Overview of the agricultural sectors in selected Asian and Latin American Countries

Asia Latin America Agri-Food Research Network

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The economic development of the Asian and South American nations has brought about important changes to the market forces acting on their respective agricultural sectors. Population growth together with growing income has shifted the populations' food demands, thereby imposing challenges to the agribusiness sectors, particularly in Asia. The relatively initial stages in which the Asian agribusiness sectors find themselves has meant that some countries are unable to offer their consumers value-added and processed foods, which subsequently need to be imported. On the other hand, the South American countries have more developed agribusiness sectors and a greater export capacity of key commodities.

Although some Asian countries have been importing commodities from South American countries, the current agricultural trade situation is not necessarily an indication of future trade between the two continents. In a world of high food prices, it becomes strategically important to strengthen the connections between areas capable of supplying food with those in deficit, as well as to understand the market drivers affecting agricultural production in such important regions. Furthermore, these regions currently know very little about each other's agricultural sectors. Given they contain almost half of the world's population, living mostly in rural areas, as well as a third of the world's agricultural land and a third of agricultural GDP, it is clear that there should be more interaction and collaboration between these two continents.

It was in this context that the Institute for International Trade Negotiations (ICONE), funded by the William and Flora Hewlett Foundation, decided to develop a project to create a platform for the interaction of agricultural trade specialists in Latin America and Asia. Agricultural researchers and institutions in nine countries were carefully selected to create the Asia Latin America Agrifood Research Network (ALARN). The member countries of ALARN are China, India, Indonesia, Malaysia, the Philippines, Thailand, Argentina, Brazil and Chile.

This publication is one of the results of this network. Herein you will find the executive summaries of the nine country papers, covering the evolution of their agriculture sectors. These summaries outline each country's agricultural production, agribusiness trends, food consumption patterns and international trade. The final report is a cross-paper comparing all countries and identifying differences and similarities, as well as potential areas for cooperation and trade.

We hope this booklet, together with the full contents of the work, will be used to enhance awareness of each country's agriculture, as well as to inform decision-makers of the growing importance of technical collaboration and trade between these regions. This South-South initiative should serve as a starting point for future collaboration in discussing and analyzing the agricultural issues that confront farmers, agribusiness and policy-makers in these developing countries.

"Enjoy your reading!"

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1. General description of the country's agriculture in the past decade

The agri-food sector has always been very important for the Argentine economy. The main products are oilseeds, cereals, beef, dairy, pork and poultry, as well as fruits, vegetables and other industrial crops (sugar, tobacco, etc.). Currently, the agri-food sector (primary and processed goods) contributes about 18% of GDP and more than 50% of total exports.

a. Main products in which Argentina shows competitiveness

Oilseed and cereal crops, including processed cereal products, are very competitive by international standards thanks to natural comparative advantages (good land and climate for extensive crop production, located near ports) and because all participants in the value chain are competitive: most farms are large and regularly adopt innovations; input and product markets are well developed; processors and traders have large and modern plants, and in the last few decades there has been substantial investment in ports and other facilities.

Livestock and poultry production are also competitive, based on: availability of good land and favorable weather conditions; highly productive pastures; cheap domestic prices for corn, soybean and other byproducts; good genetics; good sanitary conditions; and large farms. Argentina exports beef, poultry, wool and dairy products. Beef is the main livestock industry.

b. Growth / Expansion (production area and productivity)

During the last two decades total supply of agricultural products has grown steadily, at higher rates than the domestic and world demand growth rates for food and feed. Argentine cumulative annual production rates have grown around 3%, while average world demand growth has been about 2%.

Production of cereals and oilseeds almost doubled in the period 1994/95 - 2004/05, reaching 84.5 million tons in 2004/05. Soybean was the leading crop. Most of this growth resulted from increases in productivity. There has also been a significant expansion of area planted with annual crops (10 million hectares -almost 50%-,) replacing pasture land and forests.

During the last decade beef production remained stagnated at around 2.8 to 3.0 million tons carcass weight. The decline in the area devoted to livestock (pastures) was balanced by an increase in productivity, through the use of forages, corn, other grains and concentrates. Poultry production has increased dramatically during the last decade, although it is still relatively low, reaching 1 million tons in 2005. Recently, Argentina became a growing competitive exporter.

c. Agrarian Structure / Producers size distribution

The last National Agricultural Census (2002) identified 297 thousand farm units. Most Argentine farms are very large by international standards (in 2002 the country average was 588 hectares per unit). More than 94% of total farm land consists of farms of over 200 hectares.

Medium size and large farms accounted for 87% of total land and 81% of total production. Around 66% of total units were considered small farms by Argentine standards (units based on family workers); they represent 13% of total land and 19% of total production.

There were 26 thousand large farms with bovine herds holding over 500 hundred heads per unit, which composed more than 50% of total stock. Medium sized farms (50 to 500 heads) were also relevant, holding nearly 40% of total stock. About 107 thousand farms (42% of total bovine farms) had herds smaller than 50 heads, holding 10% of total stock.
2. Land and Water Use. Main limitations and/or opportunities for expansion

More than 80% of the land is possessed by owners; 14% by land renters; and about 5% by other kinds of occupants. There are no relevant limits on the development of future production imposed by the structure of farms, the land legislation, the access to land in an open and competitive market, or the organization of production. There are also no specific limitations to the size of farms in Argentina.

The last few decades has seen a concentration of the properties and a substantial consolidation of production in most agribusiness sectors. This has contributed to the improved competitiveness of Argentine agri-food production, particularly in terms of extensive annual crops and dairy and poultry production.

Oilseed and cereal production is based on rainfall as weather conditions are favorable for such a system. Water management of rainfall has improved substantially during the last decade through the substantial use of no till practices, selected seeds and weed controls.

Most irrigated land (1.36 million hectares in the 2002 Census) is used for intensive agricultural production (fruits, grapes for wine, vegetables, flowers and tobacco), which is not considered in this report. Only some sugar areas are irrigated. The main irrigated areas are located in Argentina’s western provinces, which have dry weather conditions. The main water sources are rivers and dams, while there is also some irrigation sourcing from the subsoil.

Argentina has plenty of water resources that are not currently used for irrigation, including a number of large rivers that cross the country: the Paraná, Uruguay, Paraguay, Bermejo, Colorado and Negro. Most of this abundant water flows into the Atlantic Ocean. The utilization of such water sources would require large investments, which are not in the government’s short term plans.

3. Agribusiness (value-added in the supply chain)

a. Structure of main sub-sectors: industry structure and vertical coordination

The Gross Added Value (GAV) structure of the agri-food sector in 2005 saw primary production with 53% of the total and processed products with 47% (processed food 25%, non food products 15%, and beverages 7%). In the case of primary production, GAV percentages in 2005 were: oilseeds and cereals 43%; livestock (beef, pork, sheep) 28%; poultry 4%; industrial crops (including sugar) 9%; and fruits, vegetables and flowers 11%. The breakdown of the food and beverage processing industries for the same year was: cereals 26%; beverages 21%; all meats 15%; other food products 15%; oils and meals 7% (the domestic share is low because most are exported as commodities); dairy 7%; fruits and vegetables 5%; sugar 3%; and feed 1%.

The agri-food system registered significant changes over the last 15 years. The grain trade and the oilseed crushing industries involve local private firms, co-ops and multinationals. In recent years some of these firms have been acquired or merged, resulting in a concentrated industry, which has invested in large and modern crushing plants, as well as in port facilities. There is also a widespread and well developed network of country dealers and co-ops in all the producing areas, which are the main sellers to crushers and exporters. The large crushers and exporters are also partially vertically integrated, involving primary production, storage and conditioning.

The beef industry did not register a significant concentration process during the 1990s. Most of the beef processing plants were small and medium sized local family firms. However, during the last four years some of the largest processing and exporting firms have been sold to foreign companies (from Brazil, the USA and the UK). The poultry industry underwent relevant concentration and vertical coordination processes, while sustained increases in domestic consumption and exports promoted growth and technology improvements.

b. Main sub-sectors where growth is expected

Oilseed and cereal production is very competitive in Argentina, and has huge potential for growth in the next decade, based on increases in productivity and area planted. Land devoted to annual crops could increase to around 10 million hectares. Total cereal and oilseed production was 85 million tons in 2004/05 and forecasts for 2015/16 are 122 million tons. Soybean and corn will be the leading crops. Total cereals and oilseeds available for export in 2015/16 are projected at 95 million tons; much of which will be exported as processed products (meals and oils).

Beef production could expand significantly as productivity is still relatively low in Argentina. Expected productivity improvements could result in an increase of between 39 and 57% in beef production (carcass weight) for year 2014, raising production from 3 million tons in 2004 to 4.2-4.7 million tons in 2014; exports could range from 1.6 to 2.1 million tons. Poultry production has grown dramatically and has very good prospects; production forecasts for 2014 are 2.0-2.2 million tons, and exports could reach 0.7-0.9 million tons. Pork production has grown 20% annually during the last five years. The industry is currently promoting the development of a modern chain to supply the growing domestic and international markets.

c. Main strengths and challenges identified for agricultural producers and agribusiness companies in the country

Main strengths are: the availability of good land and favorable weather conditions for rainfall temperate crops and pasture productions; the large average farm size and innovative attitudes of most farmers; very good genetics and quality in most production; the location of the main producing areas near the ports; and the modern and large sized grain, oilseed, poultry and dairy processing industries, which consolidated during the last decade. On the other hand, the beef, pork, wheat and sugar processing industries did not consolidate and modernize significantly during the last decade, resulting in weaknesses in their respective chains.
Consumers are increasingly requiring improved food quality and safety. Such demands create new challenges for all participants of the agri-food value chain to produce, process and distribute better and safer products, with specified protocols and certifications. These will require new investment in logistics and coordination improvements along the value chains.

4. Consumption

a. Main food consumption trends

Consumption patterns of the Argentine population are very similar to those prevailing in developed countries because the country is already urbanized and the per capita income has been relatively high for many decades. Argentines consume a lot of beef (around 62-64 kg per person per year in carcass equivalent) and other meats (25 kg of poultry, 6 kg of pork, 0.2 kg of lamb); expected increases in per capita meat consumption will mainly be in poultry and pork. Wheat products are also important components of food demand (bread, pasta, pizza, cookies); total wheat consumption is already very high at 135 kg per person per year. Corn and rice consumption is low when compared with other LA developing countries; however an increase in per capita consumption of such grains is not expected. Consumption of vegetable oils has grown during the last decade and currently is relatively high at around 25 kg per capita per year; expected increases in per capita income could result in some marginal growth. Dairy products consumption is over 200 liters equivalent per person per year and will continue growing during the next decade. There is also high per capita consumption of vegetables and fruits.

In recent years there have been two new key trends in consumption patterns: the increase of fast food (mainly in the cities) and niche demand for natural/organic products and dietary products.

b. Self sufficiency of future growth in consumption

Argentina is self sufficient and a net exporter of most food: cereals, oil, beef, poultry, dairy, fish, sugar, fruits and vegetables. There are limited imports of some fruits and other processed food. Most of the projected growth in food supply is substantially higher than the expected increase in domestic consumption. Thus, exports of food will continue growing during the next decade.

5. Agricultural Policy

a. Goals and main policy instruments

Argentine agricultural production is subject to private sector decisions, based on the existing environment for investment and growth. There are no specific public policies promoting self sufficiency or farm income growth; just the macroeconomic policies implemented for all sectors. On the contrary, fiscal and commercial policies in Argentina result in negative Producer Support Equivalents (PSEs estimated by OECD). Main factors for negative PSEs are export taxes on agricultural products and import taxes on some agricultural imported inputs (chemicals, cars, trucks, machinery and other capital goods). There are no income support programs, input subsidies, or long term promotional credits.

b. Main strengths and weaknesses identified

Due to fiscal reasons and plans to control inflation (of consumer goods), the government is heavily taxing the agri-food sector, limiting investments and growth. Currently, the high international prices for major commodities hide the negative impacts of such policies on production and on regional income distribution. Taxation, marketing restrictions (on beef, dairy and grain exports), and domestic price controls (on beef, dairy and wheat) are limiting the high rates of growth that could result from a very favorable international trade environment.

Another bottleneck for future expansion of agricultural production could be infrastructure: the lack of public investment in roads, rail and other transportation and exporting infrastructure could be a challenge to sell market (not sure if this word should be here at all or if it should be ‘marketing’ the expected future growth of cereal and oilseed production.

6. International Trade

a. Main competitiveness in exports

Currently, agri-food products represent more than 50% of Argentine exports, despite public policies that do not provide domestic support to agriculture. The sector has always been very competitive, particularly the oilseed and cereal chains, which have a high potential for growth in planted area and in productivity, based on the availability of good land and a developed and competitive production, processing and private marketing structure.

The availability of abundant natural resources and favorable weather conditions, as well as the competitiveness of feed production, also provide good opportunities to produce and export increased amounts of beef, dairy, poultry and pork products. In addition, Argentina has huge production and export potential for organic products, timber, fish, wine and fruit.

b. Main needs identified for future growth in agri-food imports

Argentina is and will be self sufficient and a net exporter of most agri-food products, because it has abundant natural resources and a relatively
small population. It can be anticipated that the country will only be a marginal importer of some tropical fruits (bananas) and other tropical products (coffee, cocoa), but without relevance in the global market.

c. Trade policy trends for coming years (protectionism vs. trade liberalization)

The agricultural sector is very competitive and relevant for Argentine exports. For this reason, Argentina, as a member of the CAIRNS Group, has supported agricultural trade liberalization in multilateral trade negotiations. Argentina is currently member of the G 20 and has supported the elimination or substantial reduction of export subsidies and domestic support in agriculture. It has also pursued substantial improvements to market access for agricultural goods.

On the other hand, Argentina is less competitive in NAMA, particularly in textiles, cars and other vehicles. Therefore, the proposals shared with India, Brazil and some other G 20 countries in the DOHA negotiations are less ambitious in regards to non agricultural manufactured goods. The existing Argentine government is more protectionist with respect to the domestic market for NAMA than previous administrations and it could be anticipated that such an attitude will continue during the coming years, both for multilateral and regional trade negotiations. Significantly, during the 1990s Argentina entered into bilateral and regional trade agreement negotiations with the Western Hemisphere (Free Trade Zone of the Americas) and with the EU. Both negotiations were supposed to conclude in 2005; however neither progressed and under the current commercial policies such agreements involving large, developed countries appear to be very remote.

7. Future prospects for South-South trade for the country

Argentine trade with other developing countries has increased substantially during the last decade. In 2006 36.4% of the total value of exports was destined for South American countries, with which Argentina has trade preferences as a result of several trade agreements. In addition, non regional South-South trade has grown, but it is still relatively low; in 2006 China's share of Argentine total exports was 7.5%, ASEAN countries 3.7%, and the Middle East 2.3%. Some OECD countries were still relevant: the EU-25 17.7%, and NAFTA 12.7%.

Total trade (exports + imports) with Latin American countries represented 41.3% of total Argentine 2005 trade; the EU-25 share was 16.9%; USA 12.5%; China 9.2%; African countries 5.1%; ASEAN 3.5%; Middle East 1.7%; and others 9.9%.

