



WORKING PAPER 99.06

**THE IMPACTS OF INDONESIA'S ECONOMIC CRISIS
ON FOOD CROPS AND FOOD SECURITY:
CHALLENGES AND OPPORTUNITIES**

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**Linkages Between Indonesia's Agricultural Production, Trade and the Environment
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between

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**CASER/CSIS/CIES/ANU
joint research project on**



Policy analysis of linkages between Indonesia's agricultural production, trade and environment

Rapid economic growth in Indonesia has been accompanied by significant structural changes, including for its agricultural sector and its unique natural environment. Recently questions have been raised about the impact of Indonesia's agricultural, industrial, trade and environmental policies on sustainable rural development. The nature of interactions between the economic activities of different sectors and the environment are such that an intersectoral, system-wide perspective is essential for assessing them. An international perspective also is needed to assess the impact on Indonesia of major shocks abroad, such as the implementation of the Uruguay Round agreements, APEC initiatives, or reforms in former centrally planned economies. There is increasing pressure on supporters of liberal trade to demonstrate that trade reforms at home or abroad affecting countries such as Indonesia will not add to global environmental problems (e.g., deforestation, reduced biodiversity). Again, this requires system-wide quantitative models of the economy and ecology, because typically there are both positive and negative effects at work, so the sign of the net effects ultimately has to be determined empirically.

To begin to address these issues, the Australian Centre for International Agricultural Research (ACIAR) has generously provided funds for a collaborative 3-year project (to mid-1999) involving the University of Adelaide's Centre for International Economic Studies (CIES) as the lead institution, Bogor's Centre for Agro-Socioeconomic Research (CASER) which is affiliated with the Ministry of Agriculture, Jakarta's independent Centre for Strategic and International Studies (CSIS), and the Economics Division of the Research School of Pacific and Asian Studies (RSPAS) at the Australian National University in Canberra. Being based on Indonesia with its rich diversity of environmental resources (and on which there are relatively good data) and its rapid economic growth, the project could also serve as a prototype for similar studies of other developing countries in Southeast Asia and elsewhere.

The key objective of the project is to assess the production, consumption, trade, income distributional, regional, environmental, and welfare effects of structural and policy changes at home and abroad particularly as they will or could affect Indonesia's agricultural sector over the next 5-10 years. Among other things, the analysis will focus both on the effects of economic changes on the environment, and on the impacts on Indonesia's agricultural production and trade of resource and environmental policy changes. The implications of regional and multilateral trade liberalization initiatives and Indonesia's ongoing unilateral trade reforms will be analysed, along with other potential domestic policy changes and significant external shocks such as the entry of China and Taiwan into the World Trade Organization. The analysis will draw on and adapt computable general equilibrium (CGE) models such as the national INDOGEM Model (built as part of an earlier ACIAR project) and the global GTAP Model.

The project is being undertaken in close collaboration with the Indonesian Ministry of Agriculture and ministries involved in trade, planning, and the environment. A Research Advisory Committee has been established to encourage close collaboration of representatives from those and other ministries.

ACIAR INDONESIA RESEARCH PROJECT

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SUMMARY

Indonesia's ongoing socioeconomic crisis is forcing agricultural policymakers to react quickly to the serious consequences of currency depreciation, urban to rural migration, food price instability and rapid increases in the country's food insecure population. The purpose of this paper is: (1) to review the short run impacts of the crisis on availability of food and access to food in rural and urban areas; and, (2) to examine the medium term implications of the crisis-induced induced policy changes on the country's food crops, especially rice. First, the paper presents a brief historical overview of Indonesia's food policy and rice self-sufficiency programs, including the impacts of structural adjustment policies and stabilisation programs on the food sector. Second, the paper attempts to highlight some of the direct and indirect food sector consequences of the recent policy changes that reverse twenty five years of rice self sufficiency. Finally, the paper suggests ways in which the planned policy reforms can encourage food production, increase food security and provide opportunities for the food sector to contribute to Indonesia's recovery.

1 Introduction

Indonesia's current socioeconomic crisis has dramatically reversed decades of rapid economic growth, steady progress in poverty reduction, and substantial improvements in food security.¹ Before the crisis began in August 1997, Indonesia was frequently cited as one of the highest performing Asian economies with per capita GDP growth in the top 10 percent of all developing countries. Since the crisis however, the rupiah's value has dropped precipitously, inflation has soared and GDP has fallen an estimated 14 percent in 1998 (World Bank 1998). The country's poor and those facing food insecurity are especially vulnerable to the falling incomes, increasing food prices, decreases in real wages and rising unemployment and underemployment brought on by these crisis induced events. World Bank simulations suggest a 12 percent decline in real GDP in 1998 would add some 9 million people to the more than 20 million living in poverty before the crisis began (World Bank 1998).

