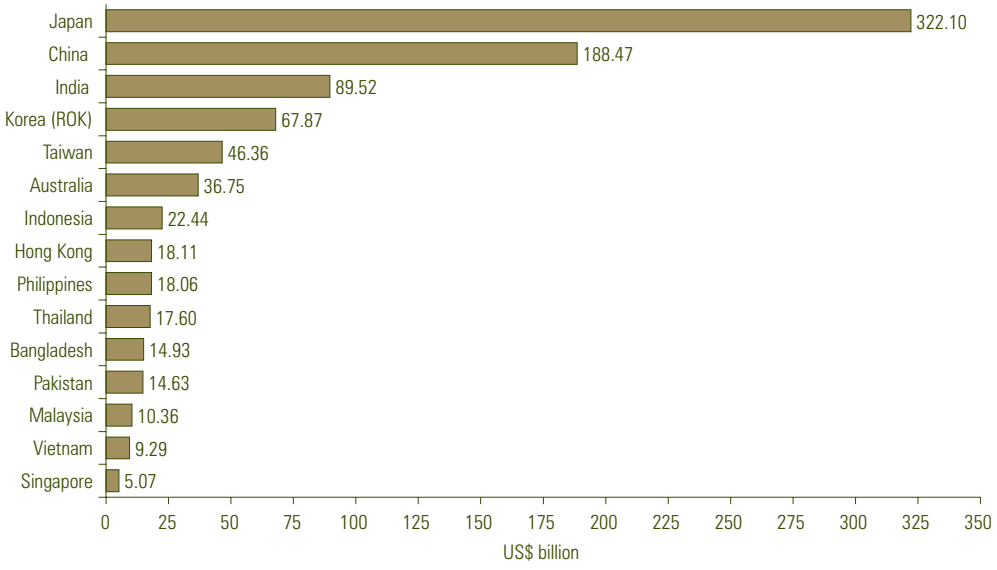
EXECUTIVE SUMMARY

Enormous change has taken place in Asian agrifood consumption patterns in the past thirty or forty years, driven in particular by the effects of economic growth and rises in per capita incomes, combined with population growth and urbanisation. But even greater change is likely to occur in coming decades. This report analyses the key factors that will drive further change in Asian agrifood consumption patterns, and based on some modelling work, looks at the possible scale of Asian agrifood demand by 2010 across 22 major agrifood categories.

ASIAN AGRIFOOD MARKETS – HOW BIG ARE THEY?

Total annual Asian food and beverage expenditure was worth at least US$858 billion by 2000, using conservative calculations based on the most recent available Household Income and Expenditure Survey (HIES) for each Asian economy (but was probably closer to US$1,100 billion), for approximately 3.393 billion people (2000). As would be expected, Japan is by far the biggest market, worth at least US$322 billion based on HIES data – but probably closer to US$500-600 billion per annum, based on the combination of separate data on food and beverage retail sales and foodservice sales. China is the next largest, worth US$188 billion in 2000, followed by India at almost US$90 billion, Korea (ROK) at US$68 billion, and Taiwan at US$46 billion. The Japanese food and beverage market is so large that even when divided into its 8 main regions, the leading ones like Kanto (centring on Tokyo), Kansai (centring on Osaka) and Chubu (including Nagoya) are still bigger than most other Asian agrifood markets.

Leading Asian Food and Beverage Markets, 2000 (US$ billion)



Notes: The figure for Japan based on the government's household income and expenditure survey appears to be considerably understated, due to various factors; based on the government's retail food and beverage sales sample survey, and the foodservice industry's annual sales data, total food and beverage expenditure is probably closer to US$500-600 billion per annum.

Sources: Based on most recent Household/Family Income & Expenditure Surveys for each Asian economy, and on population data and exchange rates for CY2000.

From a combination of population and higher urban per capita incomes, Asia's major cities have the highest concentrations of food and beverage expenditure, both in total and per capita terms. So rather than just compare the relative size of food and beverage markets based on national boundaries, it will be increasingly important to also focus on the comparative sizes of the food and beverage markets of Asia's major cities and urban agglomerations.

KEY DRIVERS OF ASIAN AGRIFOOD DEMAND GROWTH

Population Growth

The continuing growth of Asia's already enormous population is a major factor in the region's large and ever growing demand for food. According to UN data, the world's population reached around 5.67 billion in 1995, with Asia* accounting for 3.17 billion, or just under 56 per cent of the total. By 2010, Asia's population is projected to reach approximately 3.79 billion, still just under 56 per cent of a projected world total of 6.8 billion. Also, by 2010 Asia will have six out of a world total of eleven countries with populations over 100 million. India and China alone are projected to still account for 37 per cent of the world's population by 2010.

Demographic Change

Yet while Asia will continue to be the world's most populous region, its population growth is decelerating. Also, the combination of falling birth rates and extended life expectancy in most Asian economies is resulting in expanding population numbers in older age cohorts. This is particularly noticeable in higher income Asian economies, with Japan leading the trend – 21 per cent of Japan's population is projected to be aged 65 years and older by 2010. But even in China, there could be over 8 per cent of the population, or 110 million people, aged 65 and over by 2010. Older people tend to eat smaller quantities of food than younger people, with more focus on specific characteristics such as quality, health and nutrition benefits. Increasing numbers of people living in aged care facilities will push up the demand for institutional foodservice. Older people living in single households or even as a couple in higher income Asian economies are also purchasing more prepared meals in their food shopping.