The main destinations of Argentine agricultural goods exports in 2005 were the EU-25 (26.4%) and South East Asian countries (25.2%). Other relevant markets for Argentine agricultural exports were MERCOSUR (9.4%); Africa (9.8%); NAFTA (7.0%); and the Middle East (4.3%). The share of non LA developing countries increased substantially in recent years: in 1998 South East Asian countries accounted for 12.1% and African countries 5.7%; while MERCOSUR's share in 1998 was 25.1% and the EU-25 had 25.5%.

The dynamics of South East Asian and African imports of agri-food products projected for the next decade provide an excellent opportunity for the expected export growth of Argentine products, which could be improved through South-South trade and other cooperation initiatives.
Brazilian agriculture has undergone significant growth over the past three decades, including productivity increases, area expansion and product diversification. Diversification of crops occurred together with expansion to other regions of the country, primarily the Center-West but also the North region; both unexploited areas with abundant available land. This was not an effortless advancement as the land in the Center-West was not originally apt for growing crops, due to inadequate soil composition. In addition, poor logistics infrastructure - including poor roads, significant distances to ports, and lack of storage capacities - was a major barrier to stimulating investments in both regions. Nonetheless, with heavy technology investments – both governmental and private - in planting schemes and seed quality, farming managed to spread out, thereby expanding production of major commodities such as soybeans, cotton and corn. The real pioneer, however, was the beef livestock industry, which unintentionally helped prepare the soil for future crop expansion in the new regions.

Agriculture is continuing to expand towards the Cerrados, the biome that predominates in the Center-West region, where most agricultural growth has occurred. The two main current challenges are: persisting precarious transportation infrastructure and environmental pressure to avoid advancing into areas of the Amazon forest, which primarily occupies the North region. Over 60% of agricultural products are transported from the Center-West by truck, 20% by rail and about 13% by water, even though transportation costs by truck are, on average, nine times more than by barge, while rail is three times more costly than barge. This costly scenario takes place in a country that, as it continues to prove its agricultural competitiveness globally, also faces strong transportation limitations as only 10% of its highways are paved. Furthermore, Brazil’s rail extension, the amount of locks in rivers and the number of ports across the country are significantly lower than that of countries of a similar size and agricultural competitiveness, like the US.

Productivity grew for almost every crop in Brazil, particularly soybean, wheat, rice and cotton. Additionally, livestock productivity has grown for pork, poultry and beef meats, all of which also expanded in the Center-West region. Total Factor Productivity has grown at an average annual rate of about 2% over the past four decades; the highest among all Latin American countries, and close to US figures. Most of the beef livestock in Brazil is still produced using extensive grazing methods, making livestock the largest activity occupying agricultural land today, with vast areas of pastures. Presently, one of the primary concerns is how fast beef intensification will take place, since this will avoid the need for agriculture to open new forest areas for further expansion. As beef production intensifies, agricultural expansion can increasingly take place in degraded pastures, removing the need to deforest new areas in the Amazon.

Furthermore, the beef sub-sector still faces difficulties monitoring sanitary conditions, as requested by most importers around the world, particularly in light of foot-and-mouth-disease. Sanitary control is becoming a huge challenge as Brazil continues to grow its meat exports at the same time that government spending is, and has been for the last few years, declining for programs related to sanitary and phytosanitary measures. This decline in government expenditure, added to declines in research and development, is starting to affect not just beef but all products for which Brazil is proving to be competitive in world markets.

Brazilian landholdings are split into the following size categories: (i) very small farms (0-50 hectares); (ii) small farms (50 -200 hectares); (iii) medium farms (200-800 hectares); and (iv) large farms (over 800 hectares). Large farms in Brazil occupy about 60% of total private area but represent only 3% of properties, while the other three categories together represent over 90% of landholdings occupying about 40% of private land. Large properties are concentrated in the Center-West and North regions, mainly due to the large capital necessary to be competitive in those areas, while the smaller producers are spread throughout the Northeast, South and Southeast regions.

Brazil still has much potential for agricultural growth, even without further deforestation of the Amazon forest. The international concern about increasing deforestation to further expand agricultural production has become a huge national issue making the Brazilian government and private sector take a proactive stance in the discussions. Studies show that agriculture can expand into pastures throughout most of the country, without needing to further its entrance into the northern forest areas. The crucial issue here will be intensification of beef production in order to allow crops to expand into pasture areas that now sustain beef production at very inefficient land-use ratios. Hence, if beef intensification takes

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2. Senior researchers from the Institute for International Trade Negotiations (ICONE).
place more rapidly and better land-use coordination is achieved in the coming years, agricultural expansion in Brazil may prove to be a model for the rest of the world. These two improvements are most needed in the Center-West and North regions, as the South and South-East have already achieved intensified production and have very limited land availability for future growth.

The continental size of Brazil makes natural resource analysis incomplete when not taking into account regional differences. In terms of water resources, the government has divided the country into twelve Hydrological Regions for analytical and policy purposes. Most Brazilian agriculture relies on rainfall, which is abundant throughout most of the country. The only exception is the North East region, where agriculture relies heavily on irrigation; irrigation mechanisms being applied in these areas need to be improved in order to find better ways to use water resources and avoid water pollution common in the region. Other regions, particularly the South East, are already suffering not so much from the quantity of water resources as the quality, with pollution starting to show its negative impacts. About 70% of water use in the country today goes to irrigation. Nonetheless, only about 4% of agricultural production in Brazil is irrigated; way below other agricultural competitors. In general, when land and water availability are analyzed together, the majority of the Brazilian territory has adequate water resources to meet demand.

Accompanying production growth, the Brazilian agribusiness sector has also grown over the past couple of decades. Currently, the agribusiness GDP in Brazil represents about 30% of total GDP, while Brazil also maintains the highest agricultural trade balance in the world. Between 1994 and 2003, when the national currency was undergoing a strong devaluation process, almost US$ 90 billion entered the country through agribusiness net exports. On the other hand, other industrial sectors spent more than US$ 88 billion in net imports during the same period, a situation that changed after 2003. Still, after other sectors started showing positive balances, agribusiness continued to portray more favorable numbers in the trade balance when compared to the rest of the economy.

The agribusiness sector has gone through an overhaul whereby Brazilian companies have expanded their capital and market participation, while foreign multinationals have also increased their presence with buyouts, mergers, and strategic alliances. Interestingly, as foreign investments increased their presence in Brazil, Brazilian companies have also started to think and expand internationally, not only through growth in exports but also investments abroad. Farming cooperatives play an important role in Brazilian agriculture but are more involved in the initial stages of the supply chain, showing a need to further expand into more value-added stages of agribusiness.

The expansion of the ethanol sector has reaffirmed the industrial component of agriculture and is playing an important role in the country's energy matrix. The sector is leading the international race to produce environmentally-clean fuel and participating in the global debate on biofuels. The production expansion of key commodities like soybeans, corn and cotton has attracted foreign investments in recent years and should continue to do so, along with the growing investments in ethanol plants.

Current Brazilian agricultural competitiveness owes some credit to past government policy and spending on key programs, which began in the eighties. The agri-food sector is nowadays one of the most dynamic in the Brazilian economy. Most of this dynamism is due to the liberal and market-oriented policies adopted in the 1990s when agricultural policies were adapted to reduce government participation in income support programs, which were common before the 1980s. Nowadays, government support represents, on average, 3% of farm receipts, as opposed to the 1980's when there was strong government intervention. Compared to other countries, Brazil's support for farmers is considerably low, forcing them to face market forces much more aggressively than producers elsewhere.

Additionally, back in the 1980's agricultural policy focused considerably on research and development, which ended up positively influencing agricultural advances, such as those observed recently. Lately, however, government expenditures on such programs, which helped Brazil become a global competitor in agriculture, have been decreasing, particularly research and development and sanitary and phitosanitary control programs.

Overall, since the late 1980s, government expenditures on agricultural programs decreased by half in real terms, while the participation of agriculture in total government expenditures has shown an even more drastic decline, going from 12% in 1987 to 2% in 2005. In addition, agricultural funds were increasingly distributed among a growing number of programs by the last two administrations, causing programs to viciously compete for the scarce resources.

Government focus has thereby changed drastically from programs aimed at making agriculture more efficient and competitive to those assisting family farms. Ironically, past policies have proven positive for family farms, as they are the ones with least resources to spend on technological advances. The growing political concern over the livelihood of family farms led to the creation and adaptation of policies heavily focusing on land distribution for small and family farms. Many of these programs, however, are not being implemented in an efficient or sustainable manner, thereby diverting scarce resources away from policies that are beneficial to the agricultural sector as a whole. One of the main concerns is that many of the current programs aimed at helping family farms are not being well monitored and impacts are not being measured, creating a major risk for bad investments and increased corruption. As a result, there is a growing public concern that the future growth of agriculture will be constrained by a shrinking of the budgets that previously helped Brazil become a global competitive player.

While domestic policies seem to struggle, Brazilian agricultural exports are growing rapidly. Today, Brazil's agricultural trade surplus represents over US$ 30 billion. Brazil is the world's top exporter of sugar and ethanol, poultry, beef, coffee, tobacco and orange juice; is second in the soy complex; and fourth in cotton, pork and fruits. The country is expected to retain its position in the global meat trade as Brazil is one of the few countries with high growth potential when considering land and water availability, as well as technological advancements already in place. Agricultural imports are practically irrelevant for Brazil; mainly concentrated on wheat from Argentina, rice from Uruguay and soybean from Paraguay, all MERCOSUR countries.
Regarding agricultural negotiations, Brazil has taken a leading position in the WTO Doha Round as part of the G-20 sharing leadership with India in a harsh battle trying to decrease protectionism in developed countries. This stance, however, has come at a price, since, contrary to trends taking place elsewhere in the world, bilateral negotiations have not been a priority for the government, which may prove to be a high cost for a country that needs to further open markets as world demand for food and biofuels continues to grow. In any case, Brazilian trade policy should continue demanding greater agricultural liberalization in the multilateral sphere while seeking new bilateral agreements with other countries, mainly developing countries.

Food consumption in Brazil has undergone significant changes over the past few decades. Demographic factors, such as population and income growth, are increasing demand for food as a whole, as well as for higher-value and more diversified foods. The country’s population grew from 93 million people in 1970 to over 186 million inhabitants in 2006. However, as total population grew, annual growth rates declined over the same period.

The urbanization process was strongest in the 1970s. Nowadays, urban population represents 81% of total population. Consequently, the adaptation of food consumption to more modern lifestyles has already taken place in part for the majority of the population. Nevertheless, due to Brazil’s significant income disparity, there is a large consumption gap between the poor and the upper level classes in Brazil. Although both poor and rich are consuming more food quantities, the lower poor are still struggling to meet the minimum recommended levels. Hence, although malnutrition has fallen, in 2006 only 65% of the population achieved food security, a contradictory number for a country so competitive in food production. At the same time, a significant portion of the population is becoming overweight and obese. For the adult population (over 20 years), 43.8% of men and 40.0% of women are overweight. The most worrisome index is the participation of obese, which is 9.6% for men and 13.2% for women. As tends to occur in Brazil, these numbers show developed country statistics coexisting with numbers similar to the world’s least developed countries. Brazil still has a long way to go in decreasing society’s inequalities and food consumption is no exception.

Although from the consumer side - both domestic and international - the prospects for increasing agri-food and biofuels demand seem very positive, Brazilian agriculture, as competitive as it has become, faces challenges. There is enough land, water and technological resources for agriculture to continue to grow in a sustainable manner in the country. Nonetheless, transportation constraints, agricultural policy, international trade barriers, environmental constraints, and lack of proper coordination regarding land occupation will need to be resolved in order for Brazil to show the world that it can continue to play an important role as an agricultural supplier.

Smaller farmers face an additional problem of having to integrate into the agribusiness supply chain in order to survive commercially in the long-term and, as a consequence, become economically, socially and environmentally sustainable. Furthermore, in order to increase Brazilian exports, the government needs to not only continue its leading position in the WTO agricultural negotiations, but also to start thinking more strategically in bilateral agreements, which are becoming more and more necessary.

On the other hand, Brazilian agriculture has managed to develop and structure itself well, allowing the agribusiness sector to thrive and attract foreign investments as well as allowing local companies to invest abroad. The sector is responsible for significant trade surpluses and contributes significantly to the GDP. The economic stabilization of the country over the years has facilitated foreign investments and should continue to do so as logistical infrastructure improves with growing pressure and public-private investments.

Domestic demand for agri-food and biofuels will continue to increase, which is a positive scenario for Brazil as a global competitive agricultural player. In biofuels, particularly ethanol, the domestic market may be the key demand driver for Brazil considering that there is still plenty of room for growth as flex fuel car sales continue to expand nationally. Moreover, there are still high barriers to trade for biofuels globally and the standardization of ethanol is a necessary condition not yet fulfilled internationally in order to seriously discuss trade barriers.

On the other hand, increased demand for food products will depend more heavily on foreign demand. While market access in developed countries remains limited, access to developing countries, though uncertain, should improve in the medium to long-term, with growing demand for food. Some Asian countries, like India and Indonesia, have taken protectionist positions in the Doha Round, along with other countries in the protectionist G-33 group. There are some areas of potential trade between Brazil and Africa, especially for vegetable oils and meats, which are both experiencing growing demand in the Asian countries. Nonetheless, chances for closing bilateral agreements with Asia look bleak because the Brazilian government has not given emphasis to such agreements, and because Brazil needs to negotiate through Mercosur as a block, which is currently facing political and structural difficulties. Also, much dialogue and coordination is needed between the two regions in order to establish sanitary and phytosanitary standards for the main products for trade.

Lastly, Brazil’s ability to face these challenges and position itself as a global agricultural player will not only depend on the availability of resources and technological advancements already present, but also on further investments regarding transportation; an improvement of the government’s approach to domestic agricultural policy as well as proof that it can open new markets for Brazilian competitive products internationally; and the ability of the private and public sectors to coordinate further agricultural growth in a socially, environmentally and economically sustainable manner.
General description

The value added of the agricultural production sector has grown steadily since the 1980s, although the sector’s share of total GDP has tended to fall. Since 2002, however, the sector’s average growth rate has increased at more than 4% annually, reaching more than 8% in 2005. Indeed, in recent years the sector’s growth rate has been greater than the national rate. Recently, the GDP of the food industry has also been growing at approximately the same high rate as that of production agriculture. The food industry represents approximately 50% of the expanded agroindustry’s total GDP, in contrast to production agriculture and forestry, representing about 37%. Important and expanding subsectors in which the country has demonstrated competitiveness are in exportables – fruits, vegetables and forestry. These products have grown in terms of their contribution to sectoral GDP and employment, while beef and field crops (primarily wheat) have declined. Dairy and industrial pork and poultry are also highly competitive, and these subsectors have expanded significantly since 1990.

