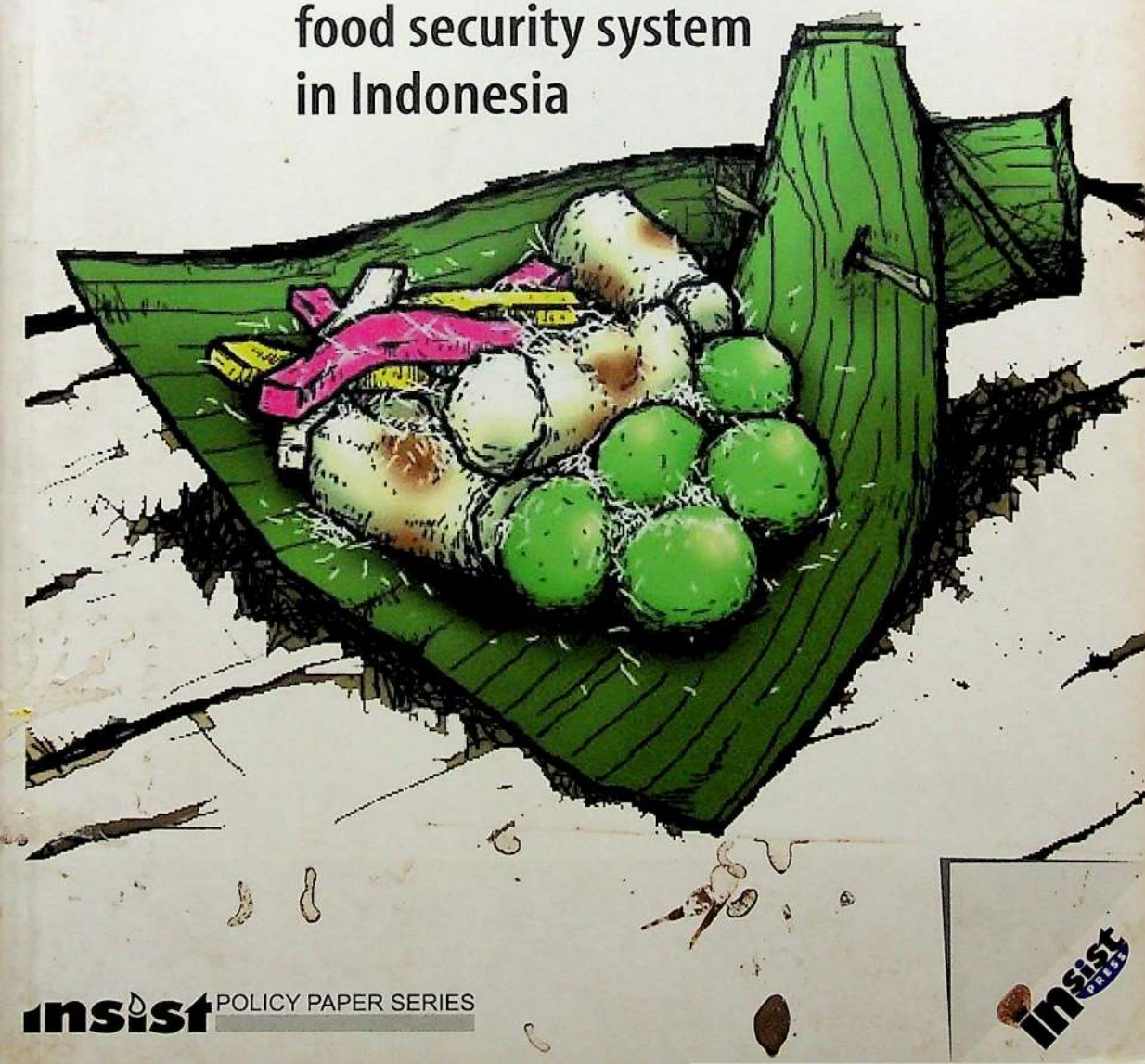
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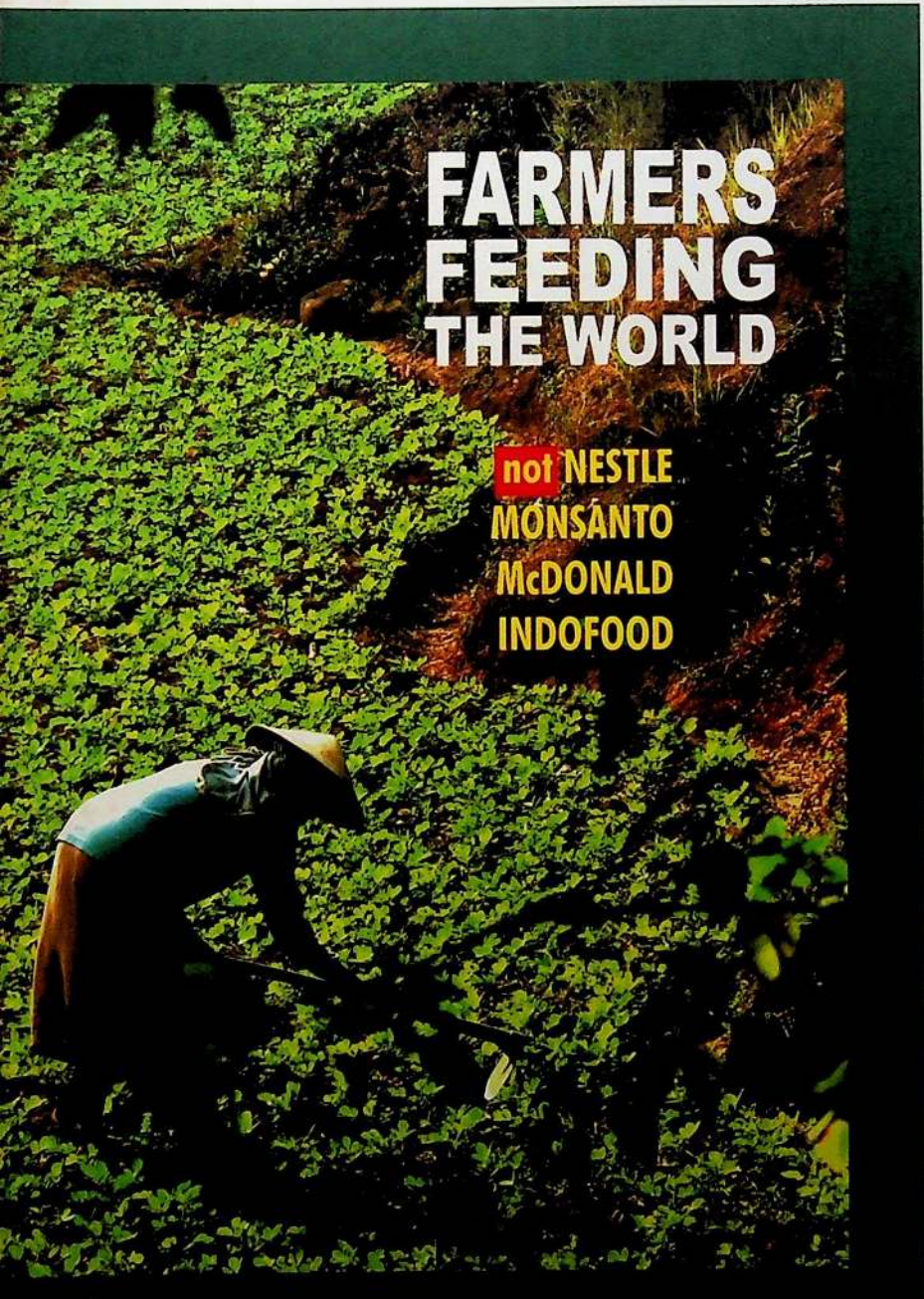
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towards community-based food security system in Indonesia



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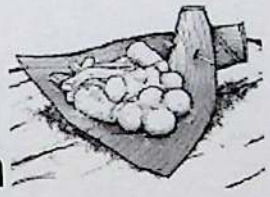


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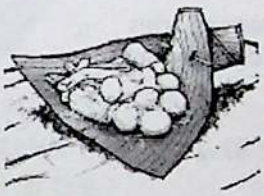
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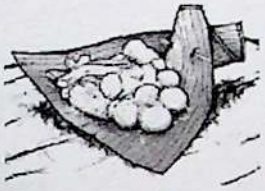
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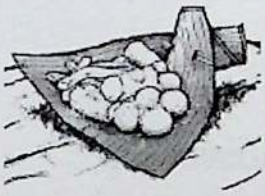
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Gianyar, August 2007
Hira Jhamtani

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Introduction

FOOD IS A POLITICAL-ECONOMIC ISSUE

In October 2006, the Indonesian government, with approval from the Parliament (*Dewan Perwakilan Rakyat*, DPR --the House of Representatives), decided to buy 32 Armored Personnel Carriers (APCs) of the VAB (*Vehicule de l'Avant Blinde)* type to be sent to Lebanon as part of Indonesia's contribution to the UN peace keeping force following the conflict in that country (*Kompas*, 11 October 2006). At about the same time UNICEF announced that the number of malnourished children under five in Indonesia has increased from 1.8 million in 2005 to 2.3 million in 2006. In addition some five million children experience inadequate nutrition. About 10% of these babies with malnutrition and inadequate nutrition die (*Kompas*, 11 October 2006).

The irony is that the country, that cannot take care of its babies and where more than 110 million people or 53% of its 220 million people live with less than USD 2 per day, is spending IDR (Indonesian *Rupiah*) 287 billion or about USD 32 million in buying APCs to be used in Lebanon (*Kompas*, 7 October and 11 October 2006). The figure USD 32 million may not seem very high but it is a substantial amount that if invested well into development programs might help to reduce the number of malnourished children and hungry people in Indonesia through rural employment and rural enterprise programs. How development funds are being invested is crucial in solving food insecurity at the community and national level. Also important is what policies are formulated, how they are being formulated and implemented.

This report **analyses the food security situation in Indonesia from the policy perspective**. It looks at food security as a development and political issue within the context of national development. But development is a broad concept and beyond the scope of this report. Thus, the report emphasizes analysis of policies that affect food production and distribution, but framing it within the context of other development issues such as natural resources management, rural development and trade.

Many of issues discussed here are not new; they have persistently been raised at the national and sometimes international level. This is evident from the brief desk research conducted to provide data and information for the report. For instance, increasing prices of rice, rice supply shortage, and rice imports are issues that have

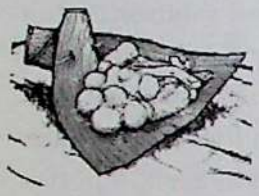
been discussed almost every year, with piece meal solutions being offered instead of solving them through a holistic policy reform in rice production, distribution and trade. The issue of shortage in seed supply is another classic case. The solution for seed shortage on the part of the government would inevitably by seed import or subsidy to seed companies to produce more seeds, without ever taking into consideration that farmers are also seed breeders and the need to increase seed production capacity of the public sector research institutions.

Thus it is important to reiterate the old issues but emphasizing on the need for paradigm shift in the way the problems are seen and analyzed the solutions for solving the problems. The final message of this report is the need to transform policies and institutions that have hitherto failed to deliver food security.

The report begins in **Section-1** with selected case studies to set the context. The first three cases highlight problems of food insecurity in terms of local food production and distribution, the persistent issue of rice and the issue of farmers' rights over seeds. The fourth case, however, describes a situation that may become a possible solution to food insecurity.

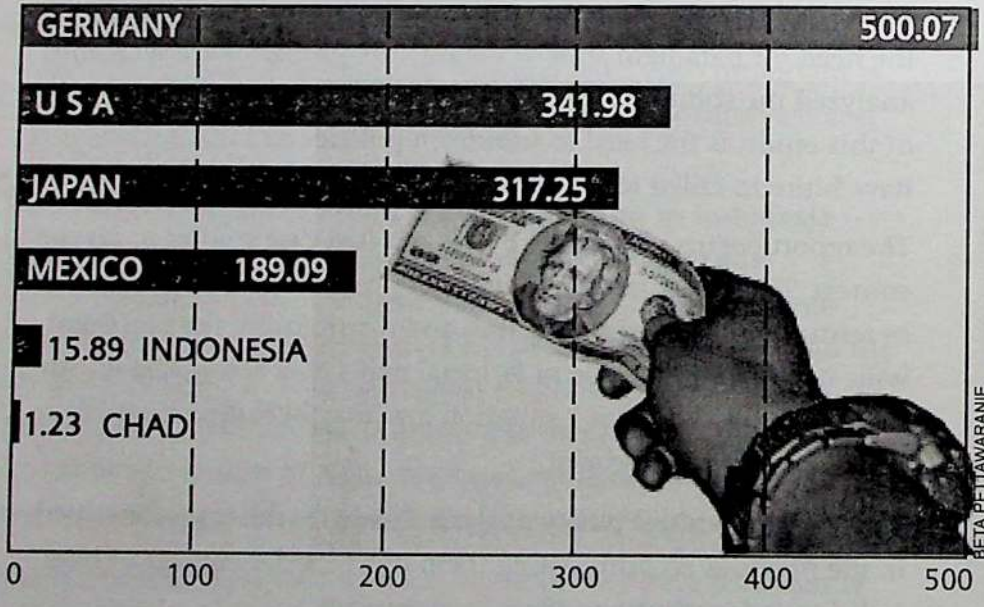
Section-2 provides a policy analysis, based on the cases described in the previous section, setting them in a broader context of how policies and institutions affect food security.

The last part, **Section-3**, outlines some policy recommendations, with several immediate steps to be taken as part of the effort to achieve food security. ❖



In their report, *The Economics of Democracy: Financing Human Development in Indonesia*; Indonesian Human Development Report 2004; the Central Bureau of Statistics (BPS), the National Development Planning Agency (BAPPENAS), and the United Nations Development Program (UNDP) show that household expenditure for food of a family in Indonesia is IDR 591,200 (about USD 63.56) per month or about USD 15.89 per week.

Compared with some countries, as reported by *TIME* Magazine (27 June-2 July 2007 special edition), the figures appear as follows (USD per week):



It is interesting that food expenditure of Indonesian families is about 50-60% of their total household expenses. For the German, American, and Japanese families, it is only 20-30% of their total household expenses.

SECTION 1

FOOD SECURITY & INSECURITY in INDONESIA

AN OVERVIEW

"If only God can be elected, we can elect His replacement" lamented Thomas Ladalasar[1], a resident of the Lembata Island, east of Flores, in *Nusa Tenggara Timur* (NTT --East Nusa Tenggara) province. He was lamenting about the prolonged drought which had caused harvest failure and thus threat of food shortage. But, drought is not a new phenomenon in the semi-arid islands of NTT. Until recently, many communities have their own food security strategies to deal with their environmental realities.

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[1]cited from FIRD report (2005).

Local communities can only blame the climate and nature which, they think, cause failure in food production and thus food shortage. But food security is a socio-economic and political issue. It is a development issue and therefore it is a political decision of those who decide on development, as will be evident from the cases described in this section.

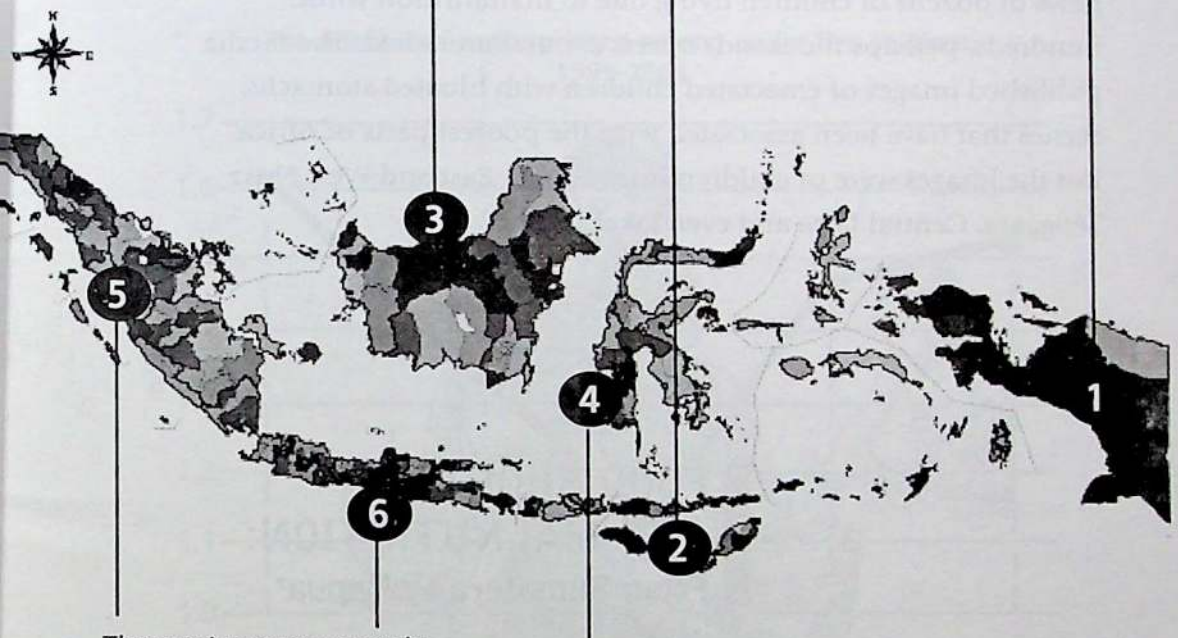
Food security is a situation in which all people of a nation have physical and economic access to food to get sufficient nutrition for a productive and healthy life (Pribadi, 2001). Law No.7/1996 on Food defines food security as "...the condition whereby food requirements of each household are met, as reflected from adequate food supply, in terms of quality and quantity, safety, equitability and accessibility".