At the same time, a large number of developing Asian economies will continue to have largely youthful populations, with very large 0 - 24 age cohorts, well above 50 per cent of their total populations by 1995, and several still projected to be above or near this level by 2010. Younger people tend to eat more of food and beverage products like snacks, soft drinks, icecream and fast food, than older people.

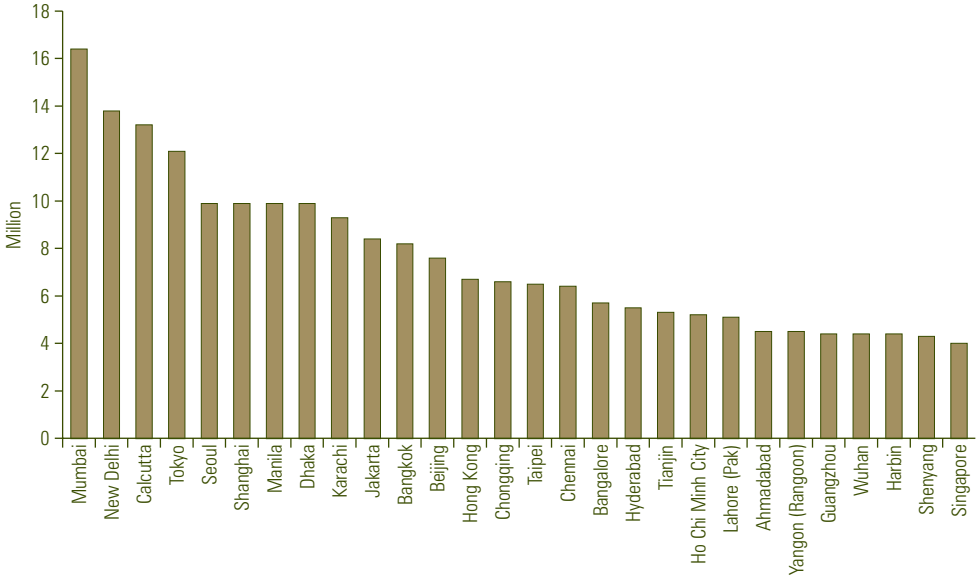
* For the SSII series, Asia is defined as comprising North-East Asia (Japan, China, Hong Kong, Macau, Taiwan, Korea [ROK], North Korea [DPRK], Mongolia), South-East Asia (Singapore, Malaysia, Thailand, Indonesia, Philippines, Brunei, Vietnam, Cambodia, Laos, Burma/Myanmar), and South Asia (India, Pakistan, Bangladesh, Sri Lanka, Nepal, Bhutan, Maldives, Afghanistan).

Urbanisation

A steady trend of urbanisation has been underway in Asia over the past half century, mostly due to economic diversification with growing manufacturing and services sectors, and the accompanying shift of population from rural areas to centres of greater employment opportunities and higher wages. In most of Asia this trend is now accelerating. With rural populations still in the majority in much of developing Asia – most significantly, 72 per cent in India, 64 per cent in China and 59 per cent in Indonesia – this means the addition of large numbers of people to Asia's cities in coming decades. For example, China's urban: rural population ratio is projected to change from 36:64 in 2000 to 45:55 by 2010, which will mean another 160 million people living in Chinese cities. This will be a remarkable change within such a short period.

Asia already contains many of the world's largest cities. By 2000, Asia already had at least 25 cities with a population of 4 million or more, and included in this number at least five of the world's mega-cities – those with a population of 10 million or more (Mumbai, New Delhi, Calcutta, Tokyo and Seoul), as well as several others close to this size (such as Shanghai, Manila, Dhaka, Karachi and Jakarta). China and India alone each have at least 20 cities with over 1 million in population. With the projected growth in Asia's population, combined with increasing urbanisation, the number and scale of Asia's large cities will continue to grow.

Urbanisation in Asia: Leading Cities, 2000 (population of 4 million and over)



This burgeoning of a remarkable array of major cities all across Asia will be a major driver of growth in demand for food and beverages in the Asian region. Urban dwellers generally have higher incomes than those in rural areas, and this translates into greater urban per capita expenditure on food and beverages (though representing a smaller percentage share of their total expenditure than it does for rural inhabitants). Urban dwellers tend to demand larger amounts of food and beverages, of better quality and greater variety, and with a higher

proportion of processed food and beverages. Urban dwellers also tend to use formal market channels more for obtaining their food supplies and use foodservice much more than rural inhabitants. This difference is particularly evident in developing economies. So Asia's cities will increasingly be the region's main hubs of agrifood demand growth. Or, to express it in words similar to those of French historian Fernand Braudel about eighteenth and nineteenth century Europe, Asia's agrifood demand and supply patterns will be increasingly driven by the "ever growing bellies" of Tokyo and Seoul, Mumbai and Shanghai, Jakarta and Bangkok, as well as hundreds of other Asian cities.

