Australia agriculture in the Asian Century, Food Bowl or Global Farmer

Geographically Australia is a part of Asia but the role that Australia will play in this Asian Century is still not clear. This essay argues that there is little opportunity for significant growth in Australian agriculture and without significant growth Australia will never be the food bowl of Asia. There is however an opportunity for Australian agriculture to adopt a new paradigm of engagement with Asia. This paradigm of commercial collaboration such as the Cooperative Research Centre model in Australia would combine the best of Australian agricultural technology, science, management and Brand Australia to generate large scale production on some of the best agricultural land in the world which happens to be in Indonesia; the north paddock over the water.

Introduction

Next year will mark 20 years since the first time I left Australian shores, it is also 20 years since the first time I visited Asia. Twenty years ago I was working for the Heytesbury Group, managing Walhallow station a very large cattle breeding enterprise in the Northern Territory turning off over 10,000 head of cattle per year, mostly into the live export trade. In 1992 I was fortunate enough to be awarded a Nuffield Farming scholarship to study the live cattle trade in South East Asia. Asia instantly fascinated me, the sounds, smells and the buzz; after 20 years Asia is still is so foreign, exotic and challenging to me.

My Nuffield scholarship coincided with the development of an integrated calf to customer strategy in the Heytesbury Group and in the ensuing five years we as a group exported cattle, chartered ships, set up feedlots, sold branded boxed beef and in 1996 won an Australian export award. In 1997 I was the managing director of the Heytesbury Beef Asian operations when the Asian financial crisis struck, as a group we had adjusted our risk profile prior to the financial crisis and by mid 1998 Heytesbury Beef had made a complete exit from all Asian operations.

I returned to Indonesia in 2001 as the managing director of an Investment Fund that was established with the late Charles Henry (Harry) Perkins AO. Harry was a visionary, a pioneer of Australian agriculture, founding chairman of Wesfarmers, chairman and champion of the Nuffield Farming Scholarship Trust. Harry and I both believed that Australia and Indonesia are interlinked and that the mutual co-operation of Indonesian and Australian agriculture was essential for both countries. Harry sadly passed away on December 15 2002 and with him so did the Investment Fund, I stayed on in Indonesia.

In 2002 I was unprepared for the complexity of doing business in a country as diverse, complex and culturally sophisticated as Indonesia, exporting to a country is not the same as becoming part of the country's day to day business environment. In Australia we are very "I" centric, I am here, I am..... business in Indonesia is done on the basis of consensus, co-operation and collaboration and whilst we may have knowledge and we may even bring answers we will only ever be one part of a solution. To this end I am forever indebted to Pak Basuki Widjaja Kusuma who in 2002 took me under his wing and has mentored, advised and taught me as much as it is humanly possible to teach an unsophisticated cattleman from the outback of Australia about the ways of Indonesian business. I have been a difficult pupil and Pak Basuki's patience, understanding and friendship are testimony to the quality of his character.

Michael Sheehy

Jakarta, October 2012

Can Australia become The Food Bowl of Asia?

Australian agriculture is a vital industry sector; the gross value of Australian farm production in 2009-10 was A$48.7 billion. Australian farmers export around 60 percent of what they grow and produce. In 2010-11 Australia's farm exports earned the country A $32.5 billion[1]. Despite these impressive statistics I will argue that Australia will never be classified as "The Food Bowl of Asia".

Asia has a population of 4.2 billion people, while Australia's population is 22 million people, meaning the country represents 0.5 percent of the Asian population; an insignificant amount. Agriculture in Australia is highly developed and arguably already a mature industry. As a result Australia enjoys a significant surplus of food, it is estimated that Australian agriculture daily feeds 40 million people in addition to the country's existing population[2].

The Australian food surplus is exported globally approximately 64 percent is exported to Asia[3]. This means that Australian agriculture is feeding slightly over 25 million people per day or 0.6 percent of the Asian population, an insignificant number of people in the greater scheme of Asian food supply. If Australian agriculture is feeding approximately one in every two hundred people in Asia, it is hard to declare Australia a major supplier of food to Asia, let alone the "Food Bowl of Asia".

Following this premise, this essay poses the question:

"Can Australian agriculture significantly increase production to the point of becoming a major food supplier to Asia?"