Increases in land productivity have been notable. Land planted with all-types of field crops has shown a gradual decline since the late 1980s; now estimated to be slightly less than 800 thousand hectares for the growing season 2007-2008. Land planted with the most important crop, wheat, has ranged between 40% and 50% of total field crop land, and currently makes up 39% of the total. Cropland has declined in both absolute and percentage terms. Pastures have increased as a percentage of all land, but declined in absolute terms, linked to the decline in wheat. Some crops such as maize and oats are examples of share gains, and in the case of maize this is linked to the rise of industrial-scale poultry and pork. Beans and lentils have declined in cropland share, displaced by imports (related to increased trade openness). Despite a decline in cropland hectares, Chile attained high rates of production growth following the mid-1980s, attributable to increases in non-land input use. Gains in productivity are also linked to improved varieties, changes in crop mix toward higher value products, better irrigation methods and other innovations. Certainly, per-hectare yields for the most important field crops have increased by 100% or more since 1980; corn yields by over 300%.

Of the 520,822 families, 30% are self-employed, 66% are salaried and 4% are employers. That is, fully two-thirds of agricultural households are those where the household head or main agricultural earner is a salaried worker. About 15% of the agricultural work force comes from families where the household head is not in agriculture. In 2003 these 520 thousand families, when expanded to include children, the elderly, and other workers, represented slightly over 2.1 million persons. In terms of crops and pasture land, on average Subsistence farms have 17.1 hectares per farm, Transition 26.6 ha. per farm, and Consolidated 65.9 ha. per farm. Commercial farms (medium and large) average 1090 ha. In terms of irrigated land, Subsistence small farms have 1.8 ha, Transition 4.0 ha, and Consolidated 7.6 ha. In terms of total national crop land, 5.2% is Subsistence, 6.3% Transition, 1.1% Consolidated, and 87% is used by medium and large commercial operations. For 1997, the small family farm share of farm production (value added) in agricultural GDP was estimated at 28%. Small farms are geographically concentrated: 65% of Subsistence, 53% of Transition, and 42% of Consolidated are located in the central south.

Land and water limitations

Compared to Argentina and Brazil, Chile has a more inelastic supply of farmland. In the center-southern region, the expansion of forestry competes with pastures and traditional field crops; an expansion induced by relative price trends. If the long term expectations of these trends change – for example with dairy prices high – the expansion could slow. In the semi-arid, fruit-growing center of the country, land use is less a question of relative prices than it is of physical limits; this limitation is primarily due to the availability of irrigation, which will depend on future investments in reservoirs and delivery and recovery systems. New irrigation techniques have been adopted, and water productivity has increased significantly. The reader should note that, unlike Chile’s twin, California, subsidies for the construction of delivery systems and for water use are small and only available for small-scale, on-farm projects.

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Agribusiness

As in many countries, the role of multinationals in agricultural production is very small. With respect to the domestic marketing chain, several multinationals are involved in the dairy sector (Nestle and New Zealand Dairy Broad's 49% interest in Soprole), but not in other agricultural activities. Multinationals are involved more heavily in agro-chemicals, machinery, and hybrid seed production. Multinationals are also involved in the export fruit production via direct contracting with farmers, but their activities are primarily centered on linking purchase product with foreign buyers. Dole and Chiquita are the most prominent, but the bulk of exports are coordinated by Chilean firms, some large and multinationals in their own right. Wine is a special case of direct foreign investment in smaller-scale wineries (e.g., Lapostolle, Rothschild, Veramonte), although the largest producers are local and are making direct investments in other countries - mainly Argentina. Foreign firms have made investments in several technologically-sophisticated activities, attracted by the combination of climate, counter-seasonal production, and an institutional commitment to intellectual property rights. These firms mainly contract the production of seeds (e.g., hybrid maize), bulbs and some horticultural products.

The agribusiness sector has grown rapidly over the last twenty years. Currently, processed food exports are increasing annually at 10 to 12%. Export destinations are highly diversified, primarily in Europe, Asia and North America. Growing sectors include frozen, dehydrated, juices and paste and preserves, while fish-products, such as salmon, are also growing notably. One constraint on the acceleration of growth of agribusiness exports is border protection in many countries, which takes the form of tariff escalation for processed goods. Indeed, the recent free trade agreement (FTA) with the United States has delayed tariff reductions for processed foods for ten to twelve years. Another challenge for the industry is compliance with increasingly strict health and safety requirements, set both by foreign governments and, more importantly, by consumer preferences transmitted via rich-country importers.

Agricultural policy

There are a few generally-available productivity-related subsidies (mainly for pasture improvement and some types of small-scale irrigation). Beyond border measures, there is a policy of direct assistance to small farmers, not through price-related policy, but through government transfers via INDAP: a government agency focused only on small farmers (subsidies to credit, crop insurance, and extension). In effect, these subsidies are much more a social than a production policy. The current emphasis of the Ministry of Agriculture is on production-oriented programs to attain "the competitive insertion of family farms."

There is currently little scope for policy interventions. There is barely a trade policy left, beyond safeguard, FTAs and WTO negotiations. Current levels of protection have reached very low levels (with the exception of sugar beets and to a lesser extent wheat); there are no price-related instruments. An important element of agricultural policy today is the implementation and monitoring of FTAs. This includes the regulatory framework of sanitary and phytosanitary questions, environmental issues, technology generation, and the special case of small farmers (credit extension and productivity enhancement). The occasional safeguard remains a possibility within the WTO framework. Within this context of FTA disciplines and low, unilateral border protection, the exchange rate issue has strongly re-emerged in public debate over the last two years (it was very strong in the early 1990s) due to the appreciation of the real exchange rate.

International trade

Over the last decade, Chilean agriculture-related exports have been growing more rapidly that imports. Forestry products make up about 40% of all exports of the agro-livestock-forestry sector, or about US$ 3,300 million in 2006. Primary agriculture exports (mainly fruits) totaled approximately US$ 2,800 million and processed agricultural products slightly under US$ 2,000 million. Exports to NAFTA countries, by far the greatest proportion being to the United States, represented about 39% of all agricultural exports. Imports of agricultural products are mainly from neighboring countries; although Mercosur countries receive a relatively small share of all Chilean agricultural exports, they supply Chile with 90% of all livestock products (boneless meat and milk products) and 60% of agricultural products (mainly maize, oils, wheat, and sugar).

The level of applied tariffs in the year 2000 was already low by world standards for all products, including agriculture (non-agriculture tariffs below 8%), primarily due to a low statutory MFN tariff. By 2006, although the uniform tariff fell to 6%, the effective applied tariffs for all goods hovered at 2% or less, a reflection of the extension of new FTAs to a broader coverage of imported products and importing countries. Given the absence of quantitative restrictions and practically any non-tariff barriers beyond sanitary and phytosanitary restrictions, Chile is reaching the point of very little scope for trade policy interventions. It is an active member of the WTO and continues negotiations of new FTAs with the remaining large importers to which the MFN tariffs apply (agreements with China, New Zealand and Japan have already been signed, and negotiations with India are in progress). This existing liberal imports policy will continue, locked in by both an institutional government commitment and by FTAs.

Consumption

The question of food supply and the degree of the country's food self-sufficiency ceased to be relevant decades ago. The food import bill is a small proportion of export revenues and the country's diet is diversified. Food as a wage good is not a question of agricultural production policy. Food supplies related to cereals and beef will continue to be met in part via imports; the bulk is domestically produced. The important issue related to consumption is unhealthy diets. Prior to the strong economic growth of the1980s, malnutrition was persistent, but since then rates of malnutrition
and hunger have almost disappeared. Yet, while rising incomes, fast-falling poverty rates, social support, and the development of advanced retailing chains have combined to eliminate concerns related to hunger and lack of food, Chile has developed a rich-country, nutrition-related problem: obesity. Certainly the nutrition of the poor has been supported by programs aimed at nursery schools and supplementary nutrition, but the decline in malnutrition and the rise of obesity have their roots in economic development and the acceleration towards an urbanized economy (currently, about 85% of the population lives in urban areas). Recently, the rate of obesity is over a third of the adult population and at least 15% of the adolescent population. Obesity in school children more than doubled between 1987 and 2000. Unsurprisingly, cardiovascular diseases are the leading cause of death, while diabetes, hypertension, and high cholesterol are growing problems.

Challenges for agriculture and agribusiness

Compared to Argentina and Brazil, Chile has a more inelastic supply of farmland. In the center-southern region, the expansion of forestry competes with pastures and traditional field crops, an expansion induced by relative price trends. If the longer term expectations (not sure what this phrase was supposed to be, a bit mixed up! - maybe for ‘expectations of’ the words ‘projections for’) of these trends change – for example with dairy prices high – the expansion could slow. In the semi-arid, fruit-growing center of the country, land use is less a question of relative prices than it is of physical limits; this limitation is primarily due to the availability of irrigation, which will depend on future investments in reservoirs and delivery and recovery systems. New irrigation techniques have been adopted, and water productivity has increased significantly. Unlike Chile’s twin, California, subsidies for the construction of delivery systems and for water use are small and only available for small-scale, on-farm projects.

An emerging challenge is a tightening supply of labor, both generally and in terms of temporary workers, especially during fruit harvest season. The growth of other sectors, particularly the rapid expansion of the construction industry, is rapidly drawing labor from rural areas. Real wages paid in agriculture are increasing, while at the same time the exchange rate is falling, so the dollar value per ton of labor has increased, threatening further investments in some labor intensive activities. By contrast, while the construction industry is also facing higher wages, it is producing non-tradables, so higher wages are transmitted to higher prices of housing. The challenge is to raise labor productivity in agriculture, either through greater physical capital intensity or improvement of on-farm labor management practices.

Prospects for South-South trade

Until a few years ago, the bulk of Chilean agricultural exports, which are not commodities, went to rich countries in the North. More recently, the share of exports going to Asia has been growing rapidly, due to FTAs, Chilean firms aggressively seeking new markets, and rising incomes in Asia. The bulk of agricultural imports: grains, beef, oilseeds and tropical crops, come from other South American countries. Looking ahead, a key question is can Chile take advantage of greater emphasis on exports to the South? Rising incomes of the poor in the South will indeed result in greater demand for food, especially food deriving from commodities. As the middle class in the South grows, consumption patterns are also changing towards non-commodities, leading to greater diversification and intensity in fruits, vegetables and livestock products. Chile’s agricultural and agribusiness growth will continue to rely on the exports of temperate and Mediterranean climate fruits and vegetables, wine, and of industrial-scale pork and poultry. Given that the growth in demand from the already-rich North for higher value-added Chilean agricultural products will be limited by the North’s slow population growth rates, sustaining a high growth rate of high-valued exports will require developing markets oriented to middle-income consumers in the South. On the supply side, one of the main constraints is the expansion of irrigation.
Agricultural sector in China

With a large territory and diversified climatic conditions, China can produce almost all agricultural products in the world. China's cultivated lands are either owned by the state or by the rural collectives, and rural households have only land use rights within a specified period. Agricultural production is carried out by over 250 million small household farms, with an average size of 0.6 of a hectare of cultivated land areas. Within such a context, China has to adopt intensive farming technologies in order to raise the outputs. Consequently, China's agricultural production features high inputs for both labor and materials on a unit of land area, leading to high land productivity and low labor productivity.

Confined by these resource constraints, China lacks comparative advantage in land-intensive products, such as cereals, oilseeds and cotton, but is competitive in many labor-intensive products, such as horticultural products, fishery products and processed foods. Until the mid 1990s, the government placed top priority on achieving national food security, mainly via self-sufficiency in grains. However, implementation of this strategy incurred large costs in terms of misallocation of resources, low incomes of rural people, enlarged urban-rural income disparity, and environmental degradation. Starting from the late 1990s, the government has revised its approach to agricultural and rural development by allowing fuller play of market mechanism in guiding micro-economic decisions. Meanwhile, the government has enhanced financial support for agriculture, including R&D activities. These measures have resulted in notable improvements in agricultural productivity and international competitiveness.

Thanks to the policy reforms, China has been able to achieve rapid growth of agricultural production. During the period 1990-2006, real gross agricultural output value grew at an average annual rate of 6.2 percent. During the same period, China's agricultural production underwent a notable structural adjustment as well. Induced by changes in food consumption patterns, livestock and fishery industries grew more rapidly than that of crop production. China has been successful in not only securing food supply for domestic consumers, but also raising rural incomes at a reasonably high rate. On the other hand, China's agricultural and rural development has continued to be bothered by the lack of an effective way to raise rural incomes sustainably, as well as by growing pressure on agricultural resources and the environment.

Land and water use

China is a country with substantial territory but limited agricultural land resources. At present, cultivated land area accounts for only 13 percent of the territory and this area has declined continuously due to expansion of cities and infrastructure. China has large areas of grasslands in the northern and north-western regions, however, productivity in these areas is low due to cool and arid climates. Similarly, China's water resource is large in total amount, but small on a per capita basis. Furthermore, water resources are distributed unevenly across regions. Agriculture is the largest user of water resources, accounting for about 65 percent of the total. At present, about 45 percent of the cultivated lands can be irrigated.

Under growing population pressure, China has already exploited its cultivatable land and water resources as much as possible. In addition, the cultivated lands are also utilized very intensively. Although land productivity has been rising continuously, the heavy reliance on the application of modern inputs and irrigation not only leads to rising production costs, but also causes environmental problems and food safety hazards. In northern China, depletion of underground water is already a prevalent phenomenon. The problem of water shortage is further complicated by pollution in water resources. In pasturing areas, degradation of grassland occurred mainly due to overgrazing. In some environmentally fragile areas, soil erosion and desertification is so severe that the government has to forbid cultivation or grazing.

China has limited potential to expand cultivated land areas and to increase water supply to agriculture. In the years to come, competition for land and water resources between agricultural and non-agricultural sectors will be increasingly fierce, which will have significant impacts on the agricultural production capacity.

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Agribusiness

Development of market-oriented agribusiness in China is a result of the economic reforms that ended the previous central planning system. However, China’s agribusiness development is based on small and semi-subsistent household farms, and how to coordinate the supply chains is constantly a puzzling question.

China has very comprehensive farm input industries that have been established with both state investments and private capital, including foreign direct investments. In order to regulate farm input markets, the government continues to exercise administrative controls over the large, state-run enterprises, with respect to production, pricing, distribution and trade. However, the retail markets are essentially liberalized. In 2005, the agricultural production inputs were valued at RMB 1638 billion, accounting for 41.5 percent of the gross agricultural output value. At present, farm inputs supplied by farm households themselves are still significant.

Due to the nature of semi-subsistence, farm households sell only part of their outputs on markets, leading to small-scale sales of products of different varieties and varying quality. Such a situation has resulted in difficulties for quality control. The farm products delivered to markets are bought by industrial firms as raw materials for processing, and by marketing firms and private dealers for sale elsewhere. Processing firms can purchase raw materials from peasants, private dealers and marketing firms at either farm-gate or assembly markets in producing regions. In recent years, many processing firms have adopted contract production arrangements in order to secure quality and quantity of raw material supplies. When highly reliable inputs are needed, such as products for exporting to quality-sensitive markets, enterprises often develop their own production basis through leasing lands and hiring skilled labor.