Economic Growth and Per Capita Income Growth

The remarkable economic growth of Japan from the 1950s on enabled it to achieve a per capita income level comparable with the leading Western economies by 1970. High levels of economic growth achieved by much of the rest of East Asia from the 1960s and 1970s onward, meant average per capita income growth of over 5 per cent per annum for the leading Asian economies for nearly three decades into the 1990s. South Asia over the same period averaged slightly below 2 per cent per annum, the same as Latin America. But from the start of substantial economic reform in 1991, India's per capita income growth picked up to average 3.5 - 4 per cent per annum over 1991-2001.

It has been widely recognised that the rate of economic growth and rise in per capita incomes is the major driver of growth in per capita food demand. One can commonly see this occurring in approximately three stages:

i. initial per capita income growth is used for increasing consumption of traditional primary staple grains (such as rice), with reduced consumption of traditional secondary staples (such as roots and tubers);

ii. further income growth is used for consumption of an alternative staple grain (such as wheat) and increased consumption of livestock products (meat, fish and dairy products), and other high value foods like fruit and vegetables, and more processed foods, while consumption of the traditional staple grain plateaus;

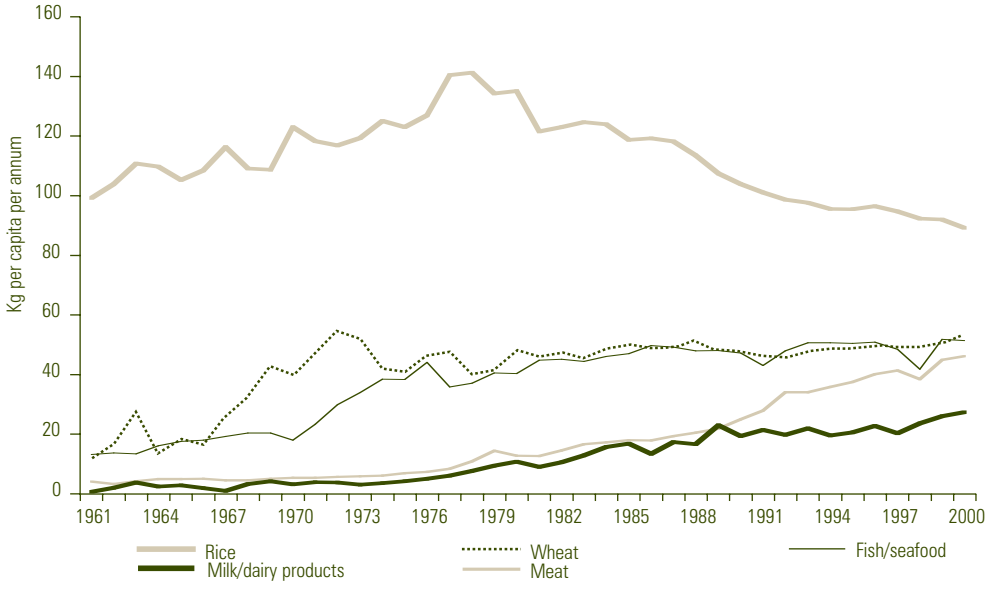
iii. further income growth is used primarily for increased consumption of livestock products and higher value foods, while direct consumption of both traditional and alternative staple grains declines.

This pattern of dietary change is particularly evident in the initial stages of per capita income growth, from about US$1,000 up to about US$7,000. However, all rises in income affect the pattern of food and beverage consumption.

This per capita income effect on the pattern of agrifood consumption can be seen in every Asian economy. For example, one can look at the case of Korea (ROK), which experienced 3 per cent annual per capita income growth over 1960-85, and around 5 per cent per annum for most of the 1980s and 1990s, so that it passed US$10,000 per capita by 1995 (though subsequently shrank somewhat due to the Asian crisis and large Won depreciation against the US$). Korea's per capita rice consumption continued to increase to a peak of around 140 kg in the late

1970s, after which it started falling, down to around 90 kg by 2000, while direct consumption of wheat and wheat products is still going up (quite apart from feed wheat use). Meat consumption has grown ten-fold and continues to increase. Consumption of milk and dairy products has grown almost ten-fold but is still less than half the level of Japan, so it is likely to grow further. Fish and seafood consumption grew almost four-fold over the period.

Changing Food Consumption in Asia: Korea (ROK) 1961-2000
(kg per capita per annum)



Notes: In this graph, wheat represents wheat grain equivalent of wheat and some wheat products (eg flour) consumed directly for food; use of wheat for feed is not included here.

Sources: FAO Database, *Food Balance Sheet Korea (ROK)*, 1961-2000

Another factor affecting the pattern of agrifood demand growth within an economy is the degree of equality or inequality of income distribution. The urban/rural economic divide appears to be the biggest factor in unequal income distribution across most of developing Asia. This is particularly seen in the different levels of average per capita expenditure on food and beverages in urban and rural areas, with urban levels usually double those of rural areas.