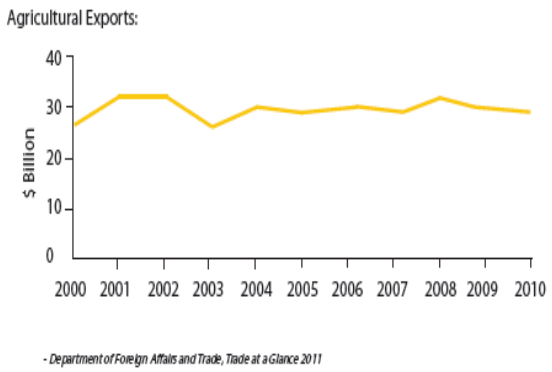

Figure 1 Value of Australian agricultural exports has been static for more than ten years

If Australia agriculture was to supply as much as 1 percent of Asia's food requirements, it would require an approximate doubling of current production levels. This increase could be achieved by increasing yields from the existing agricultural estate and opening up further agricultural land.

A significant increase in Australia's agricultural production would be possible by adopting better farming practices and allowing science to play a more significant role in agricultural production.

I believe that Australian farmers are already the best in the world, they have been largely unsubsidised, have had to work with one of the harshest environments in the world and have achieved world's best agricultural practice in almost every commodity that is produced. Australian

farmers are innovative, hard working and are constantly searching for better farming practices and techniques.

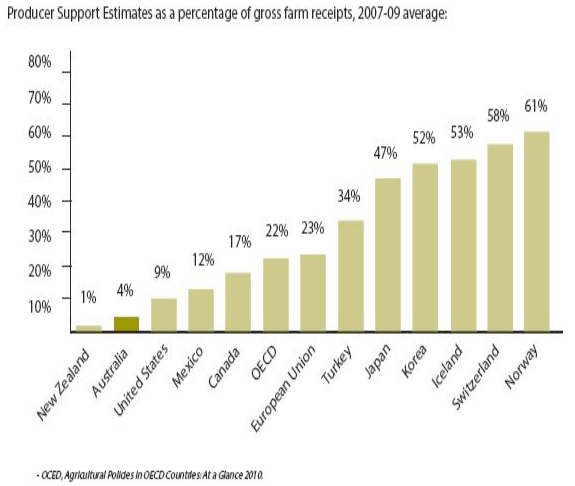

Figure 2 Australian farmers are some of the least subsidised farmers in the world

As such, there is room for constant incremental gain in Australian agriculture[4], but existing mastery of world's best farming techniques means there will be no quantum leaps in production through the implementation of better farming practise.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) has played a vital role in Australia for almost 100 years and has been responsible for larger agricultural gains through constantly evolving science and technology. However, further gains, especially those that may be realised by genetically modified organisms (GMO) or animal cloning face stern resistance in Australia from political, environmental and civil society groups. Evidence of this resistance can be seen within the agricultural policy of the Australian Greens, a political party which now commands nationwide electoral support of more than 10 percent, enjoys the balance of power in the Senate and partial balance of power in the House of Representatives. Although the party is by no means the only font of resistance to GMOs, the Australian Greens policy[5] demonstrates opposition to broadening use of such technology held by a small yet politically significant sector of the electorate. The matter is highlighted to show the political and societal limitations to large scientific increases through the use of GMO technology.

Given that the quantum leaps in production are not viable for such reasons, it could be assumed that significantly greater yields from the current agricultural estate are not possible. This then leads to the option of opening up further land for the agricultural estate in order to increase production.

The current state of the agricultural estate, however, is one of decline. Competition from mining, and urban growth, in addition to declining infrastructure, environmental restructuring and a lack of available services are leading factors contributing to this decline and are unlikely to see the trend reversed in the short term.

