

## **Making Strides in Achieving Food Security: The Cases of Ghana, Peru, and Vietnam**

The focus of this year's report is a review of progress made since the 1996 World Food Summit and an analysis of the potential for achieving food security in the next decade. After studying the progress of the 70 countries included in this report, we have identified three countries that we consider to be success stories: Ghana, Peru, and Vietnam. All three countries introduced major reforms in the late 1980s or 1990s. These reforms were based on a stronger reliance on market forces, which fostered economic stability. The agricultural sectors, in particular, benefited from improvements in access to credit and government support of research and extension services.

### **Ghana**

Ghana has achieved impressive success in improving its food security during the last decade and it is one of the best performers in the Sub-Saharan Africa (SSA) region. This success must be evaluated in the context of recognizing that the country remains among the world's poorest with a per capita income of \$380 in 2004, less than the average for SSA. Ghana's food security success can be attributed to the economic reforms of the late 1980s that brought a new approach to agricultural policies in the country. The key elements of economic reform during 1986-2002 included a fully flexible exchange rate system, simplification and lowering of tariffs, fiscal reforms, the establishment of a new value-added tax system, liberalization of the banking system, and the elimination of credit controls. With respect to the agricultural sector, the new policy initiatives included privatization of state farms, reducing subsidies on inputs such as fertilizer, and removing commodity price controls. The government, in collaboration with the World Bank, embarked on an Agricultural Rehabilitation Project, with the goal of improving the delivery of public sector services such as research, extension, irrigation, and planning institutions. Improvements in agricultural performance, however, did not happen instantly. There was a sluggish response in the early 1990s, but the efforts eventually paid off, leading to agricultural growth of 4-5 percent in nearly every year during 1995-2003. The improvement in agricultural performance had a strong impact on the performance of the overall economy because almost 70 percent of the population depends on the agricultural sector for their incomes. This high dependency on the agriculture sector, and the fact that the share of agriculture in gross domestic product (GDP) is low (about 36 percent in 2003), is an indication of unequal

Table A-1

#### **Indicators for case study countries in 2004**

	Ghana	Peru	Vietnam
GNI per capita, Atlas method (current US\$) <sup>1</sup>	380	2,360	550
Population (million) <sup>1</sup>	21.1	27.5	82.2
Agricultural machinery (tractors per hectare of arable land) <sup>2</sup>	0.1	0.4	2.4

<sup>1</sup>Source: World Development Report 2006.

<sup>2</sup>Source: World Development Indicators 2005.

purchasing power between the urban and rural population, leading to a high concentration of poverty and food insecurity in rural communities.

During the last decade, Ghana experienced improvements in food production and increased agricultural and mineral—in particular gold—exports, which helped finance food imports. This led to overall increases in food availability and food consumption across all income groups. However, continuation of this progress depends on the country’s ability to increase investment in the agricultural sector and rural development. Poverty remains deep among the lower income population in rural areas, and inequality in purchasing power continues to exacerbate food insecurity problems of the poor.

## Food Availability

Ghana’s food availability has increased from about 2,000 calories per day per person in the early 1990s to 2,667 calories per day in 2003, a jump of more than 30 percent. The success was largely due to the promotion and adoption of a high yielding variety of corn, a staple food, and cassava, the main source of food for the poorest segment of the population. Corn yields increased 36 percent during 1990-2003 and production doubled. The growth in cassava was even more impressive, with a 51-percent growth in yields leading to more than threefold increase in production. A new cassava variety introduced to farmers in 1993 is resistant to pests and well-matched with Ghana’s soil and climate conditions. This is an important achievement because cassava can be grown in poor soil, is tolerant to drought, and can be harvested 8-24 months after planting. This flexibility in harvesting also can stabilize annual consumption during drought years and lessen the risk of price hikes. Currently, cassava contributes to about one-third of daily calorie consumption in the country.

In addition to higher domestic food production, the increase in food availability was a result of rising food imports that were fueled by increased export earnings. The correlation between the value of food imports and the

Figure A-1

### Cassava and corn yields have increased in Ghana



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).

value of total export earnings was high—70 percent during 1990-2003. During this period, exports grew 8 percent per year, and food imports grew by 8.5 percent. Market liberalization in the agricultural sector, particularly for cocoa, reversed the declining trend in exports and resulted in 6.6-percent annual growth during 1990-2003. Another increasingly important agricultural export commodity is wood, both sawnwood and in finished form. However, there are serious concerns about the sustainability of wood as an export item and concern over the environmental impact of the current high rate of logging.

Nonagricultural exports also performed well as an income source for imports, but the country remains highly dependent on external assistance, which accounted for about 12 percent of gross national product (GNP) during 2000-03. Despite the government's policy adjustments, the flow of foreign direct investment remains low, less than 2 percent of GNP. In fact, in terms of receiving foreign direct investment (FDI), Ghana was ranked 15th among 47 SSA countries in 2002 (South Africa, Nigeria, and Angola accounted for 62 percent of the total). The principal reasons for the low FDI rates are inefficient financial institutions, poor infrastructure, and inadequately skilled labor, according to a report by the International Monetary Fund (IMF).

Overall, the high export growth and reductions in import tariffs—which made imports more affordable—were the reasons behind the high food import growth of 8 percent per year during 1990-2003. The growth in grain imports was less than total food imports, meaning that imports of higher valued food items became more prevalent. The volume of grain imports (mainly rice and wheat) increased by 3.3 percent per year, leading to grain import/supply dependency of 38 percent by 2003. In recent years, there has been a surge in imports of higher-value products; meat imports more than doubled, and imports of animal and vegetable oils increased fourfold during 2000-03.