China also has a comprehensive agro-processing sector, in which the non-state enterprises have a dominant position. Although food processing industries have been growing very rapidly since 1990, the gross output values of food industries in 2005 were still smaller than the gross values of food materials produced, indicating that only part of the food products was processed. This is due to the facts that rural households consume a significant proportion of own food products and that many fresh food products are sold directly to consumers without processing. In comparison, processing industries of raw agricultural materials are relatively well developed. China has already become one of the world’s leading processor of textile and leather products.

Similar to other countries, a feature of the development of food distribution systems in urban areas has been the phenomenon of rapid expansion of supermarkets. Many leading retail multinationals have entered China, which imposes pressure on the domestic retailers to improve their services. As their purchase power rises, urban consumers tend to increase purchases of food products from supermarkets, which are regarded as more reliable in securing quality and diversity of food products than the traditional channels. In contrast, modern retail services are still in their infancy in rural areas.

The future development of agribusiness in China is dependent on the growth of consumers’ incomes, the speed of urbanization, and improvement in rural marketing organizations and facilities. It is expected that the transition of rural food consumption patterns from household self-supply toward buying on the market will be accelerated. There are promising opportunities for agribusiness development in the years to come. However, domestic firms must make great efforts in improving their technological innovation capability and managerial skills in order to survive the competition.

Food consumption

At present, food expenditures still account for high shares of the total consumption expenditures for both urban and rural residents. As a result, securing food supply at reasonable prices remains an important policy issue.

China’s urban and rural people live under different market environments and have distinct dietary patterns. The experiences after 1990 indicate that per capita consumption of cereals and vegetables declined in both urban and rural areas. While consumption of meat products rose notably and steadily in rural areas, it initially declined and only in recent years began to rise for urban consumers. Consumption of edible oils rose in urban areas but fluctuated in rural areas. Consumption of milk and fishery products showed rising trends in both urban and rural areas, but the contrary was true for sugar. At present, both urban and rural residents are well fed in terms of the average intakes of nutrition. However, phenomena of malnutrition exist. While undernourishment occurs mainly in underdeveloped rural areas, problems related to overeating are encountered mainly in urban areas.

It is expected that per capita urban and rural incomes will grow at reasonably high rates in the near future, population growth will further slow down, and urbanization will proceed steadily. In such a context, the major trends of consumption change may include growing substitution of non-staple food products for food grains; growing demand for quality, diversity and convenience; increasing eating away from home; and regional convergence in dietary patterns. In general, changes in food consumption patterns are likely to be dominated by upgrading food composition rather than increasing quantities.

Agricultural policies

China has undergone fundamental reforms in its socioeconomic system since 1978, leading to a gradual transition towards a market economy and opening to the world. For the agricultural sector, the transfer of production decision rights in the early 1980s from the previous collectives
to the rural households, combined with reforms on agricultural marketing systems, established the basis for sustained development of the agricultural and rural economy over the past three decades.

For a long time, national food security was the core objective of agricultural policies. This situation changed in the late 1990s when the government began to give more attention to raising rural incomes, fostering international competitiveness, improving rural public services and protecting the environment. The new policies are reflected in the slogans to achieve “harmonious development of urban and rural sectors”, to build “new socialist countryside”, and to develop “modern agriculture”. The government has substantially increased financial assistance to agriculture via various policy programs. While the performance of the agricultural sector in recent years is better than expected, the current policies seem to be largely ineffective in narrowing the urban-rural gap in socioeconomic development. The government is still trying to find ways to assist the numerous small and resource-scarce household farms with development under a competitive market environment.

**International trade**

Under the previous centrally planned system, agricultural trade was used as an instrument to balance domestic production and consumption. As a consequence, the volumes and compositions of imports and exports often changed drastically in response to the perceived domestic market situation. With accession to the WTO, China has reformed the agricultural trade policies and institutions fundamentally. At present, China’s agricultural market is fairly open for competition. In recent years, both agricultural imports and exports have grown at unprecedented rates. However, China has turned into a net importer of agricultural products since 2004.

The growth of agricultural exports has been led by increased exports of fishery products, horticultural products, and processed and value-added products. The important destination markets include major developed countries like Japan, the United States, Germany and some neighboring developing countries like Korea, Russia, and ASEAN members. The growth of imports has been dominated by the sharp increase in imports of cotton, soybean and vegetable oils. While imports of soybean and vegetable oils are driven by the growing domestic demand, the surge of cotton imports is related to expansion of textile and clothing exports, for which China has strong international competitiveness. China also imported some food materials for processing and re-exporting, such as marine fishes. Imported agricultural products came mainly from the largest agricultural exporters in the world, such as the United States, Brazil, Argentina and Australia. The ASEAN members are important suppliers in mainly tropical products, such as palm oil and rubber. While many predicted that China would become a large net importer of cereals in the 2010s, so far this has not happened.

China’s future demand for food products is unlikely to increase as rapidly as it did during the 1980s and early 1990s, due to a slowing in the population growth and declining income elasticity of demand for food. On the other hand, expansion of supply capacity will be bound to some extent by the growing scarcity of agricultural resources. Technically, China can achieve basic self-sufficiency in a wide range of agricultural products, including cereals, oilseeds and vegetable oils, depending on how large a cost the country is willing to afford. In the years to come, China is more likely to increase exports of processed food and other agricultural products, especially in the case that the existing trade barriers can be effectively removed. In the meantime, China may increase imports in parallel. Apart from agricultural raw materials for domestic processing, China is likely to import high value food products to meet the quality demands of high income groups.

China’s future reforms on agricultural trade policies depend very much on outcomes of the Doha round. China’s successful experiences in dealing with WTO accession are conducive to public confidence on trade liberalization. While the government will surely increase domestic support for agriculture, it is unlikely to resort to border measures to shield the Chinese farmers from competition.

**Future prospects for South-South trade for the country**

The potential for China to expand agricultural trade with other developing countries is large. In the long-run, China will increase imports of raw agricultural products for domestic consumption and processing, and expand exports of value-added products to mainly developed countries. Such a pattern of agricultural trade offers promising opportunities for South-South trade. With distinct resource endowments, there is strong complementarity in the structure of trade between China and South American and African countries. In the near future, China is likely to increase imports of land intensive commodities, such as soybean, cotton and sugar, from such countries. In the long term, China may also increase imports of certain high-value products, such as meats and horticultural products. Development of bilateral trade between China and South and Southeastern Asian countries will be mainly on the basis of geographic closeness and different agronomic conditions. China may export temperate zone products and import tropical products, however, development of South-South trade is dependent crucially on how developing countries reform their trade policies and related institutions in the future.
An average Indian, living in a country of 1.1 billion people, spends 51 percent of his/her expenditure on food. Agriculture employs about 58.4 percent of the Indian workforce and contributes about 20 percent to the gross domestic product. The total geographical area of the country is 328.7 million hectares (ha), out of which 140.9 million ha is net sown. The cropping intensity of the country is 135.3, giving 190.6 million ha of gross cropped area. Such figures show the centrality of Indian agriculture in general and food in particular.

**Agriculture: Trends in production, area and productivity**

India has been targeting an agricultural growth rate of about 4 percent since the ninth five year plan (1996-97 to 2001-02). However, actual growth rates have been falling short of this target by almost half. Furthermore, the poor performance of agriculture in the face of a booming non-agricultural sector has raised concerns, as this has resulted in wider income disparities between the two sectors. The share of agriculture in overall GDP has been declining over the years due to high growth in the service sector of the economy. The share of agriculture and its allied activities in GDP went down from 31 percent in TE 1992-93 to 20 percent in TE 2005-06.

Accumulation of wheat and rice stocks of 63 million tons in the central pool in July 2002 resulted in clearing of stocks at subsidized prices, both domestically and internationally. This glut situation, coupled with inadequate rainfall, triggered a fall in area as well as production of foodgrains in 2002-03. While the growth rate of production of foodgrains has decelerated over time (from the 1980s to 2000-01/2006-07), the rates for coarse cereals and pulses have improved. Much of this slow down could be attributed to a fall in the growth of rice and wheat production, which came down from more than 3 percent to nearly 1.2 percent for rice and 0.4 percent for wheat. Production, productivity and area statistics for cotton have been exemplary, largely attributed to the introduction of Bt cotton. Production growth of cotton increased dramatically from 2.3 percent in 1990s to 16.4 percent during 2001 to 2006-07. Area under Bt cotton increased radically from 0.04 million hectares in 2002-03 to 3.7 million hectares in 2006-07. Consequently, within the span of 5 years, around 41 percent of the cotton area came under Bt hybrid in 2006-07, up from 0.5 percent in 2002-03.

Indian agriculture has been diversifying towards high value. The area under fruits and vegetables has been increasing and there is scope for further expansion. Fruits and vegetables, which account for nearly 6 percent of gross cropped area, contribute 25 percent of gross value of crop output. Apart from the high value crop sector, India has emerged as a key producer of milk (95.7 million tons in 2005-06) and fish (6.6 million tons in 2005-06). However, there is ample scope to boost the processing levels and standards of these high value products to meet the growing demand for value added products. Processing of fruits and vegetables is less than 2 percent, very low compared to other countries such as the Philippines (78%), Thailand (30%), China (23%), etc (GOI, November 2006).

**Emerging Agri-food System**

Agriculture in today’s context cannot be viewed just as farming alone; it must be viewed as an integrated agri-system that encompasses input industries, farming operations, logistics and wholesaling, processing, and retailing. Lately, retailing in India is undergoing structural changes which will have implications for other stakeholders in the system.

Despite coming from a very low base, the expanding modern retail operations in India are testimony to the fact that a revolution is taking place on the food table, which is going to drive the plough for many years to come. The agribusiness sector, both the processing and retailing segments, can take advantage of the large diversified consumer market. Of the US$270 billion retail sector, the modern (organized) food and grocery segment is already growing at a rapid pace of more than 30 percent (2004-2006) and is expected to grow even faster in the future (Images F&R Research, India Retail Report 2007). The modern value chain will thrive on the massive scales created in the agro processing and retailing segments, and the two together will help provide a ‘big pull’ towards farmers, who continue to be small and fragmented because of

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5. Director and Research Analysts, respectively, in Asia, IFPRI - New Delhi Office.
institutional arrangements such as contract farming. The retail sector will provide a further fillip to the food processing sector; it is one of the largest industries in India in terms of production and exports, contributing around 6 percent of the GDP and accounting for 13 percent of the country’s exports. There is ample evidence that the food processing sector is rapidly scaling up, as revealed by output per factory figures as well as by increasing fixed capital investment per factory over 1984-2002.

Changing Consumption Patterns

It is apparent that cereal expenditure as a proportion of total food expenditure has dropped by more than 10 percent in both rural and urban areas. Per capita per month consumption of cereals has come down from 14.9 kg (11.6 kg) to 12.1 kg (9.9 kg) in rural (urban) India during 1983 to 2004-05. While expenditure on fruits and vegetables as a percentage of total food expenditure has increased, that on milk and milk products in particular has increased from 11.5 percent to 15.4 percent in rural areas from 1983 to 2004-05. Expenditure on egg, fish and meat has increased from 4.6 percent to 6 percent during the same period. Poultry in particular has ousted other meats, with consumption rising about two and a half times in rural areas and three times in urban areas between 1993-94 and 2004-05.

Agriculture Trade: Trends and Opportunities

India had long insulated its agricultural sector from international trade, which has served the dual purpose of sustaining “food security” as well as protecting farm income and employment. However, 1991 reforms together with its signing with the WTO implied that the country had to step out of its autarkic regime. Although India has opened up its agriculture sector very reluctantly and still has the highest tariff rates (about 40%) on agriculture, the country has, since the early 1990s, been generating an agriculture trade surplus, which has been increasing over years. In 2005-06, India’s total agricultural export basket was 10.4 billion USD, while its imports were worth 5.2 billion USD.

India has been a major exporter of rice, marine products, oilmeals and, most recently, cotton. The major import items are composed of edible oil (share in total agriculture imports increased from 16 percent in TE 1992-93 to 48 percent in TE 2005-06), pulses, and fruits and nuts. Recently, India imported more than 6 million tons of wheat (2006-07). It is noteworthy that cotton exports boomed due to the introduction of high yielding Bt Cotton (5.4 million bales in 2006-07 worth over a billion USD). The biggest increase in India’s share in world exports has taken place in rice, which rose from 6.4 percent in 1990 to 18 percent in 2004.

Since reforms, India has been taking keen interest in exploring trade possibilities with other developing countries, both bilaterally and as a group. India’s import trade agreements include arrangements with SAPTA, ASEAN, India-MERCOSUR PTA and IBSA countries. While some seek to provide limited preferential market access, others focus on expansion of trade by granting reciprocal tariff reductions and ultimately converting into a free trade area. In June 2003, the Foreign Ministers of India, Brazil and South Africa met in Brasilia, Brazil, to form the IBSA Dialogue Forum. The purpose of this initiative was to support political consultation and co-ordination as well as to strengthen cooperation in sectoral areas and to improve economic relations. The forum looked to boost trade amongst each other from USD 4.6 billion to USD 10 billion by 2007.

The Way Forward

Agricultural policy in India is steered by a number of goals: food security, ensuring higher growth in agriculture, remunerative prices to farmers, and stable and low prices for consumers. In order to dovetail these concerns, it is essential to take a holistic view of the entire agri-system rather than agriculture alone. It is strongly felt that the future sources of income lie in high value agriculture commodities as well as commercial crops, given their high expenditure elasticities. Hence it is time that, at the margin, policy focus should increasingly move towards high value agriculture. This will, however, require restructuring of the existing food security complex.

- Reforming the food security complex. It is important to separate the government’s consumer welfare objectives from incentives for producers. While all controls related to marketing, exports and processing of agriculture produce need to be abolished to give the right incentives to producers, poor consumers need to be targeted and helped through conditional income transfers (such as food coupons).

- Reforming subsidies and investments. Three-fourths of the resources going to agriculture are going through input subsidies. These need to be phased out and replaced by increasing investments in agriculture. The marginal returns on subsidies in terms of their growth or poverty alleviating impact are one-tenth of the returns on investments.

- Introducing marketing reforms. It will be critical to overcome certain institutional rigidities, particularly those related to marketing of agricultural produce – Agricultural Produce and Market Committee (APMC) Act and the Essential Commodities Act (ECA). These acts restrict free movement and marketing of selected agricultural produce that impedes free market operations and private sector participation. India has to be considered as one unified market for all agricultural products, and it will not happen unless the ECA is abolished or drastically reformed.

- Freeing up land lease markets. It is time to free up the land lease markets as soon as possible and also start a political debate to do away with ceiling laws. Computerization of land records and systemic maintenance of the same will afford greater transparency and efficiency in the system. This will induce legal lease-in and-out of land where the owners do not fear the threat of losing ownership and also encourage enterprising tenants to undertake strategic investment plans.
Embrace the retail revolution. In the modern agri-food chain, the agro processors and retailers are scaling up very fast, laying out their massive investment plans. This will serve as a ‘big pull’ to the small and marginal farmers, as the strength of these front end players lies in establishing direct linkages with the farmers. Embracing this retail revolution and moving towards the organized segment will entail compressing the existing supply chain, benefiting the producers and consumers.