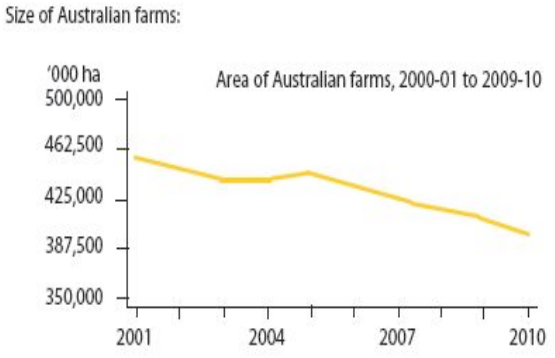

Figure 3 Australian farming estate is in decline

The vision of large-scale agricultural development in the country's northern regions is one that has been reiterated for almost 150 years[6]. However, despite prohibitive cost structures and the existence of a single-class wage system all but ruling out the feasibility of such a plan, the notion

of enlarging the estate through a system of grand irrigation programs is not easily dispelled[7][8][9]. Isolation and extreme conditions mean that with the exception of young foreign visitors on working holiday visas who are drawn to the far north, the region continues to suffer problems in attracting labour.

Furthermore, with Australia wedded to a single-class system and without importation of cheaper labour from abroad – which in itself would be politically unpalatable – the likelihood of drawing workers to the far north remains low. However, even such an ambitious scheme, as has been recently trialled with limited numbers of South Pacific nation's citizens given visas[10] to help fruit growers with labour shortages, has failed to save certain industry sectors. Moreover, combined with declining revenues and increasing costs, fruit growers are frequently left with little choice but to let their crops rot on the ground[11].

Figure 4 Oranges left to rot on the ground in the Riverina, Australia in 2012.

Another factor that potentially limits expansion of the existing estate is political hostility towards foreign investment in Australian agriculture. This has been shown by the Liberal-National coalition opposition[12] in resistance particularly towards Chinese investment and/or interest in large projects including Queensland's Cubby Station and Western Australia's Ord River Irrigation Expansion Project stage II.

Essentially, the majority of Australians have chosen lifestyle over productivity, which is great, as long as you can afford it. Professor Ross Garnaut, the Hawke government economist who predicted the rise of China, has warned Australians to prepare for a living standards bust as the resources boom gives way to falling export prices and a slump in mines development. "I think we're going to have a very difficult time adapting to the decline in living standards that's going to be a necessary part of the adjustment to the end of phase one and two of the boom," he recently told a conference on the rise of Asia.

Indonesia – the neglected giant to our north

Everybody wants to "get into" China. I am convinced that Australian agricultural opportunities lay in Indonesia, our closest and little understood neighbour. Agriculture is arguably the most important industry sector in Indonesia, employing over 44 million people and more importantly feeding 250 million people. Indonesia is not self sufficient in several key crops but does enjoy an agricultural trade surplus of US$20 billion[13].

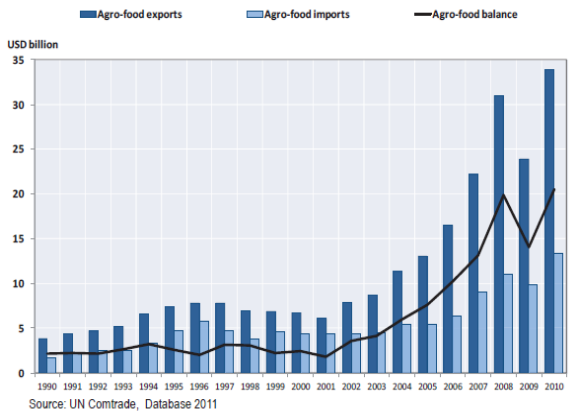

Figure 5 Indonesian Agricultural Trade Balance

This is somewhat distorted when it is considered that palm oil products alone account for a trade balance surplus of US $9.3 billion.

The average growth rate of the trade balance surplus for Indonesian agricultural products in the period 2003 - 2010 reached 54.93%, which is dominated by palm products both CPO and palm kernel oil [14].

Figure 6 Mature Palm Oil Plantation

If Indonesia is even close to self-sufficiency in food then its agricultural sector can be measured at four times the size of Australia's, from a land base a quarter the size and it could be argued that Indonesia is already a more significant Food Bowl of Asia than Australia will ever be.

Indonesia is an archipelago stretching east to west some 5,000 kilometres between 11 degrees south and six degrees north of the equator. The country's people comprise more than three hundred ethnic groups speaking seven hundred languages. Despite its proximity and the number of Australian visitors to Bali, reportedly 900,000 in 2011, many Australians have little knowledge of Indonesia.

