France	Canada	USA	U.K.	Germany	Italy	Switzerland	Japan
1970	141	132	111	59	70	72	30	46
1971	163	167	140	64	83	71	37	46
1972	167	154	127	64	79	69	34	42
1973	172	158	133	67	80	66	33	40
1974	167	150	128	71	85	75	39	40
1975	152	171	174	64	80	74	35	40
1976	137	205	167	59	73	72	36	37
1977	154	196	165	76	84	62	33	35
1978	169	183	153	77	90	73	39	34
1979	167	150	163	80	86	71	40	33
1980	178	181	157	96	91	75	36	33
1981	169	220	184	104	88	80	38	33
1982	180	221	173	111	95	86	39	33
1983	177	198	114	104	88	81	40	32
1984	219	180	158	137	99	81	50	31
1985	204	202	173	114	95	80	44	31
1986	190	224	146	117	99	83	46	31
1987	218	185	127	103	95	82	45	30
1988	222	147	109	105	106	80	53	30
1989	216	190	139	116	103	79	66	30
1990	210	223	142	116	114	83	64	30
1991	215	222	126	123	127	88	64	29
1992	249	204	151	120	116	92	61	29
1993	197	175	116	109	111	88	66	22
1994	183	166	144	106	112	87	67	33
1995	181	172	129	114	113	85	64	30
1996	198	185	138	130	118	86	70	29

Source: Calculated from FAO, AGROSTAT.

Measures towards the achievement of food security

Since food is the most basic necessity for people's life, the fundamental role of agricultural policy is to ensure its stable supply. Given the present state of the national diet, it is difficult for most importing countries to produce all the necessary food within the country where production resources including climatic conditions are constrained. It is essential to have an appropriate combination of imports and stockpiling in addition to domestic production for ensuring a stable food supply.

Japan is a typical food importing country which takes food security most seriously. The Japanese food self-sufficiency ratio is only 42% (in calorie basis, 1995) and the cereal self-sufficiency ratio is 30%, an exceptionally low figure compared to other developed countries (Figure 2 and Table 4). Reflecting this fact, 80% of Japanese feel concerned over the future food situation and 70% of them are willing to pay additional costs for food if they consider it reasonable to secure their food in the long run, according to the result of a recent public-opinion poll.

Following this national sentiment, the Japanese food and agricultural policy principally aims at putting the brakes on the declining trend of the food self-sufficiency ratio. In concrete terms, based on the "Long Term Supply and Demand Outlook for Agricultural Products (1995)" the Japanese government expressed the will to make every effort to maintain and increase domestic food production as much as possible through sustainable utilization of national land resources, effectively responding to consumer needs for high quality, safe and fresh products with reasonable prices, and through production and marketing efforts that take advantage of the merits of domestic products.

Resources for food production such as agricultural land, once destroyed, are extremely difficult to restore. It is important to secure the necessary level of domestic food supply capacity to cope with unexpected situations, by maintaining and securing good agricultural land, improving and enhancing soil productivity, and ensuring the availability of farming technologies.

Direction of international agricultural and food policies

The World Trade Organization (WTO), OECD, the World Bank, FAO and other international

organizations adopt the basic policy of free trade to help expand the opportunities of agricultural product export. Many developing countries, including those in Africa, have no export competitiveness of food, except tropical crops, and they neglect food self-sufficiency, the basis of food security. This is the direct opposite of the policies of developed countries, which have well protected agriculture both in trade and domestic production. The basic policy adopted by developed countries and some Asian countries, which succeeded in realizing a higher rate of agricultural production than population growth, is to raise the food self-sufficiency ratio or to keep the ratio level enough to secure a stable food supply. It would be crucial for developing countries to switch the policy direction from free trade of agricultural products to that of achieving food self-reliance in the long run.

From a long-term viewpoint of several decades, it will be a very important to promote agriculture, forestry and fisheries in developing countries. Considering this, the recent trends of the World Bank and Asian Development Bank to cut investment and staff for agricultural development are shortsighted policy shifts.

Japan is a net food importer and deeply interested in the world's food security. It was an agricultural country supported by small-scale farmers and had to work hard to establish self-reliant policies for food and agriculture. It started economic development far behind Western countries. Based on these historic experiences, Japan could contribute to agricultural development and policy-making in developing countries.

Economic Crisis, Policy Reforms and Related Impacts in Indonesia

*Erwidodo and Prajogo U. Hadi**

Introduction

Since mid 1997, Indonesia has been in a deep crisis. In just one year, 1997, its currency fell in value by 80%, inflation soared to over 50%,

* CASER, Bogor. This paper is taken from Effects of Trade Liberalization in Indonesia: Commodity Aspects, Working Paper No. 48, CGPRT Centre, Bogor.

unemployment climbed rapidly, the stock exchange lost much of its value, and the economy swung from rapid growth to rapid contraction. Foreign creditors have withdrawn and investors have retreated. The crisis has been intensified by the worst drought in years and a decline in oil prices. Social unrest has erupted and shaken the political stability of the nation. In 1998, the economy is predicted to contract by 10-15%, inflation could exceed 80%, and the number of poor could double.