In Indonesia about 25.97 million people (12% of the population) did not have food security in 2004, while 3.81 million children (19.37% of the total children under five) experienced malnutrition. Although the number of food insecure people had declined to 14.98 million (7%) in 2005, and the number of malnourished children had decreased to 1.8 million in 2005 (Nainggolan, 2006), UNICEF report indicated that malnourished children had incrased to 2.3 million in 2006 (*Kompas*, 7 October 2006). The Food Insecurity Atlas (FIA) developed by the Agency for Food Security, with the World Food Program (WFP) in 2005 reported that 100 districts out of 265 districts that were analyzed, were considered to be food insecure based on indicators such as food availability, health and nutrition and food access. Let see the map in the next page.

While these macro indicators are useful to get a picture of overall food insecurity in Indonesia, the micro level cases are important to understand the factors leading to food insecurity. This section provides two cases on food insecurity, the first is a glimpse of the food insecurity all over Indonesia based on reports in 2005, and the

FOOD INSECURITY MAP of INDONESIA

The most insecure are Papua in general, especially the central highland region (1); almost all of Nusa Tenggara Islands (2); and parts of West Kalimantan (3). In its original full color print, indicated with dark red.



The most secure are parts of North and South Sulawesi (4); some parts of Sumatera (5); and almost all of Bali and Jawa, especially the middle-south region (6). In its original full color print, indicated with dark green.

Other areas are in between of those two extremes, ranging from red to light red and from light green to green.

This map was composed based on four basic indicators: (1) food **availability**; (2) food and livelihood **access**; (3) food **utilization/ absorption**; and (1) food **vulnerability**.

Source: AFS-WFP, 2005

second is on production and distribution of rice. This is followed by prosecution of farmers for breeding corn seeds in East Jawa to illustrate possible threat to food security in the future while the case of non-rice local food system in Purworejo (Central Jawa) offers a ray of hope to attain food security. Based on these cases, a policy analysis related to food security is provided in Section-2.

In the first half of 2005, the Indonesian nation was taken aback by news of dozens of children dying due to malnutrition while hundreds, perhaps thousands others are malnourished. The media published images of emaciated children with bloated stomachs, scenes that have been associated with the poorest parts of Africa. But the images were of children from Papua, East and West Nusa Tenggara, Central Jawa and even Jakarta.

FOOD SHORTAGE AND MALNUTRITION: From Sumatera to Papua[2]

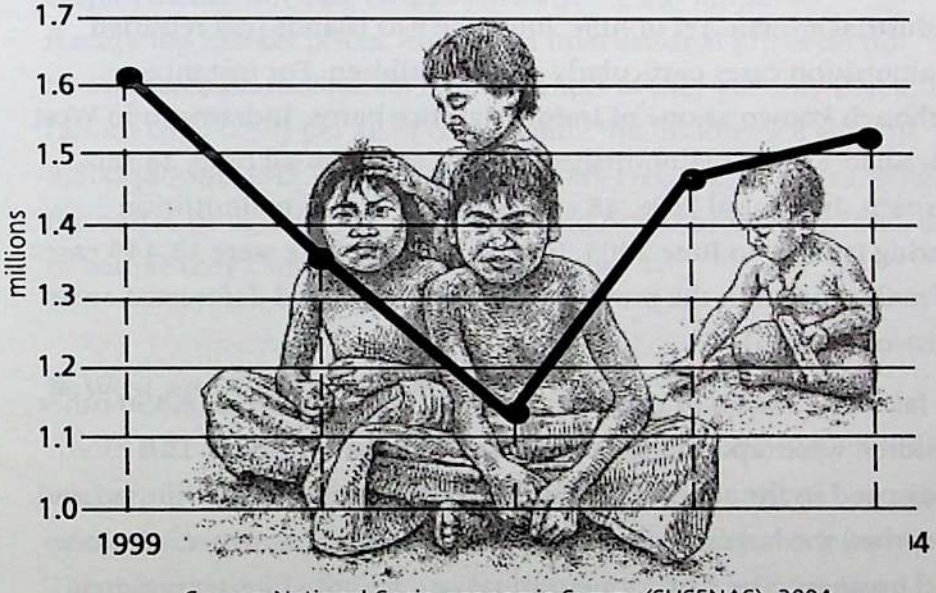
Indeed, data from the Ministry of Health indicated that the sharp increase in malnutrition among under five children began in 2002, with a rise of 29% from 2001. Since then the trend continued until 2004. East Nusa Tenggara (NTT) has the highest number of malnourished children in 2003, reaching 38.44% of total children under age of five (Departemen Kesehatan, 2004).

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[2]Unless otherwise stated, information in this sub-section draws heavily on press reports in 2005, mainly *The Jakarta Post*, listed in the reference section.

According to the United Nations World Food Program (WFP), a total of 13 million children under age of five in Indonesia suffer from chronic malnutrition. Of children under the age of five living in rural areas, 30.2% are underweight and 47.5% are under the average height. Meanwhile, 24.5% of under five years children living in cities are underweight and 37.3% are under average height (*The Jakarta Post*, April 26, 2007). See the figure below.

The number of malnourished among under five children, 1999-2004



Source: National Socio-economic Survey (SUSENAS), 2004.

Frequent reports on malnutrition began to surface during the economic crisis years of 1997-1999 and afterwards. This does not mean, however, that malnutrition did not occur before then. Some areas in Indonesia experience food shortage and malnutrition annually, although reports might not reach the capital of the nation. It is interesting to note that reports came from areas known as the 'rice barn' of Indonesia, i.e. Jawa and Bali, the natural resource rich areas such as Papua, and the economically rich area of

Jakarta, as well as from resource poor and economically less developed areas of East and West Nusa Tenggara. The following is a description of the malnutrition and food shortage in several areas, with a brief report on the situation in Flores and Lembata islands, East Nusa Tenggara.

■ Jawa and Sumatera

Jawa and Sumatera are known as the most developed islands in Indonesia in terms of infrastructure, agricultural advancement and industrial growth. Yet in June 2001, the two islands had reported malnutrition cases particularly among children. For instance, although known as one of Indonesia's rice barns, Indramayu in West Jawa had 17,847 malnourished infants, found in all of its 28 sub-districts. In Central Jawa, 48 children died due to malnutrition during January to June 2005. Indeed in 2005 there were 13,449 cases of malnutrition in the province, mainly in arid and deforested areas (Siswono, 2005).

In Jakarta, 13 cases of malnutrition were reported, while 8,450 other children were reported to be vulnerable to malnutrition. This happened in the capital city, with 75% of the money distributed and absorbed the largest part of development in infrastructure, economy and business. The Government of Jakarta had the highest regional budget of IDR 14.01 trillion or USD 1.5 billion.

In North Sumatera, the most developed region on the island, about 10.45% or 126,994 under five children suffered from malnutrition in 2005. The provincial Central Statistics Agency said the main factors were poverty and ignorance about nutrition among communities (BPS, 2006). But in other places the reasons may differ.

In West Sumatera, the land of the *Padang* cuisine, famous in the nation and overseas, 54,000 children were reported to have suffered

from malnutrition in 2005. Communities were eating split white rice from Vietnam, while the nutritious and famously fragrant *Solok* and *Nundam* rice was sold to Medan, Batam and even Malaysia.

In Tanggamus, Lampung, southern part of Sumatera, children of coffee growers suffered from malnourishment because of the fall in world coffee prices. Market orientation agriculture has driven farmers, with local government encouragement, to grow coffee in monoculture system. Investors have also been invited to open export oriented business to boost economic growth and provide employment. But cash crops such as coffee are subject to fluctuating market prices; even good international prices do not boost increased income for small farmers as they get only IDR 4,000 (about USD 0.50) per kg of coffee while the middlemen get IDR 9,800 (about USD 1.1) and the exporters even higher prices. When the coffee price collapsed, farmers could not afford to buy food, and of course they cannot eat the coffee beans.

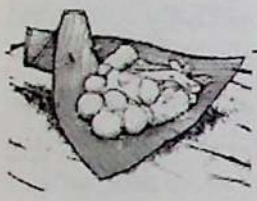
■ West and East Nusa Tenggara

About 332 people suffered from malnutrition in Lombok, the main island of *Nusa Tenggara Barat* (NTB --West Nusa Tenggara) province while 21 children died due to chronic hunger in the entire province. This happened at a time when the province had a surplus rice production and was selling it to other provinces. Indeed, in 2003, the province was awarded for attaining rice self-sufficiency. It is clear that rice production does not translate into food security particularly for landless agricultural workers.

In East Nusa Tenggara, food shortage, sometimes turning to low level famine is not uncommon. In Sikka district on the island of Flores, for instance, about 60,000 thousand people are at risk of starvation. Thirty-five people have died of malnutrition in this province, according to the provincial health office. The number of children suffering from malnutrition was at least 12,925, while

85,604 others were classified as undernourished. More detailed information on Flores, supposedly the most fertile island in NTT, and on Lembata island is provided below.

Various factors lead to food insecurity and malnutrition in Nusa Tenggara. First, the region, particularly eastern part (NTT), is indeed the driest area in Indonesia. In the past, local communities have formulated diverse strategies for food security to adapt to their ecological conditions. For instance, many communities have a diverse staple food consisting of rice, corn and root crops or tubers supplemented with beans. In NTT, communities keep local corn



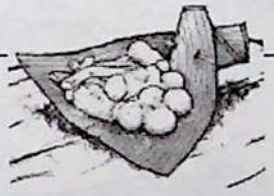
CHRONIC FOOD INSECURITY in EAST NUSA TENGGARA

East Nusa Tenggara (NTT) is a chain of semi-arid to arid islands --the Lesser Sunda-- in the eastern part of the Indonesian archipelago, straddling between Bali and Australia. These islands have diverse ecosystems, but less rain and therefore less arable lands for conventional monoculture farming. One cannot plant three harvests of rice a year as in Jawa or Bali, for instance. As such communities have adapted to the situation by developing their own agricultural and food systems, harvesting food both from cultivated lands as well as forests and bushes. In some cases, communities did practice slash and burn farming with devastating effects to the land and agricultural resources.

As in many islands in the eastern part of Indonesia, development programs have been less intensive here, particularly in terms of infrastructure. What development took place seldom took into consideration the local ecosystems and socio-cultural values and practices. For instance, NTT would have been suitable for marine eco-tourism development rather than industrial and intensive agricultural development. But this has only recently been understood and even then not much effort is being undertaken to that effect. Furthermore the introduction of rice as the single staple crop, with the monoculture development paradigm, has led to the erosion of resource related socio-cultural practices. All these, combined with the intensification of drought periods in recent years have led to chronic food

varieties on top of the kitchen fire and these are kept as food reserve for festivals and famine as they can keep up to two years. Secondly, the introduction of cheap rice and high yielding corn varieties have somewhat eroded this food habit, particularly in the cities. According to some farmers, the high yielding corn varieties cannot keep for that long and farmers plant them only to be sold. Many farmers in remote islands still plant their own corn varieties and can survive prolonged dry season by eating the corn reserve, gathering root crops in the forest and then mixing these with local beans.

As Johanis Silla, a resident of South Central Timor district on the



insecurity conditions during every dry season, culminating in a serious condition in 2005.

The case looks at Flores, perhaps the most fertile and less arid area in NTT and Lembata, a small arid island near Flores. The following information gives a general picture of the situation in some districts in Flores. Those districts not mentioned are not necessarily free of malnutrition, but rather no data is available.

- Manggarai: five reported to have malnutrition, one child died (*Flores Pos*, 15 June 2005)
- Ende: 266 children malnourished and 3,042 children with inadequate nutrition (*Flores Pos*, 16 June 2005)
- Sikka: five sub-districts are categorized as high risk for malnutrition. 142 children suffered from malnutrition and 6,066 people are with inadequate nutrition. Twelve people had to be hospitalized (*Flores Pos*, 17 June 2005)
- Flores Timur: one child was identified as suffering from malnutrition.
- Ngada: No data on malnutrition but 24 villages were identified as vulnerable to food shortage.

"If only God can be elected, we can vote for another God," Thomas Ladalasar, a resident of Lembata, said during a discussion with a local Non-governmental Organisation (NGO) in 2005. Thomas was referring to the drought and food shortage that has happened regularly over the past five years, culminating in the severe condition in 2005. Lembata is a small arid island, east of the larger Flores island, in East Nusa Tenggara. Some 80% of the residents are poor while 64% of the people depend on agriculture for livelihood. In April,

continued...

island of Timor said, the province was facing '**rice**' shortage in 2005, not a serious '**food**' shortage. The older generation usually eat corn, tubers or *arbila* (forest nut) during prolonged dry season. But younger children have always eaten rice and they would find it difficult to adjust to other foods as their parents and grandparents had done. The rice crisis also had not so much impact on the residents of Rote and Sabu islands. Before rice became the staple food of residents of the two islands, they drank the juice of the fruit from the *lontar* (a kind of palm) tree. A few glasses of the juice quenches thirst and satisfies hunger

Third, sometimes villagers face food shortage due to the fall of



the local government said 80 out of 128 villages on the island experienced harvest failures due to prolonged drought where 10,603 families were vulnerable to food shortage. People began to eat the seeds of tamarind fruits and fruits from mangrove trees to survive. The government through the State Logistics Company (BULOG) had sent food aid in the form of rice and hybrid corn seeds to families that experienced food shortage and harvest failure.

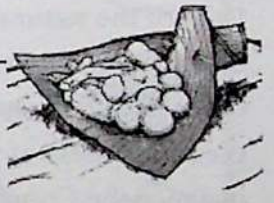
The farmers had tried planting corn and beans three times since 2004 but due to lack of rain, the seeds failed to germinate. Farmers have run out of seeds that have been saved the previous year. Despite this, the villagers said they still had food reserve for the next one or two months. This is because they had reserve corn and beans in the barn. Normally during drought they could also harvest banana and cassava, but in 2005, even these two reserve plants did not grow well.

Another local way of dealing with famine is the social system called *Regong*, which is a barter system. *Regong* is a once a week market that does not involve financial transaction. People from the coastal areas would bring fish, mussels, and limestone, while those from the mountains would bring corn, banana and root crops. People just exchange commodities based on needs. This has helped because as long as people have something to exchange, they can barter it with food.

Famine has other implications,

prices of commodities such as cacao. In 2005, farmers in Sikka regency faced the double shock of a sudden fall in the price of cacao, while at the same time pest attacks led to harvest failures. Consequently, the people did not have income to buy food available at the local markets. Families who have not changed their food habit so much still





namely on health and education. If people fall ill, they will not go to the health care centre as they do not have money, instead they will find herbs to cure their illness. While there is nothing wrong with this, sometimes the illness due to malnutrition or infection might have to be treated at the health care centre. Parents also do not have money to pay school fees and there was not information whether the schools had taken measures to exempt students from paying school fees.

In addition to food aid, the government had conducted two programs. First is to encourage farmers in coastal areas to become fishermen so that at least they can get fish to eat. The second is a program where people work to build or repair roads in exchange for food. Each family gets 10kg of rice in exchange for working under this program.

But these are short term solutions that help only at that moment. The long term programs of sustainable agriculture, water harvesting and storing during the rainy season and general food production and food reserve system have not been properly planned at all. Finally what is needed is a community based economic development strategy and program taking into account the ecological and socio-cultural conditions of the Flores and Lembata communities.

■ *Source*: FIRD, 2005.

turn to wild tubers and palm fruit as a strategy to face food insecurity.

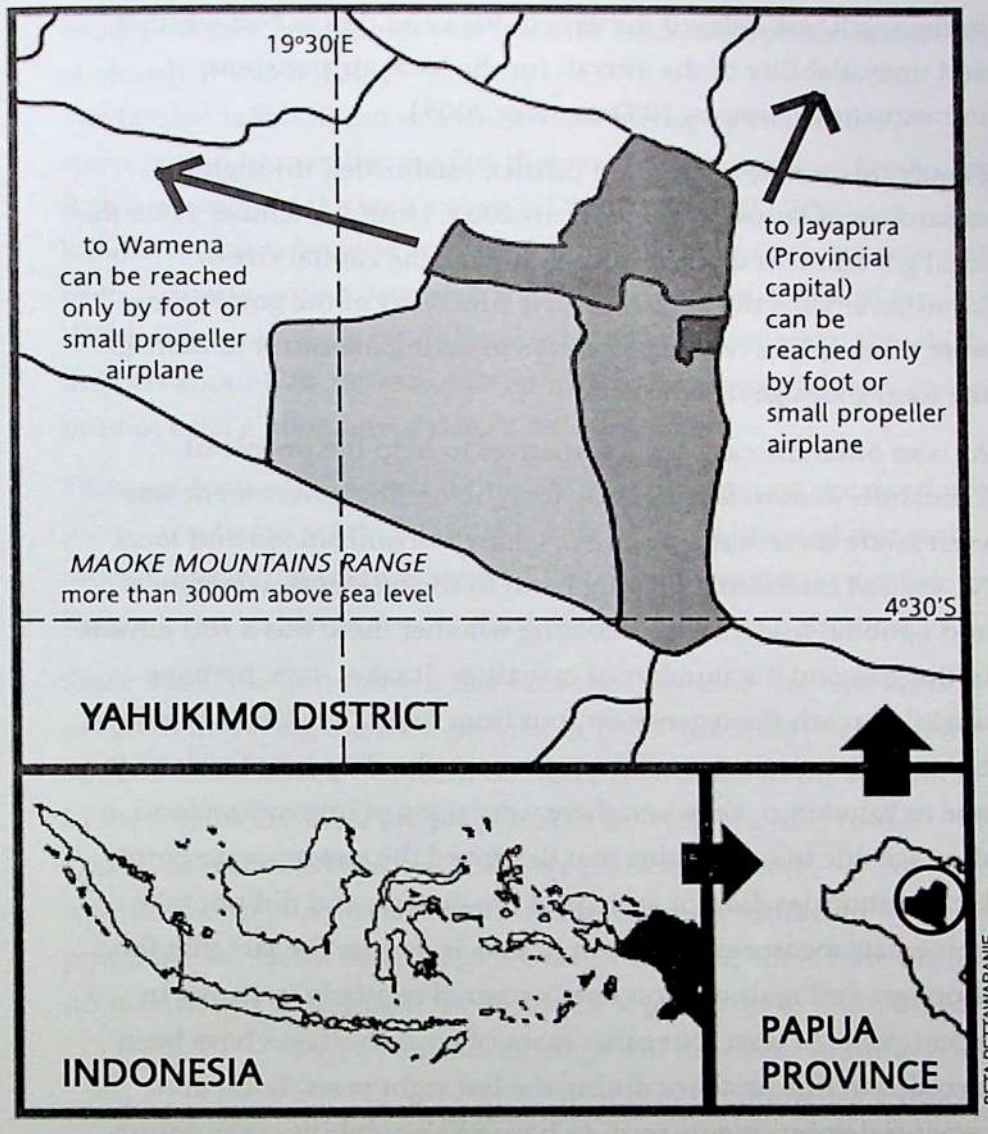
■ **Papua**

Famine is often associated with prolonged drought. But in Yahukimo district, about 800 kilometres from the Papua capital Jayapura, 55 people died of malnutrition, while 112 others have become ill from related sicknesses in November and December 2005, which is the rainy season in most parts of Indonesia.