## **Food Access**

The successful adoption of new technology led to increased food production, and also slowed the growth in food prices relative to overall inflation. However, inflation remains very high despite the government's fiscal policy efforts. The annual inflation rate (as measured by the consumer price index) during 1990-2003 was 27 percent per year, and the food price index grew at a slower rate of 24 percent. The latest World Bank reports indicate that inflation was cut in half in 2004, which could have a positive impact on consumer food prices. Another factor contributing to improved food security was income growth between 4-5 percent, exceeding population growth and thus leading to real per capita income growth of about 2 percent. Income growth improved purchasing power and food security of all income groups but, according to the IMF country report, economic growth did not change the income distribution. The income distribution remains skewed and, according to the latest statistics in 1999, the top 20 percent of income earners received 46 percent of all income and the bottom 20 percent received only 5 percent.

ERS analysis shows that the number of people who consumed less than the nutritionally required level declined from 13 million in 1992, or 80 percent of the population to 4 million in 2004, or less than 20 percent of the population. The depth of food insecurity as measured by the nutritional distribution food gap—the amount of food required to increase the consumption of all food deficit income groups to the nutritional requirement—declined dramatically from 136,000 tons (measured in tons of grain equivalent) in 1992 to 30,000 tons in 2004, a decline of roughly 80 percent.

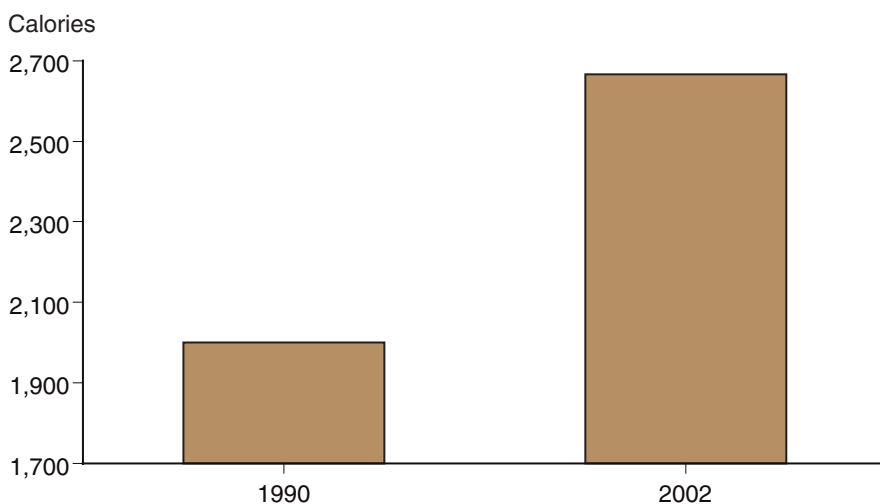
Other indicators of food security also point to improvements in food security. The trend in undernutrition among children declined, but this improvement was slower than for the aggregate population. Malnutrition among children under 5 declined from 27 percent in 1990 to 25 percent by 1999. It should be noted that improvements in child nutrition depend on improvements in a variety of factors, in particular general sanitary and health conditions. Another indicator of food security, poverty, also showed a decline: the share of population living below the poverty line (\$1 per capita per day) dropped from 52 percent in 1992 to 40 percent by 1999. Poverty, however, is unevenly distributed between rural and urban areas. About two-thirds of the population live in rural areas but, in 1999, they accounted for 84 percent of the poor. According to the World Bank report, poverty is deepest among the subsistence farmers and landless agricultural laborers who account for over half of the population. Rural poverty could worsen if growth in the agricultural sector does not keep pace with the rest of the economy. During 1990-2003, the share of agriculture in the total economy declined from 45 percent to 36 percent and the growth in agricultural value added per worker was 0.9 percent, or about half of the aggregate per capita GDP growth.

## Looking Ahead

Ghana's improving macroeconomic performance of the past decade has substantially reduced poverty and improved access to food by the poor. In addition, economic growth raised government revenues, which were used to

Figure A-2

### Daily per capita calorie consumption in Ghana



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).

strengthen public investment. The World Bank's projected annual growth rates of 4-5 percent for GDP and personal income over the coming decade provide a basis for believing that Ghana's food security will improve rather than worsen. Based on ERS assessments, food security in Ghana will improve and the number of people consuming less than the nutritionally required level is projected to be cut by half, or to about 10 percent of the population, by 2015.

This successful outcome could be achieved if agricultural, economic, and foreign exchange growth trends continue and income distribution does not deteriorate. The last decade's impressive agricultural growth was achieved through changes in policies as well as promotion and adoption of new technologies in crop varieties, particularly corn and cassava. The sustainability of this trend is not guaranteed. Any change in technology introduces changes in resource allocations, which, in turn, calls for new technology. For example, the adoption of new cassava varieties led to reductions in consumer prices, which were followed by a sharp increase in demand. On the production side, this change increased the real income of small farmers. Now, according to a recent study by the International Food Policy Research Institute (IFPRI), labor shortages could hinder harvesting of the expanded production area. This means that the technology-induced production growth cannot be sustained if it is not followed by new processing technologies such as harvesting and peeling machines that are suitable for small farmers. The IFPRI study argues that without such technologies, increases in labor costs can easily bring the production expansion to a halt. The case of cassava is not unique; other agricultural commodities with impressive past performances can run into resource and technological constraints. According to the IMF report, the agricultural sector has not had much success in attracting FDI both for food production and export crops. Agricultural exports account for 25 percent of total export earnings, with cocoa and timber accounting for the bulk of the earnings. Exports of agricultural commodities increased about 250 percent since 1990, but most of the gains are driven by land expansion, threatening the country's natural resources. According to the World Bank, the cost of overexploitation of natural resources in the country is about 5.5 percent of Ghana's GDP. Growth in the nonagricultural sector is closely correlated with the performance of the agriculture sector and, so far, economic growth in Ghana has been achieved by shifting employment out of farming into other sectors.