The World Bank projection shows the GDP falling by 10-15% in FY98/99 and remaining stagnant in FY99/2000. Domestic demand has plunged due to a sharp decline in investment. Even export growth appears to be slowing as trade finance becomes increasingly scarce. The balance of payments is projected to record a current account surplus for at least the next two years, about 1.8% of GDP for FY98/99 and 2.3% of GDP for FY99/2000. Exports are likely to grow relatively slowly owing to limited access to trade finance, the depletion of input stocks, lack of buyer confidence, and prolonged uncertainty and social unrest. In this respect, imports are expected to shrink substantially, suppressed by the severe contraction in domestic demand and a major increase in import costs.

In addition to external factors triggered by Thailand's crisis, the World Bank came to the conclusion that four key microeconomic factors sent Indonesia into the deep crisis. The first was the rapid build-up of private external debt in recent years. Such a large external debt at such short maturities made Indonesian corporations particularly vulnerable to changes in outside sentiments. Corporations could have protected themselves if they had hedged their foreign debts, but they chose not to do so to save costs and earn higher profits.

The second was that Indonesia's banking system went into the crisis with several well recognized flaws. Accounting and provisioning rules had not kept pace with the increased sophistication of the banking system and did not provide important early warning signals on the true financial health of the banks. The legal framework did not support contract enforcement when borrowers failed to repay. Not surprisingly, numerous banks were seriously undercapitalized, and some even insolvent before the crisis began.

The third factor was the question of governance, related to the issues of corruption,

collusion and insider trading as a result of the weak legal system, the arbitrariness, and lack of transparency in decision making. In some sense, this crisis of confidence has been the most damaging of all Indonesia's crises, because it postponed the return of private financial flows and slowed the provision of interim official funding.

The fourth was the unfortunate political juncture at which the crisis hit the country. The deteriorating economic situation, increases in food and fuel prices, and calls for the President's resignation and political reforms, culminating in two days of mass violence and looting in cities throughout Indonesia. The political situation remains fluid and uncertain, its fragility vulnerable to a further worsening in economic conditions.

Crisis-induced policy reforms

Not long after the monetary crisis hit the economy, the government turned to the IMF and the World Bank to cope with the crisis and stabilize the economy. The IMF and World Bank mobilized commitments for a total stabilization package amounting to some US\$ 43 billion. In exchange for these extraordinary loans, the donors insisted that Indonesia undertake macroeconomic and structural policy reforms to ensure that the economy would be managed in a more competitive and transparent way. The IMF came with conditional aid as stated in the GOI-IMF Letter of Intent signed by the two parties on 15 January 1998.

The IMF policy recommendations are basically aimed at responding to the four major policy challenges, namely: (i) restructuring the corporate debt overhang, (ii) reforming and strengthening the banking system, (iii) improving governance, and (iv) maintaining macroeconomic stability through the transition with appropriate fiscal, monetary, investment and trade policies. Each of these is necessary for restoring stability, regaining the confidence of foreign investors, trading partners and resuming growth. The scope and focus of policy reforms, however, differ slightly between one letter of intent to another.

One of the conditions that the IMF insisted on, as a part of structural transformation included in the 15 January 1998 letter of intent, was that BULOG's operation and monopoly be limited to rice and that subsidies on other food and essential goods be scaled-back sharply. Domestic agricultural trade

was deregulated. Imports of garlic, wheat, and soybean were liberalized by allowing general importers to import those commodities. Foreign investment was encouraged, and by February 1998, formal and informal barriers to investment in the palm oil industry were removed.

Much more progressive reforms on trade and investment are found in the supplementary memorandum of the GOI-IMF Letter of Intent signed on April 9, 1998. Import tariffs for most of 500 agricultural items were agreed to be reduced to a maximum of 5%. The ban on crude palm oil (CPO) export was removed and replaced by an export tax of 40% and raised in July to 60%. Local content requirement on milk products and BPPC's monopoly on cloves were abolished. Some of the proposed reforms listed in the January letter of intent were restated including the removal of regulations limiting foreign investment on palm oil, wholesales and retails.

In addition to fiscal and monetary policy reforms and debt restructuring efforts, the GOI-IMF supplementary memorandum signed on June 25 1998 re-emphasized structural policy reforms. In this memorandum, the GOI was requested to keep its commitment in completing the previous structural reforms including the BULOG demonopolization in marketing and distribution, and the use of international standard auditing in the financial system of BULOG, the state electricity company (PLN), the state oil company (Pertamina), and the reforestation funds. Transparency in the process of privatization of the state-owned companies (BUMN) was requested and the GOI together with the Asian Development Bank and the World Bank will prepare the Master Plan of the BUMN reforms by September 1998.

The June 1998 memorandum of economic and financial policies also covered the agreed plan to spend 7.5% of its GDP for social safety net programs extending to electricity, fuel, medicines, foodstuffs, and other needs. The two parties agreed on temporary subsidies for rice, sugar, soybeans, wheat, flour, corn, meat and fish, which account for a substantial portion of the expenditure of poor households. The government plans to import a million tons of sugar, 700 tons of soybeans, and 4.1 million tons of rice for the 1998/99 fiscal year. Bulog would need about \$2.7 billion in soft credit from Bank Indonesia to import essential commodities, including 3.1 million tons of rice. Another Rp 5.4 trillion is needed to finance market operation

programs aimed at stabilizing basic commodity prices. On the 2nd July 1998, the government deregulated its investment policy, embarking on a more open investment regime.