This case reflects the most ironic food insecurity condition in Indonesia. First, the number of people dying due to malnutrition in Yahukimo is quite high given that only 55,000 people live in this district. Secondly, the famine occurred in a province that is immensely rich in natural resources. Papua harbours millions of hectares of virgin tropical forest and huge gas and mineral deposits. Parts of the natural wealth have been exploited for decades, but the benefits have as yet to reach regular Papuans. Third, high ranking officials initially got into the mode of 'denial syndrome' i.e. denying the seriousness of the situation and thus delaying assistance. For instance the Coordinating Minister for People's Welfare, Aburizal Bakrie, who returned from the district during the initial stages, said "...people in the area are fat, the pigs are big, and the corn and cabbage is growing well".

Yahukimo is a geographically isolated district and therefore although there were signs of impending food shortage as early as August 2005, it was not until November that the issue came to national attention. According to a local NGO, the Yalenang People's Empowerment Foundation, in August the sweet potato crop, the staple food in the district, had been destroyed by heavy rains. Apparently, residents planted their crops late and when the rains came before the harvest, the crops were destroyed.

There were institutional and administrative factors that caused further damage and hampered adequate response to the situation.



First, Yahukimo is an isolated area with very minimum infrastructure and transportation network. Thus, reports from Yahukimo reached the provincial and national level only in November, by which time people had started dying. Residents were by that time surviving on one meal a day, mostly eating fruits and leaves gathered from the forests. Poor nutrition triggered many diseases such as malaria and tuberculosis. Food aid could not reach

in time as it was delayed for days in Wamena due to bad weather and unavailability of the aircraft for the local air transport infrastructure (*Kompas*, 10 December 2005).

Finally this is a newly formed district, established through the expansion of Jayawijaya district, in 2003. Until September 2005 the local government worked from Wamena, the capital city of Jayawijaya. Thus the administrative functions of the government were not in place, leading to delays in taking measures to manage the food shortage in Yahukimo.

As is so often the case, local initiatives to help the people of Yahukimo were well under way long before the government was even aware there was a problem. Church organizations and local NGOs had extended a helping hand to the residents, while local and national leaders were debating whether there was a real famine in the area and the number of casualties. It takes days, perhaps weeks, to reach the regency on foot from Papua's capital Jayawijaya, but it takes months for a famine to reach the desperate levels of the one in Yahukimo. Yet when there were signs of impending food shortage due to heavy rains that destroyed the sweet potato crops, local authorities did not anticipate the disaster and did not take immediate measures to prevent it. This is despite the fact that food shortages and malnutrition have occurred regularly in Papua in recent years. At least four other cases of food shortages have been recorded in this province during the last eight years. Local and provincial governments seem to have weak capability to monitor food availability at community level based on climate, harvest situation and also taking into account the difficult terrain and the remoteness of an area.

The first reaction on the part of the government during famine in any area is to send rice and instant noodles as well as medical supplies to the affected area. This was the case as well with Yahukimo, until it was realized that the staple food of people is

sweet potatoes. An attempt was made to send sweet potatoes but obviously it was not easy.

The famine is Yahukimo was caused not merely by the failure of sweet potato harvest but the fact that residents cannot buy food. Rice is a luxury in the area, costing IDR 25,000 (USD 2.50) per kilogram. This is because residents do not plant rice. It is transported from Jayapura, with a very high transportation cost. A typical family in Yahukimo sell their produce once a week in the market, for which they get about IDR 20,000 --just enough to buy sugar, salt and soap but not even a kilogram of rice.

Thus residents eat rice only if they are given or through the rice-for-the-poor scheme, where a family is entitled to 10 litters of rice each month. But if flights are hampered due to bad weather or unpaid freight fares, residents are deprived of their monthly rice ration.

Since 2000, the government had launched dry land rice cultivation program involving the local people. In 2004, residents could harvest 30 tons of unhusked rice from 60 hectares of lands in the lowlands. In the highlands, there are programs to develop non-rice (often known as secondary) crops. There are plans to develop transportation and infrastructure, healthcare and education programs. While all these steps are commendable, there have been no monitoring and long-term anticipative programs to ensure that food shortage will not occur in future, or if they occur there are quick and effective emergency measures taken by the government. This is especially important as in many areas food production system has been disrupted by a more intensive and frequent climatic conditions



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(prolonged dry season and heavy rains), as well as natural disasters (earthquake and tsunami) in the past ten years.

But food security and malnutrition is not just an issue of production; it is an issue of access to food in terms of availability and affordable price and self-sufficiency in food at the community level. The Minister for People's Welfare, Aburizal Bakrie, admitted

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that the malnutrition cases in 2005 indicated the inadequacy of current policies to ensure community welfare and access to staple food. This policy failure will be discussed further in Section-2.

A discussion on food security (or insecurity) in Indonesia would be meaningless without an analysis on the situation of rice, the most important and most commonly eaten staple food. Rice is consumed by 90% of the population and as such rice production, distribution and consumption is a complex issue in Indonesia with socio-economic and political dimensions. Most cases of food insecurity, particularly in the past, was indicated by rice availability and consumption, and responded to by the government through providing food aid in the form of rice. Although rice has always traditional cultural value among many communities (in Jawa, Bali, Sumatera, Kalimantan), the popularization of modern rice culture (particularly white polished rice) has become more of an issue of prestige rather than mere food habit. Those who eat rice are deemed to be 'successful rich and healthy people'. This has created a 'pseudo food shortage' in certain areas (such as NTT, where local food is available, even when rice harvest fails), and a tool for economic rent

seeking as well as political patronage system.

This section describes rice production and supply, the condition of rice farmers, and the rice reserve and trading system.

Rice Production and Supply

Indonesia had been hailed as one of the countries that succeeded in providing adequate food through the Green Revolution programs particularly involving rice. Between 1969 and 1999 rice production increased by 2.95% per year through the introduction of green revolution package (high yielding varieties and agrochemicals), investment in irrigation, research and extension programs, low-interest credit scheme and subsidies through low input price and baseline price for rice grains.

Real increase in production up to 3.52% with productivity of 5.32% was achieved only for ten years during 1979-1989. Since then rice production declined to 1.04% per year due to decrease in productivity of only 0.05% per year and in the area of rice cultivation which was 0.99% per year. Further, 51% of rice cultivation area is in Jawa, contributing to about 57% of national rice production. It is interesting to note that the most serious decline in productivity is in Jawa, which received the most intensive technology package (Swastika et al, 2002). A more serious decline in rice production occurred in 1997 reaching 3.4% and in 1998, 4.6% due to severe El Nino phenomenon which caused prolonged and intensive drought (Surono, 2001a).

In 2004 there was sufficient domestic rice production amounting to 54.34 million tons of dry unhusked rice or 34 million tons of rice. There was a surplus of 2 million tons. This was due to an increase in productivity outside Jawa, although Jawa still contributes to about 60% of national rice production rice (BPS, 2004 in Khudori). But there are still many problems associated with rice production.

For instance, the rendement of rice has decreased from 70% in 1950

to only 62.3% in 1997. A decline of 1% rendement means a loss of 0.5 million tons of rice (Sawit, 2000 in Surono 2001a). Secondly, about 80% of the rice is produced in irrigated fields. But increasingly this is being threatened, due to floods which damages on average 100,000 hectares of irrigated lands per year (172,000 hectares in 2002 when large scale floods occurred in many rice production areas). Only 8% of the irrigation water supply can be guaranteed through dams, the majority of other irrigated lands depend on run-off river flow subject to water table in the rivers, which are in turn subject to climatic conditions and ecological conditions in the upstream area (Khudori, 2005).

Furthermore, fertile agricultural lands, mostly rice fields are being converted to non-agriculture use at the rate of 15,000-20,000 hectares per year (Khudori, 2005). Another source estimates the conversion to be 30,000 hectares, a large part of which is wet rice fields with irrigation and in Jawa, the island which has the most fertile soil for wet rice production (Ministry of Environment, 2002). The World Bank estimated that conversion of irrigated agriculture land in Jawa cost USD 1-2 billion per year in 1980-1995 (Soemarwoto, 2001). Thus the irrigation facilities in Jawa, constructed with a high cost, often using funding from loan, have been put to waste as the land is converted into industrial or housing estates.

Finally, ecological damage may pose threat to rice production in future. There are three main issues: the problem of pest; climate fluctuations and environment related disasters, deterioration of natural resource base. As early as the mid 1970s, it was clear that while rice production did indeed increase through the Green Revolution programs, a new problem was encountered, mainly explosion of pest populations leading to crop damage. During the 1976 -1977 planting season, 1.5 million hectares of wet rice fields in Jawa, North Sumatera, Aceh, West Sumatera and Bali were infested by the brown hopper, with an estimated loss of equivalent

to 2.3 million tons of rice.

A few years later, the *tungro* virus attacked rice fields in South and Southeast Sulawesi, Central Jawa, Bali and Lombok (Oka, 1995 in Kartodihardjo and Jhamtani, 2006). This was mainly due to pest resistance towards pesticides[3]. Currently, the brown hopper and stem borer are important rice pests in Indonesia. Stem borer can reduce rice production by 10-16%. Various strategies have been conducted to reduce this pest incident one of which was introducing the resistant IR64 variety; but even this variety has become susceptible to stem borer, particularly in rice productions centres of Karawang and Indramayu, West Jawa (*Kompas*, 22 May 2002).

Climatic change, combined with damage to the forest and soil ecosystems have led to unpredictable weather conditions, as well as more frequent and intensive drought and floods. Such a situation has begun to lead to unpredictable harvest, and harvest failures. The 1997/1998 El Nino phenomenon, the most severe in perhaps the last 50 years, have led harvest failures in many areas, leading to a serious decline in rice production as stated above. Indonesia is increasingly experiencing a cycle of drought during the dry season and floods in the rainy season. At the same time, there is deterioration (in volume and quality) of natural resources, including water, which is the basis for food production. Damage to soil, due to erosion and abuse of agrochemicals have and will also lead to further decline in production. Finally, the genetic base for development of new rice varieties is also narrowing as Indonesia

[3] A similar situation occurred in other sub-sector, for instance the devastation of the Garut mandarin orange due to virus attack and shrimp harvest failure also due to virus epidemic (Oka, 1995). The most recent epidemic is the *avian influenza*, which can also be linked to chemical intensive farming system.

lost about 1,500 rice varieties during the Green Revolution (BAPPENAS, 2003), many of which had been locally adapted to pests and climatic conditions.

Even if some of the above problems are solved, Indonesia might still not be able to attain self sufficiency in rice, due to increasing consumption and population, and low incentive for rice growers (as will be discussed later). Indonesia has been importing rice for more than 30 years and is currently the largest importer of rice (USDA, 2002). In 2002, the country imported 1.8 million tons of rice, and increased to 2 million tons of rice in 2003, or 6% of the national production (*Kompas*, 28 May 2004), despite the fact there was no major calamity. The issue of rice import has created controversies as will be discussed later.

■ Rice growers are poor people

Based on Agricultural Census of 2003, rice production involves about 24,869 million households, only 10-15% of which are large land holders (Krishnamurthy, 2006). Indeed the number of farmers with small land holding of less than 0.5 hectare has increased from 9.5 million in 1983 to 10.9 million in 1993 and 13.7 million in 2003 (BPS, 2004 in Khudori, 2005). On the other hand, average land holding per farming household has decreased from 0.58 hectare in 1983 to 0.47 in 1993 (Surono, 2001b), and 0.3 hectare in 2003 (Yudhohusodo, 2003).

Furthermore, in 2002, from the 38.4 million poor people in Indonesia, 65.4% live in rural areas, and 53.9% are farmers. This illustrates that a large part of Indonesian farmers are poor and a large part of the poor are farmers (Khudori, 2005). In other words many rice growers are poor people. Also, human resources development are poor in the agricultural sector, i.e. 48% of labour in agriculture had never gone to school or not finished primary school, compared to only 32 in non-agriculture sector (Surono,

2001b).

There is disparity as well between farm and non-farm income. In 1975, income of a farm labourer was IDR 40,000 per year and non farm IDR 259,000 per year. In 1995, income of farm labourer was IDR 594,000 per year compared to IDR 5.2 million per year in the urban non-farming family. Finally, the terms of trade for farmers continue to decrease: the farm gate selling price of rice has not increased much over the years, but consumer goods needed by the farm family continue to rise (Surono, 2001b).

■ Rice Reserve and the Trading System

During the Soeharto era, rice was not an object of the free market. Together with subsidy in fertilizers, seeds and irrigation, the government provided subsidy for buying rice from the farmers at a certain floor price and maintaining a low rice (ceiling) price in the market that was affordable particularly to the urban poor. The Soeharto government understood properly the need for food accessibility to maintain its political power. In order to achieve this, the government established the Logistic Agency, known as *'Badan Urusan Logistik'* (BULOG), at the national level, with the Logistics Warehouse, known as *'Depot Logistik'* (DOLOG) at the provincial and disrict levels. The function BULOG was to stabilize price and supply of food, particularly rice, as will be described in Section-2.

The heavy government intervention in the formation of rice prices in Indonesia translated, to a certain extent, into the country's short term food security. It was considered necessary for economic growth and political stability (Timmer, 2004). Virtually none of Indonesia's developed country trading partner protested against this, and multilateral agencies such as the World Bank also did not raise objections. If anything, this intervention, together with agricultural subsidy, was hailed as 'pro-poor' policy that could lift many poor communities, especially in the rural areas, out of poverty and by

providing access to food. But even at that time it was common knowledge, that BULOG had become a political machine for the ruling party and 'the goose' that lay the golden eggs in terms of money sources for the elite. Corruption and collusion were rampant which came into light only in later years. Despite these fundamental weaknesses, BULOG did play its role in ensuring access to rice for the population.

But in 1998, in the wake of the 1997 economic crisis, state intervention in rice production and distribution was considered as no longer a 'pro-poor policy'. As part of its 'bail-out' loan, the IMF imposed many conditionalities including in matters that were related to food security. Some of these conditionalities were: elimination and/or reduction in subsidy, reducing import tariff on staple commodities, particularly rice, and substantially reducing the role of government in food trading by transforming BULOG from a non-department government agency into a state owned company and curtailing its market intervention role.

Given the situation at that time, some of these conditionalities may appear sound. For instance, at a time when food production, especially rice, had declined substantially due to drought and in a time of economic crisis, it may have made sense to lower tariff for food imports, to ensure its availability. At a time when national sentiments were against corruption, transforming the role of BULOG and making it accountable may sound a plausible solution. However, many fundamental questions need to be asked and many issues need to be tested whether such conditionalities can help facilitate access to food.

For instance, we need to ask who benefited from the IMF conditionalities? Is a transition mechanism in place to offset the negative impacts of the policy on the poor? Is institutional accountability mechanism in place for the government to make BULOG an accountable body and to shift to market mechanism for

rice? These questions were not considered, and the conditionalities imposed later on created new problems as will be described below.

One example of IMF conditionality was the elimination of subsidy for fertilizer and leaving the price of fertilizer to market forces. This was done without proper transition period, at a time when farmers were already facing problems in 1998 due to economic crisis and the impacts of long drought in 1997, and without market supervision to prevent smuggling. As a result, for some time there was a shortage of fertilizers in the market. Analysts said they might have been illegally exported to neighbouring countries as overseas price was more attractive than domestic price (Surono, 2001b).

This does not necessarily mean subsidy is good; but the timing was simply not appropriate. And, if small farmers are not subsidized, they cannot compete in the international market especially since developed countries still subsidize their farmers. While a cow is given a subsidy of USD 2 in Europe, many of Indonesia's farmers live only on less than USD 2 a day, with no substantial subsidy. Thus if the idea is to create a level playing field and that competition breeds efficiency, the IMF conditionality might benefit exporters from developed countries and importers of rice from Indonesia.

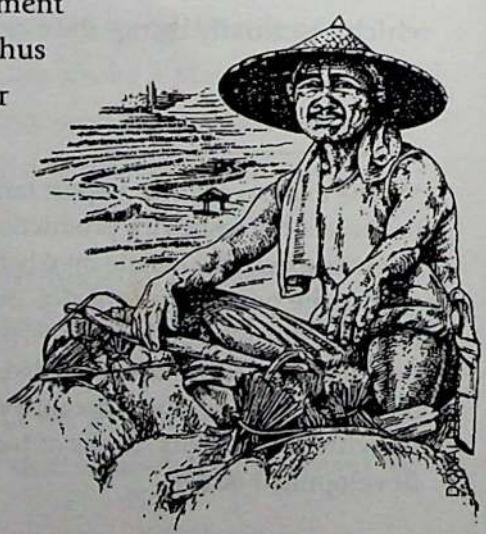
Next, IMF asked the government to reduce rice import tariff to 5%, which essentially brings the rice trading system into the free market.