**Emerging Business and Trade Links.**

The rapidly growing South-South (SS) trade has been recognized as a major driving force behind the rising share of developing countries in world trade.

At present, the most stimulating business opportunity among South-South countries lies in bio-fuels, particularly ethanol. In China, India, Brazil and Europe, economic and environmental security concerns are giving rise to new government targets and incentives aimed at reducing petroleum imports and increasing the consumption and production of renewable fuels. Each of these countries is likely to replace 15 to 20 percent of on-road gasoline consumption with ethanol by 2020.

According to Thurmond (2007), “If the promises of competitive, large-scale cellulosic ethanol production are realized, and if nationalist import/export policies for biofuels are further liberalized, then the possibilities for ethanol to replace 20 percent of gasoline consumption in the U.S., China and India may be realized by the year 2020.” This gives Brazil a business opportunity of supplying ethanol to US, Europe and Asian countries. So, ethanol can emerge as an important trade link between India and Brazil.
The Rise and Fall of Indonesian Agriculture

Indonesian agriculture has experienced a rise and fall concurrent with the process of structural transformation in the economy. During the period of extraordinarily rapid poverty decline in the 1980s, agricultural growth was the driving force. The sharp slowdown of agricultural growth in the 1990s was accompanied by cessation of poverty decline. The slowdown in agriculture occurred at the same time that the acute financial crisis in the late 1990s was drastically reducing urban and manufacturing based employment.

Indonesia has been well known as producer and exporter of palm oil, rubber, coffee, cocoa, pepper and some coconuts. These cash crop sectors recorded growth rates of over 6 percent in the period 1978-1986 and have shown to be the most competitive compared to other sectors. However, food crop sectors suffered significantly from the adverse policy environment and the country has begun importing rice again. The livestock and poultry sectors experienced a high growth level in the 1980s but remained modest after the 1990s. Fishery sector activities have become a means of income for rural people from coastal regions both in Java and the off-Java islands. In recent years, the growth rate of agricultural GDP has recovered to 3.45 percent per year during the 2001-2006 period. Outside the food sector, the estate crops, livestock and fisheries sectors have all grown at a rate above 4 percent per year. Food sector growth remains at less than 3 percent per year, mostly because of the poor performance of the rice sector and other secondary food crops, such as soybean, maize, and cassava.

Most agricultural producers in Indonesia are small farmers, either in the forms of individual farms or family farms. The number of agricultural households in Indonesia today is about 24.9 millions, with about 13.6 million households in Java and the remaining 11.3 million households off-Java. Agricultural land expansion is growing less rapidly than the number of farm households, so land fragmentation is increasing. In Java, households with agricultural land of less than 0.5 ha increased from 69 percent in 1993 to 72 percent in 2003. The increasing number of small farmers suggests that agricultural production practices in the future will be more complex. Hence, it is quite difficult for farmers to attain economic scale, unless the farming activities are functionally consolidated. Therefore, the paths of agriculture revitalization being adopted by the current administration of President Susilo Bambang Yudhoyono (SBY) - in an era of political transition to democracy and decentralization - require logical translation from the ideological and strategic level of policy into a more operational policy formulation.

Land and Water Use

For nearly four decades, the agri-food sector in Indonesia has depended on irrigation infrastructure. Irrigation, both large scale and small-medium scale, has been very important in shaping the patterns of food production in modern times. Indonesia now has approximately 6.7 million hectares of irrigated rice fields, consisting of 800 thousand hectares with dam irrigation and 5.9 million hectares with non-dam irrigation. Unfortunately, most water resources in Java, the main island for food production in Indonesia, are now in critical conditions. Poor management of irrigation infrastructure, lack of budget allocation for irrigation operation and maintenance (O&M), a high rate of degradation of irrigation catchment areas and poorly managed conservation initiatives are among the key factors contributing to the degradation of irrigation infrastructures in Indonesia. New policies on economic decentralization also contribute to the worsening quality of irrigation, causing significant decreases in food production and land productivity.

In addition, land availability for agricultural production expansion is decreasing, because of high population pressures that compete to utilize the land. At present, Indonesia is utilizing approximately 64.0 million ha for agriculture, including: 7.8 million ha for lowland rice, 30 million ha for annual upland farming and grassland, and 25.5 million ha for perennial crops. The most productive lowland rice areas (3.5 million ha) are located in Java; the most suitable lands for agriculture on the island have been cultivated and the potential for agricultural extensification is very limited. Agricultural land for expansion is widely available on the other islands, although it is generally less fertile than on Java.

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3 Agribusiness: Value Added in the Supply Chain

The food self-sufficiency issue, especially in rice, becomes politically sensitive especially if the production target is missed and the food demand has to be fulfilled with imports. Increasing world prices for rice - to about US$ 300 per ton for medium quality - cannot benefit Indonesian rice farmers due to less developed food processors and distributors. The structure of the food processing and food distribution industries remains uneven, quite different from primary agri-food production, where more than 13 millions farm households are small-scale farmers with farm-holding of 0.5 hectares or less. Small-scale food processors are still dominant in the food industry in Indonesia, but large-scale food processors have grown significantly since the 1970s.

The food distribution system in Indonesia involves some distributors, large-scale wholesalers and a large number of retailers up to village levels. Wholesale distribution is complex and is changing less rapidly than the retail sector. Some large users of imported products outsource both the import function and logistics. Increasing demand for efficiency and practicality among urban consumers contributes significantly to the growing consumption of fast food provided by local producers, foreign owned and franchise food industries. Supply chain logistics in Indonesia has faced serious constraints due to the poor quality of physical infrastructure, ports, and transportation equipment. Java and Sumatra, which have relatively better infrastructures, account for about 80 percent the market for packaged consumer goods in Indonesia.

In the processing sectors, total processed food sales grew approximately 5% in 2002 to over Rp 61 trillion (about US$ 6.5 billion) in constant value terms (adjusted for inflation). Most of the processed food consumed in Indonesia is produced domestically. Indonesia has over 900,000 traditional home industry units producing mostly unbranded and often unpackaged food products. Although small individually, these enterprises are, collectively, extremely significant. For example, 80% of unbranded savory snacks - a very big segment - is produced by small-scale home industries. At the next level, there are 4,000–5,000 food-processing companies in the formal sector. Most are small to medium-size in scale and many are family owned. However, these small and medium-scale food processing enterprises contribute only a relatively small amount of sales compared to the few large-scale food processing companies. Foreign owned companies often affiliate with large-scale domestic food industries to control the production, processing and distribution of strategic food commodities in Indonesia. Newcomers usually struggle to enter into the distribution business unless they invest substantial amounts in networking activities, including expedition and transportation businesses.

In the retail sector, Indonesia is still largely served by traditional distribution systems. The retailing system is very fragmented and dominated by traditional ‘wet markets’, which sell fresh food in small family-run retail operations. Nearly 60 percent of the population lives in rural areas and buy fresh food daily, a pattern which suits local family retail operations. Despite the rise in modern retailing over the past decade, traditional retailers still dominate the market. For example, in Jakarta there are approximately 150 traditional markets, with up to 80,000 small retail traders. The majority of fresh food is still purchased at these wet markets, which are generally owned and operated by the local government and traders.

The rapid emergence of supermarkets and fast food chains has led the way for vertical arrangement between agriculture and its allied industries. The process of vertical arrangement can be visualized using the value chain that exists in Indonesia’s food markets. Direct coordination between farmers and supermarkets either through ownership or through contract can reduce information asymmetries that otherwise prevail between urban consumers and rural producers; coordination is a way to meet the changed demand. In addition, this type of arrangement can also induce commercialization and specialization at farm level and diversification at national level. Just as with supermarkets, the rapid spread of fast food chains in Indonesia is both a consequence of changing food consumption patterns as well as a force that drives changes in patterns of food consumption.

Food Consumption

Food consumption trends in Indonesia have shown improving patterns in the last five years. Indonesian nutritionists have established a recommended consumption pattern that fulfills nutrition and calorie intake required by the human body. Consumption of cereals, primarily rice, remains important in Indonesian diets, although it has decreased in the last five years. Consumption of fish and meats has increased significantly as a result of economic recovery. The calorie intake from cereals contributes nearly 62 percent of the total food consumption, while the share of fish and meats grew from 5.9 percent in 2002 to 6.8 percent in 2005. Another encouraging trend is the increasing consumption of legumes, vegetables and fruits, in the last three years. The recommended consumption pattern for cereal is 50 percent, for tubers 8 percent, fish and meats 12 percent, oil and fats 10 percent, legumes 5 percent, and fruits and vegetables 6 percent. Food consumption habits and household income have contributed significantly to these patterns. Increases in household income and adequate information about nutrition balance also relate to improved food consumption and narrow the gaps between the actual consumption and recommended consumption patterns.

Rice has been and remains the major staple food for Indonesia’s 220 million people, almost all of whom consume rice. Rice is also an important part of the rural economy; although only 38 percent of all rural households actually farm rice, many more are connected to the rice economy through services, labor and trade. Rice policy is the most watched and monitored economic policy in Indonesia, and is often connected to high-level political controversy. Most people have put high expectations on the current government to fulfill the “political demand” of self-sufficiency in rice. However, the current rate of food production in Indonesia is threatened in terms of meeting the growing demand of food consumption, mostly due to the growing population and dependency on rice as a main staple food. In the last five years, rice production grew at just 1.05 percent per year, while the demand for food is estimated to be growing at 4.66 percent per year (based on population growth rate at 1.3 percent, economic growth rate at 5.6 percent and income elasticity on food at 0.6). Although creating controversy at political level, food importing is sometime necessary because of high seasonal variety of rice production in Indonesia.
Agricultural Policy

Agricultural policy in Indonesia is a function of the government’s strategy of economic development. Pressures to formulate subsidies for agricultural development have been very high after the economic crisis. Government policies that indirectly benefit agriculture include macroeconomic policy, public infrastructure, and research and extension policy. During the administration of President Soeharto, the country’s macro-economic policy was well-managed, which resulted in relatively low and stable levels of inflation, and tax burdens that were predictable and not terribly high. One of the most important elements was an appropriately valued exchange rate. This is of particular importance to agriculture because most of the sector is producing traded goods and prices are determined to a large extent internationally.

There was a subsidy for certain chemicals, pesticides and herbicides used in crop production during the 1980s. Indonesia strongly implemented the fertilizer subsidy up until 1998, when the subsidy was totally removed. However, a fertilizer subsidy was reintroduced during the administration of President Megawati in 2001 and has been maintained in the current administration, albeit at less significant levels. Another input that has been subsidized over the years in Indonesia is credit. It has been subsidized through many small and mid-sized programs, as well as a part of many foreign aid projects. Finally, among “input subsidies”, there are research and extension programs. This is an important category of investment in the agriculture sector due to its role in achieving productivity growth in agriculture.

Indonesia also implements commodity policy, mostly for strategic food commodities such as rice, sugar, corn and soybean. Given the pre-eminent importance of rice in Indonesia, not only as the largest crop in agricultural production, but also in consumption as the staple food commodity, it has figured centrally in agricultural commodity policy since the 1970s. The policy objective specified for this commodity has been to stabilize its price, a task charged to the state-owned enterprise Perum Bulog, which could have the power of price monitoring and fluctuation.

International Trade

Trade liberalization would be beneficial if: the agro-industry is well-developed domestically due to trade activities; wage rates and employment creation increase due to export earnings; yield and productivity of exporting commodities increase; and export values involving small-scale producers also increase substantially. Generally, the international trade policy in Indonesia has been quite liberal. Average tariff lines were reduced from 9.6 percent in 1998 to 7.2 percent in 2003. Indonesia fully implemented the final stage of its commitments under the ASEAN Free Trade Agreement (AFTA) on schedule on January 1, 2002. However, the Indonesian government has expressed reservations about the pace of liberalization within AFTA and has noted an interest in pursuing emergency exit clauses from AFTA commitments in general.

In multilateral organizations such as the World Trade Organization (WTO), Indonesia is now a leader of developing countries (G-33) and advocating special products for rice, corn, soybeans and sugars, in the context of the Doha round. The current domestic political structure has brought Indonesia back into “protection” as the Indonesian economy cannot take much benefit from the structural adjustment program advocated by the International Monetary Fund (IMF). The trade and investment liberalization program is now somewhat problematic due to political pressure to simply not adopt the liberalization as it does not benefit the majority of Indonesian people.

Future prospects for South-South trade for the country

Geographically, opportunities for South-South cooperation between Indonesia and other developing countries are wide open. Flows of goods (and services) through Indonesian major ports have improved significantly, even after the economic crisis, both for export and import destinations. Politically, as a current leader of developing countries grouping (G-33) in the multilateral negotiations of the World Trade Organization (WTO), the position of Indonesia is very strategic. Rice, maize, sugar, chicken, wheat, beef, and some types of vegetable oils (palm and soy-oils) are all potential special products (SPs) that are both major developing country exports and important South-South traded products. The incidence of high developing country import market share that is heavily focused on a relatively small number of country/product combinations leads to some optimism that bilateral negotiations could solve a significant proportion of potential problems concerning SPs and South–South trade.

Challenges in promoting South-South trade in agri-food sectors are usually associated with clear differences of interest between countries. For example, in the case of corn, wheat and sugar/sugar products, there is a wide dispersion between importers in the share sourced from developing countries. This might complicate the task of reaching an Intra-South agreement. Another example of wide dispersion is in the case of rice, where about 90 percent of importers are developing countries, while for soy-oils 88 percent of importers are developing countries. The situation for palm oil, fresh beef, and frozen beef is quite unique where developing countries supply all or most of the imports to the major developing country importers. Shared research and policy agenda for the future in Indonesia and South-South cooperation between countries in Asia and Latin America should focus on the (potential) roles of agriculture to raise labor productivity through higher yield and cropping intensity. Increased productive employment would then be created in the rural non-farm sector from the expenditure of the increased farm income.
Overview of the Agriculture Sector in Malaysia

The share of the agricultural sector in the Malaysian GDP has declined from 18.7% in 1990 to 5.8% in 2005, while the rate of growth for the sector is lower than for other sectors of the economy. For instance, the average annual rate of growth for the agricultural sector in the last ten years was 2.1%, compared to the manufacturing sector at 6.6% and the services sector at 5.8%. The share of agricultural labor in total employment has declined from 26% in 1990 to 12.9% in 2005. Malaysian agricultural production consists of tree crops such as palm oil, rubber and cocoa (mainly for export), rice and livestock (mainly for domestic consumption), and fruits and vegetables (for both export and domestic consumption). Main export crops include oil palm, rubber, cocoa, pineapple and pepper. Among these crops, Malaysia has a clear competitive advantage in palm oil production. Malaysia exports about 13.4 million tonnes of palm oil to the world, accounting for 51% of global palm oil exports and 26% of global oil and fat trade in 2005.

Malaysia was once the world's largest exporter of tropical hardwoods, but sustainable management policies have reduced timber exports. Log production was 19.1 million cubic meters in 1975, peaked at 40.1 million cubic meters in 1990, and declined to 20.6 million cubic meters by 2002. Fishing accounted for 13.4 percent of the value of agricultural output in 2000 but declined to 11.8 percent by 2006; the government has invested in aquaculture to improve the output of the fishing industry.