Agricultural sector adjustment policies

Indonesia has undertaken massive policy reforms in agriculture, including: (i) eliminating BULOG import monopoly over wheat, wheat flour, sugar, soybeans, garlic, and quite recently rice, (ii) reducing tariff rates on all food items to a maximum of 5% and abolishing local content regulations, (iii) removing restrictive trade and marketing arrangements for a number of commodities including the local content requirement, and (iv) deregulating trade in agricultural products across district and provincial boundaries including those for cloves, oranges, and livestock. It is expected that consistent implementation of these reforms will restore investor confidence and allow for more efficient and productive investment. Moreover, these reforms will benefit smallholder producers and thus reduce the incidence of poverty.

In the beginning of September 1998, the government lifted subsidies on wheat flour, sugar, and soybeans, and simultaneously liberalized their importation. General importers are completely free to import the commodities and will be exempt from import duties. The government has committed to improving the bidding mechanism by adding several requirements to ensure transparency and competitive bidding. At least 160 companies, both domestic and foreign, have shown an interest in joining the tender.

There are several other essential policy areas to be addressed to strengthen the poverty-reducing capacity of the agricultural and natural resource sectors.

- Ensuring adequate incentives to rice farmers: There are clear trade-offs between keeping rice prices low for consumers and providing adequate production incentives to farmers. In the medium term, it will be important to move rice prices towards the world market price on trend to ensure an appropriate supply response, to avoid smuggling overseas, and to provide appropriate earning opportunities to farmers.
- Reforming the role of government in the marketing and distribution of food commodities: This includes further deregulation of trade in

food crops (except for rice), possibly replacing administrative mechanisms for food security and price stabilization with financial instruments.

- Improving trade and price policies affecting agricultural and rural sectors: Reducing non-tariff barriers to constrained agricultural markets, including export restrictions on agricultural commodities, will provide better earning opportunities to producers. Other policies are also essential to increase competitiveness, productivity and efficiency in agriculture such as liberalizing trade in fertilizer, agro chemicals, and seeds and privatizing state owned fertilizer and seed enterprises.
- Increasing the efficiency of irrigation management to improve efficiency and productivity in agriculture: This can be achieved by increasing efficiency of existing irrigation schemes and instituting effective irrigation options and maintenance programs.

A more agricultural specific policy reform which is in line with supplementary memorandum to the GOI-IMF Letter of Intent signed on 15 November 1998, added the so called "The Agricultural Sector Adjustment Loan (Agsal)", listing necessary policy reforms required by IMF as a condition for loan disbursement. There are three objectives of the reforms, namely: (i) maintain food security in a more efficient and effective manner, (ii) improve the efficiency of key farm level factor markets, and (iii) enhance the knowledge base to improve agricultural performance.

The first objective is based on the question of the ability of Indonesia to adequately feed its population. Since the crisis hit the Indonesian economy, food prices have risen dramatically and adequate quantities of food are out of reach of approximately the bottom quarter of the population. It is estimated that as many as 70 million persons have an income below the poverty line. The objective will be achieved by (i) relying on market mechanisms for foodstuffs, (ii) protecting food insecure households through well-targeted food subsidy programs, and (iii) restructuring BULOG.

The second objective is based on the consideration that markets of the main farm inputs are heavily distorted. The crisis has revealed underlying structural flaws in the operation of agro-input markets. The fertilizer and seed markets, for example, are dominated by public sector companies which operate in non-competitive and inefficient ways. The lack of competition or a commercial

orientation within the fertilizer and food seed industry raises the cost of providing essential agro-inputs and reduces the responsiveness of the agro-input producers to farmer demands. Technological innovation is stifled and growth is far less than what it could be. For fertilizer, the GOI has maintained heavy subsidies for urea, TSP, ZA and KCl. At the present level, close to two-thirds of the sale price of fertilizer is accounted for by direct budgetary subsidy. In addition, the domestic fertilizer factories are provided natural gas at subsidized prices. Based on the above consideration, the second objective is to be achieved by (i) improving the fertilizer market, (ii) improving the seed market, and (iii) reorienting cooperatives.

The third objective is based on the belief that competition in agricultural production and factor markets will spur an agricultural recovery if the public sector can provide an enabling environment for agricultural growth and development. Good quality economic infrastructure, solid investment in rural human resources, clear rights in rural property, an effective legal framework for rural business activity, an ample supply of suitable technology, well-functioning rural financial markets, and the information and awareness of technological and market opportunities are necessary to sustain the dynamism of rural prosperity and structural change. This objective is to be achieved by undertaking joint consultations and reviews of public programs and priorities in agriculture with the World Bank, interested government agencies (central and local), NGOs, and other technical experts on an annual basis to improve the efficiency of sectoral spending. Such review will examine, inter alia, agricultural research, extension, rural credit, village infrastructure, rural industrialization, rural education, and rural health care.

As mentioned in previous chapters, in December 1998 the government undertook progressive reforms on the domestic food market including the role of BULOG. In addition, fertilizer subsidies were lifted and fertilizer and rice prices were freed to be determined by market mechanisms. Along with the above measures, as a compensation, non-price production incentives are to be implemented in the forms of, among others: (i) adequate farm credit and simple procedures to ensure the implementation of packages of technology, (ii) adequate funds for national seed systems to operate, and (iii) adequate funds to undertake applied research and extension services.