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[4] Some experts say rice import tariff should be 61-76%, others say 90%, to protect domestic rice production, and small farmers (Wahono, 2001). There is extensive debate on whether to protect small farmers or to ensure the poor can afford rice. But the dichotomy remains: small farmers are also poor people who buy rice. Clearly a more balanced development approach is needed rather than extensive debate on import quota and tariff, because ensuring affordable price has more to do with productivity, terms of trade for farmers and a whole range of development issues.

Although, due to protests and criticisms, the tariff had been raised to 30% by 2000[4], the damage had already been done, since the low tariff was combined with eliminating the monopoly of government over rice imports. Since September 1998, private companies can import rice and trade them in the market with the same treatment as BULOG. Within four months the private sector had imported 1.3 million tons, while BULOG had previously imported 5.78 million tons due to the long drought and economic crisis of 1997, to ensure rice reserve. Thus there were 7.1 million tons of rice in 1998, although the rice shortage was only of 3.2 million tons. Since then the private sector had imported more rice than BULOG, flooding the market and drastically decreasing the price.

In 1999, the private sector imported 64% of the total rice import, creating an excessive supply, decreasing price further. The price of rice in the international market was USD 150 per MT. With an exchange rate of IDR 10,000 per USD and an import tariff of IDR 430 per kilogram, the wholesaler price of imported rice was IDR 1,930 per kilogram or 20% below the price at which BULOG bought rice from the farmers (Surono 2001a). At a glance this might have benefited the poor, but as indicated before, a substantial part of the poor are farmers; decreasing rice prices also hurt them. Since the Green Revolution era, most rice farmers sell their harvest to the market via government established village cooperatives, and thus have to buy rice at the market for their food. This means if they get lower price for their harvest, they can buy less rice from the market.



Unlike in the past, BULOG cannot buy up farmers' rice at floor price with unlimited credit. BULOG now buys unhusked rice, which is more appropriate to raise the price of

grains. But, it has been provided with limited budget by the state, and has to obtain credit at commercial rates. Thus, BULOG cannot buy unhusked rice at subsidized price, it also cannot stabilise price in the market. Now its roles are to formulate a policy in determining the price at which the government buys farmers' harvest, and to manage stockpile for emergency situations. It can no longer maintain price control. BULOG will soon become a commercial enterprise with social functions, a situation that may create further confusion.

Meanwhile, the rice market becomes unpredictable and prey to speculators. Sometimes rice price can be raised arbitrarily by traders in the market, such as the situation during December 2006 when the highest price was IDR 8,000 per kilogram (*Media Indonesia*, 13 December 2006).

Whenever there is a price increase, the debate would always revert to whether to import or not. In reality the situation is more complex than that. There are cases of traders hoarding rice, importers waiting at the port ready to unload their shipment of cheap imported rice, sometimes smuggled, and an entire range of manipulative practices. Sometimes prices are raised not because rice is not available in the market; rice is made unavailable at a certain period, in order to 'legalize imports'. Rice import and its tariff is a sensitive issue for political parties, governments and NGOs; there is unending controversy on this. But maintaining tariff at the level at which farmers can still compete is the only instrument that is can be implemented visibly at this point. Other measures such as increasing farm productivity and farmers' welfare often get sidelined in the debate on tariff.

What is disturbing is the lack of protection mechanism for small farmers, a mechanism that even developed countries have put in place very strongly. Even the EU conducts market price intervention in 72% of its agricultural products, while the US implements a

minimum price for farmers, and intervenes when price falls below the targeted minimum price (Surono, 2001). These were the roles played by BULOG in the past. Granted there was corruption and unfair practices. But one should not 'throw away the baby for wanting to throw dirty bath water', i.e. the bad practices must be eliminated without the eliminating the important roles of BULOG.

As a result of IMF intervention, the government decided to make BULOG a commercial state enterprise in 2003 with a two year transition period. But there is no clear mechanism on how transition will be undertaken and how to balance the social role of BULOG with its profit making activities, and how to prevent corruption. If policies and programs are not transformed in the near future, the political economy of rice in Indonesia might just be solved by indeed 'throwing the baby away with the dirty bath water'.

RIGHTS TO SEEDS: Threatened by Law suits

Food security may also be threatened by the lack of access to seeds and seed breeding by farmers as illustrated by the case of prosecution of East Jawa farmers over breeding corn seeds.

Since 2003, about 12 farmers in East Jawa had been brought to court by the seed company PT Benih Inti Subur Intani (BISI), accused of stealing parent seeds and copying the company's breeding technique. The court had prosecuted some of them under various violations ranging from seed piracy to illegal breeding and distribution of seed without certification, to protection of consumers from unlabelled seeds.

PT BISI was established in 1983, a joint venture between the Thailand-based Charoen Phokphand (80% share) and a national company PT Central Pertiwi Indonesia (20%). It is the largest producer of corn seeds particularly hybrid varieties. It is based in Kediri district, East Jawa; the province of East Jawa is also its largest market (*Tempo*, October 2006). It has also been involving farmers in experimental planting and breeding programs to produce seeds for the company. But now the company is filing law suits against farmers at least four districts in East Jawa: Kediri, Nganjuk, Magetan and Tulungagung. The case of Tukirin, a 53 year old corn grower in Nganjuk (Jhamtani and Patria, 2006; API, 2006; *Tempo*, 8 October 2006) illustrates how the company's monopoly over corn seeds have given it power over the courts and eroded farmers' rights to breed seeds.

■ The Tukirin case

In 1994, Tukirin and a few other farmers in Nganjuk were involved in a cooperation project between PT BISI and the local agricultural service to develop corn seeds. Tukirin was asked to participate in the project without being informed of the objective, except that the farmers would be taught the skill of breeding seeds. The farmers bought seeds from the shop while PT BISI provided the male seeds. Then the seeds were planted on each farmer's land in a particular way: three rows of female seeds and one row of male seeds. The corn seeds harvested from the farmers' plots were bought and marketed by PT BISI. The project ended in 1998 and Tukirin was awarded the second best seed breeder under the project. There were never any legal terms of contract between the farmers and the project management or PT BISI.

In 1999, Tukirin continued to plant corn by buying seeds every season. He needed 10 kilogram of corn seeds for his half-hectare plot of land. At the current price, BISI-produced seeds cost IDR

26,000-30,000 (about USD 2.90-3.30) per kilogram. Thus the cost of seeds would come up to around IDR 300,000.

In 2003, Tukirin wanted to breed his own seeds using the skills he had acquired during the project. So in July he bought BISI labeled seeds from a shop and planted them in his field. Before harvesting, he saw the differences in the physical characteristics of the seeds. He selected the larger corn type with seeds which were pale in colour, which he considered as male. And then selected the smaller ones that he considered as female. In 2004, he and his friend Suprapto planted them, modified method in which they inserted male seeds among the rows of female plants. He then selected the seeds again and replanted some of them.

The highest price for corn harvest was IDR 1,200 per kilogram, but the actual price was always lower than that. In other words, farmers like Tukirin do not make much money. Therefore anything that could cut production costs was welcome. Thus, Tukirin's colleague was happy when he started breeding seeds and selling them at IDR 6,000 per kilogram. He sold them without labels and only among his neighbours. He also wanted to continue to experiment further but apparently, PT BISI somehow got hold of this information and filed a case against Tukirin and his friend Suprapto. Both were arrested in October 2003 when the police came with employees of PT BISI and several government extension officers serving as witnesses. They charged Tukirin with 'stealing parent seeds from PT BISI'.

What followed was a bizarre court and legal proceedings manner indicative of legal flaws and collusion. For instance, police officers, employees of PT BISI and witnesses from among the government agriculture extension officers confiscated two female and two male corn plants from Tukirin's field without prior consent or proper authorization. These plants were two months old and the flowers had not matured. Later on in the court, different corn plants were

exhibited whose flowers had bloomed.

Secondly, Tukirin was never represented by (or provided with) a lawyer during both interrogation as well as the court proceedings. The judge did not offer him the services of a state-paid lawyer, to which Tukirin had a right.

Finally, it was not very clear what Tukirin was actually charged with: stealing parent seed, selling seeds without proper certification, or copying BISI's breeding method. Initially, PT BISI accused Tukirin of stealing its parent seeds but it was difficult to prove this in court. Tukirin pleaded not guilty to these accusations. He said he did not steal seeds, he did not copy the methodology of PT BISI and he did not market uncertified seeds as he only sold them to his neighbours and did not make a big business out of this.

The judge ruled that Tukirin violated Article 14(1) of Law No. 12/1992 on Plant Cultivation System. This article says that seed certification is to be undertaken by the government, or by individuals or legal bodies that are authorized to do so (but Tukirin did not certify his seeds!) Article 61(1) b says that unauthorized seed certification as provided in Article 14(1) is liable to a penalty of a maximum three years' imprisonment and a maximum fine of IDR 150 million. The judge handed down a six-month imprisonment, but suspended it and instead imposed a one-year probationary sentence. The court also prohibited Tukirin from planting his own corn seeds for a year.

■ Other cases

Local non-governmental organisations (NGOs) reported similar cases from other districts in East Jawa, particularly Kediri, Tulungagung, and Magetan (API, 2006). Initially farmers dared not talk to reporters or NGOs of their prosecution but by early 2006,

the cases had been reported by the media and so more information was available. The cases involving Budi Purwo Utomo from Kediri and Burhana from Magetan illustrate further the problems of seed monopoly by PT BISI. Budi Purwo Utomo is a farmer at Gampengrejo sub-district in Kediri who graduated from a Law Faculty. He has been experimenting with seed breeding since 2003, involving corns harvested from seeds produced by Pioneer and BISI as well as *Urakan* seeds (local seeds without label often planted by local farmers). He planted them all in one field continuously, where he put 1 row of big seeds for every 4 rows of small seeds. Budi learned breeding techniques from books.

When he succeeded breeding seeds, Budi asked another farmer, Jumidi from Keras sub-district, also in Kediri to distribute them to the farmers with a condition that farmers would pay a certain price at harvest time. Jumidi then gave these seeds to Slamet, Kusen, and Dawam which were planted in 4 rows of small seeds and 1 row of big seeds, a technique used by Budi. In April 2005, two police officers and a BISI employee came to arrest Jumidi, Kusen, Dawam and Slamet without an official warrant. All four were brought to court where Kusen, Dawam and Slamet was sentenced to one year probation imprisonment without having to spend time in prison, while Jumidi was actually imprisoned for one month. Jumidi was accused of violating Law 12/1992 about Plant Cultivation System article 61 (1) letter b, d and article 55 (1) of the Criminal Law.

Meanwhile Budi asked the help of lawyers from the Muhammadiyah University in Malang, East Jawa, to represent his court case. He was sentenced to one year probation period but appealed to a higher court. The higher court upheld this decision and Budi is preparing a cassation case against the judges, with support from his lawyers and other legal aid institutions.

BISI also sued Budi in Tulungagung as he gave corn seeds to Heru a farmer in Nga: tru sub-district. When the seedlings were 60 days

old, BISI came and claimed them as certified corn seeds belonging PT. BISI. The company sued Heru who said he was just working for Budi. So, Budi was sued and Heru became a witness in the court. Budi was sued for violating Article 61 (1) No. 12/1992, Article 55 (1) and Article 56 of the Criminal Law. The judge ruled that Budi committed the suspected act, but that it was not a criminal act. Thus, he was released.

The Burhana case in Magetan may be the most bizarre. Burhana is a former employee of PT BISI who went on to form a small seed company of his own. His company had a license to produce and sell rice and corn seeds. The company, Cipta Tani Mandiri, was able to produce and market the Ciherang IR64 rice variety. Burhana tried to develop a composite corn seed variety but this had lower yields. He wanted to develop hybrid corn seeds but could not find the parent seeds in the market. So he decided to sell the F2 (second generation) hybrid seeds which can provide higher yields, lower seed costs but do not have to be certified. All he did was buy the F1 seeds from the shops, planted them in a certain way to maintain their purity, then select the best seeds during harvest to be sold as seeds. He had practiced this for two years before BISI took him to court on the accusation that he had created 'fake' BISI seeds.

It was very strange that the court used the Consumer Protection Law, as well as the Plant Cultivation System Law, to sentence Burhana to five months in prison. The judges said he violated the provisions that require producers to label their products. This is indeed strange as the consumers of Burhana's seeds were farmers, not PT BISI and the company is not a public interest group that advocates for the protection of consumers rights to know products being sold. In fact, the witnesses who supported Burhana were farmers who had used his seeds. In court they stated their satisfaction with the performance of the seeds. In fact Suhirno, one of the farmers who bought Burhana's seeds said they were better than those produced by BISI. He said he bought the seeds for only

IDR 15,000 per kilogram while BISI's seeds cost IDR 27,000 per kilogram. The yields are higher too; on his 1,700 m2 of land, Burhana's seeds could produce 1.3 tons of corn while BISI's seeds could produce only 930 kilogram.

Meanwhile, BISI insisted that Burhana's seeds have the same DNA as their BISI-2 corn variety based on laboratory tests. But it was not clear whether BISI-2 had patent protection or not. Yet the judge sentenced Burhana not based on the Indonesian Plant Protection or Patent Laws but on the fact that he was distributing seeds without label. The police also arrested Maman, a farmer from Ponorogo district, who got the seeds from Burhana and sold them to farmers. Maman was sentenced to 4.5 months in prison.

The above cases illustrate not only weaknesses in Indonesia's legal system, but deeper implications on food security. These cases show

NON-RICE FOOD SYSTEM: Why Not?



how the government has not tackled food security system in a holistic manner as part of development process. In fact, the government has created policies that undermine food security, as will be discussed in Section-2.

■ The Case of Giyombong Community

Unlike most modern day Jawanese, the people of Giyombong village, at Bruno sub-district, Purworejo district, Central Jawa eat rice only when they feel like it or

during festivals. For generations, *leye*, food made from cassava, has been the main staple food of about 286 families (1,359 people) in the village. Purworejo is located about 65 kilometers west of the cultural city of Yogyakarta, while Giyombong village is about 30 kilometers north west of the Purworejo city. Although Giyombong is located in Jawa, the rice barn of Indonesia, and the most developed island in the archipelago, villagers do not depend only on rice for their food, and the village itself is relatively isolated and less developed.

Indeed this village is an excellent example of a community that is food self-sufficient through sustainable, diversified food production system that is not dominated by rice. Villagers plant four varieties of cassava locally known as *Palengka, Randu, Lanteng* and *Tela Pait* or *Jawa Ireng*. These are planted all over their lands, together with a rotation of dry land paddy (*gogo* rice) in the rainy season, or vegetables and other root crops such as sweet potato, ginger and taro during other seasons, or even with coffee. Cassava is harvested as and when needed, because the villagers always replant after they harvest the roots, especially during the rainy season. The crop rotation is managed in such a way that there is always a produce at every season, and each time a family needs food or needs money.

This is achieved by cultivating fruit trees, tree crops for fodder, fuel wood and housing, as well as keeping fish and poultry. For instance, 14 varieties of banana are planted in the village, together with other fruits such as guava, papaya, jackfruit and pineapple. Their most important economic asset though is their goats. Each family has at least five goats which they consider as their savings; the number of goats owned by a family indicates the economic level. Thus, they also plant crops for fodder such as *Caliandra*, a special rubber cassava (locally known as *karet*) whose leaves are eaten by the livestock, two types of grass and a few other trees that serve as fodder. The fodder trees also serve as erosion control in steep areas

and source of fuel wood. In turn, the waste of the goats is made into manure, mixed with dead leaves from the trees which they call *lemen*. People use *lemen* to fertilize their own fields first, and if they have extra, it is sold at IDR 250 per 15 kilogram.

Other sources of income are making sugar from palm trees and harvesting pine resin in the plantations of the State Forest Corporation, PERHUTANI. The sugar palm trees are cultivated by about 60 families. They extract the juice of the flowers and then make palm sugar that is sold in the village or the market. The mature fruits known as *kolang-kaling* are also sold, as is the tree itself when it is old and can no longer bear fruit; the old trunks are used to make agricultural tools.

The community used chemical fertilizers and pesticides only when they planted cabbage, the harvest of which was sold and not locally consumed. Now they rarely plant cabbage as the production cost is too high while the selling price is lower. It is interesting to note that there is no record of pesticide poisoning in the village. A villager had a negative experience when he used urea for his albizzia trees that were planted together with cassava. The roots of the cassava had rotted when he wanted to harvest them.

Food self-sufficiency has been achieved at Giyombong not only due to the integrated production system but also due to their food culture. As stated, villagers eat *leye*, made from the *Jawa Ireng* cassava roots. This cassava has a bitter taste if eaten without being processed. The roots are cleaned, cut into 0.5 cm thin strips and then soaked in water for two nights. The water is changed and the strips are soaked for another night. The best way is actually to soak them in running water at the river or local springs. Next, the strips are dried in the sun during the dry season or over the heat of the cooking stove in the rainy season. It takes about two days for the strips to dry, after which they are kept in a bamboo basket for another night. The strips are pounded into powder and then made

moist with hot water; the dough like mixture is run through a colander to get round shapes, the size of rice grains. The *leye* grain is half dried in the sun or on top of the cooking fire after which they are steamed and ready to eat. If *leye* is to be kept for reserve food supply, the grains are fully dried again in the sun or over the cooking stove, and can be stored for until about one year.