Other food insecurity issues, such as concentration of poverty and hunger among the landless and the rural labor force, require long-term investment in education and rural development to help speed the movement of the labor force out of the agricultural sector. The slow rate of improvement in undernutrition among children, in addition to poverty, is related to discrepancies in access to services such as clean drinking water, health care, and sanitation. According to a United Nations Millennium report, only 40 percent of the rural population had access to safe water, compared with 70 percent in urban areas in 2000. Similarly, 44 percent of the rural population received improved access to sanitation, compared with 71 percent in urban areas.

Overall, Ghana's food security achievements have surpassed those of many countries with much higher incomes and more resources. The remaining

challenges, however, are not trivial. All food security and health indicators show deep problems among the lower income group, particularly in rural areas. While the continuation of recent economic growth can help the situation, the experiences of other developing countries indicate that growth alone will not solve the problem. This means targeted safety net programs to augment food consumption will be necessary if the goal is to eradicate food insecurity and poverty.

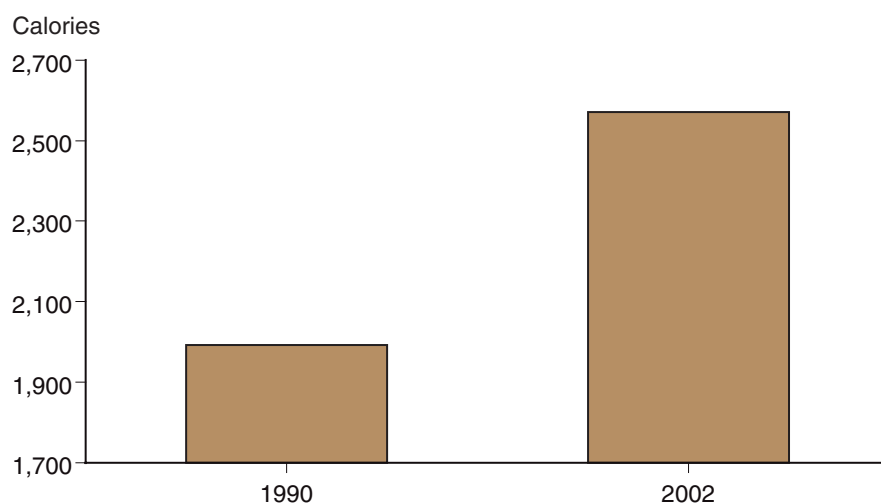
## Peru

Peru's success in improving food security during 1992-2002 was impressive and the country is the best performer in the Latin America and Caribbean region (LAC). Average food consumption grew from 1,993 calories per person per day in 1990 (close to the target dietary energy requirements of 2,050 calories) to 2,571 calories by 2002, a jump of 29 percent. Peru's success in food security can be attributed to political stability that was a result of a newly instituted set of macroeconomic policies in the early 1990s. The trend has faltered in recent years, raising serious questions about Peru's future path. In terms of overall economic status, Peru's per capita income was \$2,050 in 2002, considerably less than the LAC regional average of \$3,280. During the 1990s, the country's economic agenda focused on controlling hyperinflation, which included liberalizing the exchange rate, lifting price controls, and tightening fiscal policy.

Within the context of fiscal policy there was a major overhaul of laws and regulations for the private sector. For example, the government offered a "Stability Agreement"—basically a pledge to keep the rules relevant to foreign investment, such as those related to taxes and profits, in place regardless of changes in national policies—to encourage foreign investment. In agriculture, laws related to land transactions and entitlements were introduced, leading to improvements in access to credit. In the area of trade, the tariff system was simplified to a two-level *ad-valorem* tariff of 12 and 20 percent. Agricultural trade protection, however, did not change much, and

Figure A-3

### Daily per capita calorie consumption in Peru



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).



tariffs for commodities such as sugar and milk exceeded the 20-percent ceiling during the 1990s. Tariff levels were lowered in the early 2000s, but, because of the decline in global agricultural prices, protection for some key commodities remained.

The policy initiatives led to dramatic improvements in the economy. Hyperinflation of 300 percent a year in 1990-91 was reduced to about 3 percent in the early 2000s. The response was strong in all sectors. Agricultural value added per worker increased by more than 4 percent annually during the 1990s, and the share of agriculture in the economy increased from 8.5 percent in 1990 to 10.5 by the early 2000s. By the end of the 1990s, however, there was a visible slowdown in the economy that was worsened by domestic political instability and a border dispute with Ecuador. Although agricultural performance maintained its course, poverty and food insecurity grew in the early 2000s after a decade of positive trends.

The lesson of the last decade of Peru's experience is that political stability and improvements in macroeconomic conditions lead to a strong performance of the agricultural sector, including food production. Agricultural production growth, however, had high annual variability, with growth of as high as 75 percent in 1994 and a decline of 22 percent in 1998 (due mainly to the effects of El Niño). This uneven growth increased the pace of migration from rural to urban regions and, with the downturn of the economy in the early 2000s, there was an increase in food insecurity and poverty across the country.

## **Food Availability**

During the 1990s, Peru showed an impressive food security record, largely due to improvements in the performance of the agricultural sector. Annual agricultural value added per worker increased 4.2 percent per year, a much larger increase than the 2.4-percent per capita GDP growth during 1990-2003. The growth in the value of agricultural exports (9.3 percent) also surpassed growth in overall merchandise exports (8.2 percent).