It has been argued that government should increase the rice floor price by 40-50% in order to reduce the gap between prices received by farmers and the import parity price (Table 1). Higher farm prices would increase farmer incentives and help restore higher rates of production growth. In the long-run, higher prices of rice would reduce rice consumption, stimulate diversification of

consumption by diverting household consumption away from rice, and in turn reduce rice self-sufficiency burdens. Whether higher rice prices increase rural welfare depends very much on the degree to which farm producers are net sellers or net buyers of rice, and the relevant demand and supply elasticities prevailing in the market.

Table 1 Domestic and world rice prices, 1997-1998.

Year	Domestic Price (Rp/kg)	World Price (US\$/ton)	Exchange Rate (Rp/US\$)	Import Parity Price (Rp/kg)	Ratio Dom/IPP
1997 Jan	965	310	2,387	893	1.08
Feb	972	337	2,403	978	0.99
Mar	1,014	328	2,418	958	1.06
Apr	1,016	290	2,443	855	1.19
May	1,021	280	2,458	830	1.23
June	1,033	290	2,450	858	1.20
Jul	1,046	300	2,528	915	1.14
Aug	1,062	290	2,935	1,028	1.03
Sep	1,088	270	3,350	1,092	0.99
Oct	1,123	250	3,700	1,117	1.01
Nov	1,207	250	3,740	1,129	1.07
Dec	1,215	232	5,700	1,597	0.76
1998 Jan	1,290	230	9,230	2,563	0.50
Feb	1,439	240	9,580	2,776	0.52
Mar	1,475	237	9,540	2,730	0.54
Apr	1,532	260	8,350	2,622	0.58
May	1,950	260	10,910	3,425	0.57
June	2,300	260	12,500	3,925	0.58
Jul	2,150	275	12,000	3,985	0.54
Aug	2,810	290	11,500	4,027	0.70

Source: Price data from Bulog monthly reports (various issues).

Exchange rate from Economic Indicators (BPS).

Note: World price of rice: Bangkok FOB of Thai 25% Broken.

Freight and insurance costs: 15% of the FOB price.

Cost of handling and transport to central market: 5% of CIF price.

Import parity price= ((1+1.15)*FOB Bangkok*Exchange rate) *1.05/1000.

The price of fertilizer has been highly subsidized as an incentive to increase rice production. If rice were competitively priced, there would be little reason to subsidize fertilizer. The level of subsidy relative to world or import parity prices of fertilizer is described in Table 2. The rate of fertilizer subsidy increased in the last year mainly due to devaluation of the rupiah. A wide gap between the subsidized and world market prices has provided traders or speculators with high incentives to illegally re-export subsidized fertilizer to neighboring countries. Moreover, given that export crops become more profitable in the wake of devaluation, there has been strong indication that fertilizer is being used on estate crop production. This has caused domestic prices of fertilizers to soar to a level of well above the maximum retail (subsidized) prices set by the government.

In terms of urea and TSP (SP-36) fertilizers, for example, their market prices in August 1998 were reported to be Rp 1,100 and Rp 1,500 per kg, respectively, much higher than the subsidized prices. Similarly, the maximum retail price of KCl for rice production was set at Rp 850 per kg, while the market price in fact reached a level of Rp 3,000 per kg. This indicates that the implementation of fertilizer price subsidy was no longer effective. This was the main reason for the government to abolish price subsidy on fertilizer.

Whether it is timely to abolish subsidies, when the delivery system has collapsed is now a controversial policy issue. Many argue that before the subsidies were removed, the government should have secured an effective food delivery system in order to reach those who are food insecure. In terms of fertilizer subsidy removal,

negative reaction spread out not long after the policy was announced, which was close to fertilizing time. At that time, farmers have no cash to purchase fertilizer which has already become much more expensive and, unfortunately, fertilizers

accidentally disappeared from the markets. Speculators were blamed for hoarding the fertilizers. Many people suggested that subsidy elimination should instead be done gradually.

Table 2 Subsidized retail and world market prices of fertilizer.

Year/Month	Subsidized Price (1)		Import Parity (2)		Ratio (1:2)	
	Urea	TSP	Urea	TSP	Urea	TSP
1997 Dec	400	525	630	1,180	0.63	0.45
1998 Jan	400	525	1,015	1,910	0.39	0.27
Feb	400	525	1,040	1,985	0.38	0.26
Mar	450	675	1,088	1,975	0.41	0.34
Apr	450	675	1,095	1,728	0.41	0.39
May	450	675	1,415	2,298	0.32	0.29
Jun	450	675	1,445	2,635	0.31	0.26
Jul	450	675	1,330	2,525	0.34	0.27
Aug	450	675	1,330	2,420	0.34	0.28

Source: Calculated from Fertilizer Week Magazine (various issues).

Impacts of the crisis and economic situation

The massive rupiah depreciation has serious implications on domestic demand, the banking system, corporate balancesheets, inflation, trade and the balance of payments, government finances, and eventually growth, incomes, employment, welfare, and poverty.

The most immediate effect of the exchange rate depreciation was a collapse in domestic demand: -2.5% in the last quarter of 1997, -7.9% and -17.6% in the first and second quarters of 1998. The collapse of domestic demand overwhelmed producers of import substitutes who might otherwise

have benefited from the exchange rate depreciation. Exporters of manufacturing products have been handicapped by a shortage in trade finance due to lack of confidence among the trading partners. The main gainers were exporters, especially those exporting agricultural and natural resource based products. As presented in Table 3, the values of agricultural exports during the first two quarters in 1998 were much higher than those of the previous year. However, this is not the case for mining where export values during the first two quarters were below those that of the previous year.