Roots from 3-4 cassava plants are sufficient to make *leye* for a family, per day. Roots are harvested when the plants are 1-2 years old. Other cassava varieties are fried and eaten during coffee time or made into snacks, chips and crackers. As stated, *leye* is the main staple food in Giyombong. Families normally eat *leye* for two-three days consecutively and then eat rice for one day. Rice is served only to guests or when there are festivals and parties. It is also served to construction or farm workers hired by a family. Each family has a family barn, called *Grobog*, in which they store dried *gogo* rice, corn and *leye*, sometimes cassava crackers. Also, villagers often barter *leye* with *gogo* rice with each other depending on their needs. Two kilogram of *leye* is bartered with one kilogram of rice.

Eating *leye* began during the colonial era as a strategy to survive the forced cultivation policy (*cultuurstelsel*) forced by the Dutch on villagers. The Dutch forced each family to plant crops for export on 2/3 of their lands for the benefit of the colonial rulers. Thus food crops could be planted only on 1/3 of the land of each farmer family. In Giyombong, farmers made sure they had enough to eat by cultivating rice, cassava and vegetable crops on the limited land. They found out that cassava made into *leye* can be a rich source of carbohydrate and can be stored as a guarantee against harvest failure.

After Independence, during the Green Revolution era, Giyombong escaped coercion to convert their lands into monoculture rice fields, as government's irrigation and improved agriculture programs did not reach this village. Probably it was due to the isolated and

difficult to access location, and the steep lands of Giyombong. The only government sponsored program was planting of pine trees by PERHUTANI. The more accessible road was constructed merely by solidifying the dirt road in 2002, funded by the regional development budget. In other words, the conventional development programs by the government did not reach Giyombong, which perhaps partly explained their strategy to achieve food sufficiency.

The integrated farming system, the *leye* technology and the fact that *gogo* rice is kept in the barn and not sold guarantee local food sufficiency in Giyombong. Villagers said they had faced food shortage during the 1960s due to wild boars destroying their cassava crops. But since then they always have food. The local mid-wife that provided health care to the villagers from 1997-2000 said that she had never encountered a case of below-five children or adults suffering from malnutrition. In the district health care centre there is no record of child malnutrition in Giyombong. The mid-wife said the food in Giyombong is healthy. She also stated her objections to the food supplied by 'Rice for the Poor' program that she said may not provide adequate nutrition. She further confirmed that children in Giyombong often suffer diarrhoea mainly due to poor sanitation, not due to malnutrition.

Despite the difficulty in making *leye* and the introduction of cheap white (polished) rice, most villagers have continued making and eating it. There are various reasons for this. Some farmers feel that *leye* keeps their stomach full for a longer period. Cipto, a farmer said that if he eats *leye* for breakfast, he can still work in his fields up to lunch time at noon. But when he eats rice, he would be hungry again by 11 a.m. *Leye* can also be kept longer. If a family cooks more than enough *leye* for a day it can be kept overnight. White rice that has been processed cannot be kept overnight without getting spoilt. A small shop that sells IR-64 white rice in Kaligedhe, one of the hamlets at Giyombong with about 65 families, has a stock of 50

kilogram white rice a month. Yet, often the shop keeper cannot sell them all within that month. There are of course families who decide to eat white rice on a daily basis and *leye* only occasionally, but they are still a minority.

Villagers were introduced to the white, polished, green revolution variety of rice in 1994 when government provided it as part of the 'Pre-Welfare Family Program', during Soeharto's government. The word 'pre-welfare' actually meant 'poor'. This was then replaced by the 'Rice for the Poor' (*Beras untuk Keluarga Miskin* --RASKIN) program in which government provided subsidised rice to poor families following the economic crisis of 1997-1998. A poor family is entitled to buy 20 kilogram of rice per month, at IDR 1,000 per kilogram, which means each family would spend IDR 20,000 per month. Often the definition of 'poor family' leads to conflict and jealousy. Thus, villagers decided that instead of competing for this rice, they share the RASKIN equally among them in which each family gets to buy 2.5 kilogram of rice per month. This avoids conflict and each family prefers to spend their money for buying other more essential needs, as they have their own supply of *leye* and *gogo* rice. A former village head and a religious figure in the village said the RASKIN scheme is more damaging than helping, as it creates dependence of villagers on food from outside.

Indeed, as long as villagers have their own food production and storage system by ensuring that people keep farming their land, they can have sustainable food security at the community level. But the older generations are worried as more and more people might decide not to work on the land. As roads are being constructed and access to the outside world improved, the lifestyle of villagers will also change. People would want to have instant cash to buy motorcycle and television. They might do this by selling off their land, thus reducing the area for food crop production. Some people have turned to planting trees with high value timber rather than plant food crops and this may have an impact on food security as



well. In other words, the market economy may be the real threat to local food security in future.

The case of Giyombong illustrates that the balance between rice and non-rice diet is an important part of food security and this is not an isolated case, nor a new one. Communities in most parts of Indonesia had not been totally dependent on rice, even in the predominantly rice eating communities of Jawa, Bali, Sumatera, Kalimantan and Sulawesi. People supplemented their diet with corn or root crops. In Eastern parts of Indonesia people ate sago, root crops and corn as their staple food, supplemented with rice. This food habit was lost or eroded when the government focused on rice as the one and only staple food, through the green revolution technology. Food security is at stake when rice becomes the only staple food, but the Giyombong case can become a roadmap for community based diverse food security system. ❖

SECTION 2

FOOD SECURITY FAILURES

A POLICY ANALYSIS

The malnutrition cases described in Section-1 indicate potential food insecurity in Indonesia, at least at the community level. Food security is measured by the availability of energy and protein per capita per day. At the macro level, in 2000 the available of energy in Indonesia was 2,992 kilocalorie (Kcal) per capita per day, higher than the recommended 2,5550 Kcal per capita per day. Similarly the available protein for consumption was 80 gram per capita per day, higher than the recommended 55 grams per capita per day. At the micro level, energy consumption was only 1.849 (82%) Kcal per capita per day and protein consumption 48.7 gram per capita per day. This shows that while food security at the national level was adequate, it is not so at the micro level (Pribadi, 2001), showing a disparity between community groups. This explains the growing incidence of malnutrition in the country, reaching its peak in 2005.

Food security needs to be viewed as a system. In economic terms, it consists of three interconnected subsystems: supply, distribution, and consumption. In terms of institutions, food security is attained through the synergy of the individual or family, community and government or national sub-systems. The mechanism of these subsystems is connected to various other development aspects such as agriculture, transportation, technology, natural resources and environment, trade, health and education (Pribadi, 2001). Thus food security is not merely a case of adequate food production but a more a complex issue, with development and political perspectives.

This section analyses the national policies aimed at achieving food security from that development perspective, using the cases described in Section-1 as the reference points. It consists of four aspects: (1) production and productivity; (2) distribution and the global trading systems; (3) displacement of local systems; and (4) food policy failure.

FOOD PRODUCTION & PRODUCTIVITY

Although the drive to ensure food security at the national level has been highlighted by each government regime since independence, it has been disproportionately focused on rice production. For instance, the Soekarno government launched the land intensification and clearing program, otherwise known as *'Padi Sentra'* (Rice Center) in 1958, followed by 'KOGM' (*Komando Operasi Gerakan Makmur* --Welfare Movement Operation Command) in 1959, and rice self-sufficiency program in 1961. These programs later became the basis for the Green Revolution

drive during the early years of Soeharto's rule, known as 'BIMAS' *(Bimbingan Massal* --Mass Guidance) in 1969. The BIMAS program consisted of building irrigation facilities, improvement in cultivation technique and pest and disease control, and credit for agriculture activities (Pribadi, 2001). As is known, two important features of the Green Revolution were the use of agrochemicals and high yielding seed varieties (HYV) that respond to high agrochemical input. In addition subsidy and soft credits were provided by the government to farmers who apply the chemical intensive farming system, mostly focused on wet rice production.

The BIMAS drive led to rice (**not food**) self-sufficiency in 1984 when Indonesia's rice imports were substantially reduced. This lasted for only ten years, because in 1994 Indonesia began to import rice again (Buchori, 1999) which continues till today. The effort to ensure food security, as mentioned above, was flawed at three levels: (1) they were focused at increasing rice production rather than farmers' income; (2) the role of government was very strong, leaving very little or no space for communities to develop initiatives in food security based on local resources; (3) the programs were not cost-efficient, and required huge funding (Pribadi 2001).

As a result, rice production and productivity could not be sustained. Between 1996 and 2001, rice growing area and productivity had stagnated. In 1996, rice growing area was11.6 million hectares, increased to 12 million in 1999 but decreased to 11.7 million hectares in 2001. Productivity in 1996 was 44.2 kilogram per hectare, decreased to 42.5 in 1999 and 42.2 kilogram per hectar in 2001 (<www.agroekonomika.or.id>).

A set of technical, ecological, social, economic and political factors have led to declining agricultural productivity in Indonesia, not just in the rice sub-sector. Declining terms of trade for farmers, increasing prices of agricultural input, fluctuating prices in the

market and the inadequate policy measures to improve farmers' welfare play an important role in the decrease of agriculture productivity (Buchori, 1999). Many of these issues, which have been discussed in Section-1, indicate policy failures.

A case in point is the effort to curb conversion of fertile agricultural lands through Presidential Instruction No.33/1990 on Prohibition of Conversion of Irrigated Paddy Fields to Non-agricultural Purposes. As with many other regulations in Indonesia, the instruction has barely been carried out as evident from the rising rate of agricultural land conversion (Ministry of Environment, 2002). Also, since the regulation is in the form of a Presidential Instruction, its enforceability is weak as there is no penalty for violation. To offset the loss of agriculture lands in Jawa, the government in the past created new rice fields in less fertile islands such as Kalimantan and Sulawesi. The notorious mega project of converting one million hectares peat swamp forest in South and Central Kalimantan into rice fields had turned into a disaster instead of increasing food supply[1]. But lessons have been ignored. Recently, the new government had launched a program to create 25 million hectare of rice fields (*The Jakarta Post*, 8 June, 2005) without specifying where and how. Food and agriculture crisis cannot be solved only by creating rice fields without a policy to protect all fertile agricultural lands from conversion.

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[1] In mid 1990s the Soeharto government issued a decision to convert one million hectares of peat swamp forest in Central and South Kalimantan into rice fields to increase rice production, without proper environmental impact and real potential assessments. Transmigrants were brought in from Jawa to work on the land. About 300,000 hectars of the area had been cleared, resulting in ecological and social problems, the most serious of which was the peat fire in 1997 and thereafter. Although the project has been halted, socio-economic and ecological damages remain to be solved.

Most importantly, the monoculture and industrial intensification concept, applied since the late 1960s to boost food production has been proved to be unsustainable. Food production policy was aimed at the intensification of a single crop i.e. rice through the Green Revolution, or shrimps in the fishery sector, through the Blue Revolution. Even rice production effort has been further reduced into just wet rice systems, despite the fact that communities have developed dry land rice cultivation in many areas such as East Nusa Tenggara and Kalimantan.

It has been assumed that all Indonesians eat only rice, despite the fact that the country has non-rice food crops (root crops, corn, sago and beans). The case of non rice food system in Purworejo, described in Section-1, shows the fallacy of such a policy. It needs to be noted that when the government of Indonesia was awarded by FAO in 1984 for achievement in food production, the reality was that the country had attained **'self sufficiency in rice not in food'.**

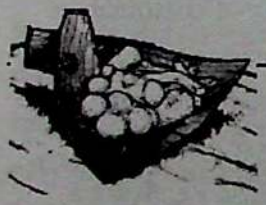
An important aspect about industrial intensification and monoculture cultivation is the indiscriminate use of chemical pesticides. In the long-term this has created resistance and resurgence of pests –-the *tungro* virus in rice, *vibrio* in shrimps, and *avian influenza* (AI) in poultry. Shrimp farming was intensified following the pattern of the green revolution in rice, i.e. using a single shrimp species, with high chemical input. By mid 1990s, shrimp farms were facing a devastating viral epidemic that lasted for four years, leading to harvest failures, sometimes reaching 100% particularly in Jawa, Sulawesi and Sumatera. This has led to a decline of shrimp production for export, bankruptcy among small shrimp farmers and damage to the environment (Jhamtani, 2003). The latest epidemic is the *avian influenza* which has taken its toll not only in the poultry industry but has spread to humans as well.

Meanwhile, due to monoculture, when there is a major pest infestation, an entire crop (i.e. such as rice) becomes vulnerable,

leading to major harvest failure. Applying crop diversity and policulture system might have been able to salvage at least some of the damage due to pests.

It is also important to note the production and productivity of other staple food crops such as corn, soybean and cassava. Below is a brief account of corn production and use in Indonesia. Corn is the second most important cereal crop in Indonesia, yet production is not sufficient to fulfill domestic consumption. However, the statistics might not take into account corn production which is not sold in the market, but used for local and household food supply in areas such as Sulawesi and East Nusa Tenggara.

Soybean, an important crop for the production of *tofu*, *tempe* (fermented soybean cake) and soy sauce --popular foods of many Indonesian communities, face similar problems. Production grew at 5.07% per annum during 1969-1999, but then the area of production declined by 0.66% per annum in 1989-1999, leading to



CORN PRODUCTION: INCREASING BUT NOT ENOUGH

Corn production in Indonesia has shown a substantial increase, from 2.82 million tons in 1970 to 9.34 million tons in 2000, growing at 4.07% per annum (CBS 1971- 2001). This increase was mainly attributed to the adoption of improved technologies, especially improved varieties, including hybrids. But corn productivity is still low, i.e. 2.8 ton per hectare as compared to 5-6 tons in China (FAO, 2003).

In addition, production growth, has failed to meet domestic demand. Thus net imports have increased from 0.05 million tons in 1976 to 0.60 million tons in 1996, reaching 1.26 million tons in 2000. Between 1990 and 2001 Indonesia imported 667.500 tons of corn, growing at 11.28% per year.

This is due to increasing demand for corn, especially for feed and for food industries. Statistics on feed demand vary. The Central Bureau of Statistics estimated that in 1998,

a production decline of 0.31% per annum. Thus, Indonesia has, for many years, imported soybean, reaching 2.88 million tons in 2005 (Swastika, 2001; Departemen Pertanian, 2005).

Cassava may not be a very important crop from the point of view of national government, but it is an important crop at the local level, especially as an alternative during food shortage or crisis. According to Central Bureau of Statistics (2004) although area of production declined from 1,324,259 hectares in 1995 to 1,259,152 hectares in 2004, productivity has increased from 117 to 155 quintal per hectare. Production increased from 15.4 million tons in 1995 to 19.5 million tons in 2004. Despite its potential as a food crop, as shown in the Giyombong case in Section-1, cassava remains a minor crop with the reputation of being the food of the poorest people who cannot afford to buy rice.

The production of main staple food, i.e. rice, corn and soybean, is also unevenly distributed, and biased towards Jawa. For instance,



about 69% of corn was used for food, but Kasryno (2002) estimated that in 2001 about three million (metric) tons (43%) of maize were used for food and four million tons (57%) for feed. Yet another study (Kariyasa and Sinaga, 2004) estimated that between 1990 -2001 the use of corn for food was only 9.15% per year (697,000 tons) and decline by 4.86% per year. The food industry consumed the largest amount of corn, 52.81% or 4.5 million tons per year, grwoing at 9%. While 28.72% of corn or 2.3 million tons were used for feed, growing at 5.6%.

Such a demand should logically be the driving force to increase production and productivity.

But corn production faces a number of constraints, such as: low grain prices during harvest; high input prices; large distances between corn production areas, feed mills, and seed industries; lack of promotion of local improved maize varieties by government research centers; and lack of farmer capital.

Sources: Kariyasa and Sinaga, 2004; Swastika et al, 2004.

51% of rice growing area, 64% of corn growing area, 63% of soybean area is in Jawa, contributing 57% rice, 68% corn and 69% soybean production at the national level (Swastika et al, 2002). Jawa also experiences the highest rate of agricultural land conversion. Thus if the current policies and concepts remain in place, food security would be undermined.

DISTRIBUTION & TRADING SYSTEMS

Food distribution in Indonesia, which is an archipelago of about 17,000 islands, depends on air and sea transportation network. However, there is unequal development of transportation network among the islands. Islands in the western part have more transportation infrastructure compared to those in the eastern part of the country. The western part, particularly Jawa and Sumatera, also produces the bulk of staple food such as rice, corn, soybean, sugar, poultry products, milk and farmed meat products. The eastern part produces less cultivated products such as sago, spices, marine caught fishes and shrimps, and forest products. Since food is defined as 'rice', and to a certain extent 'corn, soybean, sugar and eggs', the eastern part of the country depends on the western part for the bulk supply of such food.

To ensure stability of food prices and food availability at the consumer level, the government established the Logistics Agency (BULOG) in 1967. BULOG was first created to manage rice supply and price stability. But eventually it also played a role in stabilising prices and ensuring availability of other food stuff such as sugar, wheat flour, soybean, animal feed, cooking oil, eggs and meat, even spices. This function was carried out in an *ad hoc* manner whenever there was price escalation (Saifullah, 2001).

Until the mid-1990s, BULOG defended a floor price and a ceiling price for rice through a combination of the following four policy instruments: (1) monopoly control over international trade in rice; (2) access to an unlimited line of credit (at heavily subsidized interest rates in the early years and at commercial rates with a Bank Indonesia guarantee in the later years); (3) procurement of as much rice as necessary by regional rice warehouses, DOLOG, to lift the price in rural markets to the policy-determined floor price; and (4) extensive logistical facilities, including a nation-wide complex of warehouses, which permitted seasonal storage of substantial quantities of rice. These rice stocks, accumulated through domestic procurement in defense of the floor price and, when these supplies were inadequate, through imports, were then used to defend a ceiling price in urban markets.