Agricultural growth was not uniform across all types of producers. Although detailed data are not available, a report by Peru's Institute of Developing Economics found that privatization of the banking system in general, and the Agriculture Bank in particular, led to a sharp decline in the amount of credit given to small farmers. In fact, from 1989 to 2000, the value of credit given to smaller farms was cut by more than half, while the value given to larger farms increased more than fourfold. In 2000, about 83 percent of credit offered by commercial banks for agriculture was given to 4.3 percent of the producers. This change in credit availability boosted the agricultural production of large farmers and weakened the competitiveness of small producers. The farmers, in particular large farmers in the coastal areas, were in a good position to take advantage of the liberalized economic environment, and thereby increased their productivity both in food and export crops. This led to a decline in agricultural commodity prices—including staple food prices—despite relatively high tariffs that had dampened import growth.

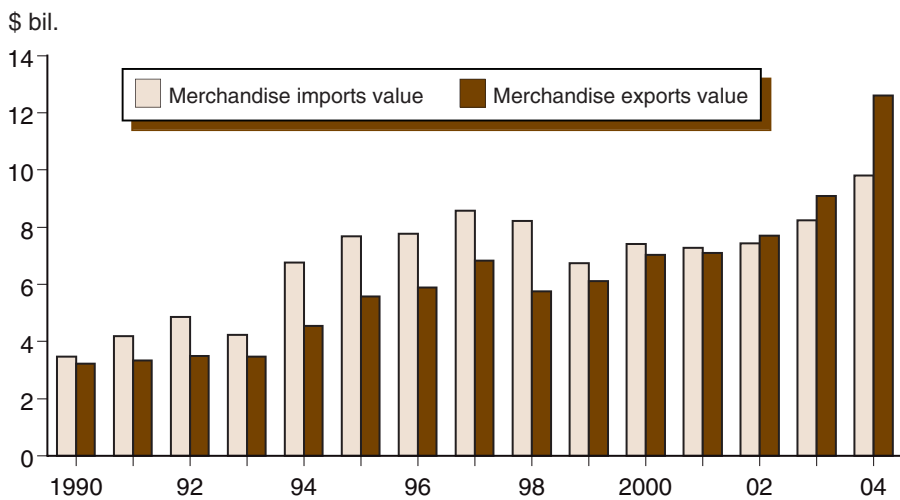
The small farmers in the highland areas, hindered already by high costs associated with the poor transportation infrastructure, were hit by the decline in prices. About 25 percent of the country's farms are smaller than

1 hectare, and half are less than 3 hectares. The large size of rural families exacerbates the problem of poverty. The majority of these households rely entirely on agricultural production for their livelihood, mainly production of staple foods such as beans and potatoes. In the rural Sierra area, for example, about 1.5 million farmers operate on less than 5 hectares of land with an average household size of about 7 people and a per capita income of less than \$1 a day (extremely poor according to the World Bank definition). For these farmers, productivity did not increase much during the 1990s because of poor land quality, and the reduction in credit availability exacerbated their situation. During 1991-2002, annual real producer prices for potatoes and rice declined by 6 percent and 3 percent, respectively. The decline in producer prices led to a decline in incomes, thus widening the income disparity between subsistence farmers in the highland areas and commercial farmers in the coastal areas.

Growth in agricultural and food production slowed the pace of food import growth, thereby reducing the food share of total imports from 7 percent in 1990 to 5 percent in 2002. Among different food categories, imports of vegetable oils had the highest growth (9 percent) during 1990-2002, followed by wheat (3 percent). Peru remains highly dependent on exports of primary goods, which have declining price prospects. The main export commodities are minerals and fishery products, which accounted for about 60 percent of total merchandise exports in 2000. Agricultural exports (not including fishery products) hold a small share of total exports—5 percent in 2000. There have also been changes in the product composition of primary commodity exports. For example, traditional agricultural exports such as coffee, sugar, and cotton are losing their shares to new products such as fruits and vegetables. In 1990, traditional agricultural exports accounted for 64 percent of total agricultural exports; this share declined to 39 percent by 2000. Overall, the improvement in productivity led to relatively higher growth in exports than for imports, which resulted in the significant trade deficit of the mid- to late-1990s becoming a trade surplus in 2002 through 2004.

Figure A-4

**Peru's merchandise imports and exports**



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).



## Food Access

Economic liberalization based on controlling inflation paid off, leading to an increase in domestic productivity since 1990. The annual inflation rate (as measured by the Consumer Price Index) fell from 44 percent during 1990-97 to 3.3 percent during 1997-2002 as a result of the government's fiscal discipline. The consequence was a stable food price index and a decline in real prices of staple foods. The growth in per capita income also was a key factor leading to an improvement in food security at the national level.

Overall economic growth was not smooth between 1992 and 2002. Annual growth was about 6 percent between 1992 and 1997, but declined to a low of 0.2 percent in 2002. During the high-growth period, social expenditures doubled, leading to a decline in poverty from 55 percent of population in 1992 to 50 percent in 1997. After 1997, Peru experienced some internal political instability due to alleged government corruption. This led to a deterioration of the policy environment and a slowdown of the economy. The end result was a contraction of social expenditures and an increase in the poverty rate to 54 percent by 2000. There is no independent data available but, according to a recent message from the Peruvian President (July 28, 2005), poverty (income of less than \$2 a day) was reduced to 51 percent and extreme poverty (less than a \$1 a day) was reduced from 24 percent to 19 percent between 2001 and 2004.

In the early 1990s, the incidence of poverty was much higher in the rural areas relative to urban areas, but migration caused the number of urban poor (those who live on less than \$2 a day) to surpass the number of rural poor by the year 2000. However, poverty is more pervasive in rural areas, which account for 70 percent of the country's extremely poor people (those who live on less than \$1 a day).