Indonesia's capacity to address the crisis has been greatly complicated by forest fires, drought, floods and a sharp decline in crude oil prices. During 1997, one million hectares of forest fires in Kalimantan and Sumatra damaged ecosystems, destroyed crops, disrupted transport and tourism, increased the incidence of respiratory problems and strained Indonesia's relations with neighbouring Singapore and Malaysia (Solahuddin 1998). Estimates of the economic damage to Indonesia's logging and timber industries, (excluding environmental and health costs) are set at more than US\$900 million (Tay, 1998). One estimate of the 1997 fire's impact on increased health care costs and foregone tourism income for Indonesia, Malaysia and Singapore is US\$1.4 billion (Tay, 1998).

A prolonged drought throughout 1997/98 reduced export crop production and, more importantly for the country's food security objectives, contributed to a large drop in paddy production. Initial estimates suggest that the 1998 paddy crop is nearly 10 percent below the 1996 production level (FAO 1998; CBS 1999). The drought's impact has been worse in the islands of the country's east, which is drier and contains a higher proportion of low income households than Java.

Around one-third of the country's population spend 70 percent or more of their total expenditures on food (SUSENAS, 1996). Thus, the collapsing demand, rising unemployment, falling food production, increasing food prices and rapidly expanding numbers of malnourished stress the fundamental role agriculture must play in revitalizing the economy. The agricultural sector's potential to contribute has been greatly enhanced by crisis-induced policy reforms which have removed many of the long standing disincentives facing producers, traders and processors. This dramatically changed policy environment provides an important foundation for the agriculturalization of the economy.

¹A recent World Bank report (July 1998) suggests four key microeconomic causes of Indonesia's crisis: the rapid build up of private debt; (2) well-recognized flaws in the banking system; (3) inadequate governance; and (4) the timing of the crisis in relation to political events (World Bank, 1998).

It seems ironic that in Indonesia, like most of the rest of Asia, the vast majority of chronically undernourished people live in rural communities that depend on agriculture for their livelihood (Bidani and Ravallion 1993; Mason and Baptist 1996). Hunger is concentrated in regions where the majority of the population produce food, but where available food supplies are among the lowest in the world.

2. Indonesia's Food Security Strategy: A Success Story?

Recognising that the country's rice yields were among the lowest in Asia, Indonesia's agricultural policymakers began implementing a series of strategic initiatives in the late 1970s. Between 1976 and 1980, even though rice accounted for 70 percent of the area in food crops and engaged 40 percent of agricultural employment, Indonesia imported more rice than any other country in the world. In addition, poverty was heavily concentrated in agriculture. Around 55 million Indonesians lived in absolute poverty and 75 percent of households in this category depended on agriculture for jobs, income and food.

The country's overall socioeconomic structure presented an additional set of problems. More than 60 percent of the total population was concentrated on Java and Sumatra with Java contributing 60 percent of rice output and 70 percent of maize and soybean output. Finally, most farms in Indonesia are very small, even by Asian standards. For example, in the late 1980s, only 2 percent of the farms in Java had more than 2 hectares and an estimated 18 million farm households had access to less than 1 hectare of land.

In an attempt to resolve these problems, policymakers implemented agricultural programs and economic policies aimed at making the country self-sufficient in rice. These rice self-sufficiency initiatives involved a range of food and agricultural policies aimed at boosting rice production. The government established investment programs, import restrictions, procurement policies and price controls. Rice intensification provided irrigation, fertilizer, pesticides, HYV seeds, credit extension, technical assistance and related capital improvements. Irrigation alone is credited with contributing to around 50 percent of the growth in rice production through increased yields during the 1980s and early 1990s. In total, the rice area under HYVs increased by 75 percent since the late 1970s, bringing the new technology to 3.5 million hectares and 6 million farmers.

The subsidized inputs and credit, expanded marketing channels and extension services contributed to sharp increases in fertilizer and pesticide use. Fertilizer subsidies kept the retail price 40 percent below its economic value and helped keep Indonesian farmgate prices among the lowest in Asia during the 1980s. Fertilizer applications increased by 500 percent in many areas, with applications rates more than twice those in the Philippines and three times those in Thailand (FAO, 1992). Subsidy programs maintained a prominent role throughout the 1980s. By 1987, the fertilizer subsidy alone consumed 35 percent of the government's expenditure on agriculture. The irrigation subsidy cost about US \$110 per hectare. Together, rice-related subsidies for fertilizers, pesticides, HYV seeds, credit and irrigation amounted to more than US \$1 billion per year in the late 1980s. In the early 1990s, budgetary expenditures on fertilizer subsidies to Indonesian farmers were around \$500 million per year (Trewin and Tomich 1994).