Table 3 Indonesia's export values (million US\$) by industry (excluding petroleum and gas).

Year	Agriculture	Manufacturing	Mining	Others	Total
1995	2,888.3	29,328.2	2,690.9	46.0	34,953.4
1996	2,912.7	32,124.8	3,019.8	35.6	38,092.9
QRT 1	587.0	7,164.0	671.7	9.7	8,462.4
QRT 2	686.7	8,035.3	862.6	8.7	9,593.3
QRT 3	824.5	8,341.8	716.4	7.7	9,890.4
QRT 4	784.5	8,583.7	769.1	9.5	10,146.8
1997	3,132.6	34,985.2	3,107.1	596.1	41,821.0
QRT 1	600.8	7,779.4	718.5	52.5	9,151.2
QRT 2	720.2	8,501.3	878.0	261.5	10,361.0
QRT 3	931.4	9,340.0	782.4	258.1	11,311.9
QRT 4	880.2	9,364.5	728.2	24.0	10,996.9
1998					
QRT 1	807.3	8,814.3	613.0	7.4	10,242.0
QRT 2	907.5	8,751.4	606.8	6.2	10,271.9

Source: BPS, Economic Indicators (Nov. 1998 & August 1997).

The rupiah depreciation caused inflation to soar. By the end of June 1998, inflation over the past 12 months had reached 59%. The bulk of this increase was caused by a rise in the price of tradables, especially food and clothing. This has serious implications on the welfare of the poor. Agricultural supply shocks due to weather problems combined with the high inflation have sharply reduced consumer purchasing power and triggered an alarming rise in the number of food insecure families. A large number of families with incomes marginally above the poverty line in 1996 have found that their incomes no longer keep pace with the rapidly rising prices of essential goods.

Tabor et al. (1998) estimated the poverty incidence and number of persons classified as severely food insecure in 1998. They argue that the absolute poverty incidence has increased because of: (i) the fall in real incomes, (ii) the rise in urban unemployment, which is estimated to be as high as 15 million persons, and (iii) the rise in food prices facing the poor at a rate faster than the rate of price inflation. Using the income distribution and poverty line measures prevailing in 1996, the 1998 estimates of the income fall, and higher real prices facing the poor and middle classes, they suggest that the crisis would cause an increase of 8 million urban poor and 23 million rural poor. They also suggest that there would be approximately 9.6 million urban and 24.3 million rural food-insecure individuals in mid-1998.

Up to now, the government is retaining its (more targeted) subsidy on rice, particularly to food insecure families, and it still seeking the most appropriate mechanism to deregulate trading in the staple and to make the price affordable. Market operations to help people severely affected by the crisis have been conducted in 23 out of the country's 27 provinces, with about 230,000 tons of rice being sold at much reduced price (40%). Such market operations are planned to last until March 1999.

The government budget is under tremendous strain, stemming from the impact of weaker economic activity, lower oil prices, and increased subsidies as a result of the rupiah depreciation and higher inflation. The 1998/99 budget has turned to a deficit of 8.5% of GDP. All these factors combined to lower GDP growth significantly. By the first half of 1998, GDP had contracted by 12.2% causing a number of lay-offs. Total unemployment climbed sharply to an estimated figure of 14 million or 15%

of the workforce by the end of the year. Many claim that this is just the beginning. Economic conditions are likely to get worse before they get better.

Impacts of the crisis on food production and supply

Weather problems and the economic crisis have pushed Indonesia into a serious food crisis. The primary cause of food shortages and production drops is the long El-Nino drought followed by La-Nina. In terms of rice, the supply shocks occurred after several years of slow growth of rice production. The monetary crisis, which has disrupted agricultural input and output markets, seriously affected food supply.

Table 4 presents food crop production in the last three years. Rice production, in the form of dried paddy, dropped from 51 million tons in 1996 to 49 million tons in 1997 or at a rate of 4.1%. The 1998 rice production is estimated to drop further by 6-7% compared with that of last year. This estimate is based on the production figure over the first 8 months, which is much smaller (37 million tons) than that of the previous year (42 million tons). According to the second production forecast of the Central Bureau of Statistics, rice production in 1998 is forecast to drop further by 6.5%, to a total amount of 46.3 million tons. A similar situation has occurred in the production of other food crops. The case of soybean was the worst, since its production continuously dropped, from 1.7 million tons in 1995 to 1.5 million tons in 1996 and 1.4 in 1997. Due to weather problems of La-Nina, the 1998 production of soybeans is estimated to further decline as reflected by its total production in the first eight month of the year.

The decline in the domestic food supply has been partially offset by an increase in food imports. Table 5 presents import figures of main food commodities during the 1994-1998 period. Imports of rice, soybean and sugar, in particular, have increased significantly to offset the low level of domestic production. The import of wheat has also increased to meet an increasing demand in relation to the food and social safety net program. The decline in rice production in 1997 has been offset by rice imports of 3.6 million tons plus 4.3 million tons of wheat import. As mentioned before, for the 1998/99 fiscal year, the government plans to import a million tons of sugar, 700 tons of soybeans, and 4.1 million tons of rice.

Table 4 Production of food crops, 1995-1998 ('000 tons).