ERS research showed a decline in the number of hungry people from 1990 to 2000, but an increase during 2000-02. According to ERS estimates, the number of people who consumed less than the nutritionally required level was 18 million in 1992 or 80 percent of the population. That number declined to 5 million or 20 percent of the population in 2001-02, but the estimates for 2004 show an increase to 11 million or 40 percent of the population (see Appendix for methodology). The nutritional distribution food gap—the amount of food required to increase the consumption of all food deficit income groups to the nutritional requirement—measures the depth of food insecurity. This gap declined by 38 percent, from 427,000 tons of grain equivalent in 1992 to 265,000 tons in 2002. By 2004, there was an upturn of 10 percent to 289,000 tons. The slower rate of decline of the food gap versus the decline in number of hungry people indicates an intensification of hunger among the lowest income segment of the population.

Other indicators of food security also show support for the generally positive trends of the 1990s. The infant (under 1 year) mortality rate fell from 52 per 1,000 in 1991 to 32 in 2000, a 38-percent decline. Most of the drop in the child mortality rate occurred in urban areas where access to sanitary and health services is easier.

## Looking Ahead

The review of macroeconomic indicators in Peru shows a considerable improvement in all dimensions: low and stable inflation, strong growth of trade and the economy as a whole, improved laws, regulations, and institutions, and better access to public services. Economic growth, however, remains volatile and income inequality is persistently high. An analysis of Peru prepared by the International Monetary Fund provides a positive profile of the economy, noting a rebound during 2002-03 and forecasting continued growth based on low inflation and strength of external trade and capital balances. Based on the ERS assessment, food security in Peru will improve and the number of people consuming less than the nutritionally required level is projected to be cut by half or to about 10 percent of the population by 2015.

This successful scenario can be achieved if agricultural, economic, and foreign exchange growth trends continue, and there is no deterioration in the income distribution. The last decade of economic growth was achieved through market liberalization policies and fiscal discipline. Although these policies appear to be sustainable, political instability such as the events of the late 1990s can increase investment risk, thus threatening the cornerstone of economic growth. In 1996, Peru was among the top 10 recipients of foreign direct investment among developing countries, and in 1998 it was in fourth place among Latin American countries. The mining and trade sectors were the largest recipients. This investment, however, did not markedly change the structure of trade, and exports continue to depend on primary products. Within that structure, however, a number of new export commodities have emerged, making exports more diversified than before. Another positive development was the investment in improving performance and sustainability of exports. For example, Peru was among the top fishing countries in the world in the 1950s, but then lost its market share because of overfishing in the 1970s when the government took over the sector. Now, through privatization and increased investment, the sector has rebounded, contributing to 15 percent of total exports in 1999.

The lack of export diversification in manufacturing, however, remains a problem in the face of the growing import dependency of the economy. Peru depends on imports of key commodities such as petroleum and petroleum products, industrial goods, consumer goods, and key food items including wheat and vegetable oils. Prices for raw materials that dominate the country's export profile remain weak. Also, agricultural exports face weather-related shocks that can create earnings instability. Finally, agricultural exports are faced with stiff competition from neighboring countries that have stronger quality control institutions.

Related to food access, the high disparity and deterioration of the income distribution coupled with social problems, particularly for the indigenous population, remains a major challenge. Despite some progress, the experience of Peru in the last decade shows that economic growth alone is not adequate to address deep income inequality and food insecurity.

## Vietnam

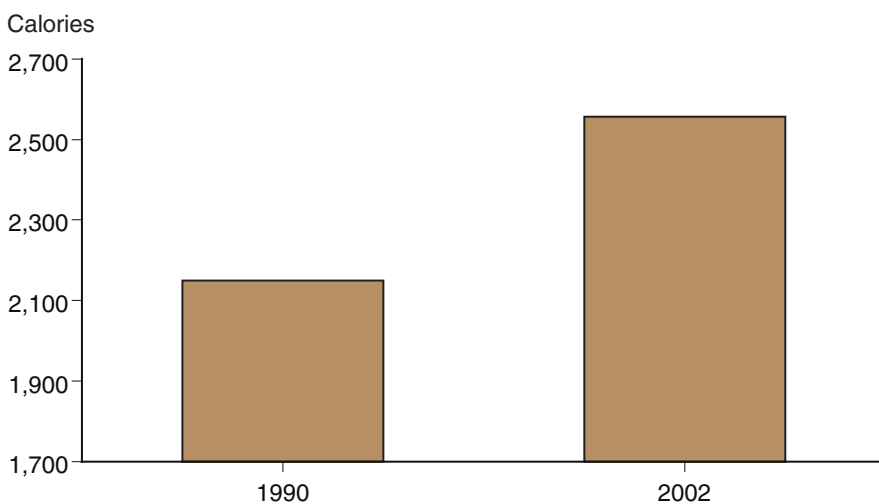
Food security success in Vietnam is not only an important triumph in terms of the human dimension, but it also provides an impressive model for many low-income countries that rely on agriculture for employment and incomes. The government considers achieving food security to be a national priority and has a comprehensive plan to promote and monitor food security.

Vietnam's experience illustrates how a country can evolve from a government-controlled market to a liberalized economy while maintaining strong public service institutions. When studying the case of Vietnam, however, one should keep in mind that the country is still among the lowest income countries with per capita income of \$550 in 2004.