In the early years, the ceiling price was explicit and announced publicly; in the later years, it was informal, providing local DOLOG officials more flexibility in maintaining stability of rice prices. In essence, BULOG was tasked with creating price stability, distribution of rice to the remote areas and certain segments of the society and to manage stockpile. If the floor price of rice fell in a certain area, DOLOG would immediately buy them at the floor price. If the rice price increased in the market, BULOG would release its stock to stabilize prices (Timmer, 2004; Krishnamurthi, 2003; Surono, 2001b).

This situation changed during the economic crisis of 1997/1998 when Indonesia took a loan package from the International Monetary Fund (IMF) to try and solve the crisis. The loan was approved with several conditionalities that changed not only BULOG's role but domestic food market as well. Based on the Memorandum of Economic and Financial Policies, signed in early 1998 between Indonesia and the IMF, the following conditions and policies were imposed:

(a) BULOG's import monopoly over wheat and wheat flour, soybean, and garlic was eliminated; importers were allowed to market all of these products domestically, except wheat; tariffs were introduced on all of these products, but limited to 20% or less, and will be reduced to 5% by 2003.

(b) Tariffs on all food items have been cut to a maximum of 5%, while local content regulations on dairy products have been abolished.

(c) BULOG's monopoly will be limited to rice, and on domestic procurement.

(d) All traders will be allowed to import sugar and market it domestically. It was thought that this will rationalize sugar production, and increase the efficiency and competitiveness of sugar-using industries, such as food processing[1].

Based on the agreement, in September 1998, the government announced that BULOG would limit its domestic procurement activities to rice and would dispose of its non-rice food stocks. Similarly, the government also announced that trade in foodstuffs would be liberalized, including rice. By January 2000, rice imports were fully liberalized, and a 30% specific import duty was applied to imported rice. The results of such a policy has been described in Section-1, namely: dependence on food imports, farmers have to compete with a surge of cheap imports without any transition period or any safeguard, and fluctuating prices of food in the market especially rice.

The poor, in urban as well as rural areas, began to have problems in

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[2]These market liberalisation policies have impacts on both domestic food production, food producers and food security. Studies to that effect were mostly conducted in rice, although there have also been negative impacts on the sugar and dairy production. For instance see: YLKI (2005).

procuring rice. This forced the government to launch a new policy which was a targeted price subsidy for the poor otherwise known as *'Operasi Pasar Khusus'* (OPK --Special Market Operation), to protect the food security of low-income households. Under OPK, eligible households are allowed to buy ten (later twenty) kilograms of rice per family per month at a subsidized price of IDR 1,000 per kilogram from the government. The dismantling of BULOG's broad-based food trade monopoly and price stabilization authority implies that, by default, the OPK targeted rice subsidy program has become the government's single most important policy instrument for protecting food security of the poor. Rice is supplied not through the free market but sold directly by DOLOG officials in poor villages or communities in urban areas (Saifullah, 2001; Tabor and Sawit, 2001).

Meanwhile, rice distribution by the private sector increased to by about 90% of the national needs, while DOLOG and BULOG supplied only 10% of rice by the year 2000. Because the floor price offered by BULOG is lower than that offered by middlemen in the field, farmers prefer not to sell their rice harvest to BULOG. As a result, BULOG has problems buying domestic rice to create sufficient stockpile both for price stabilisation in the market as well as reserve supply for emergency situations such as harvest failure, disasters and during festivals when rice demand increases at the national level (Surono, 2001).

Such a situation creates unstable price and availability of rice in the market, with effects on both consumers and producers. For instance, in December 2006, the price of rice in the retail market was IDR 8.000 per kilogram, the highest ever recorded since the 1997 crisis. BULOG is charged with only buying rice for stockpile and no longer have an authority to set floor retail price of rice (*Kompas*, 14 December 2006). This forces the government to import rice, in order to increase supply thus hoping to reduce price. However, rice imports hurt poor rice farmers who would not get enough money

for their harvest and thus would not have enough money to buy food. The situation has created a dilemma which has as yet to be solved.

These domestic problems are aggravated by the pressures of global trade regimes such as through the World Trade Organization which strives to reduce import tariff and open up national food markets in developing countries such as Indonesia, while developed countries keep high subsidies and higher tarriff. As an effort to solve this problem, Indonesia has been leading the group of 33 countries (G-33) that is asking for Special Products/Special Safeguard Mechanisms (SP/SSM) rules. SP rules would allow a country to designate certain products as sensitive for rural development, food security and livelihood and, thus, the country can opt not to open up markets for those products. SSM allows a country to temporarily stop imports or slap a high tariff import when there is a surge of imports that would distort the prices in domestic markets and hurt local producers[2].

■ Displacing local systems

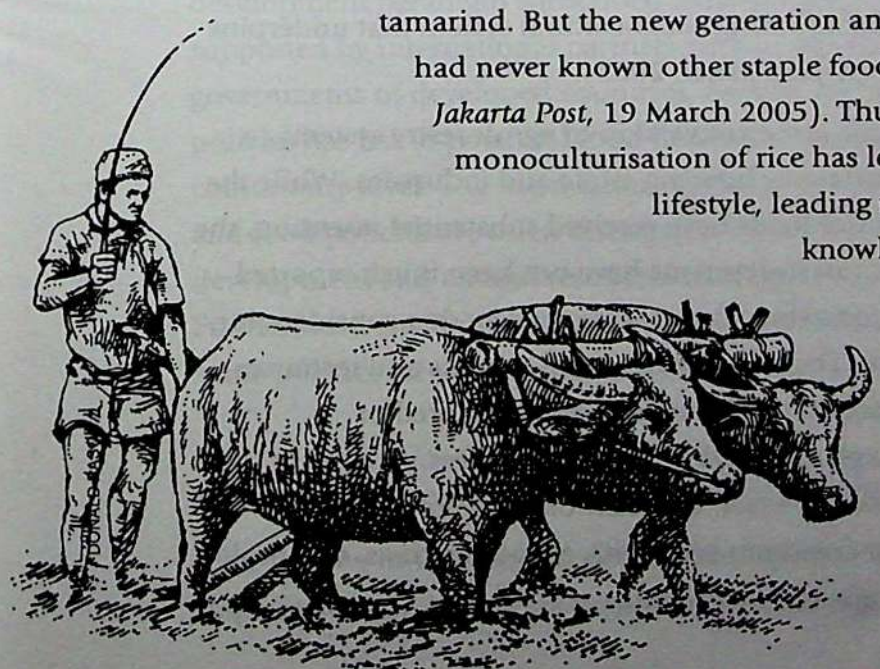
Monoculture and industrial intensification has led to erosion of local, diverse agricultural systems in Indonesia. Funding for research, political support and economic incentives were provided only for Green Revolution style farming systems or large scale monoculture ventures such as shrimp farming and palm oil development. For instance, the credit package for small holders is given to farmers who use high yielding varieties, with chemical

[2]The discussion of global regime on trade in agricultural products, especially food is beyond the scope of this paper. Refer to <www.twnside.org> for a full discussion on this issue.

inputs. There has not been a report where farmers who use traditional or local varieties and organic inputs have been given credits.

Most importantly, there was a systematic effort to displace locally developed varieties, particularly rice. During the Green Revolution era, the government 'confiscated' farmer variety seeds to ensure that all rice farmers use only HYVs. It is estimated that about 1500 locally developed rice varieties were lost during the Green Revolution era (BAPPENAS, 2003). When high yielding rice varieties were attacked by *tungro* and brown hopper, or when farmers now want to return to local varieties, seeds are no longer easily available to be used for developing resistant varieties. Traditional knowledge on germplasm also becomes lost. In reality, this translates into the loss of 'savings' both the tangible seeds and the intangible knowledge, leading to loss of seed security, thus threatening the food production system.

As a resident of the Timor Tengah Selatan District said, in the past when the area faced rice shortage, people would eat corn, *arbila* (a bean from the forest), root crops and even the seeds of tamarind. But the new generation and the children had never known other staple food except rice (*The Jakarta Post*, 19 March 2005). Thus monoculturisation of rice has led to a change in lifestyle, leading to a loss in knowledge and taste



about food. The Purworejo case in Section-1 shows that local food systems have in-built food security strategies; in places where the local systems have not been tampered by conventional development programs, they have survived and averted serious food insecurity problems.

Local water systems have also been displaced. The best example is the *subak* irrigation system developed by Balinese. *Subak* is a community-managed irrigation system based on a holistic socio-religious system with technical know-how on agricultural water management. During the Indonesian Green Revolution era, the community irrigation system, particularly in Jawa and Bali, was taken over by the government and the entire system was reduced to merely an issue of technical management of water for agriculture. Farmers were reduced from water managers to water users. Practically all community-managed irrigation systems disappeared in Jawa where it was prominent before the Dutch colonial era. But the Balinese *subak* system managed to exist, albeit under severe constraints of agriculture land conversion and modern irrigation systems, mostly due to strong socio-cultural system that underpins the system (Sutawan, *pers. comm*, 2003).

Yet another example is the conversion of agroforestry systems to make way for plantations, housing estate and industries. While the conversion of wet rice fields have received substantial attention, the conversion of agroforestry systems have not been much reported and documented, and thus have not been given due consideration by the government. Thus local agricultural systems and resources (land, water and seeds) have been displaced, ignored or undermined through the maldevelopment process. As a result there is no fall back position: when the technological conventional approach failed or could not cope with economic crisis, the local systems cannot come to the rescue.

POLICY FAILURE

Technically, at the national level, food security is undermined by the following (Pribadi, 2001)

* Deterioration (in volume and quality) of natural resources, including water, which is the basis for food production;

* The fluctuations in climate and its impact on food production;

* Inadequate food distribution infrastructure particularly in remote areas;

* Inadequate regulatory system that can guarantee food distribution and trade which is fair, responsible and safe;

* The relatively large number of communities that are not yet able to attain their own food security.

However, the underlying cause of food insecurity is national policies that lead to maldevelopment practices, i.e. development that runs counter to its own objectives. The problems are rooted in the development paradigm subscribed to by the government, often supported by international partners such as the World Bank and governments of developed countries. As such the failure of these policies has led to potential food insecurity, particularly at the community level. The main failure is due to the fact that agricultural and food policies are often disengaged from the national development and natural resources management policies. Furthermore, institutional failure has also occurred so that even if some policies are appropriate, they are not carried out effectively.

■ Disengagement from Development Policies

After putting much effort to develop the agriculture sector (especially rice), Indonesia began to embark on industrial

development in the late 1970s, but at the expense of agriculture. The large investment in green revolution was not strengthened by protecting agricultural lands and agriculture infrastructure. This is evident from the large scale conversion of agricultural areas, particularly irrigated lands in Jawa. Thus the irrigation facilities in Jawa, constructed with a high cost, often using funding from loan, have been put to waste as the land is converted.

The government did not formulate the industrial development policy in such a way so as not to damage the agriculture development. Rhetorically of course the industrial development was aimed at strengthening agricultural development but in reality the two sectors were competing with each other in terms of resources from the state.

Even rural development policies and their implementation have failed to substantially enhance the social economic condition of small food growers in Indonesia. In contrast to European and other developed countries, Indonesian farmers (and fisher folks) are not provided with any subsidy. Their education and health conditions are the poorest compared to other community groups. It is an irony that food producers are one of the poorest groups in Indonesia, without adequate social and economic protection.

This is because both agricultural and industrial development programs have failed to translate into farmers' welfare through equitable rural development. The children of farmers have the least access to education and quality health care. Farmers often do not have access to information on climate, market and research results that can be used to add value to their products. Post-harvest appropriate technology is often inadequate or absent in rural areas, despite the fact that such technology can help to add value and decrease post-harvest loss. When food producers are poor, food insecurity is inevitable.

On the other hand, rural poverty has driven urbanisation but

industrial development cannot provide adequate employment. This has caused food insecurity in urban areas. At the same time, there is rural-urban disparity in development particularly during the Soeharto regime. It was Soeharto's policy to ensure that the price of rice is low enough for the urban poor to afford, in order to prevent social unrest. Thus the agricultural policy was to control prices and/or provide subsidy so that rice, especially, is kept at a low price more for the benefit of the urban poor. Until recently, there has been little attempt to create a balance between ensuring affordable food prices for the urban poor and adequate prices to benefit small farmers[4].

This is evident from the declining terms of trade and disparity in on farm and off farm income as discussed in Section-1. For instance, the terms of trade for farmers declined from 99.09 in November 2005 to 97.94 in December 2005. The price index received by farmers declined by 0.23% while the price index paid for by farmers rose by 0.94% (BPS, 2006). The fluctuating terms of trade for farmers between 1994–2005 is provided below. Thus economic welfare of farmers are disengaged from the entire agriculture and other economic sector development.

This disengagement continues in the decentralization era. Following Decentralization Law in 1999, the main task of central government is limited to setting national policy on agriculture and food security, budget allocation, and facilitation, while local governments

[4]Poverty needs to be addressed, whether it is urban or rural based. But many policies are aimed at addressing urban poverty, while ignoring the fact that rural producers also need a fair price for their products as much as the urban poor need affordable food. A comprehensive food security policy is needed to address this disparity.

implement the national agriculture and food security policy adjusted to their local conditions. But the decentralisation process has not been well prepared.

After more than 30 years of centralized rule, many local governments are not equipped, not capable, and sometimes are not willing to deal with difficult issues such as food security. The central government has also not provided enough resources and effective transition time to adjust to the situation. During the decentralisation process, the division of revenue arising from natural resources between the central and regent governments took centre stage, while the issue of coping with development issues has been sidelined. When food shortage occurs, central government puts the blame on local governments, while local governments will first deny the event, until things go out of hand.

Food security may feature in national government programs, but local governments often do not have sound food security programs. One example is the malnutrition case in West Nusa Tenggara, at a time when the province actually had surplus rice production and was exporting to other provinces, as illustrated in Section-1.

An important development issue is how Indonesia copes with harmonization to international trading rules, and its impact on food security. Indonesia became a member of the World Trade Organization in 1994, and had since then harmonized its rules and regulations. There are two important issues related to this.

First is the surge of cheap food imports began during the economic crisis and was due to structural adjustment rules imposed by the World Bank and IMF, which distorted the local markets. This is illustrated by the rice case in Section-1 and has been touched upon in the subsection on distribution and trading system in this section.

The second issue relates to protection of Intellectual Property Right (IPR) over seeds. Indonesia has ratified the Trade Related

Intellectual Property Rights (TRIPS) of the WTO has two laws would make Tukirin-style prosecution (described in Section-1) possible: Law No. 29/2000 on Plant Variety Protection and Law No.14/2001 on Patents. The first is based on the 1991 UPOV (International Union for the Protection of New Varieties of Plants) and the government treats this as the *sui generis* system for plant variety protection as mandated by the TRIPS Agreement. The second is based on the TRIPS Agreement, including a full translation of its controversial Article 27.3(b). Both will provide maximum intellectual property protection to companies and 'intellectual' plant breeders, at the expense of farmers' rights over seeds. Although the prosecution of farmers in East Jawa was not based on these laws, it would be possible to do so in future. Prosecution against farmers who develop their own seeds may have impact on food security, in terms of the loss of control over seeds and dependence on companies for seeds. It is evident that the government did not support the farmers in the prosecution case.

■ Disengagement from Environmental and Natural Resources Management

Agriculture is based on natural resources management mainly soil, water and seeds. Yet agricultural programs are often disenganged from natural resources management, particularly in terms of sustainable management of the ecosystems. For instance, agricultural issues are managed separately from forestry issues, by having two separate ministries. As a result, forest management policies do not take into account the impact on agriculture. Indonesia has a very high rate of deforestation, about 2.8 million hectares per year (WALHI, 2007). This has triggered many environmental related disasters such as landslide, floods, and drought with implications on agriculture production. The table below presents a summary of disasters in Indonesia between 1998–

December 2004.

Disasters in Indonesia, 1988-2004

Type of disaster	Number of event
Flood	402
Fire (building)	193
Land slide	294
Forest fire	51
Earthquake	58
Storm wave	102
Social conflicts	82
Volcanic eruptions	19
Technological failure	10

Source: Bakornas, 2005 in MPBI, 2005 (cited in Kartodihardjo and Jhamtani, 2006)

The table shows that flood contributes 32.96% and land slide 25.04% of the total number of disasters. Both indicate the impact of deforestation and have destroyed farmlands, as shown in the next table:

A similar situation but of different nature is related to drought. Indonesia has been experiencing longer and more intensive dry periods during the past 15 years. Some of the longer dry periods is associated with El Nino. Between 1960-1988, there were 14 events of long dry season, 10 of which were triggered by El Nino (*Kompas*, 24 August 2003). Such dry periods trigger drought, water shortage and forest and land fires. Even normal dry seasons, without El Nino has triggered droughts in recent years. For instance in 2003, during a normal dry season, there were 78 drought related cases in 36 areas at 11 provinces (KLH, 2004).