With rice receiving most of the policy attention and financial resources, its economic importance meant that the entire agricultural sector performed well during the 1980s. Agricultural GDP increased by 4 percent per year and the sector accounted for more than half the total number of jobs created during much of the 1980s, contributing up to 1.3 million jobs each year (FAO, 1992). Export crops, livestock production and fisheries all recorded strong performances as well, growing by at least 4 percent per year. Forestry was the only subsector to decline, which was mostly the result of a ban on long exports aimed at increasing value added in the sector. Exports of wood products increased from \$1 billion in 1985 to \$3.4 billion in 1990.

Moreover growth in agricultural output rose at a faster rate than employment. This productivity increase contributed to higher real incomes in rural areas and significant improvements in nutrition levels, mortality rates and rural services. The country's poverty rate has dropped to around 12 percent, reducing the number of rural poor by more than 20 million since 1980 (FAO 1992; Mason and Baptist 1996).

By the mid 1990s, agricultural policy focus turned towards resource efficiency and long-term productivity issues. Policymakers began considering the economic and ecological importance of agricultural diversification as well as sustainability issue for a number of reasons. The limits to rice production in Indonesia were being recognized, if not realized; consumption patterns began to change as incomes increased, putting new pressure on livestock, feed grains and related trade and domestic policies; the need to improve export crop performance coincided with the need to develop the economic potential of the outer islands; and two causes of natural resource degradation began to attract the attention of policymakers: 1) the pesticide, fertilizer and water mismanagement associated with subsidies and 2) broader sustainability issues related to watershed management, forestry resources and marine and coastal degradation.

Policy reforms reflected this evolving focus. The government phased out pesticide subsidies, and Indonesia's highly successfully integrated pest management programme (IPM) provided farmers with innovative technology aimed at minimizing pesticide and fertilizer use. The majority of the participating rice farmers reduce pesticide and fertilizer use, while maintaining yields. By substituting labour and new techniques for cash inputs, net returns often increased. Most credit subsidies ended in 1990, and a three year phase out of fertilizer subsidies began in 1991.

3. The Socioeconomic Impacts of the Current Crisis on Rural Communities and Agriculture

Among the present concerns facing agricultural policymakers is the short and long term implications of the economic crisis on food security. For example, what does the devaluation mean for food production and access to food; how will rural communities cope with thousands of urban unemployed returning to the countryside in search for jobs and food; and what are the price related impacts on factor markets?

The answers to most of these questions are ambiguous. For instance, the direct and indirect impacts of the devaluation on food consumers and producers work in opposing directions. For example, while agricultural wages represent an important cost component for food production, they are also the primary income source for many households. In part, the crisis shocks should encourage food production since drops in real wages reduce food production costs, increase producer profits and provide incentives to boost production further through both extensive and intensive techniques.

For wage-dependent landless workers, however, falling incomes reduce food demand, counteracting the production enhancing effects of lower production costs. Likewise, as the price of export crops increase relative to non-exported food crops, producers will shift land, labour and other inputs towards the more profitable opportunities.

It is ironic that in Indonesia, agricultural households tend to be more vulnerable to food insecurity than urban residents. Before the crisis, the average per capita expenditure of agricultural households was about 57 percent higher than the poverty line (World Bank 1998). In contrast, average per capita expenditure among households in both manufacturing and construction was more than twice the poverty line. Unskilled agricultural wages have fallen in real terms as urban workers whose jobs are lost in construction, manufacturing, and import-dependent food processing activities migrate back to the countryside to look for work.

Empirical evidence demonstrates that this influx of labour into the countryside is placing downward pressure on agricultural wages. Table 1 presents some recent evidence of real wage declines in Indonesia during the period of January 1997 to January 1998. As expected, regions closest to Jakarta, Central and East Java have seen the largest declines, 12 percent and 13 percent respectively.

The devaluation provides increased opportunities for expanding traditional exports crops (cocoa beans, coffee, tea and fishery and forestry products), as well as exports of fruits and vegetables (See Figure 1). As prices of vegetables increase relative to rice prices, producers will tend to substitute vegetables for rice production. Table 2 highlights the trend in relative output prices. The price ratio of paddy to agricultural wages has changed significantly compared with the price ratio of vegetables to agricultural wages between August 1997 and June 1998. As the relative output prices of these two commodities continue to diverge, policymakers attempting to control rice prices through generalized subsidies will find it increasingly difficult to compensate rice producers via input subsidies.