The tree crops are planted by three types of growers: private estates (who operate farms of more than 40.4 hectares), government estates and independent smallholders. The share of private estates in rubber and cocoa plantations has declined while it is the reverse for palm oil. Between 1990 and 2005, the share of smallholders in planted areas decreased from 55.1% to 39.7% for palm oil, increased from 69.3% to 95.2% for rubber, and rose from 50.8% to 71.9% for cocoa.

The production of palm oil is expected to increase from the current level of 14.9 mn tonnes to 19.5 tonnes in 2010. The production of rubber and cocoa are also expected to increase, albeit at a lower rate. In terms of productivity, the last decade saw little increase in the export crops category. For instance, the yield for rubber has been stagnant at around 1,200 tonnes/ha/year and the same can be said for cocoa, where the productivity has not improved since it registered 830 tonnes/ha in 1990. The productivity for palm oil has declined from 3.64 tonnes/ha in 1990 to 3.46 tonnes in 2005.

The growing worldwide concern of global warming, the dire need for cleaner air and the continuous instability of fossil fuel prices all provide good opportunities for palm oil as an alternative feedstock for biodiesel. Hence, in the medium term, palm oil hectarage and production are expected to significantly increase. In 1990, palm oil accounted for about one-third of agricultural land use. However, by 2005 it had increased to 63% and is expected to reach 66% in 2010. The arable land in the Peninsular Malaysia has been fully utilized, hence the area of expansion will be focused in the east of Malaysia, particularly in Sabah and Sarawak.

The country's focus on the industrial sector has left the food industry under-developed until recently, when the country decided to revive the agricultural sector as the third engine of growth. Malaysia has not achieved much in terms of export competitiveness for its food products with a small number of exceptions, such as guava, papaya, star fruits, some floricultural produce and fish products. Most of the food crops are lagging behind in terms of production technology and marketing. The food sector is characterized by small farms of less than 1 hectare, fragmented and at times uneconomical. However, there are a small number of large commercial farms producing vegetables for exports in the Cameron Highlands area.

Land and Water Use

According to an estimate from 2003, 5.5 percent of Malaysia's land is categorized as arable, 17.6 percent is covered by permanent crops, with the remaining 76.9 percent categorized as “other.” (FAO, 2007). In terms of agricultural land use, in 2005 a total of 63.4% or 4 million hectares were planted with palm oil, rubber (19.6%), paddy (7.1%) and fruits (5.2%) (Malaysia, 2006- Ninth Malaysia Plan). Among these commodities, the
The annual internal renewable water resources are estimated at 630 km³. As surface water is readily available throughout the year, it is extracted mainly for irrigation and domestic uses. The groundwater potential is limited to some pockets of the coastal region and is generally exploited by rural people to supplement their piped water supply. Surface water represents 97% of the total water use, while groundwater represents 3%. About 60-65% of groundwater utilization is for domestic and/or municipal purposes, 5% for irrigation and 30-35% for industry.

Lately, water quality has become a major issue due to rapid urbanization, industrialization and poor water management. For instance, urban consumers are using on average 500 litres per day (LPD), which is far above the International Standard for water use recommended by the United Nations, which is 200 LPD. The heavy logging activities and overuse of chemical pesticides and fertilizers are polluting the soil and water system.

**Agribusiness and Supply Chain**

The agribusiness sector in Malaysia is undergoing a transformation as a result of retail innovations that swept most of the open economies of the world, including Malaysia. For the input sector, Malaysia relies on imports for the supply of fertilizers, pesticides, fungicides, agro-chemicals, and machinery to support its agricultural sector. There are two major plants that produce urea for export. The feedstuffs for the livestock industries, such as corn and soybean meals, are mostly imported. Until Malaysia is able to convert its abundant agricultural waste, such as palm oil effluents and rice husks, into palatable feedstuffs, the country's agricultural sector will continue to rely on imports as the major source for these inputs. The heavy dependence on imported inputs partially explains for lower competitiveness of the food sectors in the country, when compared to Thailand and Indonesia.

The agribusiness sector differs structurally for exports and food. In the case of the palm oil production sector, there are three major types of oil palm producers: independent smallholders, producers in the land development schemes, and private estates. The farms of independent smallholders are generally small (less than 40.4 hectares). Each group of producers exhibits different production and marketing characteristics. As well as having small farms, the independent smallholders are characterized by low productivity (compared to the estates) and dependence on private middlemen for the sale of their produce. Marketing of produce is done through the marketing unit or mills owned by the parent institution. For instance, FELDA buys and sells fresh fruit bunches at the farm level, processes them into processed palm oil, and sells or exports this to either local or foreign manufacturers respectively.

The private estates have a highly organized marketing system. Generally, there exists a high degree of vertical integration. A plantation firm not only has its own production farms, but also milling and processing plants. Hence, raw materials are easily absorbed into their mills and refineries, before the processed products are sold to domestic industrial users or foreign manufacturers. With this structure, the large estates are able to internalize the problem of price instability, besides enjoying the economies of scale. Some of the private estate companies are global players and have invested off shore both for plantations as well as downstream activities. For instance, Malaysian companies have opened up palm oil plantations in Indonesia, particularly in Sumatra and Borneo. Malaysian companies have also opened up refineries in overseas markets such as in Europe and in ASEAN countries.

The new supply chain is invading the agricultural (particular food and fresh produce) markets in Malaysia. The traditional marketing system is multi-layered, cumbersome, lacks a transparent pricing mechanism, and is an unstable and wholesaler-dominated market. Under the new system, the distribution channels are shorter, efficient and prices are transparent across the chains. To ensure consistent supply of quality food and fresh produce, the large scale retailers or hypermarkets practice contract marketing with farmers or traders. Products are labelled or branded to ensure quality to the consumers. This system appears to favour commercial farmers as they are able to supply high quality produce according to specifications; while the small farmers, retailers or traders are marginalised. There is evidence to show that the small farms are consolidating to take advantage of economies of scale. The government has introduced a number of standards to ensure good agricultural practices in line with the developments in the export market.

**Consumption**

Growth in income and population, coupled with a modern lifestyle, have increased food demand and induced changes in food habits and consumption patterns. As living standards have risen in Malaysia, more people have chosen to eat quality meat, chicken and fish products regularly rather than traditional, rice-rich meals. The consumption of meat, egg, and fish and seafood products is trending upwards, which is a normal characteristic of high income societies. For instance, meat consumption per capita was 15.7 kg in 1970, compared to 48.5 kg in 2003. Egg consumption per capita has increased from 6.2 kg to 10.8 kg in the same period, while fish consumption per capita has more than doubled from 24.2 kg in 1970 to 55.9 kg in 2004. Per capita vegetable consumption increased from 28.2 kg in 1970 to 34.4 kg in 2003 and is expected to increase further in the future. The consumption of rice decreased from 121.2 kg in 1970 to 70.8 kg in 2003. These figures show that the Malaysian consumers’ dietary preferences are changing as incomes and standards of living rise. Consumers are eating more protein and fresh produce and less carbohydrate as they achieve disposable income and greater awareness of food nutrients and quality.

The level of self-sufficiency for food varies according to items. Malaysia is self-sufficient in poultry and pork meat and eggs. In 2005, the level of self-sufficiency for fruits was 94%, with vegetables at 95%, fisheries products 86%, rice 70%, beef 15%, mutton 6% and milk 3%. Clearly, Malaysia has to rely on imports for commodities it lacks in supply. Under the country’s Ninth Malaysia Plan (2006-2010), policy and programmes have been laid out to increase production of food commodities to reduce dependence on imports. A target of positive net balance of trade amounting to US$0.08 billion by 2010 has been set.
**Agricultural Policy**

In the last decade, the agriculture sector in Malaysia has been directed by three major policy statements from the Second and Third National Agricultural Policies (NAP II and NAP III) and Ninth Malaysia Plan. Under NAP II, greater emphasis was given to address productivity, efficiency and competitiveness issues in the context of sustainable development and linkages with other sectors of the economy. The policy also outlined strategies for expanding food production, a greater role for the private sector, marketing reform and accelerated agro-based industrial development. Efforts to further liberalize the agricultural sector were intensified.

During the 1992-1996 period, further structural changes in the economy led to increasing resource constraints for agricultural and forestry development. The establishment of the World Trade Organisation (WTO) along with the 1997/98 financial crisis in both Malaysia and the region posed new issues and challenges for the agricultural and forestry sectors. A new NAP was introduced. Under NAP III, two strategic approaches were adopted; the first being the agroforestry approach and second the product-based approach. The first approach is aimed at addressing the increasingly scarce resources, including land and raw material availability. In this approach, agriculture and forestry are viewed as mutually compatible and complementary, thereby providing a scope for joint development. The product-based approach was adopted to reinforce and complement the cluster-based agro-industrial development as identified in the Second Industrial Master Plan 1996-2005 through strengthening both inter and intra-sectoral linkages including the development and expansion of intermediate and supporting industries. This approach emphasizes in satisfying the specific needs of niche markets and consumers world-wide. In this approach key products and markets are identified based on market demand, preferences and potential. The market demand and preferences are translated into strategies for upstream primary agricultural production to enhance production and marketing of the agricultural produce.

The Ninth Malaysia Plan focused on revitalizing the agriculture sector and making it a third engine of economic growth after manufacturing and services. The aim is to make Malaysia a competitive global producer of high quality and safe agricultural products that meet international standards. Policy emphasis is on: (1) adopting modern agricultural methods through R&D including biotechnology (Malaysia has established three laboratories in molecular biology, agricultural biotechnology, and nutraceutical and pharmaceutical biotechnology); (2) developing Malaysia as a centre of processing, packaging, and marketing of agricultural products; (3) encouraging the private sector, and especially GLCs, to act as a catalyst in the commercialization of the agriculture sector; and (4) developing the country into a competitive food exporter in selected areas such as aquaculture, deep-sea fishing, ornamental fish breeding, and halal products.

The policies appear to be pro-active and address the major development needs of the agricultural sector. However, there are some issues that did not receive adequate attention. For instance, the policies do not provide adequate incentives as well as fiscal policy measure to attract investment in agriculture. Factors of production such as labor, land and capital are moving away from agriculture due to the pull of better returns from the industrial sectors. Secondly, no attempt has been made to address agricultural risks, which are relatively high due to market instability as well as natural calamities. Thirdly, no deliberate measures have been spelt out to reduce the country's heavy dependence on foreign labor to work on the agricultural farms. Foreign labor may hold the cost of production down, but no progress has been made thus far in terms of mechanization and automation of farming processes. Fourthly, issues relating to dependence on imported agricultural inputs such as fertilizers, agricultural chemicals, seedlings and feedstuffs have not been addressed adequately.

**International Trade and Prospects for South-South trade**

Malaysia’s economic growth is largely dependent on international trade. Being a trading nation, it actively pursues and strongly supports trade liberalization through multilateral, regional and bilateral trade agreements.

The balance of trade (BOT) for agriculture and food products between 1990 and 2005 was positive. Both exports and imports of agricultural and food products showed positive trends during this period; food exports and imports of both agricultural and food products more than doubled in size between 1990 and 2005.

Malaysia is committed to the trade liberalization process and negotiations through the rules-based multilateral trading system under the WTO. In order to enhance economic growth and complement its push for greater market access, Malaysia is also seeking closer economic relations at both regional and bilateral levels by participating in the ASEAN Free Trade Area (AFTA) and ASEAN-regional plus FTAs with other countries. Malaysia is also pursuing bilateral FTA negotiations with Japan, India, Korea, New Zealand, Australia and the United States. Hence, the prospect of South-South appears bright.

The Ninth Economic Development Plan of Malaysia aimed at making the country a competitive global producer of high quality and safe agricultural products that meet international standards. Malaysia has implemented a number of agricultural trade regimes to achieve the above. They include: zero or low applied import tariffs for many agricultural commodities; imposing import licensing requirements for a number of agricultural products; providing production subsidies and protection for rice and tobacco for food security and poverty reasons; imposing export duties on key agricultural commodities, such as palm oil, to discourage the export of raw materials and to encourage downstream activities in the country; developing halal certification and encouraging food processors to adopt and maintain standards that meet global benchmarks such as ISO 9000, Codex Alimentarius, the Quality Assurance Programme, Hazard Analysis and Critical Control Point (HACCP), Good Hygienic Practice (GHP), and Sanitation Standard Operating procedures (SOPs); requiring labeling with nutritional information on certain processed, packaged food products sold in Malaysia; and establishing a Genetic Modification Advisory Committee (GMAC) to identify and manage risks associated with the use of GMOs and related products.
General Description of Philippine Agriculture

The Philippine agriculture sector is generally classified as an aggregate of three subsectors, including: agriculture production covering various crops, livestock and poultry, as well as agriculture-based activities and services; fisheries; and forestry. In terms of gross value-added contribution to the agriculture sector, paddy rice is the number one contributor followed by livestock and poultry, corn, coconut, sugarcane, and agricultural services.

The growth of the Philippine agriculture sector has been comparatively sluggish compared to its Asian counterparts during the last sixteen years. Among the factors that prevented real growth of the sector were: inadequate resources, limited institutional capabilities of national and local government units, weak coordination among implementing agencies, natural disasters (e.g., El Niño and La Niña phenomena) and international market crises (e.g., the 1997 financial crisis).

An examination of productivity trends to spur agriculture growth revealed possible reasons for its slow expansion. There was marginal development in irrigation systems in recent years, while labor employed in major agriculture crops dwindled during the last decade. In contrast, inorganic fertilizer usage has intensified for rice and corn, and there is also a growing increase in the use of organic fertilizer in rice, vegetable and other crops, because of the high demand of organic agricultural products in Europe.

In terms of land use structure and distribution, a large portion of the country's alienable and disposable lands are agricultural areas. The majority of agricultural areas were devoted to rice, corn and coconut. There appeared to be a shift in the number of farms from large size to small ones; the result of the implementation of the Agrarian Reform Law in 1998, which called for a land ownership ceiling per person. This policy has resulted in fragmentation of large farms, which were distributed to landless farm tenants.

Land and Water Use

Three major factors were identified that can hinder resource use expansion: competing uses of resources, rights of indigenous people, and government policy.

Different uses of a resource cannot be pursued exclusively. Compromises and conflicts arise whenever one specific resource use is preferred over another. For example, land is a primary input in the conduct of economic and productive activities for the Filipinos' general welfare. The creation of special economic zones and industrial parks are mechanisms of giving a premium to the economic or commercial use of large tracts of land. However, this economic and commercial use of land may, at times, be in conflict with the food production role of land. For example, indiscriminate land conversions from agriculture to non-agricultural purposes that persist around the country pose the danger of food insufficiency for the Filipinos. This conflict between economic and food security is illustrated by the actual state of agricultural lands available in the country.

The right of indigenous people to protect their lands raises issues. In the Philippines, the State is mandated to protect the rights of indigenous people over their ancestral domains to ensure their economic, social and cultural well-being, and to recognize the applicability of customary laws governing property rights or relations in determining the ownership and extent of ancestral domain. This indigenous concept of ownership with regard to all ancestral lands and all resources found therein serves as the foundation of the indigenous people's cultural integrity. The law guarantees the indigenous peoples' rights to claim ownership of ancestral domains.