Year /Period	Paddy	Maize	Soybean	Cassava
1995	49,744	8,246	1,680	15,441
Jan-Apr	23,524	4,811	539	2,443
May-Agt	16,476	1,946	689	6,228
Sep-Dec	9,744	1,489	452	6,770
1996	51,101	9,307	1,517	17,002
Jan-Apr	26,345	5,203	502	3,289
May-Agt	15,302	2,153	625	8,149
Sep-Dec	9,454	1,951	390	5,564
1997	49,377	8,771	1,357	15,134
Jan-Apr	26,742	5,312	469	2,680
May-Agt	14,694	2,404	550	7,770
Sep-Dec	7,941	1,055	338	4,684
1998				
Jan-Apr	21,621	5,593	380	1,952
May-Agt	15,625	2,059	510	6,119

Source: BPS. Economic Indicators (Nov. 1998).

Table 5 Food imports, 1994-1998 ('000 tons).

Year	Rice	Maize	Soybean	Wheat	Sugar
1994	876	1,084	697	3,188	128
1995	3,014	894	473	3,614	687
1996	1,090	595	593	3,820	975
1997	3,582	619	779	3,958	1,336
Jan-Jun	320	na	na	2,087	993
1998*	3,100	500	700	4,250	1,716
Jan-Jun	3,414	na	298	2,130	954

Source: BULOG.

Note: * Forecast by Tabor et al. (1998).

Jan-Jun: Import procurement by BULOG.

Impact of the crisis on agricultural exports

Natural rubber, palm oil, coffee, tea, and cocoa are major sources of foreign exchange earnings for Indonesia. Theoretically, a large devaluation of the rupiah would make Indonesia's export commodities more competitive in the world market, and therefore increase exports. This, however, was not true due to a number of reasons. The potential boost in agricultural exports was offset by higher input prices or higher prices for imports which are either used directly by the sector (such as fertilizer and pesticides) or indirectly by other sectors which supply inputs to agriculture. The higher cost of capital choked off investment in the economy, including in the cash crop subsector.

Not only on food crops, a long drought as a result of El-Nino resulted in a sharp fall in the production of export crops including oil palm, cocoa, and coffee in the second half of 1997. Coffee production dropped by 30% in 1997, more than half of the nation's 2.7 million hectares of oil palm were seriously damaged. As a result, exports of coffee fell by 16%, cocoa beans by 20% and tea fell by

more than 36%. Data on the value of Indonesia's major agricultural exports are described in Table 6.

Background: development stakes for irrigated and rainfed areas

The importance of the irrigated plains and deltas of Southeast Asia is indisputable: most of the population and the agricultural production of the region is concentrated there. The future of agriculture in this region is being built in these irrigated areas. However, their high population density often leads to small farm size where economic accumulation is difficult. These small farming units do not usually produce enough to meet their basic needs and have to engage in non-agricultural activities to improve their incomes.

Table 6 Exports of agricultural products (million US\$).

Year	Rubber	Coffee	Shrimp	Tea	Cocoa	Fish	Others	Total
1996	46.0	588.8	1,015.7	109.3	263.0	675.4	254.5	2,952.7
QRT 1	17.0	90.5	228.0	24.0	50.2	75.8	131.5	617.0
QRT 2	11.8	143.1	226.9	21.6	75.2	93.9	114.2	686.7
QRT 3	6.5	199.6	279.9	29.4	66.9	108.6	133.6	824.5
QRT 4	10.7	155.6	280.9	34.3	70.7	97.1	135.2	784.5
1997	31.8	503.5	1,007.9	84.6	295.1	381.4	828.3	3,132.6
QRT 1	6.7	91.7	232.7	31.9	45.5	60.6	131.7	600.8
QRT 2	9.4	156.8	220.1	31.0	59.8	99.3	143.8	720.2
QRT 3	6.8	165.2	291.1	15.6	95.0	98.5	259.2	931.4
QRT 4	8.9	89.8	264.0	6.1	94.8	123.0	293.6	880.2
1998								
QRT 1	4.4	100.0	230.2	31.1	45.4	97.7	298.5	807.3
QRT 2	5.1	113.2	307.7	28.8	102.0	98.5	252.2	907.5

Source: BPS, Economic Indicators (Nov. 1998 & August 1997).

CGPRT Centre News and Activities

Technical Advisory Committee (TAC) and Governing Board (GB) meetings

The meetings of the Technical Advisory Committee (TAC)* and the Governing Board (GB)** of the CGPRT Centre for the year of 1999 were held at the Centre on 23-25 November and 1-2 December, respectively. The TAC meeting was attended by eight members out of nine and the GB meeting was attended by ten representatives out of the eleven member countries. Ms. Lim Kim-Lan, Chief, Programme Management Division, attended the GB meeting on behalf of the ESCAP secretariat.

Progress reports of both the research and development (R&D) and the human resources development and information services (HRD/IS) programmes, together with the management report, were presented at the meetings.

Under the R&D programme, the following projects and plans were discussed:

On-going projects:

- (i) Effects of trade liberalization on agriculture in selected Asian countries with special focus on CGPRT crops (TradeLib).
- (ii) Economic and policy analysis for the ecoregional approach in Southeast Asia (ECOPOL).
- (iii) Food security strategies for selected South Pacific island countries (SouthPIC).

- (iv) Avenues for agro-industrial development in Southeast Asia (AGRIND).

Proposed projects:

- (i) Stabilization of upland agriculture and rural development in El Niño vulnerable countries (ELNINO).
- (ii) Human resources development to enhance sustainability of upland agriculture in selected Southeast Asian countries (SUASA-3).