The increasing food prices and falling real input costs stimulate production and agricultural income, but reduce the real income, effective demand and food security situation of landless agricultural workers and consumers who depend on the market for their food supplies. For agricultural workers, declining real wages harm their ability to feed their families, to school their children, and to provide adequate health care. These are especially important concerns for Indonesia where 11 million rice producers cultivate less than 0.35 hectares and an estimated 7 million rural households are landless (Tabor, Dillion and Sawit, 1998).

Figure 2 provides data showing just how much faster food prices are rising than are wages. The partial equilibrium impact on income of a 40 percent rise in the real price of rice (the estimated price rise if trade were liberalized at prices prevailing in late -1998) is simulated in Table 3. The income losses range from 7.5 percent to 14 percent. Income declines of this proportion for the poorest one-third of the country's population have serious implications for the country's food security objectives. On the other hand, what is not taken into account in the simulations presented in Table 3, is that rice producers gain from the real price rise.

The Ministry of Population (BKKBN) estimates for May 1998 are that 16.7 percent of the households in Indonesia (some 34 million individuals) could be classified as badly impoverished -- households that are unable to satisfy their basic needs. Table 4 presents data on changes in poverty since 1976, including recent estimates of the growth in poor since the crisis. The Ministry of Food and Horticulture estimates that 40 percent could be classified as food insecure. The highest absolute number of food insecure rural households are in Java.

Food insecurity and malnutrition have immediate consequences for those households effected. Chronic malnutrition blinds, otherwise debilitates and kills, reducing physical capacity, lowering productivity, stunting growth, and inhibiting learning. In the world's poorest regions and countries, one-third of deaths among children are due to malnutrition (Del Rosso 1992). Decreased access to food and nutrition leads to declining learning capacity, school performance, and school attendance; to more school and work days lost to sickness; and to lower earnings, shorter work lives and a less productive work force.

In a recent review of the crisis, Tabor, Dillion and Sawit (1998) argue that three events contributed to a significant increase in absolute poverty: (1) a fall in average real incomes of 10 to 14 percent, (2) a rise in urban unemployment; estimated to be as high as 15 million persons, and (3) a rise in food prices facing the poor -- between January 1996 and May 1998, food prices rose 11 per cent in real terms. Tabor et. al. estimate that the crisis could cause an increase of 8 million urban poor and 23 million rural poor; and there would be approximately 9.6 million urban and 24.3 million rural food-insecure individuals in mid-1998 (Table 4).

The highest estimate of poverty levels was that of Ministry of Women's Affairs. This ministry classified 56 percent of the population, or around 113 million persons, as poor. In 1996, 22.5 million persons were classified as absolutely poor of which about 7.2 million were in urban area and 15.3 in rural area. Another 37 million were reported as "nearly poor". With falling real wages and shocks to food production, the great majority of these "nearly poor" households would have fallen below the poverty line. This implies that 50-55 million persons could be classified as absolutely poor, of which 38 million live in the rural areas.

These crisis related impact have long term consequences for future income, agricultural productivity and production possibilities. Many households respond to negative economic shocks by pulling their children out of school. An estimated 17.5 million school age children (out of a total 53 million) in 1997 were reported to be out of school to earn an income (Tabour et. al. 1998). Even with the planned abolition of school fees, these numbers will undoubtedly rise as the increased opportunity cost of keeping children in school rises. The government estimates suggest that about 6 percent of primary school students and 13 percent of junior secondary school students are at risk of dropping out (approximately 1,650,000 and 1,100,000 students respectively), while an additional 400,000 primary school graduates are unlikely to continue their education (World Bank, 1998)².

² As cited by Tabor et al. (1998), UNICEF estimates that 8 percent of the 30 million primary school children and 14 percent of the 10 million junior high school students may drop out of school as a result of the economic crisis.

The outlook for health is also sobering. The sharp exchange rate depreciation has raised the prices of medicines, vaccines, contraceptives, and other medical supplies. Drug prices have increased two- to three-fold since the crisis began. In some communities, health centres have had to close because of a lack of medicines.

Recent estimates suggest that primary, junior and secondary school drop out rates are rising rapidly. Government estimates presented in Table 5 show that drop out rates more than doubled between 1997/98 to 1998/99. Evidence from the much smaller 1986/87 shock, however, suggests the overall impacts are likely to be large. During that period enrolment rates fell from 62 percent to 52 percent at the junior secondary level and took a decade to recover. Virtually the entire decline was from poor households (Atinc and Walton 1998).