Policy reforms, known as "doi moi," began in the late 1980s. At that time, agriculture employed 70 percent of the population and contributed 40 percent of gross domestic product (GDP). Poverty was deep in rural areas, but per capita food consumption was near the target nutritional requirement (2,149 calories per day). Initial reform efforts targeted the agriculture sector. The pillars of the reform were a shift away from collective farming to distributing land to farmers through long-term leases, and liberalization of input and output markets. The reform was complemented by government service support in the form of introducing new crop varieties, improving accessibility to extension services, and subsidizing the credit system. The results were dramatic: production of the main staple food, rice, doubled between the late 1980s and 2004, and the country moved from being a net cereal importer to a net exporter. In 2003, the volume of cereal exports was 3 times larger than cereal imports. The policy reforms did not stop with agriculture and soon expanded to the rest of the economy, leading to an overall boost in growth. Annual average economic growth was 8 percent during the 1990s, much higher than other East Asian countries (excluding China). Moreover, the success of the agricultural sector, which grew at an average annual rate of almost 4 percent, receives a high mark for improving food security and reducing poverty.

Figure A-5

### Daily per capita calorie consumption in Vietnam



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).

The lesson of the last decade of Vietnam's experience is that improvements in the agricultural sector in general and food production in particular led to overall improvements in food availability and food consumption across different income groups. Currently, food insecurity and poverty are mainly concentrated in the rural areas, but the government is committed to improving the situation. This is an achievable goal given the fact that the country is in a solid economic position in terms of resources and policies to reach the food insecure and poor.

## **Food Availability**

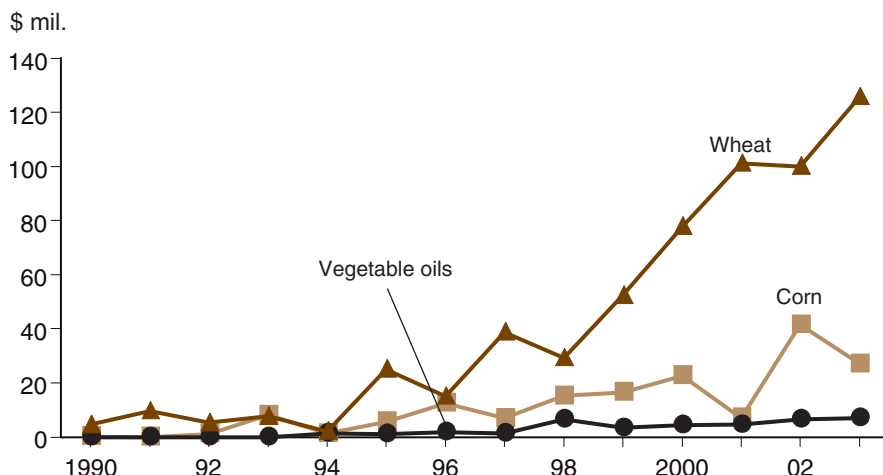
The dramatic improvement in food availability in Vietnam was a result of improved access to new technology that was supported by policies of market liberalization for inputs and outputs and privatization of agricultural land. Per capita agricultural production increased 71 percent and food production increased 64 percent from 1990 to 2004. How did Vietnam succeed while many other countries have failed? The review of a detailed study in Vietnam's northwestern upland region provides a comprehensive picture of the impacts of introducing new technology on reducing poverty and enhancing sustainability of the production system.

Vietnam's northwestern uplands region was one of the poorest regions in the country, with 78 percent of the hills and mountains covered with dense forest. In 1990, agricultural production contributed to 92 percent of the region's employment and the main commodities produced were rice, corn, and cassava. The production system was rain-fed with few irrigated areas for rice production. To increase production, the only option was the expansion of area into the forest land. Land degradation and deforestation became a concern of the government. These factors, along with the poor state of food insecurity and poverty, led to a major change in government policy toward the agricultural sector. The government increased investment in roads and irrigation. An extension service introduced high-yielding varieties of rice and corn, and micro-credit was provided to enhance the financial situation of farmers. The high-yielding rice varieties were drought-resistant and required a shorter growing period. The impact was profound: rice yields that were 2.5-3 tons per hectare in 1990 increased to 5-6 tons by 1993. In the following years, growth continued and some varieties produced up to 8 tons per hectare, and expansion of irrigated areas allowed farmers to harvest two to three times per year. The growth was not limited to rice. Hybrid corn varieties were introduced as cash crops and they replaced the traditional cassava crop. The market for corn grew rapidly in response to the growing demand for meat and thus animal feed. By 2001, hybrid corn was grown in 70 percent of the northwestern upland region. The impact of the adoption of new technologies on farm income and poverty reduction was remarkable: poverty declined from 50 percent in 1989 to 21 percent in 2000. The higher production intensity had also the side benefit of reducing the rate of deforestation by 1.3 percent during 1994-2000.

The growth in agricultural production in Vietnam's northwestern upland areas was not an isolated case. The entire agricultural sector, including agricultural exports, followed a similar path, and growth in the agriculture sector helped fuel growth in the rest of the economy. As in other countries,

Figure A-6

### Vietnam's food imports



Source: USDA, Economic Research Service, using data from FAOSTAT (<http://faostat.fao.org>).

the supply response of the nonagricultural sectors was much stronger than that of the agricultural sector. Consequently, the export sector showed a remarkable tenfold increase in earnings during 1990-2003. This provided a secure platform for financing imports, including food.

From 1990 to 2003, food imports increased 9 percent per year. Specifically, imports of wheat, corn, and vegetable oils, soared. Wheat increased twenty-fivefold, corn twentyfold, and vegetable oils eighteenfold, between 1990 and 2003. Responding to expansion of domestic production livestock and poultry production, imports of soybean meal increased from near zero in 1990 to more than 1 million tons by 2003. The increase in food imports led to a diversification of the diet. The share of animal products in total calorie consumption increased from 8 percent to 12 percent between 1990 and 2002.