The 1990s brought significant disruptions to the upward pattern of economic growth in East Asia, including the bursting of Japan's 1985-1990 bubble economy and subsequent decade-long slowdown, and the general watershed of the 1997 Asian financial crisis. These disruptions marked a new stage in the region's economic development, with less uniform trends and more differentiated performance among economies, and less certainty about future per capita income growth. So far, East Asia as a whole has continued to enjoy the highest average GDP per capita growth since 1999, compared to other parts of the world. But many challenges remain for all Asian economies to tackle, with the success or otherwise of each Asian economy mainly determining the future course of per capita income growth of its citizens.

To incorporate a broad range of future possible per capita income growth paths in Asia, and their effects on agrifood demand, the modelling done for the SSII project used three different scenarios of possible GDP (and GDP per capita) growth to 2010 - low, medium and high - for each major Asian economy, as explained further below.

Agrifood Prices

A key consideration for the majority of Asian consumers in their purchasing choices of food and beverages is, of course, price. The actual price and price structure for each food and beverage product within an economy will be affected by many factors, including international agricultural commodity prices, seasonal and cyclical fluctuations in local agricultural production, domestic systems of agricultural production, agrifood processing and distribution infrastructure, the nature of government policies applied to each part of the agrifood chain (including taxation, subsidisation and regulation), an economy's international and domestic trade regimes, and general economic conditions. Prices vary considerably for many agrifood products from one Asian economy to another, and also in different regions within an economy, due to one or more of these factors, and affect the level of consumer demand.

Other Factors

A host of other factors is also influencing the pattern and direction of Asian agrifood demand trends. Asia is increasingly affected by the globalisation of diets, though some strong cultural differences remain, prominently those related to religious or customary dietary restrictions. There is growing consumer interest in food safety, food integrity, food quality, and health and nutrition issues, particularly among higher income consumers. (The 2003-2004 outbreak of highly pathogenic avian influenza [HPAI, sub-type H5N1] has been yet another instance in recent years of a serious livestock disease outbreak sharpening Asian consumer concerns about food safety.) Asian economies are still making up their minds about the issue of GM foods, though consumers in most higher income Asian economies, especially Japan, Korea (ROK), Taiwan and Hong Kong, have shown reluctance to accept them, and partly in reaction are increasingly choosing foods labelled non-GM or organic. Changing consumer lifestyles, including more women in the formal workforce and smaller households across Asia, are intensifying consumer demand for convenience in their food and beverage expenditure, including more eating away from home and more purchases of prepared foods and meals. In addition, the modernisation of food and beverage processing, retailing and foodservice, as well as consolidation of corporate agrifood players within each market, is translating into larger-scale sourcing of agrifood products and materials from fewer, bigger agrifood companies, both Asian and foreign, operating in Asian markets.

MODELLING ASIAN AGRIFOOD DEMAND TRENDS TO 2010

As one way of gaining a reasonably credible picture of the possible future scale of Asian agrifood demand, some modelling work was commissioned from the Washington-based International Food Policy Research Institute (IFPRI), part of the Consultative Group on International Agricultural Research (CGIAR) network, in conjunction with some supplementary work by a team from the Australian National University (ANU). The IFPRI IMPACT Model was used to project the likely scale of total annual Asian demand (plus

domestic supply and net trade) by 2010 for 22 agrifood products, using a base year of 1997 (average of three years 1996-98), arising from per capita income growth based on three scenarios of GDP growth (low, medium and high) for each major Asian economy.

The 22 agrifood products or product groupings covered by IMPACT are: all grains (also disaggregated into rice, wheat, maize, other grains), soybeans, oilseed and other cakes and meals, edible oils, all meat (also disaggregated into pork, poultry meat, beef and buffalo meat, and sheepmeat/goatmeat), milk and milk products, roots and tubers, potatoes, temperate vegetables, tropical and sub-tropical fruits, temperate fruits, sugar, and other natural sweeteners. The detailed results for each of these agrifood products is presented in graphs, tables and text, for Asia as a whole, for each of the three regions of North-East, South-East and South Asia, and for each of the 17 major Asian economies or grouping of economies covered in the modelling work.

From the IMPACT modelling results it is clear that even if Asian economies grow at only modest rates to 2010, there will still be a significant increase in Asia's total annual agrifood demand from the level of the base year 1997. But if Asian economies grow at medium or high rates, there will be a remarkable increase.