The drop in enrolment levels raises serious medium and long term growth implications for Indonesia's economy. The development literature suggests strongly that basic education, skill development and institutional reforms are all necessary conditions for increasing productivity growth and taking advantage of the increased competition resulting from market liberalization (Krueger, 1995; Rodrigo and Thorbecke, 1997; World Bank, 1998) While measuring how much basic education actually contributes to economic growth remains part of an ongoing empirical debate, few dispute the fundamental role played by education in the agricultural development process. Schooling and basic education foster agricultural innovations, enhance producers' abilities to reallocate resources in response to policy reforms and to adapt to fluctuating input and output prices; and promote the use of new technologies, including best practice resource management techniques (World Bank, 1998; Foster and Rosenzweig, 1993; Foster and Rosenzweig, 1995; Foster and Rosenzweig, 1996).

4. Crisis-Induced Agricultural Policy Responses

Crisis-induced policy responses also have direct and indirect impacts on producer and consumer price incentives, affecting competition in output, input and credit markets, and the use of natural resources and environmental services. Moreover, agricultural suppliers, producers, processors, and traders are influenced directly by the policy response and indirectly via how producers and consumers respond.

Among its many attempts to address the impacts of the drought and the economic crisis, Indonesia's policymakers have worked with the international community to establish a series of appropriate policy responses. The Minister For Economy, Finance and Industry provides periodically a letter of intent to the Managing Director of the International Monetary Fund which includes an outline of the government's policy reforms and specifies the types and timing of the actions to be taken.

The macroeconomic, trade and agriculture policy reforms implemented in response to the crisis are wide ranging. Since September 1997, Indonesian policy-makers have taken steps to reduce tariffs on more than 500 food items to 5 percent. They have eliminated local content requirements for dairy products and dismantled export controls for plywood and wood products. The government has withdrawn BULOG's import and trading monopolies for wheat, wheat flour, garlic, sugar and soybeans, abolished the clove monopoly and reduced agricultural export taxes to 10 percent. Inter-provincial commodity trade restrictions have been eliminated. Other policy reforms include removing the export restriction on oil palm products, privatising plantations, estates and input suppliers, liquidating cooperatives and removing land use regulations restricting producer crop choices.

The September 1998 memorandum includes an annex outlining a strategy for Indonesian food subsidies and another annex outlining a Seven Point Strategy for Rice. Important food and agricultural sector reforms include: (a) eliminating BULOG's monopoly on wheat, sugar and soybeans imports; (b) suspending the VAT on rice and other essential commodities; (c) eliminating wheat and sugar subsidies (while soybean subsidies are to be phased out); (d) removing export bans on wheat, soybeans and sugar; (e) eliminating import subsidies and relevant import duties for soybean meal and fishmeal; and (f) for the first time in 30 years, allowing private traders to import rice.

Unlike pre-crisis reforms which were often motivated by budgetary constraints, the present price and trade reforms reflect the government's inability to enforce export bans and to hold down food prices in local markets. Illegal exports and trader markups forced the early implementation of these policies (Third Memorandum, 1998). Indeed, the government's price interventions have not been effective. From January to June 1998, BULOG raised procurement and market operation prices three times. Procurement prices for paddy were increased to Rp. 600, then to Rp. 700 and finally to Rp. 1000 per kilogram in June. BULOG also attempted to lower rice prices for consumers by selling large quantities in the market at Rp. 1750 to Rp. 2000 per kilogram. Prices remained high, among other reasons, because the rice distribution system allowed speculators to buy subsidised rice and sell it at higher prices. In addition, large amount of rice were being exported illegally to neighbouring countries³. In an attempt to curb speculation, BULOG raised its reference price to between Rp. 2000 and Rp. 3500 per kilogram, depending on the quality of the rice.

Due to the lower than expected second rice harvest, panic hoarding and sharp rises in rice prices, the current targeted rice price program (covering 2 million people) is to be expanded to cover 7.5 million people by October. The targeted rice program may ultimately cover 15 million families. In addition, BULOG plans to increase substantially the quantity of rice released into the market at below market prices and maintain a high release level until the main harvest.