The Comprehensive Agrarian Reform Law limits the individual landholding to five ha. Issues concerning this law include the negative impact on agribusiness expansion and efficiency due to limited economies of scale. In addition, the non bankability of certificates of land ownership has limited the expansion of agricultural economic activities in these areas.

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8. President and chairman of the Board at Society Towards Reinforcing Inherent Viability for Enrichment (STRiVE) Foundation.
**Agribusiness**

The Philippine food and processing industry is not a homogenous entity. It is composed of several subsectors according to the variety of product, as follows: cereal preparations; meat preparations; fish and marine products; seaweeds/carrageenan; dairy products and eggs; processed fruits and vegetables; non-alcoholic beverages; coffee, cocoa and tea; and other food commodities such as sugar products, sauces and condiments, and cooking oil.

The Philippine food manufacturing industry is generally concentrated. The large food manufacturing firms have strong brands that are aggressively advertised in the country. Large suppliers/manufacturers are able to give volume discounts, concessions and promotion support. The pressure on processors in terms of quality standards and costs is transmitted in the chain and felt by upstream agents. For farmers to tap the high value chain, they should be able to meet the requirements of the buyers.

Increasing vertical and horizontal competition squeezes the margins of small processors. Because of the limited scale and scope of small processors, they are now forced to supply to wholesalers, which may further squeeze their margins. Large manufacturers are establishing strategic partnerships with retailers; these partnerships have been facilitated with the development of information technology and its adoption in retailing. The agricultural sector has become significantly dependent on the retail industry's performance because agricultural products are used as raw materials for retail food production.

Philippine food manufacturers continue to face the following challenges: high electricity and increasing labor and production costs; inconsistent domestic supplies; outdated equipment and facilities; high distribution costs due to the geographical characteristics of the country; lack of grading system for agricultural goods; gaps in the cold chain; and less expensive finished products from neighboring countries. Domestic agricultural supplies are often hampered by inefficient post-harvest and storage facilities and costly farm-to-market transport, which often drive prices higher than those of the world market. The large corporations are attempting to overcome these challenges by investing in new technology, buying out smaller competitors, keeping profit margins low to remain competitive and developing new products with intensive advertising and marketing support. Other processors focus on niche marketing or maintaining current output.

**Consumption**

The early 1990s showed a general decrease in the amount of consumption of various foods. Major food groups, including cereals and products; roots and tubers; fish, meat and poultry; and fruits and vegetables, also showed significant reductions in per capita food intake. In contrast, during the early years of the succeeding decade, there were marked improvements in the per capita food consumption of all foods and food subgroups.

Filipinos are heavy on the consumption of rice compared to other agricultural crops. Corn consumption in the Southern part of the country barely improved during the last 15 years. In general, corn is consumed as feed ingredients for the livestock and poultry subsectors. Filipino meat consumption of beef, carabeef and goat was not that high. These are usually substituted by pork and chicken meat. Individual fish consumption is relatively low compared to agriculture food products.

Food has the biggest share in a Filipino family budget. In recent years, the spending patterns of Filipino families changed towards less spending on food. A large portion of food expenditure is for food consumed at home, with outside-the-home consumption having a very marginal share. However, the share of expenditure on food consumed at home has been dropping, with out of home expenditure expanding.

**Agricultural Policy**

There are several domestic agricultural policies supporting agriculture. The Medium Term Philippine Development Plan 2004-2010 is a detailed roadmap towards achieving the Philippines’ goal of reducing poverty through job creation and agribusiness enterprises. Republic Act 8435, otherwise known as the Agriculture and Fisheries Modernization Act, aims to strengthen the competitiveness of the agriculture and fishery sectors through modernization, greater participation of small-holders, food security and food self-sufficiency, private sector participation and people empowerment.

*[Ginintuang Masaganang Ani]* is the banner program for agricultural development; a transitional blueprint for putting the Agriculture and Fisheries Modernization Act to work. As such, it focuses on achieving food security and poverty alleviation, with the local government units and other stakeholders developing their own plans and programs suitable for their respective localities.

Lastly, the Philippine Department of Agriculture provides support services on rural credit, crop insurance, research and extension services, as well as other services like accreditation/registration/lease agreement, certification and clearance, laboratory services, and licensing and granting of permits.

**International Trade**

Major agricultural exports included crude and refined coconut oil exported mainly to the Netherlands and the United States; fresh bananas to Japan, the People’s Republic of China and the Near East; tuna to Japan, the United States and Germany; pineapple and pineapple products to the United States and Japan; shrimps and prawns to Japan and the United States; manufactured fertilizer mainly to Vietnam; sugar to the United States; desiccated coconut to the United States and EU; seaweeds and carrageenan to the United States and EU; fresh mango to Hong Kong, China and Japan; copra oil to the EU and Republic of Korea; copra and coffee in small quantities; and tobacco to the United States, Japan and the EU.

Major agricultural and food imports include rice from Vietnam, Thailand, India, China and the United States; milk and cream and cream products from Australia, New Zealand and the Netherlands; wheat and meslin from the United States; corn from the United States, Argentina, China and
To date, the Philippines has entered into several regional trade agreements outside of the WTO. These agreements include: ASEAN Free Trade Area, Japan-Philippine Economic Partnership Agreement, ASEAN-China Free Trade Agreement and ASEAN-Korea Free Trade Area. The country, therefore, is open to exploring South-South trade and further liberalizing its trade policies in the coming years.

**Future Prospects for South-South Trade**

Two forces are driving the opportunities for Philippine agriculture in South-South Cooperation. One is the domestic market, which is large by global standards and therefore optimization of economic transactions at the domestic front in relation with East Asian and Latin American Countries offers great opportunities. The second force is the pull of the global market. Globalization through open trade regimes has had a major effect on the Philippines since it became a member of the GATT WTO in 1994.

**Opportunities of South-South Cooperation, with the Philippine Domestic Market**

Across crops, livestock and fishery agribusiness activities, there are great opportunities to put in place the policy mechanisms to enhance adoption of the commercial technologies (R&D and extension) that are “efficiency drivers” of the supply chain in providing agricultural goods and services. As an enabling strategy, technology innovations can provide the agribusiness production system with lower per unit cost resulting in enhanced efficiency at the different supply chain components: primary production; distribution system; processing or value-adding; agricultural mechanization; and social services. Technology development and investment to commercialize available technologies will be another area where the Philippines will actively participate in South-South cooperation.

The Philippines has historically high cost agriculture because of inefficiencies in the transport and distribution systems. Public and private investments in marketing infrastructures will lower the cost of basic commodities from farm to retail levels, making basic food more affordable to the poor, especially nutritionally disadvantaged groups. Joint venture investment in infrastructure development is another area for Joint South-South collaboration.

Value adding and processing of strategic crop, livestock and fishery products will provide opportunities for employment in the agribusiness system resulting in improved incomes and purchasing power and expansion of the consumer base among stakeholders.

Poverty is a rural phenomenon in the Philippines. Producing basic food (rice, fish, meat and vegetables) more efficiently can provide an opportunity to eliminate hunger and malnutrition and alleviate poverty. Trends in the consumption of basic staples in the country have showed stagnancy if not a downward trend. This trend has to be reversed through higher productivity in the sector, which leads to higher rural incomes inducing imports of basic food items from East Asia and Latin American countries.

Experience has also demonstrated that the private sector is the engine of growth in economic development. The public sector provides the enabling mechanisms in terms of investments and policies, however, a market driven private sector-led agribusiness strategy is still the most sustainable model. A private sector technical cooperation in agribusiness development in the South-South countries can be explored.

Finally, there are great domestic opportunities for the Philippines to collaborate with South-South countries if it can improve public governance, i.e. overcome the prevailing perception of risk and deficiency in the government and private sector environment for private sector enterprises. Good governance encourages corporate governance and foreign direct investments.

**Opportunities in South-South Trade, with the Global Market**

Global market opportunities are embodied by the principle of multilateral trade. The basic premise is that removal of trade distortions will lead to more efficiency in global trade. A more open global trade regime is desirable for a number of reasons: it will lead to better allocation of world resources, expand consumption opportunities and production efficiency, and help economies move to a higher growth path. The Doha Development agenda adopted by the WTO in 2001 calls for the reduction of trade-distorting policies and the bolstering of the development relevance of the WTO. Some say it is one of the most ambitious development agendas posted among the family of nations in recent times.

Analysis of trade flows indicates that the Philippines has competitive advantage in exporting fresh and processed tropical fruits, fish and agriculture products, carageenan and seaweeds, sugar, and coconut oil. Removal of trade distortions in global trade would result in the expansion of these Philippine products across diverse destinations.

To date, the Philippines has entered into several regional trade agreements outside the WTO, indicating its openness in South-South trade. This appears to be the most pragmatic approach at present, considering the difficulties of the North and South countries in implementing the spirit of the Doha Development Agenda. Although a lot of work is still needed to effectively operationalize South-South trade, it is a trade modality worth exploring.
Between 1980 and 2005 Thai agriculture experienced boom-and-bust cycles and long-term decline, yet it managed to grow at the moderate rate of almost 4 percent per year. The agricultural malaise, which occurred in the 1986-1996 period of industrial and financial boom, resulted in a sharp increase in the prices of non-traded goods relative to those of traded agricultural goods and the consequent withdrawal of resources from agriculture. The slump in world agricultural prices and exhaustion of land frontier also contributed to the agricultural decline. The Dutch disease effect was reversed after the sharp depreciation of the Baht triggered by the 1997-98 economic crisis and the rebound of world agricultural prices in the early 2000s. As a result, a declining trend in the value added share of the crop sector, which is dominated by exportable products, has been reversed.

Farmers responded to those changes as well as the boom-and-bust cycles by restructuring their production. Within the crop sector, rubber, sugar, fruits and vegetables had increasing share in the crop value added, while other crops suffered a declining share, including rice, cassava, maize and kenaf. The increasing shares of rubber and sugar are due to subsidies while the latter also receives additional protection. High growth of exports and increasing per capita income explain the increasing shares of fruits and vegetables. The main reasons for the declining share of rice output are the lower real price of rice, increasing real wage rates and water scarcity. Although frequent droughts forced the farmers to switch from maize to cassava, cassava still has a declining value added share due to the sharp fall in the cassava exports to EU.

The increasing share of poultry in the livestock value added was caused both by the high growth of foreign demand and increased domestic demand in response to a decline in the relative price of chicken as a result of new technology and deregulation of chicken slaughterhouses. Despite the scaling up of commercial pig farms, the swine industry has suffered a declining share because of regulations on slaughterhouses, the environmental impact, labor shortages and the higher relative prices of pork meat.

The increasing value added share of fishery was first attributed to the high growth of fishery exports in the 1980-90 period, while the expansion of fresh water fish was in response to increased domestic demand in the 1990s. Since the early 2000s, its share has declined as a result of over-exploitation of natural resources.

Except for the agricultural pricing policy prior to 1986, most agricultural policies have contributed to the growth and development of Thai agriculture. These include conservative and sound macroeconomic policy; universal primary education, which began in the 1960s; the series of infrastructural investments for agricultural development between 1960 and 1990; and the universal provision of farm credit by the Bank for Agriculture and Agricultural Cooperative (BAAC). Until the late 1990s, the government had also invested heavily in agricultural research and extension. Due to its failure in shoring up the domestic prices of agricultural products, the government decided to abolish its export tax policies in 1986, thus ending an era of penalizing agriculture. Since then the agricultural policy has shifted towards protecting and subsidizing the farmers. While the negative protection of most exportable crops was reduced to zero, the government has maintained a moderate level of nominal protection for most import-competing crops, such as sugar cane, palm oil and soy bean. In addition, the government has increased the farm subsidy to alleviate poverty. The major policy is the paddy pledging program, which provides cheap credit to farmers so that they delay the sale of the pledged paddy until the prices rise later in the season. The increase in the pledging prices between 2001 and 2006 resulted in a big jump of pledging paddy and government stockpiles, estimated at half the rice export; a large financial cost to taxpayers.

Recently, there has also been some weakness in the competitiveness policy. The research intensity in agriculture has declined and increasing numbers of senior professors in agriculture will be retiring in the next few years. The over expansion of BAAC credit resulted in higher debt arrear in 1998/99. The third weakness is the failure of the agricultural restructuring programs, which were designed to help less competitive farmers restructure their agricultural production.

Since the mid 1980s, Thai agriculture has experienced some serious problems. Since more than 98 percent of the farm holdings are small family farms, averaging 3 hectares, the massive migration of young workers out of agriculture since the late 1980s has resulted in the farm labor
shortage. The farmers responded by hiring illegal foreign migrants and mechanizing their farm operations. One major constraint is the recurrent but increasing scarcity of water. Finally, some irrigated farms may experience serious soil degradation because of high intensity of cultivation without proper land rotation.

Despite all the malaise and policy distortions, Thai agriculture has been highly resilient and remained the country’s largest employer as well as major foreign exchange earning. Thailand has been the world’s largest exporter of rice, rubber, cassava, and canned tuna for decades; and a major exporter of sugar, shrimp, poultry and fruits. Before the 1980s, land abundance was the main source of comparative advantage of the crop sector, while availability of natural resource and cheap labor explained the competitiveness of the fishery and poultry sectors. Except for the export taxes on some agricultural products before 1986, the conservative macroeconomic policy and minimum intervention of the market mechanism have allowed the relative domestic prices to reflect the international prices. Since the 1980s, most of the agricultural growth has been attributed to the total factor productivity growth (TFP); it accounted for 75% of the growth of the crop sector and 34.6% of the livestock growth between 1980 and 2004. TFP growth of the crop sector is due to genetic improvements and cultural practices in response to the changes in relative prices of inputs and output. Improved feed nutrients and animal breeds, as well as better farm management, are the main reasons for the productivity growth of livestock. The fishery sector had negative growth of TFP, implying that the fishing industry has overexploited and damaged the natural resources.

The higher land-labor ratio since the late 1990s, caused by the exodus of the young agricultural workforce, may result in higher farm output and productivity in the near future, provided that the land consolidation process is facilitated. The products that have high growth potential will be the land-intensive products, high value or health products and those with high income elasticity, such as fruits, energy crops, organic and safe produces, etc.

The food processing industry is the largest industry in the manufacturing sector both in term of value added (17.5 percent) and employment (13.4 percent). Its growth performance between 1980 and 2005 was impressive, averaging 12.6 percent per year. The largest industries are canning and preservation of seafood, rice milling, slaughtering, breweries, sugar refinery, soft drinks, and canning and preserving of fruits and vegetables. The sub-sectors that have high growth and increasing shares in the manufacturing GDP are canning and preserving of fruits and vegetables, seafood, breweries, canning and preserving of meat, dairy products, palm oil, confectionery and snack, and coffee. These are mostly health foods or products with high income elasticity of demand. The industries that have declining shares in manufacturing value added are those with low income elasticity of demand, such as rice milling, flour and tapioca milling, sugar refinery, distilling of spirit (low grade), bakery, animal feeds and ice.