Future project ideas:

- (i) Market development strategies for potato in selected Southeast Asian countries (MDSP).
- (ii) Feed crop study in Asia (FEED).

Under the HRD/IS programme, the following activities and plans were reported:

HRD:

- (i) Regional training course on integrated database management at the advanced level (two weeks in Bogor) under "TERAP" project (completed).
- (ii) Dissemination of ecoregional analysis and planning tools for the development of agricultural atlas in Asian monsoon countries (AgriAtlas) (proposed).

Publication:

- (i) Working Papers: Fourteen country reports of TradeLib projects (WP No. 38-51).

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- (ii) Monographs: Integrated report of "SUASA-2" project and Proceedings of a regional working seminar (CGPRT No. 36).
Agricultural planning in Asia: Proceedings of a workshop (CGPRT No.37).
- (iii) Palawija News: Vol. 16, No. 1-4.

* Members of the Technical Advisory Committee (as of November (1999): Prof. Jean-Marc Bousard, National Institute of Agricultural Research (France); Dr. Roley Piggot, University of New England (Australia); Dr. Raghunath D. Godhake, National Agricultural Research Institute (Papua New Guinea); Prof. Masao Kikuchi, Chiba University (Japan); Prof. Dr. Arie Kuyvenhoven, Wageningen University (The Netherlands); Dr. Dong Phil-Lee, Korea Rural Economic Institute (Republic of Korea); Dr. Sumarno, Central Research Institute for Food Crops (Indonesia); Dr. Boonjit Titapiwatanakun, Kasetsart University (Thailand); and Dr. Mruthyunjaya, Indian Council of Agricultural Research (India).

** Members of Governing Board (1997-1999): Bangladesh, France, India, Indonesia, Japan, Myanmar, Papua New Guinea, Philippines, Republic of Korea, Sri Lanka and Thailand.

TradeLib

A regional workshop on "Effects of Trade Liberalization on Agriculture in Asia" was held during 5-8 October 1999 in Bogor, Indonesia. Ten country reports were discussed by the national experts of the project together with corresponding commentators. In addition, six non-participating countries, Bangladesh, Cambodia, Lao PDR, Myanmar, Nepal and Sri Lanka were invited. A keynote paper entitled "Trade Liberalization and World Food Prospects in the 21st Century" was presented by Dr. Keiji Ohga, University of Tokyo, and a consolidated discussion of the project findings was reported by the regional advisor of the project, Dr. Boonjit Titapiwatanakun, Kasetsart University. Proceedings of this workshop is being edited.

Nine of the ten second country reports of the projects - China, Pakistan, India, Malaysia, Republic of Korea, Indonesia, Thailand, Japan and the

Philippines - were published under the working paper series of the Centre during May-December 1999. The Viet Nam report is being edited. These reports cover commodity aspects of the effects of trade liberalization at national and local or farm levels in each country.

An integrated report of the project, which covers those studies implemented in both Phases I and II, is now being prepared.

ECOPOL

In Indonesia, a survey of 120 rural households was conducted in November and the results are currently under analysis. The survey targeted mainly poor agricultural households, in particular landless agricultural workers and farmers cultivating and/or owning less than 0.5 hectare, ricefields and dry land included. It is expected to help characterize socioeconomic and agricultural conditions of rural households in the southern part of West Java province and identify potential areas of work to improve household welfare, either through commodity development or institutional improvement. Results will be presented in January/February next year to stakeholders at different levels, including local farmers at the village level.

In Viet Nam, the first phase activities are now completed. The results have been presented to the district and province stakeholders, including MARD and other government institutions. The institutional analysis will start in January next year and will lead to the identification of main stakes, actors' positions towards these and the functional representation of the system, in particular as far as the rice and the pig commodity chains are concerned.

In both cases, it appears that a gap has to be bridged between local decision-makers (farmers) and government officials and policy-makers. This gap derives from different perceptions and representations of the development of agriculture, as well as from different objectives. The "ECOPOL" project with the tools that it develops will mainly tackle these issues in 2000, trying to help reconcile all actors' preferences into a shared vision of problems and solutions and the related actions and decisions to be taken in order to improve the current situation.

SouthPIC

The coordinating planning meeting was held at the Centre on 20-21 September 1999. The regional advisor participated in the meeting along with the Centre's staff. The meeting agenda included: (i) brief review of the project background and objectives; (ii) formulation of methodological guidelines for country studies; (iii) framework of the project reports; and (iv) schedule of in-country planning meetings; and (v) other related matters.

Based on the discussions, the project leader, in consultation with the regional advisor, prepared the following materials for the in-country planning meetings: (i) report of the coordinating planning meeting; (ii) general reference of the project plan; and (iii) basic concepts and analytical framework.

The in-country planning meeting were held in each participating country during 6-17 December 1999. The project leader along with the regional advisor participated in the meetings. The national experts were asked to finalized their work plans of the country studies and to start implementation from January 2000.

AGRIND

The project "Avenues for Agro-Industrial Development in Southeast Asia (AGRIND)" was officially started in May 1999. The aim of this project is to identify feasible post-harvest technology and industrial development activities in Southeast Asia. The project will result in (i) the identification of opportunities for improvements in industry and farming, (ii) broadening the range of produced and processed commodities, and (iii) the development of new commodities (specific crops, semi-processed products or end-products) from agricultural products.