5. Making the best use of agriculture to address poverty and food security

One of the most important short term goals for improving food security in Indonesia will be utilising the poverty reduction potential of its agricultural sector. Periods of high agricultural growth rates are associated with falling rural poverty and increasing food security (Binswanger and von Braun 1991; Timmer 1992; Bell and Rich 1994; Johnson

³ More than 1900 tons of rice were seized at Sunda Kelapa harbour in North Jakarta as it was being prepared to be exported to Kuching, Malaysia. The rice was found in boats, containers, trucks, and warehouses at the harbour. The remaining 380 tons were seized from traders who tried to mixing low quality rice and good quality rice before selling it in open market to gain greater profit.

1993). Strong agricultural growth leads to: (1) lower food prices (for urban consumers and rural net-food buyers); (2) increased income generating opportunities for food producers and jobs for rural workers (thus reducing rural-urban migration, with positive consequences for real urban wage rates); and (3) positive intersectoral spillover effects including migration, trade and enhanced productivity (Lipton and Ravallion, 1995; Timmer 1992). In the past, Indonesia's rapid agricultural growth substantially reduced rural poverty, improved food security in both rural and urban sectors, and provided a significant demand side stimulus for non-agricultural goods and services.

Much of the past progress in providing increased food availability in Indonesia has resulted from increased domestic food production. Despite rapid industrialisation, Indonesia's cereal self-sufficiency ratio increased from 90 percent to 95 percent, with rice yields increasing from 3.3 kg/ha to 4.3 kg/ha during this period between 1979/81 to 1989/91. Martin and Warr (1993) conclude that technical change in Indonesia has been faster in agriculture than in the rest of the rest of the economy due to such programs as rice intensification (BIMAS, INMAS, INSUS), public investment in irrigation and in adaptive research and dissemination of modern varieties, and the subsidies for credit, fertilisers and pesticides.

However, after three decades of steady gains in agricultural productivity, growth rates of food production begun to lag. Annual rice yield growth in Indonesia has dropped from 5.2 percent in the 1971-83 period, to 3.1 percent in 1984-90, to less than 3 percent today. Warning signs include declining growth of arable and irrigated areas, and increasing competition for resources between agriculture and other sectors. The use of inputs such as fertiliser and pesticides has declined due to environmental and health concerns. Falling world food prices have discouraged investment in agriculture, and neglect of agricultural research at national levels – although productivity growth arising from the latter is a means of dealing with price falls.

Indonesia's agricultural sector was growing relatively slowly even before the drought and economic crisis hit. The same trend of declining agricultural comparative advantage in the process of industrialization experienced by structural changes in developing countries worldwide. The share of agricultural output in total production in developing countries as a group, has declined from 29 percent in 1965 to 17 percent in 1990 (Pandya-Lorch 1994). In Indonesia, agriculture's share of GDP has fallen from 45 percent in the early 1970s to around 17 percent in the mid-1990s and is expected to be less than 10 percent by 2020 (Anderson and Pangestu, 1995).

Anderson and Pangestu (1995) examine how three sets of influences affected structural change in Indonesia's agricultural sector: external events, domestic macroeconomic and non-agricultural policies, and domestic food and agricultural policies. Their study suggests that while petroleum sector prices represents the most important external event influencing the country's economic growth pattern (both the boom period during the 1970s and the critical 60 percent drop in real oil prices between 1982-86), it has been the prudent, market-driven approach to macroeconomic management and the liberalization of foreign trade and investment since 1985 which laid the foundation for the continuous and rapid economic growth in all sectors.⁴

⁴ While these policies and programs have been highly successful, Indonesia's economic success is also due, in no small part to an abundant natural resource base. Oil, natural gas, coal, tin, nickel and gold are all found in substantial amounts, along with one of the world's richest tropical commercial forests. With more than 13,000 islands, the country's marine area is six times larger than its land area. Together renewable and exhaustible

6. Laying the Foundation for Sustainable Growth

Indonesia's ability to once again lay the foundation for a long term sustainable growth path (with the capacity to weather future economic crisis), depends in large part on its ability to successfully manage agricultural land, water and forest resources. Equally important is understanding how alternative economic policy instruments influence resource use across different economic sectors; between local, regional and national levels; and among households, food producers and firms. Macroeconomic policies and sectoral policies not aimed specifically at food and agricultural producers do, nonetheless, have a strategic impact on resource allocation and aggregate demand in the economy.

Indonesia's overall development strategy and use of macroeconomic policies -- including fiscal, monetary and trade policies-- directly and indirectly affect demand and investment in agricultural related activities. Apart from the direct effects of rice price incentives on water, fertilizer and pesticide use, the increased demand for inputs has additional intersectoral, intrasectoral, distributional and environmental implications. The agriculture sector is provided with an economic advantage in access, for example, to water vis-à-vis the industrial sector (intersectoral); water used for rice gains an economic advantage over water used for other crops (intrasectoral); rice producers with more land and greater access to water gain over those with less land and water (distributional); and increased pesticide and fertilizer use affect water quality (environmental).