Flood and Land slide, 2000-2006 with implications on farmland damage

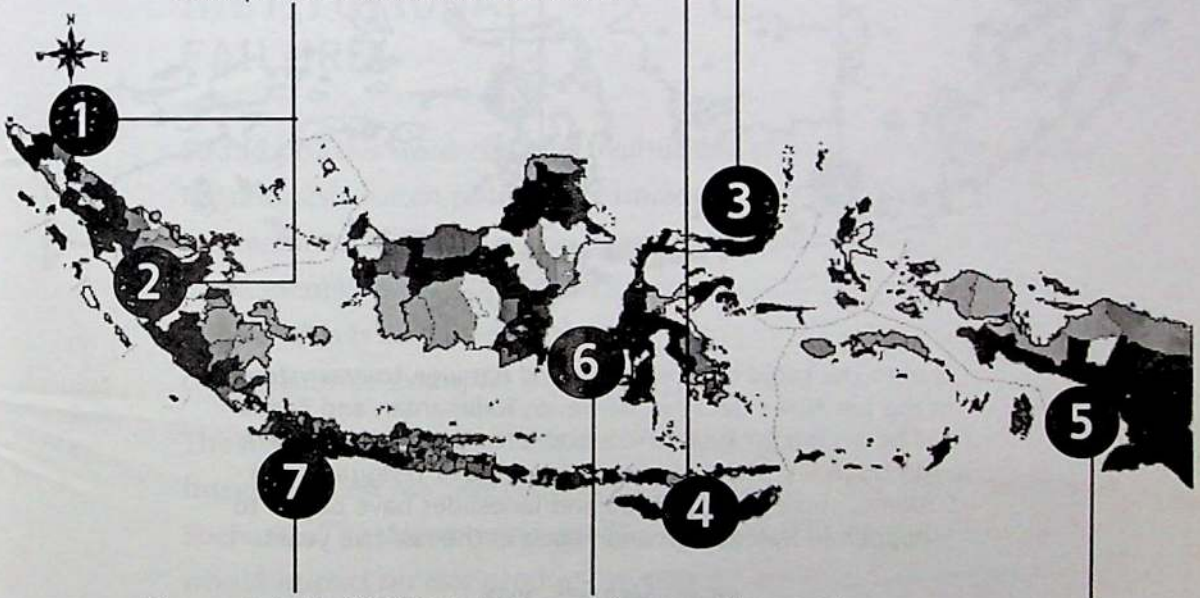
Year	Number of event	Farmland damage (hectares)
2000	104	5,364
2001	46	4,908
2002	63	10,164
2003	40	17,373
2004	31	354,027
2005	49	567,000
2006	59	136,573

Source: collated by WALHI, 2007 from various reports.

The following are two maps shows of flood vulnerable areas and erratic rainfall in Indonesia.

RAINFALL DEVIATION MAP of INDONESIA, 1993/94-2002/03, compared to 30 year average

The most erratic (deviation of 50% and above) are some parts of Aceh (1); North & Central Sumatera (2); almost all parts of Gorontalo (3); and some parts of NTT, especially Timor and Sumba Islands (4). In its original color print, indicated with dark red.



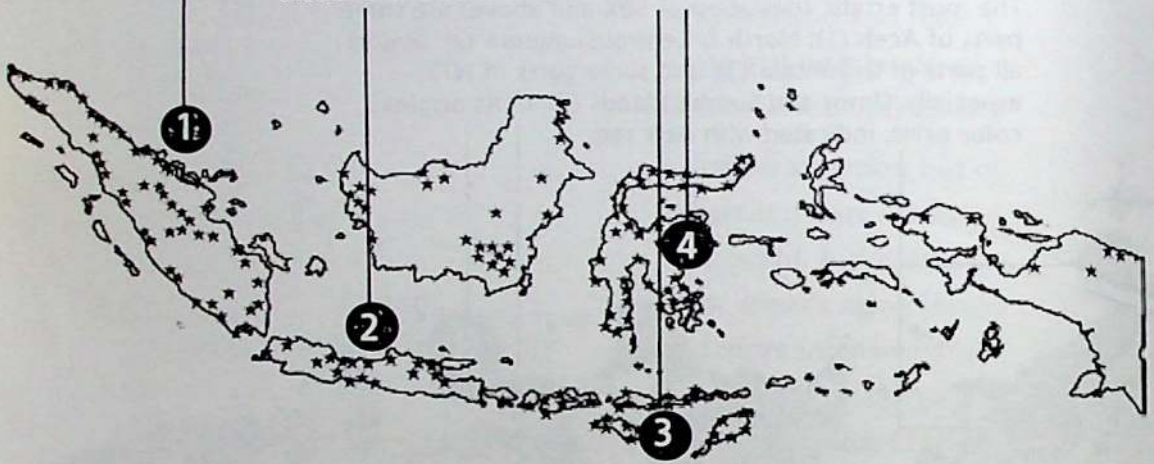
The most stable (0-10% deviation only) are southern part of Papua (5); almost all parts of South and West Sulawesi (6); and almost all parts of West Jawa (7). In its original color print, indicated with dark green. South Sulawesi and West Jawa are respectively the 2nd and the 4th largest producer of rice at the national level.

Other areas are in between of those two extremes. (10-30% deviation); but no single area is perfectly or constantly stable.

Source: WFP/AFS, 2003

MAP of AREAS PRONE TO FLOOD

Almost all parts of Sumatera (1), Jawa (2), Nusa Tenggara (3), and Sulawesi Islands (4) are the most vulnerable towards flood and landslide (indicated with star-dots). The first three (Sumatera, Jawa, and Sulawesi), are the main producers and suppliers of rice to other islands. In case of Nusa Tenggara, the most prone area to flood is Flores, the most fertile island in that arid and semi-arid chain of small islands.



Due to the rapid deforestation and damage to ecosystem in the last three decades, however, Kalimantan and Papua will be no longer be less vulnerable to the same disasters. Although less than Sumatera, Jawa, Nusa Tenggara, and Sulawesi, some serious flood and landslides have begun to happen in Kalimantan and Papua in the last five years.

Source: WFP/AFS, 2003

The main impact of drought upon agriculture is shortage of water, that often leads to harvest failure. For example, dry periods between 1993 and 2002 affected 220,380 hectares per year of wet rice fields leading to a harvest failure in 43,434 hectares per year, equivalent to 530,600 tons of dry milled rice grains (*Kompas*, 24 Agustus 2003). In 2003 dry season in Lampung, Jawa, and South Sulawesi Selatan affected 430,295 hectares of rice fields, and 82,696 hectares of

harvest failure. Rice production declined by 347,984 tons that year (*Kompas*, 28 August, 2004).

Dams and reservoirs that were built to mitigate the water shortage problems for rice fields in the dry season did not function as the upstream areas, i.e the forests were not preserved to ensure water catchment functions.

INSTITUTIONAL FAILURE

Sound policies need effective institutions to carry out those policies. In Indonesia, often policies are unclear and therefore not implementable. But in some cases, where policies may be implementable they are not being implemented due to institutional failure. This is also true in case of policies that support food security, of which three examples are discussed here.

The first example is the Presidential Decree No.3/1986 on Integrated Pest Management (IPM) issued by the then President Soeharto. The decree was issued in response to pest outbreak that would impact on rice production which would in turn create problems for the government's ability to provide cheap food to urban populations and his other power bases. It was also prompted by some academics who tried to convince Soeharto on the ineffectiveness of chemical intensive farming. This decree provided the legal basis for training farmers and field workers on IPM, banning 57 broad spectrum insecticides in rice production (in 1989) and the eventual elimination of subsidy for insecticides.

The decree was implemented, among others through FAO/ Government Cooperative Programme that initiated the Farmer Field

School (FFS) particularly on rice cultivation. The FFS trained farmers and extension workers to increase their capacity in managing their farms based on IPM principles, i.e. using less or no pesticides, enhancing skill and knowledge on plant-pest ecology and agro-ecosystem analysis. Once this was adopted, it reduced pest damage, thus reducing imports of insecticides as well as strengthening farmers' role in agriculture.

The IPM and FFS programme has been proven to be successful not only in Indonesia but also at the international level. However, the government has not institutionalised it to become national level programme, as evident from the fact that the IPM and FFS based farmers are but drops in the ocean of farmers using chemical pesticides all over Indonesia. In recent years, the programme has broadened into 'Community IPM' and there are efforts by non-governmental groups to institutionalise it at the local level, given the process of decentralisation going on in the country (Fakih et. al 2003). However, without serious and effective government institutional support, it is difficult to mainstream IPM into national and local agriculture development programmes.

The second example involves Law No.12/1992 on Plant Cultivation System, enacted by the government more than 20 years after the government conducted Green Revolution programs. This law regulates the use of seeds and pesticides, collection and storage of agricultural germplasm, release of new crop varieties and seed certification. But, it has failed to provide access and rights of small farmers to agricultural resources, particularly seeds, land and water. Only one implementing regulation has been issued i.e. Government Regulation No. 44/1995 on Plant Seed Management, thus this law has practically not been used. But, this law has been used by a company to sue and indict farmers who try to breed their own seeds in East Jawa, as described in Section-1.

Instead of an agricultural law that promotes agricultural creativity,

innovation and productivity, and an Agricultural Department that protects farmers, the country has a law which is being used to undermine the productive activity of small food producers, while the Agricultural Department failed to defend them.

The third example deals directly with food policy, i.e. Law No.7/1996 on Food which recognises that "...the fulfillment of food is a fundamental right of each citizen"[5]. It also recognises the need for fair and equal benefit of food development based on independence and not contradictory with the belief of the community (Article 2). The objectives of this Law, as referred in Article 3 are: (1) to make available food which fulfills the safety, quality and nutrition for human health; (2) to create an honest and responsible food trade; (3) to realize food sufficiency at the level of the community. The Law also states that the government is tasked with ensuring food security and safety, by ensuring national food supply, and taking measures to prevent or mitigate food shortage and emergency situations and/or speculations and manipulations in food supply and distribution.

A year later, in 1997 Indonesia faced serious economic, social and ecological crisis that undermined the already fragile food security, as evident from the malnutrition and food shortage case described in Section-1.

There was no implementing policy to help the situation. It was only in 2002 that the Food Law could be partially implemented through Government Regulation No.68/2002 on Food Security. The

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[5] The original Indonesian version uses the term '*hak azasi*' that is often translated as 'human rights'. So basically the Food Law recognises fulfillment of food is a basic human right.



DONALD BASON

HIRA JHAMTANI, Putting Food First

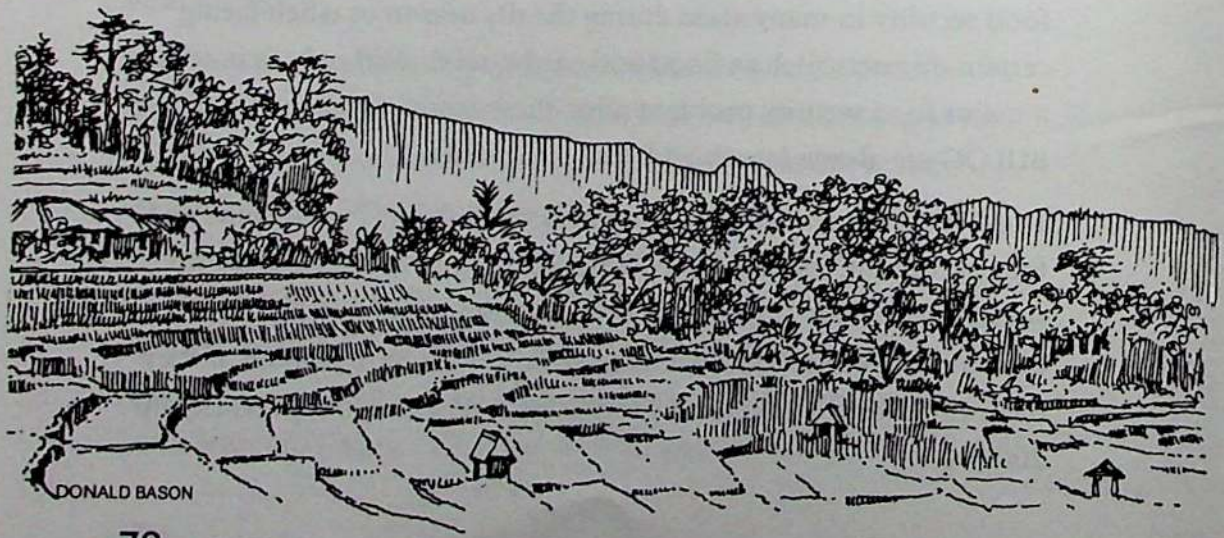
regulation recognises the need to ensure food availability at the household level, the decentralisation process that was on-going at that time, and the need for a fair trading system in food. It emphasizes the need to supply food primarily from domestic production, and the need to have food reserve as well as allows the government to control food prices in cases of emergencies. Most importantly it encourages the local government and community to build up their own food reserve, and food diversification based on local resources.

The Food Law and the Government Regulation No. 68/2002 provide adequate legal basis to ensure food security, as long as the institutional arrangements are in place. An attempt was made to that effect by transforming the National Coordinating Agency for Mass Guidance (BIMAS) that was established to increase food production, into the Agency for Food Security (*Badan Ketahanan Pangan*). This was followed by the establishment of local level Agency for Food Security in 18 provinces and Office for Food Security in more than 230 districts (Nainggolan, 2006).

But food security is a complex issue involving more than one institution, and coordination has always been a problem in Indonesia. To address this, the government established the multi-ministry National Council on Food Security (NCFS) in 2001, with two main functions: (i) coordinating food security policies formulation; and (ii) monitoring and evaluation of the state of food security. The Council is chaired by the President, with the Agency as the Secretariat of the Council. This was followed by the Regional Council on Food Security (RCFS) in almost all provinces and districts, chaired by the Governors and *Bupati* (the Regents) and *Walikota* (the Mayors) at the provincial and district level, respectively (Nainggolan, 2006).

Despite such comprehensive institutional arrangement from the national to the district level, every year some areas suffer from chronic food insecurity such as the case of East Nusa Tenggara, and occasional food security such as the case of other islands. These institutions, together with the relevant Departments (Agriculture and Social Affairs) at the national and local levels, as well as the Coordinating Ministry for People's Welfare have failed to anticipate food security in many areas during the dry season or when facing certain disasters such as flood and earthquakes. Not only that, when a major food security problem arise, these institutions, together with BULOG are always late in addressing the crisis.

These institutions also do not address the linkages between the need for appropriate research and development, and the need to set up social institutions at the local level to prevent and manage food insecurity. Neither the law nor the institutions have worked; if they have, Indonesia would not be facing such serious food insecurity in 2005. ❖


DONALD BASON

SECTION 3

TOWARDS COMMUNITY-BASED FOOD SECURITY SYSTEM

POLICY RECOMMENDATIONS

Food security is a political choice at the national and global levels, but it is a matter of survival at the local and family levels. This is especially true in a country with rich biological resources, as well as diverse food, knowledge and cultural systems such as Indonesia. In this case food security problem is not a matter of inadequate resources or knowledge systems, or even technology; it is an issue of making the right political decisions within the framework of national development that integrates rural development, people participation and sustainable management of natural resources.

Such a political decision needs to be based on the current and projected factors that would affect food security such as food demand and supply, the environment, and impacts of international trade regimes.

This section describes those factors, the need for paradigm shift and a set of policy recommendations. The last part provides a recommendation for immediate measures to shift to community based food security systems.

FACTORS AFFECTING FOOD SECURITY

Many factors will affect food security in the future. Increasing population and income will create demands for increased food supply and variety. Deterioration of natural resource base and erratic climate patterns will constraint food production. The management of all these will determine where Indonesia is heading to in terms of food security.

■ Population and consumption trends

The population of Indonesia is projected to increase from 205.1 million in 2000 to 273.1 million in year 2025 (BAPPENAS, BPS and UNPF, 2005). This will be an important factor in achieving food security particularly when related to some features of the population increase. First, the population growth is uneven between islands and provinces, with the island of Jawa usually bearing the most population burden on less than 7% of the total land area. However percentage of population living on Jawa will gradually

decrease from about 59.1% in 2000 to 55.5% in 2025 because the growth would be higher in in the outer islands and also people will migrate out of Jawa (BAPPENAS, BPS and UNPF, 2005).

Secondly, urbanization is projected to reach 68% in 2025. Urbanization level in some in provinces of Jawa and Bali is already more than 80% (BAPPENAS, BPS and UNPF, 2005). That means more and more farmers are abandoning farming in search of jobs in the city. This would lead to reduction in the number of people engaged in food production and/or less lands for food production as they are abandoned and will perhaps be converted to non-farming purposes.

Third is the issue of poverty, which is difficult to project due to uncertainty in economic growth and wealth distribution as well as the baseline per capita income to be considered poor. The human poverty index, for instance, has increased from 15.20 in 1999 to 22.70 in 2002 (BAPPENAS, BPS and UNPF, 2005). If poverty increases over the coming years, national food security would be difficult to achieve.

The population issue needs to be looked at in tandem with food production capacity and access to food. If there are less farmers but productivity is higher, food production might increase. If urbanization brings increased income instead of just shifting rural poverty to urban areas, food security situation might improve. It all depends on how development and economic growth would be managed in the next few years.

Increasing population, increased income for a section of the population and changing lifestyle will impact on food consumption trends. The table in the next page shows the projected demand for selected food in 2035, with the corresponding production in 2001. The table shows that if demands are to be fulfilled predominantly through domestic production, a substantial increase in productivity is required.

Projected demands for selected food in Indonesia, 2035

Food	Consumption/ capita/year	Demand in 2035	Production in 2001
Rice	90 kg	36 million tons	29 million tons
Meat	15 kg	6 million tons	2.2 million tons
Egg	90	36 billion	12.6 billion
Milk	12 liters	4.8 billion liters	1.2 billion liters
Sugar	25 kg	10 million tons	1.9 million tons
Chicken	8 kg	3.2 million tons	750 thousand tons

Source: Yudhohusodo, 2003

To take a case, the production of rice in 2001 was only 29 million tons and projected demand in 2035 is 36 million tons; thus domestic production need to increase by 7 million tons, unless the country wants to substantially import rice. But as described in Sections-1 and 2, rice production is declining due to agricultural land conversion, reduced productivity and the fact that rice farmers are poor people. Therefore, significant measures are needed to boost production and to ensure increased income, should there be a need to import. This may also be true for other food items.

Granted a certain amount of import will be needed, but a country with a large population such as Indonesia needs to substantially increase domestic food production to ensure food security, especially for the poor.