The share of food imports to export earnings, however, remained small, less than 1 percent in 2002. This means that further diet diversification is possible, given the strong import financing capacity of the country. From 1991 to 2002, export value increased eightfold and its share of GDP increased from 24 percent in 1991 to 48 percent in 2002. The export composition also changed dramatically from oil-dominated exports in the early 1990s to manufacturing by the early 2000s. In 2001, the manufacturing share of exports was 67 percent (including marine products), followed by oil at 21 percent, and agriculture at 12 percent. Manufacturing exports are diversified, but are mainly labor-intensive products such as textiles and apparel, footwear, furniture, and processed foods.

Vietnam is in the process of becoming a member of the World Trade Organization (WTO) and to that end, trade policy reforms are on the top of the government agenda. Since 1996, tariffs have been gradually reduced. Agricultural tariffs have been lowered such that, of the total 840 tariff lines, 74 percent have tariffs of 0-5 percent. Most of the remaining tariff lines have either been reduced or have a set timetable for reduction. The improvements resulting from working toward joining the WTO—expanded market access

and the harmonization and transparency of domestic policies—also led to a sharp increase in private and foreign investment, creating robust future growth prospects. Investment in the economy has also shown strength. In just one year (2003-04) private investment increased by 23 percent and foreign direct investment increased by 30 percent. These trends are expected to continue, and a 2004 survey showed that more than two-thirds of foreign businesses already investing in Vietnam planned to expand their investment in the country in the following 2-3 years.

## **Food Access**

During the last decade, food access improved as a result of high income growth and declining inflation rates, including food prices. Per capita income growth was about 6 percent per year during 1990-2003, second only to China (9 percent). Consequently, food consumption rose and food security improved across all income levels. Average daily per capita calorie consumption, already close to the minimum requirement in 1990 (2,149), increased by 19 percent to 2,556 by 2002. The ERS food security estimate provides a positive picture of the hunger situation in Vietnam during the last decade. The number of hungry people was estimated to be 28 million, or 41 percent of population, in 1992, declining to less than 10 percent in 2004. Based on these estimates, food security improvements in Vietnam exceed the World Food Summit (WFS) target trend.

Other indicators of food security show similar trends. The number of undernourished children declined from about half to about a quarter of all children during 1993-2003. Also, according to the World Bank, Vietnam's poverty rate declined from 58 percent in 1993 to 29 percent in 2002. The rate of poverty reduction was similar in both urban and rural areas, and across regions. The gap in poverty between rural and urban areas, however, remains large. In 2002, 6.6 percent of the urban population was considered poor, compared with 35.6 percent in rural areas. A recent report published by the International Monetary Fund indicates that, despite drought in 2004 and the outbreak of Avian Influenza in Vietnam, real GDP growth in Vietnam was 7.7 percent and the poverty rate continued to decline to 26 percent of the population. The decline in poverty among all regions and economic groups is mainly attributed to the even pattern of growth in all sectors, in particular the export sector, including agricultural commodities.

Despite the great strides in poverty reduction, Vietnam remains among the world's low-income countries and poverty remains deep in rural areas. This means improvements may require different policy instruments. The agricultural intensification that has thus far improved food security and reduced poverty may not have the same growth potential. According to an International Food Policy Research Institute (IFPRI) study, poverty is five times more severe in rural areas than urban areas and poverty is more concentrated in the remote hilly regions. The government is seeking to improve the situation. According to a World Bank report, the government plan includes targeted poverty reduction interventions to be achieved by developing a new social safety law and targeted social safety net programs.



## Looking Ahead

According to all economic indicators, Vietnam is in a strong position to exceed the stated goal of the WFS by 2015. According to ERS estimates, the number of people consuming below the nutritionally required level in 2004 was less than 10 percent of the total population—down from 40 percent in 1992. However, if the growth achieved during the last decade is not sustainable, the situation could deteriorate. Any slowdown in agricultural performance could affect the purchasing power of the rural community, where most poor and food insecure live. During the last decade, most of the agricultural growth was the result of the adoption of new technologies, in particular the adoption of new crop varieties. Further growth from these options may be limited. According to the IFPRI study, growth in rice production is expected to decline in coming years because there is no potential for intensification and/or expansion of area. Rice is the dominant crop in Vietnam, planted on more than 80 percent of the cropland and accounting for 60 percent of the diet. Even assuming that the latest technologies are used, the long-term role of agriculture in eliminating food insecurity and poverty in the rural areas may be limited. The reason is the small average farm size of less than one hectare. Agriculture based on farms of this size cannot pull the rural population out of poverty. The trend of agriculture's declining share of GDP from 39 percent in 1990 to 22 percent in 2003 is expected to continue. This trend is consistent with the pattern of development in other countries, but if the share of population that depends on agriculture for income does not decline in the same proportion as the decline of the share of agriculture in GDP, income inequality is likely to increase. Another side effect is the increase in the pace of migration from rural to urban areas, requiring improvements in labor skills and faster employment creation.

So far, the changes in income inequality have been modest. However, the challenge of preventing inequality in growth will be predicated on creating jobs in rural communities, something that according to the World Bank report "...has been a major disappointment of the last decade."

On the positive side, Vietnam's commitment to improving social conditions—including food security—remains strong. The latest development plan contains a number of initiatives regarding potential economic and social problems. The rural development strategy includes intensification of the agricultural sector through an increase in the budget for agricultural research. Another important initiative is to diversify agricultural production, in particular shifting from rice production to high-value products with the goal of doubling the value of crops per hectare. To expand agricultural trade and reduce marketing costs, the government also plans to increase investment in market infrastructure, roads in particular. The Comprehensive Poverty and Growth Strategy and National Nutrition Strategy outline the goal of the government to reduce the rate of poverty to less than 5 percent of the population by 2010 and reduce the incidence of malnutrition in children under 5 to 20 percent.