These linkages and unanticipated consequences highlight the need to carefully address the overall economic, social and environmental implications of crisis induced policy choices and public investment decisions. The heightened role of food security in the context of the crisis is pressuring the governments to modify sectoral policies to accommodate new demands for safeguarding the opportunities of future generations. Indonesia's successful development experiences suggests that significant, complementary improvements in both food security and sustainable development can be made when policymakers: (1) seek policy portfolios suited to broad-based growth and build in flexibility to adjust this portfolio over time in response to new developments; (2) remove unfair market privileges, input subsidies and price incentives which, decrease competition in output, input and credit markets, raise costs to consumers and taxpayers, and encourage overuse and misuse of resources; (3) ensure that equity plays a central role in decisions about appropriate responses to food security and sustainability concerns; (4) focus public sector actions on those rural development services under-provided by the private sector; and (5) revitalize public and private investments in agricultural research to encourage new technologies for sustainable development.

Development lessons suggest the best role for the public sector is to provide a conducive policy environment and basic rural infrastructure, including roads, irrigation, safe drinking water, sanitation and electrification to take full advantage of their direct effects on food security through productivity gains, lower transactions costs and employment creation; and their indirect effects on agricultural growth through the strengthening of linkages between public and private investment.

Indonesia's development record indicates these public investments and policy attention should now concentrate on resource-poor, high poverty rural areas where food security depends on increasing production and resilience through

primary resources contribute to 40 percent of GDP. Primary sector exports account for 70 percent of total exports, with agriculture contributing about 50 percent of non-oil exports.

diversification of production systems and of economic activities. For example, growth strategies should promote diversified farming systems and diversified economic activities.

In resource-poor rural areas, important food security activities for the public sector include: providing educational, technological and financial support to encourage mixed farming systems that mitigate environmental consequences by integrating livestock, tree crops, and annual crops; establishing training programmes on soil fertility and organic matter management, moisture conservation, erosion control and nutrient recycling; encouraging diversity in research and extension efforts to accommodate site-specific differences in resource poor and fragile areas and involve farmers in the process; establishing secure property rights for both private and common property resources including forests, pastures and watersheds; and providing nutrition-related extension services to increase food availability through home gardens, urban agriculture, food processing and preservation.

In high potential agricultural areas with fertile soils and favourable climates, environmentally-friendly intensification and specialization require competitive markets, good management practices and timely information. Policy reforms alone can often lower costs and improve environmental incentives for small scale processors, transporters, and traders. Other low-cost measures include adjustments in extension programmes and information systems to incorporate environmental production approaches such as integrated pest management, integrated plant nutrition systems and rural energy use. In specific cases, funds must be allocated to rehabilitate, conserve and monitor resource use.

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Table 1**Changes in Real Wages for Weeding in Selected Provinces**

Province	12 Month Change Jan 97 to Jan 98	6 Month Change July 97 to Jan 98
West Java	-6.8	-10.0
Central Java	-12.1	-13.4
East Java	-13.1	-11.2
West Sumatra	-5.2	-5.0
South Sulawesi	-8.0	-5.7
West Nusa Tenggara	-8.2	-12.0

Source: World Bank, 1998b

Table 2**Percentage Increase in the Ratio of Paddy Price to Wages vs. Vegetables to Wages**

Province	August 1997 to June 1998 Percentage Change	
	Paddy	Vegetables
West Java	35%	79%
Central Java	30%	44%
Yogyakarta	54%	156%
East Java	31%	89%
Sumatera Utara	9%	86%
Sulawesi Selatan	32%	23%

Source: Authors' calculations based on BPS, 1997 and 1998 various issues.

Tak Simulations of 40 perce

Expenditure Group 1996 (Rp/month)	U 1
Rice Expenditure Share	4
Income Elasticity	
Compensated Demand Elasticity	
Price Elasticity (Slutsky Equation)	
Kg purchased per month before price rise	
Price per Kg before price rise	
Real rice Price Rise (40% increase)	
Kg purchased per month after price rise	
Food expenditure share	8
Expenditure on food (Rupiahs/month)	
Expenditure on cereals (Rupiahs/month)	
Expenditure on rice (Rupiahs/month)	
Average Monthly Expenditure	
Loss in Consumer Income	-1

Source: SUSENAS, 1996 and author's calculations.