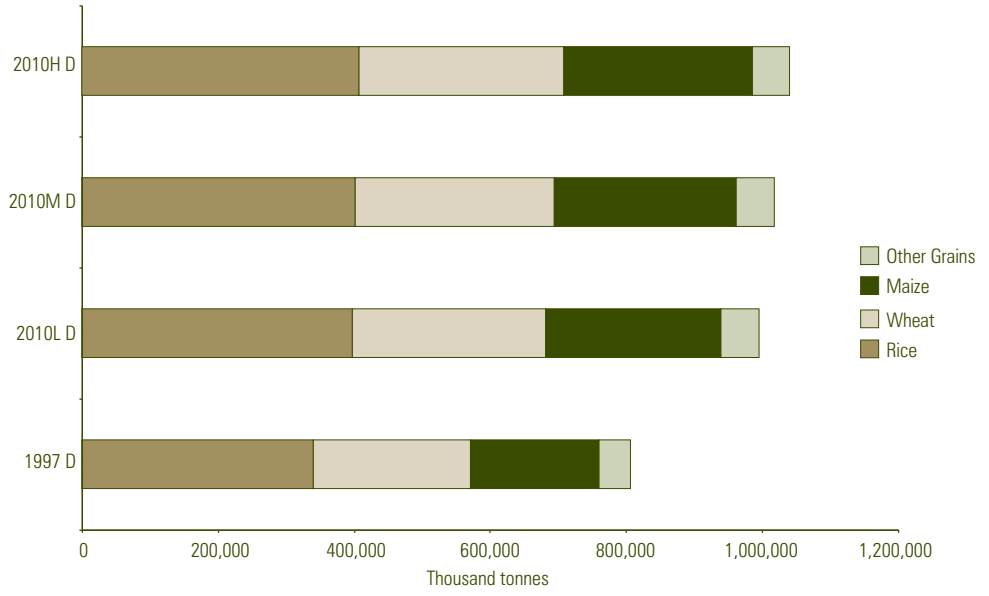
A summary of the demand results is shown in the first table below, starting with the size of actual total annual consumption for each agrifood category in the base year 1997, then the possible size of total demand by 2010 under each of the three GDP growth rate scenarios, and what this would mean in terms of net increase in demand for each category. A second table follows which shows the consequent possible scale of annual net trade by 2010.

Key results of the modelling include:

- Over the period 1997-2010, Asia's total annual demand for grains could expand from 806 million tonnes in the base year 1997 to within a range of 996 - 1,040 million tonnes by 2010. This would mean an increase of 190 million tonnes in the case of low GDP growth rates, but possibly of between 211 and 234 million tonnes in the case of medium or high economic growth rates. Asia's annual net imports of grains could rise from around 58 million tonnes in the base year to 107 - 119 million tonnes by 2010. Within grains, total annual wheat demand could rise from 232 million tonnes in 1997 to between 285 and 300 million tonnes by 2010, an increase of perhaps 53 - 67 million tonnes, and with annual net imports projected to rise from 28 million tonnes to 48 - 55 million tonnes.

- Asia's total demand for meat could be 29 million tonnes higher by 2010 compared to the level of 1997, under conditions of low average economic growth, but could be as much as 39 to 50 million tonnes higher in the case of medium or high economic growth rates. This could translate into annual net imports of meat of between 2.1 (low scenario), 5.7 (medium) and 9.3 (high) million tonnes by 2010. Within this, Asian demand for beef (and buffalo meat) is projected by IMPACT to rise from 11.7 million tonnes in 1997 to a range of 17 million tonnes (low scenario), 19.3 (medium) or 21.5 (high) million tonnes, with net imports of between 1.24 (low), 2.3 (medium) or 3.1 (high) million tonnes. Pork is projected to remain Asia's most consumed meat, with total demand likely to rise from 45 million tonnes in 1997 to between 58 - 66 million tonnes by 2010, with annual net imports of 0.14 million tonnes (low), or 1.4 (medium) or 2.5 (high) million tonnes.

Asian Grains Demand Trends by Type 1997-2010 ('000 mt)
– based on Low/Medium/High Per Capita Income Growth Rate Scenarios



Notes: D = Demand; P = Production; NT = Net Trade
2010L D = 2010 volume ('000 mt) of total demand based on per capita income low growth rate scenario
2010M D = 2010 volume ('000 mt) of total demand based on per capita income medium growth rate scenario
2010H D = 2010 volume ('000 mt) of total demand based on per capita income high growth rate scenario
Source: *SSII Asian Agrifood Demand Trends Modelling Consultancy by IFPRI/APSEM, 2001*

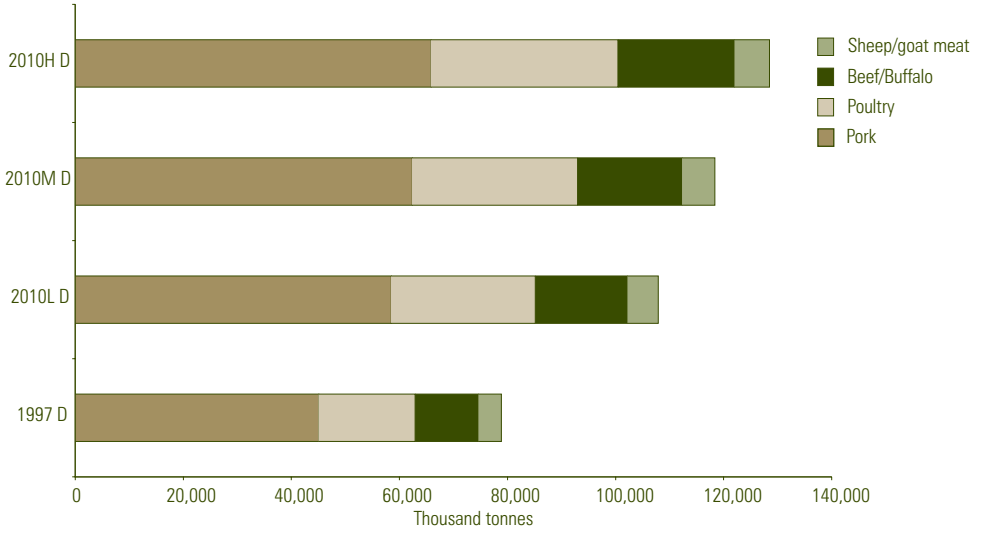
- Asia's total consumption of milk and milk products (expressed in raw milk equivalent terms) expanded from around 35 million tonnes in the early 1960s to 130 million tonnes by the base year 1997. Even in the case of low economic growth over the 1997-2010 period, Asia's total dairy demand could expand to 171 million tonnes. But in the case of medium or high economic growth, total demand could reach between 187 and 207 million tonnes by 2010. This would represent a demand increase in the range of 41 - 78 million tonnes by 2010. Within this increase in overall volume, the proportion of processed dairy products consumed is likely to expand further. Asia's long standing gap between dairy production and demand is likely to continue to grow, so that Asia's annual net dairy imports could range between 7 million tonnes (low growth scenario), and 13 - 21 million tonnes (medium/high growth scenarios) by 2010.