Figure 7 Raja Ampat Islands, Papua province, Indonesia

The McKinsey Global Institute stated in a 2012 report[15] that "Indonesia is in the throes of a rapid transformation. The Indonesian economy is larger, more stable, and more advanced than many companies and investors around the world realize." Indonesia is currently the world's 16th-largest economy, with gross domestic product of about $846 billion last year, according to IMF data cited in the McKinsey report.

That may rise to $1.8 trillion in 2017, compared with Germany's $3.9 trillion economy and UK GDP of $3.2 trillion in the same period, IMF data shows, according to McKinsey. Only China, the US, India, Japan, Brazil and Russia will be bigger than Indonesia by 2030, the report said.

Figure 8 Jakarta a modern, vibrant, dynamic and rapidly expanding city

The Indonesian economy is already more than 75% of the size of the Australian economy and growing at more than three times the rate. Bank Indonesia has forecast that 2012 GDP growth in Indonesia will be 6.4 per cent. This growth is expected to be underpinned by domestic consumption, the main driver of growth in Indonesia.

Figure 9 Pacific Place, one of the many new modern malls to appear in Jakarta, domestic consumption is the main driver of the economy

Australia and Indonesia have a dynamic often volatile relationship but share strong historical bonds many Australians fought and died with Indonesians on Indonesian soil against the Japanese in the Second World War and post WWII Australia championed Indonesian Independence from 350 years of Dutch rule. When the worst tsunami in recorded history struck Indonesia on Boxing Day in 2004 the Australian Government and people rallied to give aid totalling over A $1 billion. Australia also contributed aid of A$588 million in the period 2011-2012 to Indonesia, meaning the country was Australia's largest aid recipient.

However, it has been noted by Professor Hugh White of the ANU, that this donation will become an "embarrassment" as Australia is outstripped by the size of its northern neighbour's economy. White has instead recommended the money would be better spent on person-to-person exchanges, arguing Canberra should instead send 10,000 young Australians to Indonesia annually in order to build the kind of relationship Australia will need with Indonesia when it becomes a great power. According to DFAT there are currently 15,000 Indonesian students enrolled in Australian institutions.

Food security and self-sufficiency in Indonesia are crucial issues that require serious focus and attention from both the Indonesian and Australian governments. Moreover, food self-sufficiency is often used as a political tool in Indonesia to promote national pride. However, food security and self-sufficiency are often conflated as being the same thing. Due to the large number of smallholder farmers and unreliable data collection it is difficult to be certain of the exact status of Indonesian agricultural self sufficiency. Figures are regularly manipulated to show regional surpluses to appease the central government. Indonesia's rich volcanic soils and high rainfall create ideal conditions for a range of agricultural activities; Indonesia has an abundance of growing regions at an altitude of over 600 meters above sea level. The temperature at this altitude creates unique tropical micro climates that provide the opportunity to grow crops that need a cooler climate and cannot be grown at sea level, such as tea as well as varieties of

fruits, vegetables, flowers and herbs that would otherwise not be able to be grown in an equatorial location.

Figure 10 Snow capped Puncak Mountain, 4 degrees south of the equator in Papua province, Indonesia

Indonesia's main agricultural commodities include rice, palm oil, corn, rubber, sugar and soy beans. Rice, the most important crop in Indonesia is grown by 77 percent of farmers (almost 30 million) on an estimated 12.2 million hectares for a yield sufficient for consumption of 27 million tons in 2011, in primarily subsistence conditions. Average farm size for rice growers is less than one hectare, with the majority working holdings of between 0.1 and 0.5 hectares.

Figure 11 Abandoned tea plantation in Central Java

Production is heavily concentrated on the islands of Java and Sumatra, with the former accounting for 60 percent of the national total. At the same time, Java is the most densely populated island in the world and home to nearly 60 percent of the nation's population (approximately 143.8 million).

Figure 12 Rice terraces in Bali

Observers of Indonesia's rice sector are becoming concerned by the apparent slowing of long-term historical growth rates for both rice area and yield.