■ Deteriorating natural resource base

As stated in Section-2, food production depends on natural resource base mainly soil, water and seeds. Indonesia is experiencing an ecological crisis that deteriorates the natural resource base especially soil and water. Erosion has lessened nutrients in the land for food crops, while water shortage has plagued agriculture during the dry

season. Some parts of the soil and water have also been contaminated either by pesticides or industrial and household waste, making land and water unusable for agriculture, or if used, may contaminate food. Such a situation also threatens attempts at reviving organic local agriculture in many places. There seems to be no serious plan to curb these problems, except at policy level.

Biological diversity erosion also means that the genetic resource base for seeds breeding is also reduced. More and more seeds of major food crops are controlled by multinational companies, as shown by the Tukirin case in Section-1. No policies or programmes are as yet in place to address deterioration of natural resources, including seeds. In fact, seed subsidy program is often mistargeted, as the government provides money to seed companies who would then sell the seeds to farmers rather than use the money for programs to empower local seed breeding involving farmers. It seems this trend will continue in future, even with new governments in place, unless there is a paradigm shift.

■ Disasters and erratic climate patterns

Indonesia is vulnerable to nature related disasters such as earthquake, volcanic eruption, tsunami and storms. During the past five years such disasters have been more frequent, such as the earthquake with tsunami in the northern part of Sumatera in 2004 and the earthquake in Central Jawa in 2006. Such disasters increase the number of poor people, while decreasing food production and increasing the need for food aid.

In addition, Indonesia has begun to experience erratic climate patterns where rainy seasons are shorter but more intense, dry seasons become longer and more intense, or dry seasons become wetter than normal. This has disrupted cropping patterns particularly fruiting of some agricultural crops, sometimes leading to pest attack, thus reducing food production.

Such disasters are aggravated by increasing social conflicts and technological disasters, often leading to internally displaced persons. The mudflow disaster in Sidoardjo[1], East Jawa, is an example of a technological disaster that has led to internally displaced persons, whereby quite well off people become poor as they lost house, land and jobs.

All these have impacts on food security at several levels. First, disasters in any region will decrease food production capacity. Secondly, disasters create new poor people, including those who lost ability to buy food due to loss of employment. Third, at the national level, the government would need increased food supply to provide food aid which may create financial burden.

■ Decentralisation

Decentralisation of government bureaucracies and decision making can stimulate innovative food security programs or pose threat to food security, depending on how decentralisation is perceived and implemented. The policy of village autonomy, for instance, can provide opportunities for villages in Indonesia to achieve food security at the village level so long as the village governance applies the appropriate programs and policies. The central or regional (district level) governments cannot interfere with village policies.

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[1]The hot mudflow incident occurred in Porong, East Jawa, when PT LAPINDO BRANTAS, an oil and gas company failed to conduct proper drilling procedures at the depth of 6 km under the earth surface. It began in May 2006 and has not stopped at the time of writing this report. It put 3,000 people from 15 companies out of jobs, whle 10,000 people were displaced and made homeless (*Antara*, 2006).

The village also has autonomy over how to manage its resources such as water and soil, and forests. Thus the issue is how to raise awareness of villagers and capacity of village government to achieve food security.

Similarly, appropriate policies at the district (*kabupaten*) level can become a driving force for food security achievement. However, *kabupaten* governments often emphasize more on economic development, through policies that do not take into account food security issues, much in the same manner as at the national level. The same policy and institutional failures may be repeated at the regional level. This is illustrated by the example of West Nusa Tenggara (see Section-1) that exports rice to other regions, while some parts of the population suffer from malnutrition.

■ Impact of globalisation, trade rules and international organizations

Indonesia is facing pressures from globalisation and unfair trade rules in the form of artificially cheap food imports, trade barriers for Indonesian agricultural products in foreign markets, especially in the developed world, and the pressure to open up the domestic market such as for rice.

At the international level, Indonesia is the leader of the Group of 33 (G-33) in the WTO that is striving for two important issues. First is exemption of Special Products (SP) from market liberalisation in order to protect farmers from unfair competition with cheap imports. Second is the Special Safeguard Measures (SSM) that would allow for temporary application of high tariff or import barrier should there be an import surge that threaten domestic farmers' production.

Both policies would be aimed at food security, livelihood security and rural development. The G-33 is facing stiff opposition from

developed countries and a few agricultural exporting developing countries at the WTO. If the G-33 stands firm on their position, Indonesia will be able to manage the international market pressures that would impact on food security. If, on the other hand, the G-33 has to undermine their own position, Indonesia will face tremendous market pressures in future that may impact on food security as well as rural livelihood.

In the past, Indonesia has also faced pressures from international organizations such as the World Bank and IMF to liberalize food market as a conditionality of loans packages. The World Bank also supported structural adjustment programs in other sectors such as water that has and would further have an impact on food production. Although Indonesia is no longer obliged to adhere by the conditionalities imposed by IMF in the past, many of the inappropriate polices are still in place. Further pressures would be exerted should Indonesia enter into a Bilateral Free Trade Agreement with developed countries such as the US and EU, both of which will require opening up food markets as part of the agreement package.

■ Diverse community systems and biodiversity

Despite the problems mentioned in Section-1 and 2, Indonesia still has diverse community agriculture systems and rich biological resources that can support food security. The case of Giyombong in Section-1 is just one example. Diverse agro-ecological practices and vibrant traditional knowledge on agriculture still exist in other parts of Indonesia, especially outside Jawa, Bali and Sumatera. These can be tapped and developed as part of food security programs at the national, regional and especially local level. But an appropriate set of policies, institutional arrangement and incentives are needed.

PARADIGM SHIFT

There is a need for a paradigm shift in managing food security at the national and local level. The shift is important to break away from inappropriate policies and practices in the past and to recover from the damages that have been done to the national and local food security system. It is also important that the paradigm shift is put within the framework of transformation in the development paradigm.

Essentially a paradigm shift would involve:

(a) **Shifting from monoculture industrialised based system to diverse local systems.** A monoculture system has been proven to be vulnerable to pests, diseases and fluctuating market prices when there is overproduction. The monoculture food habits also need to be transformed into diverse food culture that has its roots in the diverse culture and agricultural systems in Indonesia.

(b) **Transforming production based agriculture to farmer and local resources based agriculture.** Increased production is an important factor for food supply increase, but has failed to translate into food security. Using local resources and prioritizing farmers' welfare would translate into increased local production and increased income that would be more sustainable in terms of food security.

(c) **Moving from agrochemical based farming to environmentally sound farming practices.** This is an attempt to protect the natural resource base of agriculture and food production system as well as to provide healthier food for the population.

(d) **Changing centralised government based planning into local community based planning.** Communities need to be responsible

for food security and the government needs to provide policy, technical and funding support. Rural and urban communities need to plan their own food security strategies that would then be integrated into the regional and national food security policies and programs.

(e) **Transforming fragmented development system (rural vs. urban; industrialisation vs. agriculture development) into integrated development system.** Development programmes have created dichotomy between rural and urban development or industrialisation and agriculture development. The process has often led to urbanization and increased rural poverty. An integrated development system, on one hand, prioritizes rural development by providing health care, education and employment in rural areas as well as developing agriculture based rural industries; and on the other hand encourages urban food production system and distribution that would help the poor.

POLICY RECOMMENDATIONS

Food security is a political choice to be supported by effective implementation of policies, sustainable natural resource base, appropriate technological know how coupled with traditional knowledge and systems. Thus this paper looks more at policy recommendations but in a holistic manner that include policies at the technical level. Many of these policies have been put forward before by experts and practitioners, debated upon, agreed on, but

seldom implemented as an integrated unit, although some parts might have been converted into programs.

■ National development policy and institutional framework

Food security policies need to be integrated into the entire national development policy, not just through agricultural and/or trade policies. To that end, there is a need to **get the policies, institutions and incentives right**. For instance, the credit policy in the current banking system does not favor small scale food producers and local resource based agriculture. Thus there is no incentive to increase productivity. The banking and other alternative financial system must be supported by government policy to serve small scale food producers and farmers. This can be done through micro-credit schemes and crop insurance schemes.

Similarly, the government at the central, regional and local level needs to support existing policies and institutions that are useful for local food security strategy. The *Desa Mandiri Pangan* (Food Secure Village) programme, for instance, needs to be implemented through local institutions rather than in a top down manner.

There is also a need to balance priorities between urban based industrialisation programme and rural based agricultural programmes. Industrialisation needs to strengthen food security system, not threaten it. And this can be done through a holistic framework of national development programmes. The balance should be reflected in the budget, in development of economic incentives and in policy and technological support, particularly for research and development.

In addition, there must be policies to protect agricultural lands and agro-ecological areas from conversion. One way is by ensuring that the public is involved in decision making process about spatial planning and land use policies.

■ Integrated agricultural policy that includes food security and rural development policies

Food security in Indonesia is predominantly rooted in agricultural production although increasing income from non-agricultural, non-rural based sectors is also important. Agricultural policy must be integrated into rural development programs aimed at first fulfilling local food security.

Rural development needs to be aimed at providing education system at least until high school, adequate health care services, and energy services. In addition, there is a need to develop rural incomes through provision of road infrastructure and information services. Villages must have access to internet, electricity, market information and appropriate technologies for rural based, environmentally sustainable industrialisation. The goals must be self sufficient villages, instead of only rice self-sufficiency. This will hopefully reduce urbanization, create opportunities in villages and increase food productivity.

Agricultural policy should not be uniform for islands across the archipelago. It must be based on local comparative advantages, local resources and local systems. National targets that are set without proper assessments should not be forced on villages and provinces, especially if such targets can only be achieved through technologies that potentially harm local systems and natural resources. For instance, Papua should not be forced to grow rice unless the lands are appropriate and the local people want to eat rice and have the knowledge to grow rice.

This brings us to the next point that policies should be formulated through a participatory manner, in which farmers across regions are consulted as equal partners, as people who have knowledge and skills as much as the policy makers. Decentralisation must bring a change in how policies are made, otherwise centralisation in policy making would persist.

Finally, the policy package must take into account the economic, social and cultural rights of farmers. The government often provides tax break incentives, subsidies or political support to investors and companies, including seed companies. But aside from fertilizer subsidy (which is often mis-targetted anyway), farmers are not given any incentives for the service they do i.e. feeding the nation. Incentives can be in the form of free health care and education for children of farmers, and tax reductions over lands that are being productively cultivated.

■ Policy on research, knowledge and technological capacity

There is a need for a coherent policy on research, knowledge and technological capacity development for systems aimed at food security. Such a policy must be put in place based on several aspects. First the government and the scientific community need to recognize that **farmers are innovators and applied scientists at the micro level**. They have the appropriate knowledge about their work and local socio-ecological conditions. The lack of recognition and acceptance of indigenous knowledge have regrettably led to many scientists ignoring traditional farmers' rationales and imposing conditions and technologies that have disrupted the integrity and sustainability of local and indigenous agriculture systems.

Secondly, **any agricultural innovation and food security strategy must guarantee equity for the farmers and the poor**. That would mean that policies need to ensure that farmers can access knowledge and technology that would help them advance economically. Farmers should not be treated only as users of new technologies.

Third, **diversity and interlinkages of agroecology and socio-culture must be recognised and taken into account**. Research and knowledge and technological development must not further delink the agri-'culture' from a socio-cultural and ecological process. Research and technological policy need to take into account

traditional knowledge and know how, as well as the social relationships and cultural patterns that govern technical know-how. Important issues in this aspect are the technology on seed breeding, cultivation systems, post-harvest processing and food processing.

■ Trade policy

Trade policy must effectively take into account the issue of food security, livelihood security and rural development as is the national position at the WTO within the framework of the Group of 33. To that effect food imports and tariff must be managed in such a way so as to create a balance between the interests of the farmers and the interests of urban consumers. So far an attempt to do so has been conducted with rice; it needs to be expanded to other food commodities, as necessary.

■ Reforms of policies

In order to ensure that the above policies are effectively implmented, there is a need to reform existing policies, particularly the Law No. 12/1992 on Plant Cultivation System and the Law No. 29/2000 on Plant Variety Protection. These laws should be reformed in order to ensure the national sovereignty over seeds, farmers rights' over seeds and other resources. Other policies to be reformed include subsidies for seed and fertilizer companies, the credit system in order to make it more accessible to farmers, crop insurance system, and general protection of small farmers from import surges, and unfair trading system at the local level as well as at the national and international level.

Of importance is reforming the current BULOG system in order that it can function as a marketing channel for farmers' crops at fair prices, as stock for food reserve and as a price stabilisation mechanism to ensure availability of food at affordable prices.

Finally, there is a need to evaluate all agricultural and food related policies that were formulated due to pressures from IMF, the World Bank and possibly through bilateral channels to gauge whether they are supportive of food security measures or not; should they actually hamper food security, these policies must be reformed accordingly.

All these policies need to be reformed within the framework of the larger policy and regulatory framework of national development programs.

SHORT-TERM IMMEDIATE MEASURES:

The above policy reforms will not be easy to undertake, as it involves paradigm shift at all levels, including policy makers at the parliament. This will need long-term programmes on awareness raising, policy formulation process, and capacity building. In the meantime, some immediate measures can be undertaken, at the national level, with encouragement to be followed at the local level. These measures are:

(1) **Introduce cooperative farming** to solve the problem of small land sizes and reduce production costs, thus making agricultural enterprise more profitable. This effort should be combined with joint marketing measures to ensure fair prices for farmers. The national government can introduce the concept, provide capacity building and perhaps financial incentive, while the implementation can be at the local level.

(2) **Provide options for organic farming or other environmentally sustainable practices** in areas that have not used chemicals intensively and provide incentive for farmers who have used chemicals to shift to sustainable agriculture. Provinces such as Maluku, Papua, East Nusa Tenggara and remote areas in Kalimantan and Sulawesi should be protected from the unfair and unethical marketing of agrochemicals. A gradual shift to sustainable agriculture must be encouraged in Jawa, Bali, and Sumatera through economic and social incentives. Overall, the government must take the lead in shifting towards healthier and environmentally sound practices. Non-governmental organizations must take the lead in raising consumer awareness for healthier products and facilitate marketing of those products.

(3) The government need to immediately **provide funding and guidance for research and development of locally adapted seeds**, particularly those with drought tolerance. This can be undertaken more cost efficiently if conducted together with farmers and local researchers. Over dependence on seeds from companies and from foreign sources need to be reduced substantially.

(4) The government needs to **seriously and effectively implement some sound policies that are already in place**, such as control of agricultural land conversion. This needs to be strengthened with regulations that will impose a moratorium on agricultural land conversion in sensitive and fertile areas such as Jawa, Bali and Sumatera, as well as in traditional, productive agro-ecological lands.

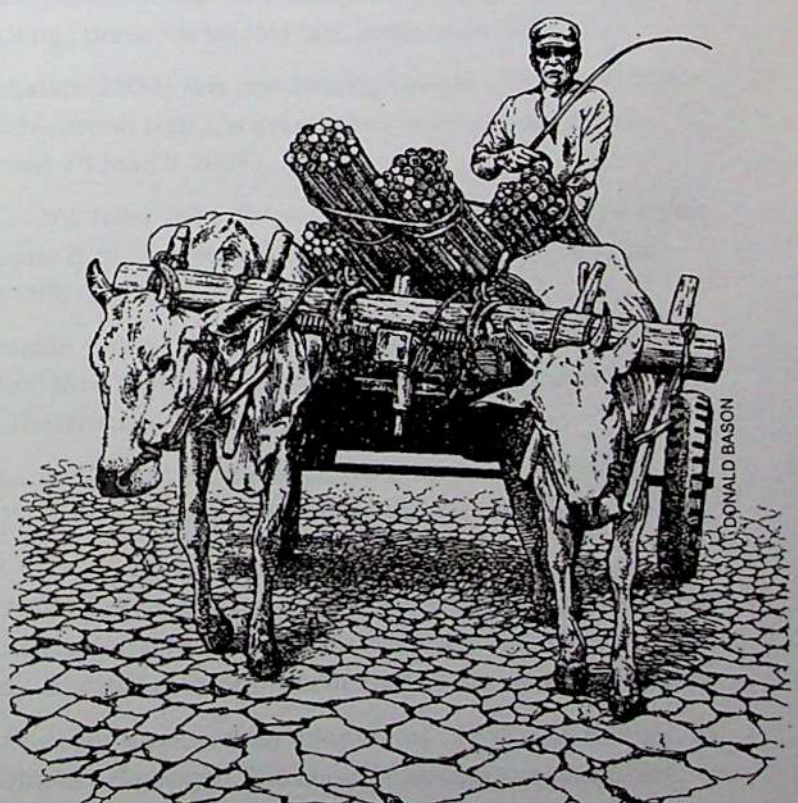
(5) The current National and Local Food Security Agencies, together with the *Desa Mandiri Pangan* need **to be evaluated for effectiveness and then adjusted accordingly.**

(6) The national and local governments need to take the leadership in **reducing dependence on rice and introduce diverse food systems** by not just launching campaigns but actually undertaking the transformation. When governments organize events, the food

served can be made from non-rice elements. Local governments can help increase farmers' income by creating a market for local foods through government sponsored events. The government must move from rhetorics to real implementation.

(7) Given the vulnerability to disasters, BULOG must immediately **strengthen its warehouse and food distribution system in areas that have been identified as vulnerable to disasters and food insecurity situations**. For instance, BULOG must have food distribution centre and preparedness in Kupang, the capital of NTT, the province that experiences periodical food shortage. BULOG must also begin to introduce non rice food reserves, mainly cassava and other root crops, sago and corn.

Many of the above recommendations can be implemented and may receive wide support. The main issue is the political will of decision makers to create the right policy and incentives. ❖



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