## Conclusions

These three countries have made tremendous strides toward improving the food security of their populations. While there are a handful of other countries that have also made marked improvements toward meeting the WFS goal, many countries, particularly those in Sub-Saharan Africa, continue to lose ground. Ghana, Peru, and Vietnam have been successful by implementing policy changes such as privatizing land, liberalizing input markets, creating flexible exchange rate systems, and removing price controls. Other countries that are determined to address food security problems will have to assess whether these kinds of policy changes could prove beneficial for their own countries given their own specific circumstances.

## References

### **Ghana:**

Food and Agricultural Organization of United Nations (FAO). "Explaining Success in Reducing Under-Nourishment Numbers in Ghana," FAO, Rome, Italy, June, 2003.

Harsh, Ernest. "Food Security Through Science." UN African Recovery Report, Vol. 13, No. 4, UN Office in Accra, Ghana, December 1999.

International Food Policy Research Institute. "Country Note for Ghana." 2020 Vision Network for West Africa, Washington, DC, 1998.

International Monetary Fund. "Ghana: Selected Issues." IMF, Washington, DC May 2003.

Maxwell D., C. Levin, M. Armar-Klemesu, M. Ruel, S. Morris, and C. Ahiadeke. "Urban Livelihood and Food and Nutrition in Greater Accra, Ghana." Research Report 112, IFPRI, Washington, DC, 2000.

Nweke, Felix. "New Challenges in the Cassava Transformation in Nigeria and Ghana," Discussion Paper No. 118, International Food Policy Research Institute, Washington, DC, 2004.

Overseas Development Institute (ODI). "Food Policy Old and New." Briefing Paper, ODI, London, 2003.

United Nations. "Ghana: Millennium Development Goals Report." Millennium Development Goals Report, New York, NY, 2005.

World Bank. Various official reports, Washington, DC, September, 2000.

### **Peru:**

Bate, P., and T. Veracruz. "A Different Kind of Opportunity." International Development Bank of America, Washington, DC, November 2005.

Coady, D., and R.L., Harris. "Evaluating Targeted Cash Transfer Program: A General Equilibrium Framework with an Application to Mexico." Research Report On. 137, International Food Policy Research Institute, Washington, DC, 2004.

- Food and Agricultural Organization of United Nations. "Food Security Developments: Peru." Rome, Italy, October, 2005.
- Gomes, Carlos. "Peru's Debt Crisis and Subsequent Shock Economy." University of California at Los Angeles, International Institute, April, 2005.
- International Monetary Fund. "Peru: Selected Issues." Country Report No. 01/51, Washington, DC, March 2001.
- International Monetary Fund. "Peru: Letter of Intent, Memorandum of Economic and Financial Policies, and Technical Memorandum of Understanding." Washington, DC, May 2004.
- Japan Bank for International Cooperation. "Poverty Profile: Republic of Peru." February 2001.
- Oxfam. "Peru: The Cost of Rapid Liberalization." 2001.
- Sadoulet, E., A., de Janvry, and B., Davis. "Cash Transfer Programs with Income Multipliers: PROCAMPO in Mexico." Working Paper No. 99, International Food Policy Research Institute, Washington, DC, January 2001.
- Salaverry Llosa, J., R., Gomez, and T., Shimizu. "Modernization of Agriculture in Peru in the 1990s." Institute of Developing Economics, Lima, Peru, March 2001.
- Skoufias, E., Davis, B., and J., R., Behrman. "An Evaluation of the Selection of Beneficiary Households in the Education, Health, and Nutrition Program (PROGRESA) in Mexico." International Food Policy Research Institute, Washington, DC, June, 4, 1999.
- World Bank. "Peru: Country Assistance Evaluation." Operations Evaluation Department, Washington, DC, September, 2002
- World Bank. "Peru Country Brief." Washington, DC, October 2005
- United Nations. "Investment Policy Review: Peru." UN Conference on Trade and Development, New York, NY, 2000.
- United Nations Development Program (UNDP). "Peru Country Assessment." UNDP Poverty Report, 2000, April, 2000.

## **Vietnam**

- Adger Neil W. "Observing Institutional Adaptation to Global Environmental Change in Coastal Vietnam." Paper presented at Seventh Conference of the International Association for the Study of Common Property, Simon Fraser University, Vancouver, Canada, June 1998.
- Asian Development Outlook. "Vietnam: Macroeconomic Assessment for 2004." Asian Development Bank, Manila, Philippines, 2005
- Hop, L. T., L. B. Mai, and N. C. Khan. "Trends in Food Production and Food Consumption in Vietnam During the Period 1980-2000." The National Institute of Nutrition, Hanoi, Vietnam, 2003.

- International Monetary Fund. "Mid-Year Consultative Group Meeting for Vietnam." Washington, DC, June 2005.
- Luttrell Cecilia. "Food Security in Vietnam." Annual Report, Overseas Development Institute, 2005.
- Minot N., and F. Goletti. "Rice Market Liberalization and Poverty in Vietnam." Research Report 114, International Food Policy Research Institute, Washington, DC, 2001.
- Minot N., and B. Baulch. "Spatial Patterns of Poverty in Vietnam and their Implications for Policy." *Journal of Food Policy*, Vol. 30, 2005.
- Thang, Nguyen. "The Poverty Impacts of Doha: Vietnam." Research Report, Overseas Development Institute, March 2004.
- United Nations Food and Agriculture Organization. FAOSTAT statistical database. <http://faostat.fao.org>.
- World Bank. "Vietnam: Country Brief." Washington, DC, October 2005
- World Bank. "Vietnam: Country Strategy Note." Washington, DC, April 2005
- World Bank. "Vietnam: 2010: Entering the 21st Century." Joint report of World Bank, Asian Development Bank, United Nations Development Program, Washington, DC, November 2000.