A series of surveys on the industrial potential of the following agricultural commodity groups has been implemented in Indonesia: animal products, beverages, fibre crops, grains, nuts, oil crops, spices, starch crops, sugar crops, vegetables, and others. On each commodity a description is given on (inter) national markets, local production centers (with emphasis on seasonality), local constraints, and government intervention. Furthermore, a network of over 150 agro-industrial partners (covering multinationals, ministries, universities, and

small and medium enterprises) has been developed and will be expanded in the coming years.

In the meantime, projects already initiated are a potato processing project in the South Sulawesi region, a palm oil improvement project in North Sumatra and a mango export project in East Java. Also, several additional opportunities for improvement have been identified, and relevant partners for related projects are being contacted. These developments currently focus on:

- New processing techniques for traditional plantation crops (like rubber, oil palm, coffee and tea);
 - Local knowledge of herbs and spices as alternatives for industrial preservatives (green chemicals); and
 - Local production of high-quality end-products (tapioca starch for industrial purposes).
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HRD/IS

Human resources development

A two-week regional training course at the advanced level on "Database management and eco-regional analytical techniques for agricultural planning" under the "TERAP" project was held during 12-23 July 1999 at the CGPRT Centre. The main objective of the training was to transfer tools and techniques for geographic, economic and policy analysis. The major goal was to promote an eco-regional approach to national planning; the ultimate thrust is to develop a dynamic agricultural atlas for the region.

The course was attended by nine participants, three each from Indonesia, the Philippines and Viet Nam. Topics included task definition, agricultural data needs, database design, construction, management and queries, geographic information system (GIS), polygon overlay and map digitizing, spreadsheets, and tools developed under the project "Economic and policy analysis for the ecoregional approach in Southeast Asia (ECOPOL).

The course was well received by the participants.

Information services

Two staff of the information services section participated in the Pan Asia E-Commerce Training Workshop from 16-19 August 1999. They were given orientation on the system to develop an

access point at the Centre to expand its information services. The setting is now coming to completion.

In this quarter the section published eight titles of Working Papers under the "TradeLib" project (phase II). Two others will be completed soon.

The library prepared a new facility CDS-ISIS system for users. Users are now able to do a literature search by themselves.

Database

The database section activities include:

- Preparation of resource materials for TERAP course (topic: spreadsheets in agriculture).
 - Development of training module for TERAP course (topic: map digitizing).
 - Reconstruction of the Centre's homepage.
 - Updating CGPRT crop data for Thailand.
 - Updating data for Viet Nam.
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Announcements

International Course on Integrated Pest Management Strategies to control disease, insect pests and weeds

**International Agricultural Centre
Wageningen/the Netherlands March 19 –
July 1, 2000**

The course is designed for university trained plant protection and advisory officers who are engaged in advising farmers on all aspects of plant protection, as well as for lectures in general plant protection at agricultural colleges and those engaged in applied plant protection research. The course is open to candidates of both government and non-government organizations. Applicants should have been working in plant protection for several years. They should be engaged in plant protection in the widest sense and be interested in all subjects dealt with the course.

For further information, contact:
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Rural Extension Courses

- I A Rural Communication Networks
- IB Participatory Planning and Monitoring
- II A Management of Extension Organisations
- II B Research – Extension – Farmer Linkages

**International Agricultural Centre/Royal Tropical Institute (Amsterdam)
Wageningen/the Netherlands May 28 –
July 8, 2000**

IAC is organizing four course modules with a duration of 3 weeks each. In addition it offers a tailor-made module for in-country Training for Trainers in Rural Communication. Each module offers a specific entry point and approach for coping with the institutional and methodological framework of rural extension nowadays.

With respect to the Netherlands-based training modules, participants can either attend any of the individual course modules or attend a six-weeks programme combining module I-A or I-B with either module II-A or II-B.

The in-country training module is organized for local, national and possibly regional groups of professionals engaged in rural extension or related service. This training is situation-specific and tailor-made to better meet local requirements and needs and to economies through local implementation.

For further information, contact:
International Agricultural Centre (IAC)

CGPRT Centre

The Regional Co-ordination Centre to Research and Development of Coarse Grains, Pulses, Roots and Tuber Crops in the Humid Tropics of Asia and the Pacific (CGPRT Centre) was established in 1981 as a subsidiary body of UN/ESCAP.

Objectives

In co-operation with ESCAP member countries, the Centre will initiate and promote research, training and dissemination of information on socio-economic and related aspects of CGPRT crops in Asia and the Pacific. In its activities, the Centre aims to serve the needs of institutions concerned with planning, research, extension and development in relation to CGPRT crop production, marketing and use.

Programmes

1. Research, which entails the preparation and implementation of studies covering production, utilization and trade of CGPRT crops in the countries of Asia and the South Pacific.
2. Training of national research and extension workers,
3. Information and documentation which encompasses the collection, processing and dissemination of relevant information for use by researchers, policy makers, and extension workers.

Palawija News

Contributors are invited to submit concise summaries of significant social research related to CGPRT crops for publication. Figures (graphs or tables) may accompany the article. All articles are subject to editing to meet space limitations.

Please send all queries relating to articles in *Palawija News* to Publications Section, CGPRT Centre, Jalan Merdeka 145, Bogor 16111, Indonesia.

Palawija News is distributed free of charge to interested individuals and institutions. Please send address corrections and additions to the Distribution Officer, Publications Section.

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Palawija News
Volume 16, Number 4