- Asia's total annual consumption of edible oils is projected to rise from 40 million tonnes in 1997, to perhaps 55 million tonnes by 2010 under a low scenario, or else 60 (medium) or 65 (high) million tonnes. North-East Asia and South Asia would continue to have large net imports under all three scenarios, while South-East Asia would expand its very large net exports (mainly palm oil). Importantly, as their per capita incomes rise, Asian consumers are varying and diversifying the types of edible oils they consume, and with growing demand for healthier oils.

- Total annual demand for temperate vegetables is projected to rise from 349 million tonnes in 1997, to between 447 million tonnes (low scenario), or 474 (medium) or 500 (high) million tonnes by 2010, with China and India by far the largest consumers by volume, but higher income economies remaining more significant in terms of value. This represents a possible increase in annual demand of 97 - 151 million tonnes. A key consumption change that will emerge more clearly, is that as their per capita incomes rise, Asian consumers increasingly are replacing coarser, cheaper and higher volume vegetables, with more varied, better quality, more expensive and often lower volume vegetables.

- Asia's demand for fruit, both tropical/sub-tropical and temperate, is projected to continue growing significantly. Annual demand for tropical/sub-tropical fruit could be 23 - 39 million tonnes higher by 2010 compared to 1997, and temperate fruit could be 15 - 25 million tonnes higher. Volume demand for the overall category of fruit (and vegetable) juice may have plateaued in higher income economies, but all across Asia, there is increasing demand by higher income consumers for 100 per cent pure juice of better quality, instead of lower cost diluted juice drinks.

Asian Meat Demand Trends by Type 1997-2010 ('000 mt)
– based on Low/Medium/High Per Capita Income Growth Rate Scenarios



Notes: D = Demand; P = Production; NT = Net Trade
2010L D = 2010 volume ('000 mt) of total demand based on per capita income low growth rate scenario
2010M D = 2010 volume ('000 mt) of total demand based on per capita income medium growth rate scenario
2010H D = 2010 volume ('000 mt) of total demand based on per capita income high growth rate scenario

Source: *SSII Asian Agrifood Demand Trends Modelling Consultancy by IFPRI/APSEM, 2001*

- Asia's major growth in sugar consumption (that is, centrifugal sugar derived from sugar cane or sugar beet) over recent decades can be expected to continue. Total consumption of 39 million tonnes by 1997 is projected to increase to either 51 million tonnes by 2010 under a low scenario, or 55 million tonnes under a medium scenario, or even 61 million tonnes under a high scenario. Moderate but significant growth in per capita sugar demand in the lower income economies of Asia, especially in China, India and Indonesia, will underlie this trend. Asia's annual net sugar imports could rise from 3.3 million tonnes in 1997, to between 5.8 (low), 7.9 (medium) or 10.4 (high) million tonnes by 2010.

Asian Agrifood Demand Trends to 2010: Summary of IMPACT Modelling Results
Possible Range of Total Demand (million mt)

	Base year 1997 (average of 1996-98) (million mt)	2010 Demand (low scenario) (million mt)	2010 Demand (medium scenario) (million mt)	2010 Demand (high scenario) (million mt)	Range of projected net increase 1997-2010 (million mt)
Grains	**806.1**	**995.9**	**1,017.6**	**1,040.1**	**189.8 - 234.0**
Rice	339.6	397.6	402.2	408.1	58.0 - 68.5
Wheat	232.4	285.5	292.7	299.9	53.1 - 67.5
Maize	188.3	257.5	267.7	277.3	69.2 - 89.0
Other Grains	45.8	55.3	55.1	54.8	9.5 - 9.0
Soybeans	**35.7**	**47.6**	**51.8**	**55.7**	**11.9 - 20.0**
Meals (oilseed & other)	**53.1**	**77.1**	**81.6**	**86.5**	**24.0 - 33.4**
Edible Oils & Fats	**40.1**	**54.9**	**59.6**	**64.7**	**14.8 - 24.7**
Meat	**78.8**	**107.9**	**118.3**	**128.5**	**29.1 - 49.7**
Pork	45.0	58.5	62.3	65.8	13.5 - 20.8
Poultry meat	17.8	26.7	30.6	34.6	8.9 - 16.8
Beef & buffalo	11.7	17.0	19.3	21.6	5.3 - 9.9
Sheep/goatmeat	4.3	5.7	6.1	6.5	1.4 - 2.2
Milk & milk products	**129.7**	**170.7**	**186.7**	**207.4**	**41.0 - 77.7**
Temperate Vegetables	**349.1**	**446.5**	**474.3**	**500.0**	**97.4 - 150.9**
Potatoes	**89.6**	**114.4**	**124.8**	**136.2**	**24.8 - 46.6**
Tropical Fruit	**75.8**	**98.6**	**105.6**	**114.3**	**22.8 - 38.5**
Temperate Fruit	**42.1**	**56.6**	**62.0**	**66.9**	**14.5 - 24.8**
Sugar	**38.9**	**51.2**	**55.5**	**60.7**	**12.3 - 21.8**