The structure of the food processing industry is dualistic and monopolistically competitive, consisting of both modern large-scale factories and a large number of small-and medium-scale enterprises (SMEs). The latter, which account for 96 percent, are in the following low value added industries: rice milling, bakery, confectionery, rice noodle, fish sauce, ice, etc. The modern large-scale companies, which account for only 4 percent of all food processing factories, are in the following industries: canned and frozen seafood, canning and preserving of fruits and vegetables, chicken processing, dairy products, modified starch, instant noodle, sugar, beverages, energy drinks, beer, animal feeds etc. Most of these industries are quite concentrated, yet the competition is high, except for the sugar industry, where the price is regulated. The high concentration is partly attributed to the high tariff wall (e.g., coffee, sugar, dairy products), legal entry barriers (e.g., sugar, beer), economies of scale (e.g., seafood, canned fruits), and consumer loyalty or high intensity of advertising (e.g., noodle, soft drink, energy drink and health food).

The multi national companies play important roles in only a few sectors but usually have a dominant position for their products, i.e., soft drink, coffee, imported whisky, dairy products, ice cream, health food and retail trade.

Between 1980 and 2006, exports of some food items increased by between 34 and 88 times, i.e., preserved and canned fruits (88 times), preserved and canned seafood (67.5 times), fresh and frozen vegetables (64 times), chilled and cooked poultry products (45 times) and fresh and frozen fruits (34 times). Such export performance reflects the comparative advantage of the Thai food processing industries, a fact which is confirmed by the low indices of domestic resource cost (DRC).

There are at least six major trends underlying the structural changes in the agri-business sector; (1) a shift from resource-intensive and labor-intensive products towards high valued products, and a shift from domestic resources toward imported raw materials. These were the consequences of local raw material shortage, the reduction of tariff on imported raw materials and rising labor costs. (2) Rising per capita income, changes in life style towards the western way of life and increasing health concerns have resulted in an increase in domestic demand for western food as well as for safe food in recent years. (3) As a result of industrialization and infrastructure development, the provincial markets have been integrated with Bangkok, resulting in a national market for the food products. This in turn allows several food manufacturers to successfully develop national brands for their products. (4) Since the mid 1990s, there has been a rapid expansion of large-scale foreign retailers in response to the demands of the increasing number of middle-income consumers, whose time cost become more expensive. (5) Some food MNCs have used Thailand as their export base to ASEAN markets, thanks to the ASEAN Free Trade Agreement, which allows them to exploit the economies of scale. (6) Finally, some food exporters have successfully introduced new production technology to the farmers through contract farming, thanks to the government policy of non-intervention. These industries are chicken products, frozen vegetables, and sugar. Moreover, some food industries have also adopted vertically integrated organization, which allows them to minimize some transaction costs. These industries include broiler, canned pineapple and sea food.

Over the last two decades, household consumption has exhibited four major trends. First, after the 1997-98 crisis, real household income gradually increased while the percentage share of food expenditure declined, as predicted by the Engel law.
Secondly, after a fall in real food expenditure triggered by the 1997-98 crisis, household food consumption has started to increase since 2001. Yet, 2004 consumption was still lower than in 1990-92, despite the fact that the real household income in 2004 was already higher than in 1990-92.

Thirdly, household food consumption has shifted from the traditional main staples, which have relatively low or negative income elasticity, towards more convenient forms of consumption and the modern style of diet, with higher income elasticity. As a result, the expenditure share of traditional diets, especially grain and cereal products, which used to have the largest share, has declined, while shares of meals eaten away from home, and prepared meal taken home have increased and become the largest food items, accounting for 22.1% and 15.1% of food expenditure in 2004, respectively. These changes can be attributed to higher time cost of married female household members, since 68% now work in the labor markets. The declining shares of poultry, meat, fish and seafood, and vegetables are misleading because when family members eat away or take home prepared meals, most of the foods they order are meat, poultry, fish, and vegetables.

The other food items that have increasing budget shares are both the western diet foods and health foods, i.e., (a) milk, cheese and eggs, (b) coffee and spices, (c) alcoholic beverages, (d) non-alcoholic beverages, and (e) fruits and nuts. These are items with high income elasticity of demand. The consumption of sugar and sweets shows fluctuating shares around 2.5-3.3 percent.

Finally, the nutrition situation in Thailand has slightly improved since 1990 as the caput dietary energy consumption estimated by FAO increased from 2,200 calories in 1990 to 2,400 calories in 2004, an increase of 9 percent. Yet Thailand still has lower dietary energy consumption than other Asian countries.

In addition to the effect of high female labor force participation and higher incomes, the spread of the western life style has had a profound impact on the consumption preferences of the Thai people, thanks to globalized TV programs, Hollywood movies, the internet and higher levels of education amongst the Thai population. The increase in consumption of imported food can also be attributed to tariff reductions as well as the rapid expansion of foreign hypermarkets between 1998 and 2006. Changes in age composition and a smaller family size induced by the rapid demographic transition in the last 30 years have also had a significant influence on the household consumption pattern.

Thailand is also one of the world’s top ten exporters of processed food. Since the growth of processed food exports is higher than that of agricultural products, the former’s share in food and agricultural exports jumped from 25 percent in 1988 to 35 percent in 2005. The key factors explaining its comparative advantage are land abundance, cheap labor, and the ability to build capacity to produce safe and high standard food in response to foreign demand. In addition, Thai exporters have been able to diversify their exportable products and readily adapt to the changes in the world market. But their weaknesses are: concentrated markets, low world ranks for the trend of import coverage by exports, and matching the dynamics of world demand for the fresh food markets.

Thailand is still one of the Asian countries with the highest average tariff for imported food. Yet in the early 2000s, the government was one of the most aggressive countries in the negotiation of 11 bilateral FTAs and 8 RTAs, regardless of the economic characteristics of the trading partners. With 10 trade pacts already signed, the Thai tariffs on some imported foods from those trading partners have been lowered. Although it is still too early to assess their trade impact, some studies find that the costs of complying with rules of origin may offset the benefit of tariff preferential if the trade volume is too small. Although the South-South FTAs will result in a large reduction of tariffs of the trading partners, the potential for trade creation may be seriously compromised as each partner is introducing the unrealistically stringent SPS and TBT measures to protect their farmers and local producers. On the other hand, the North-South FTAs will have a large impact on Thai food exports only if the Thai exporters can cope with the stringent food safety standards imposed by the developed trading partners.

The future prospect of enhanced South-South trade depends on four main challenges. The first challenge is to tackle the spaghetti bowl effects arising from different FTAs. There is a need for the politicians in the South to agree upon a common framework for a larger RTA that combines the fragmented FTAs among the Southern partners. The second challenge is for the Southern partners, particularly ASEAN members, to establish a common infrastructural network or trade standards to facilitate intra-ASEAN trade, e.g., the common ASEAN fast-track customs procedures. They should also negotiate and establish the common and more appropriate food safety standards that will allow them to increase food trade among the Southern partners. Thirdly, the Southern countries can form a coalition with a more liberal agricultural trade policy stance to counter the bargaining power of the super powers in both the multilateral and regional trade negotiation forum. One potential area of cooperation is undertaking joint complaints against the unfair trade practices and unrealistic SPS measures of the developed countries. Finally, the formation of a research network among the research institutes in the South will allow the Southern researchers to identify and carry out a common research agenda that fits the needs of the South. Moreover, by pooling its scarce resources, the network will enhance the research capability of the researchers in the South.
In 2005, USD 852 billion worth of agricultural goods was traded across borders, up from USD 415 billion in 1990, according to WTO data. A remarkable feature of agrifood trade over the last two decades has been the increasing share of developing countries. In particular, countries in Asia and Latin America have benefited from increased trade. The average annual growth rate of agrifood exports of nine countries from Asia and Latin America in the 1990-2005 period reached 7.4%. As a result, the share of these countries in international agrifood exports increased from 11% in 1990 to almost 16% in 2005 (Table 1).

Table 1. Agricultural Export Growth in USD Billion (1990-2005)

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<tbody>
<tr>
<td>Argentina</td>
<td>6.949</td>
<td>11.471</td>
<td>18.635</td>
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<tr>
<td>Brazil</td>
<td>8.697</td>
<td>12.810</td>
<td>30.423</td>
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<td>Chile</td>
<td>2.779</td>
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<td>China</td>
<td>7.868</td>
<td>13.559</td>
<td>24.635</td>
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<tr>
<td>India</td>
<td>3.506</td>
<td>6.401</td>
<td>10.134</td>
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<tr>
<td>Indonesia</td>
<td>4.154</td>
<td>7.764</td>
<td>14.320</td>
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<tr>
<td>Malaysia</td>
<td>3.434</td>
<td>5.440</td>
<td>9.800</td>
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<tr>
<td>Philippines</td>
<td>1.532</td>
<td>1.815</td>
<td>2.504</td>
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<tr>
<td>Thailand</td>
<td>6.611</td>
<td>9.945</td>
<td>12.820</td>
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<td>ALARN Total</td>
<td>45.529</td>
<td>75.604</td>
<td>133.369</td>
<td>7.4%</td>
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<tr>
<td>World Total</td>
<td>414.723</td>
<td>552.989</td>
<td>851.847</td>
<td>4.9%</td>
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<tr>
<td>ALARN/World (%)</td>
<td>11.0%</td>
<td>13.7%</td>
<td>15.7%</td>
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</table>

Source: WTO International Trade Statistics.

The recent growth in agrifood imports from developing countries has also been impressive, reaching almost 90% between 2000 and 2005 in Asia, fueled by strong economic growth and rising per capita incomes. This surge in agrifood imports – coupled with the increased use of agricultural commodities in biofuel production – has affected commodity prices, leading some economists to worry about the prospects of “agflation.”

Given this backdrop, it is increasingly important to understand the drivers of agrifood supply and demand in Asia and Latin America. Despite being key players in international agricultural markets, Latin American and Asian-Pacific countries lacked a platform for the interaction of agricultural trade specialists. The Asia Latin America Agrifood Research Network (ALARN) was formed in 2007 by researchers representing nine countries in both regions (Table 2). The objective of ALARN is to promote coordination of agrifood trade intelligence resources across Latin American and Asian-Pacific developing countries as a means of generating and disseminating knowledge that can be utilized to expand South-South trade and investment.

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Table 2. Background Information on ALARN Countries

<table>
<thead>
<tr>
<th>ALARN / World Total</th>
<th>ALARN / World Total</th>
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<tr>
<td>GDP (USD Billion)</td>
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<td>Population (Million)</td>
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<td>Rural Population (Million)</td>
<td>Rural Population (Million)</td>
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<td>China</td>
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<td>Argentina</td>
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</tr>
<tr>
<td>Chile</td>
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<tr>
<td>Agriculture Area (Million hectares)</td>
<td>Agriculture Area (Million hectares)</td>
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<td>China</td>
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<tr>
<td>India</td>
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<tr>
<td>Brazil</td>
<td>264</td>
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<tr>
<td>Chile</td>
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<tr>
<td>Agrifood Exports (USD Billion)</td>
<td>Agrifood Exports (USD Billion)</td>
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<tr>
<td>China</td>
<td>27.18</td>
</tr>
<tr>
<td>India</td>
<td>8.17</td>
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<tr>
<td>Indonesia</td>
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<tr>
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<tr>
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<td>Brazil</td>
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<tr>
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<tr>
<td>Chile</td>
<td>7.44</td>
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Sources: CIA World Factbook (2004/05); FAO country information (2002); FAO indicators (2003); FAOStat (2003); COMTRADE; IMF World Economic Outlook.

This cross-country paper analyzes the main characteristics of the agricultural and food sectors of the nine countries. In doing so, it highlights the similarities and differences between the countries and regions and identifies the factors driving agrifood development in these emerging economies. An analysis of the nine country reports allows us to make the following general observations:

Observation 1. Following economic liberalization in the 1990s, there was strong growth in agricultural output and increased participation in world agrifood trade. According to FAO data, per capita food production in developing countries increased 32% between 1990 and 2005. This growth occurred primarily in the Asia-Pacific (with 36% growth) and Latin America and the Caribbean (with 29% growth) regions. Another positive outcome of reforms and economic liberalization is high agrifood export growth rates across the board. Table 1 shows that – with the exception of Thailand and the Philippines – the annual average growth rates in agrifood exports from ALARN countries were significantly higher than the 4.9% world average in the 1990-2005 period. As a result, these countries have become world leaders in international markets for the main agrifood products.

Observation 2. Agricultural production growth occurred as a result of area growth in Latin America, but primarily due to more intensive use of inputs and productivity growth in both Asia and Latin America.

Observation 3. Despite recent output growth and productivity gains, there are limits to agricultural production expansion, primarily in Asia and particularly for grains. The first constraint is posed by natural resource availability, including land and water. While Argentina, Brazil and Chile may further expand agricultural area by incorporating pasture areas into crop production, this is not possible in many Asian countries. For example, India has one-sixth of the world’s population but only 2.5% of the world’s land resources and 4% of the world’s fresh water resources. Another factor that might limit agricultural expansion in the future is legislation affecting farm structure and, in some countries, imposing size-limits, hindering consolidation to more efficient farm units. In most countries in Asia, the bulk of agricultural production is carried out by hundreds of millions of small household farm units, which cannot realize economies of scale.

Observation 4. Population and per capita income growth, as well as increased urbanization, are driving forces behind food consumption growth and diet diversification. The combined population of the nine ALARN countries in 2005 surpassed 3 billion, equivalent to almost 50% of the total world population. Yet population growth in these countries has been decelerating and only India, Malaysia and the Philippines are expected to have population growth rates above the world average until 2050. The most important factor driving food demand has been per capita income growth since 1990. Annual per capita income growth has surpassed 6% in East Asia and 3% in South Asia but was below 2% in Latin America for the period 1990-2000. Urbanization, which has largely occurred in South America but is still in process in Asia, has also contributed to increased food demand. Together, these forces have led to increases in per capita food consumption and diet diversification. Per capita availability of calories, proteins and fat have all increased over time, while the number of undernourished decreased primarily in Asia and the Pacific. As income rises, famine starts to recede but changes in diet and activity patterns lead to the emergence of new disease problems including obesity, diabetes, and heart disease, as observed in several of the country papers.

Observation 5. Despite these food consumption changes, per capita food consumption in Asia and South America remains below that in developed countries, especially for proteins and high value products. In addition, poverty and undernourishment are decreasing, suggesting potential for continued food consumption growth in the future.

Observation 6. The agrifood sector in these developing countries is going through a structural change process known as “agricultural industrialization,” which includes horizontal integration, industry concentration, changing food distribution, and increased vertical coordination.
One oft-cited issue related to agricultural industrialization is that the transition to a global agrifood system may lead to the exclusion of small farmers and rural entrepreneurs, due to increased capital intensity and transaction costs in global supply chains.

**Observation 7.** Agricultural policy goals and instruments, applied tariffs in agriculture, and openness to trade differ significantly across the two regions. Future growth in South-South agrifood trade – based on apparent trade complementarities between the two regions – would greatly benefit from increased dialogue between policy makers and continued liberalization efforts.