Table 4**Changes in Poverty: 1976-1998**

Year	Millions			Percentage		
	Urban	Rural	Total	Urban	Rural	Total
1976	9.5	44.2	54.2	38.8	40.4	40.1
1980	9.4	32.8	42.3	29	28.4	28.6
1990	7.2	17.2	25.9	16.8	14.3	15.1
1996	10	15.3	22.5	9.7	12.3	11.3
1998 (est.)	15	32	53	20	30	26
1998 Severely food insecure	9.6	24.3	32			

Source: BPS (1998) and Tabor, et al., (1998). Note: 1976-1996 were BPS statistics while the 1998 values were estimated by Tabor et al.

Table 5**Estimated impact of the Crisis on School Enrollment**

	Change 98/98 to 98/99				
	1967/97	1997/98	1998/99	Absolute	Percentage
PRIMARY					
Enrollment (millions)	29.24	29.27	28.99	-0.28	-1.0%
Drop Outs (millions)	0.88	0.76	1.65	0.89	117.1%
Drop out rate	3.0%	2.6%	5.7%	3.1	119.2%
JUNIOR SECONDARY					
Enrollment (millions)	9.28	9.69	8.33	-1.36	-14.0%
Drop Outs (millions)	0.3	0.47	1.11	0.64	136.1%
Drop out rate	3.6%	5.1%	11.5%	6.4	125.5%

Source: World Bank: 1998a

Figure 1
Wholesale Price Indices For Export
Commodity Groups (1983 = 100)

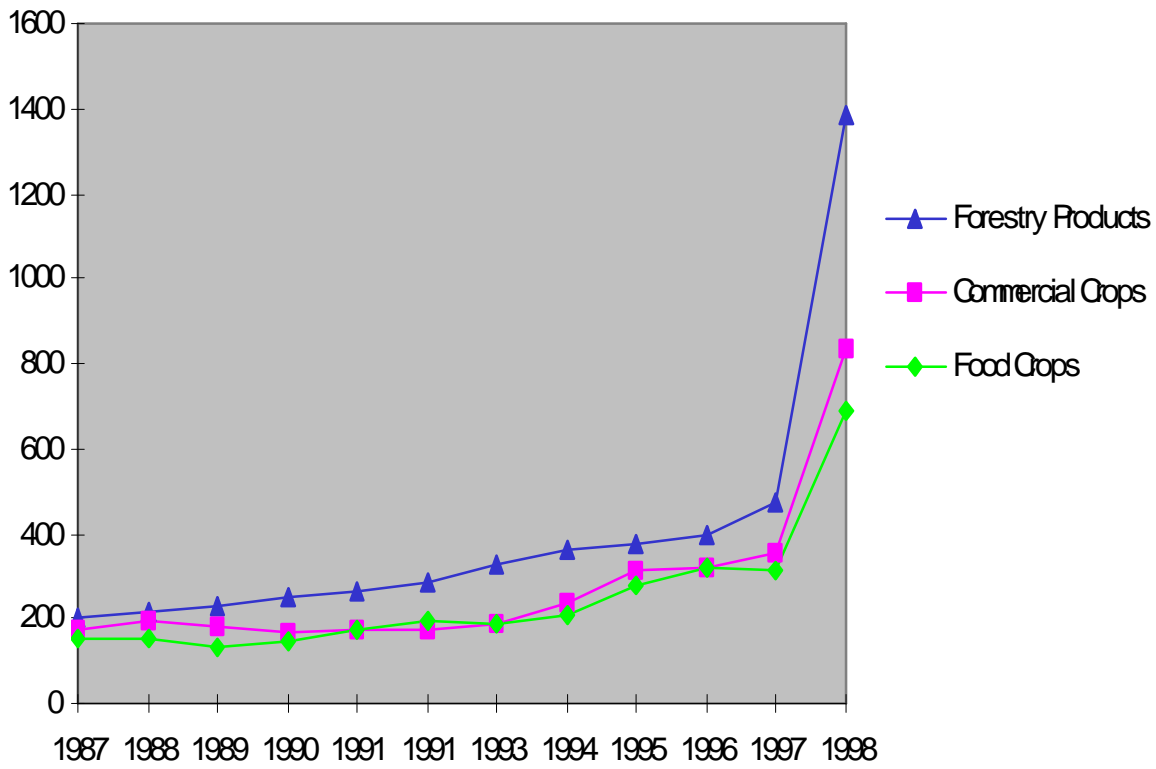


Figure 2
Indices of Farmer's Consumer Prices, Food
and Agricultural Wages: West Java
(1983 = 100)