Notes: Some sectoral sub-totals and totals may not sum exactly due to rounding of sub-totals.
Source: SSII Asian Agrifood Demand Trends Modelling Consultancy by IFPRI/APSEM, 2001

Asian Agrifood Demand Trends to 2010: Summary of IMPACT Modelling Results
Possible Range of Net Trade*, 2010 (million mt)

	Base year 1997 (average of 1996-98) (million mt)	2010 Net Trade (low scenario) (million mt)	2010 Net Trade (medium scenario) (million mt)	2010 Net Trade (high scenario) (million mt)
Grains	**- 58.2**	**- 107.0**	**- 113.1**	**- 119.2**
Rice	9.0	7.8	7.2	6.5
Wheat	- 28.2	- 48.1	- 51.6	- 55.1
Maize	- 29.8	- 52.8	- 56.0	- 59.3
Other Grains	- 9.2	- 13.9	-12.7	- 11.3
Soybeans	**- 12.6**	**- 15.5**	**- 18.4**	**- 21.0**
Meals (oilseed & other)	**- 4.2**	**- 13.2**	**- 14.6**	**- 16.3**
Edible Oils & Fats	**2.7**	**4.1**	**1.9**	**- 0.4**
Meat	**- 2.5**	**- 2.1**	**- 5.8**	**- 9.3**
Pork	- 0.4	- 0.1	- 1.4	- 2.5
Poultry meat	- 0.8	- 0.6	- 1.9	- 3.2
Beef & buffalo	- 1.2	- 1.2	- 2.3	- 3.1
Sheep/goatmeat	0.1	- 0.2	- 0.3	- 0.5
Milk & milk products	**- 9.9**	**- 7.1**	**- 13.2**	**- 21.0**
Temperate Vegetables	**- 0.5**	**5.6**	**- 1.8**	**- 8.3**
Potatoes	**- 1.8**	**0.5**	**- 2.1**	**- 4.8**
Tropical Fruit	**- 2.6**	**- 0.7**	**- 4.1**	**- 8.3**
Temperate Fruit	**- 1.4**	**- 0.6**	**- 2.4**	**- 4.0**
Sugar	**- 3.3**	**- 5.8**	**- 7.9**	**- 10.4**

Notes: * minus sign = net imports; no minus sign = net exports
Some sectoral sub-totals and totals may not sum exactly due to rounding of sub-totals.
Source: *SSII Asian Agrifood Demand Trends Modelling Consultancy by IFPRI/APSEM, 2001*

Demand trends for a number of other agrifood categories not specifically included in the modelling were also analysed, such as beverages, pulses, and fish and seafood. Key findings in these sectors include:

- Fish and seafood still comprises the single most important source of animal protein in much of Asia, with the level of per capita fish and seafood consumption as great as or greater than total per capita meat consumption in many Asian economies. Total annual fish and seafood consumption reached approximately 37 million tonnes in the base year 1997, and over 40 million tonnes by 2001, and one could conservatively estimate this figure reaching at least 50-60 million tonnes by 2010. In addition to greater volumes, as their per capita incomes rise, Asian consumers look for better quality and a greater variety of fish and seafood.

- In the category of non-alcoholic beverages, while demand growth for traditional carbonated beverages is slowing, there is a major shift by higher income consumers towards beverages with greater perceived health benefits such as bottled water and 'near-water', pure fruit and vegetable juices, and tea beverages. Coffee consumption is also growing. In particular, while Asia has the lowest average per capita consumption of bottled water in the world, at around 6 litres by 2002, it also has the highest level of annual growth in volume of demand (15 per cent in 2002), so that major growth in Asian bottled water consumption can be forecast.
- Asia's beer consumption reached approximately 382 million hectolitres by 2001, with average annual volume growth of about 5 per cent in recent years. Given the still moderate average per capita intake levels in key developing Asian economies with large populations, notably China, Vietnam, Thailand and the Philippines, and also India and Indonesia, there is strong potential for further major growth in Asian beer consumption. This will mean further significant growth in Asia's demand for malting barley and barley malt.
- While grape-based wine is a relatively new alcoholic beverage for the majority of Asian consumers, and national average per capita consumption levels are still very low, yet consumption is growing rapidly in some markets. So Asia's total consumption of around 755 million litres by 2001 can be expected to grow markedly in the coming decade.

A key issue is that the higher the level of income growth and consequently per capita demand, in general, the less likely that Asia's production of a considerable number of agrifood categories would attain the same rate of growth in output in order to keep up with demand, so that higher levels of imports would probably result. On the other hand, in agrifood categories where Asia has traditionally been a strong surplus producer, in the case of low income growth with consequent low per capita demand growth, the region's existing production surplus and net exports would probably increase. But in the case of medium or high growth, its net trade surplus could plateau or even fall somewhat.

For example, the overall trade deficit for temperate vegetables of 0.5 million tonnes in 1997 could possibly change to a net trade surplus of 5.6 million tonnes by 2010 in the case of low growth on average for the region. But in the case of medium or high income growth with consequently higher demand, the region's net trade deficit in temperate vegetables could increase to perhaps 1.8 (medium) or 8.3 (high) million tonnes by 2010. Of course, within this overall trade picture there is a different set of net trade results for each Asian economy, and different trends for each different item within these aggregated agrifood categories.

An important point to keep in mind in looking at the modelling's net trade results, is that the modelling in general assumed levels of trade protection for each Asian economy as existed at the conclusion of the Uruguay Round (due to lack of later reliable data on summary levels of protection for most Asian economies). With further trade liberalisation, the results could be different, with probably higher levels of imports for a number of agrifood categories, as well as higher levels of exports in agrifood categories where Asian economies might be strong producers.

It was evident in comparing the 1997 (1996-98) base year data and the modelling projections with more recent FAO and USDA data (for 1999-2002) that Asian consumption of the agrifood categories included in the modelling has in most cases recovered from any declines occasioned by the Asian financial crisis, and generally continued to grow in line with the projections. In a few cases, as detailed in the relevant part of the text, there may have been slower recovery from the crisis and slower growth than projected; for example, by 2001 Indonesia's total poultry meat consumption at 0.82 million tonnes had still not regained its 1996 pre-crisis peak consumption level of 0.96 million tonnes, so that it may not quite reach the projected range of 1.25 - 1.8 million tonnes by 2010. On the other hand, in some cases, consumption may have grown faster than projected; for example, Thailand's total consumption of wheat and wheat products was projected to rise from 0.56 million tonnes in 1997 to between 0.68 and 0.76 million tonnes by 2010, but over 1999-2001 total consumption already averaged 0.7 million tonnes, so the projection range appears likely to be exceeded. The projections are intended to be indicative, rather than definitive, and it will be important to continue monitoring consumption trends against the projected ranges.

OTHER KEY TRENDS

However, just as important as the likely increases in ***quantity*** of Asian total demand for each agrifood category, is the ongoing increase in demand for better ***quality*** of agrifood products. As per capita incomes rise, consumers look not just for more rice or wheat, meat and fish/seafood, dairy products, fruit and vegetables, and so forth, they also look for better quality products in these food categories. This pattern can be seen across the whole spectrum of food and beverage products, from apples to orange juice, from fish and seafood to edible oils, from pork to pulses. So in higher income Asian economies, even where the rate of demand growth for an agrifood product might be smaller in volume terms in future than in the past, consumers are choosing better quality products within the same volume of per capita consumption, and with more specific characteristics such as with better guarantees of food safety, or with additional nutritional features, and usually at a higher unit price. Higher income consumers are also increasingly choosing cleaner, more hygienic and better presented surroundings for purchasing or consuming food and beverage products. This trend can also be seen occurring among higher income consumers in lower income Asian economies.

The projected major increases in the scale of Asian agrifood demand by 2010 (and beyond), and just as importantly, the ever growing higher quality and more specific characteristics of agrifood products looked for by Asian consumers, will transform the landscape of Asian domestic agrifood supply systems as they endeavour to meet these demands by consumers. Agribusiness will increasingly replace the old subsistence and cash crop agricultural systems, and Asian agriculture will become more efficient. Asian agrifood companies will strive harder to be competitive suppliers of the agrifood products demanded by the region's consumers. As Asian agrifood markets grow larger and more valuable, there will also be even keener interest by foreign agrifood players in participating in supplying those markets, who will compete determinedly to meet the quality and other characteristics demanded by higher income consumers in particular.

CHALLENGES FOR AUSTRALIA

It will be important for Australian agrifood suppliers to consider their future potential capacity and strategies to supply both the increasing volumes and additional product characteristics that will be required by expanding Asian agrifood markets, not just a year or two ahead, but in the coming five to ten years. Improving information on and understanding of continuing changes in agrifood demand (and supply) patterns in Asian agrifood markets will be a crucial part of such planning.

Considering the very large volumes of potential demand projected for each agrifood category by the IMPACT modelling, compared with the relatively moderate volumes of most of Australia's agrifood export capacity**, a key strategy for Australia will be continuing to seek to maximise the average unit price for exported agrifood products, by excelling in the product quality and precise characteristics demanded in particular by higher income Asian consumers. There should also be more emphasis given by Australian suppliers to developing and supplying unique high quality food and beverage products with a distinct Australian identity but which are comprehensible and of appeal to Asian consumers, including marketable brand names and packaging. Australian agrifood suppliers should also be giving increased attention to the full range of potential customers in Asian markets.

** See Table (Australia's Agrifood Exports to the World: Main Categories by Volume ['000 tonnes], AFY1999-2002), in Conclusion.