Year	Harvested area (ha)	Yield (ton/ha)	Production (ton)	Growth (%)
2002	11,521,166	4.47	51,489,694	2.04
2003	11,488,034	4.54	52,137,604	1.26
2004	11,922,974	4.54	54,088,468	3.74
2005	11,839,060	4.57	54,151,097	0.12
2006	11,786,430	4.62	54,454,937	0.56
2007	12,147,637	4.71	57,157,435	4.76
2008	12,327,425	4.89	60,325,925	5.46
2009	12,883,576	5.00	64,389,890	6.75
2010	13,244,184	5.01	66,411,469	3.13
2011*	13.224.379	4,94	65.385.183	-1,63

Source: BPS (various years), *Latest: Third Production Forecast, as of November 1, 2011

Figure 13 Average rice yields in Indonesia

Crop yield growth averaged nearly 4 percent per year between 1960 and 1989, but has since slowed to about 0.5 percent per year between 1990 through 2010. Similarly, after rice area expanded at a rate of 138,000 hectares a year between 1960 and 1998-a2 percent growth rate- it slowed to an average rate of 9,000 hectares a year (an increase of less than 0.1 percent per year) between 1999-2010. ***16***

Sugar is another vital industry with enormous growth potential, Indonesia currently consumes approximately 5 million

ton of sugar per year; Indonesia's 2013 sugar production may reach 2.6 million metric tonnes, an increase of 8.3% from estimated 2012 output, due to higher yields, according to Dow Jones.

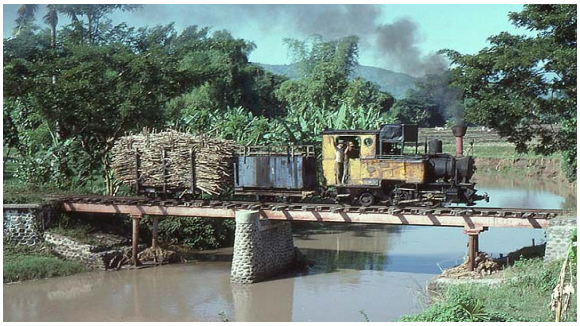

Figure 14 Aged but still functioning sugar infrastructure

Raw sugar consumption in Indonesia's food and beverage industries will climb by 10% annually for the next five years, an industry group said, as the country's booming population boosts domestic demand, according to Reuters.

Adhi Lukman, chairman of the Indonesian Food and Beverage Industries Association (GAPMMI), told Reuters. "The food industry is growing, with beverage growth higher than food," said Lukman. "Companies are happy with the Indonesian domestic market because it is quite big for the Asean region, with 240 million people."

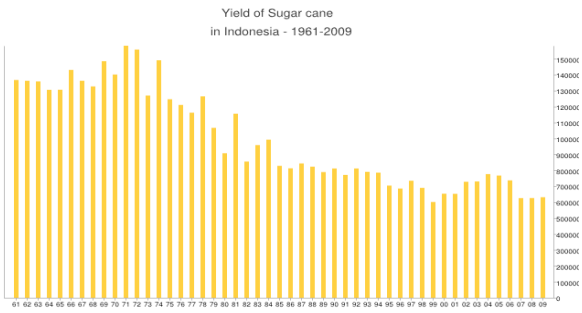

Figure 15 Declining sugar cane yield

Overall consumption in the country with the world's largest Muslim population will rise 4% to 5.2 million tonnes this year, with household and direct usage at 2.7 million tonnes, Lukman added. Domestic sugar output will be flat at 2.2 million tonnes this year, meeting just half the country's needs, with the shortfall likely to be filled by imports from Thailand, Brazil or Australia, he said.

Figure 16 Sugar in Indonesia was once a significant sector

Indonesia was once the world's second-largest exporter of sugar in the 1930s, but ageing mills, a vast network of smallholders and an influx of cheaper imported sugar have squeezed domestic production. Indonesia is now not in the top ten sugar producers or exporters in the world but is in the top ten of importers.

A potential role for Australia in Indonesian agriculture

Indonesia is Australia's most important neighbour and both countries have strengthened security and economic cooperation in a way that speaks to a desire for shared peace and prosperity. Given the limitations to expansion of Australian agriculture and the potential for expansion in the agricultural sector in Indonesia there is an ideal opportunity for Australian engagement in this sector.

I argue that while the current capacity building and poverty alleviation model of Australian funding to Indonesian agriculture is laudable as it has seen some alleviation of poverty and reduction of health risks in rural areas the aid money in agriculture could be put to better use.

$578.4 million*

Priority	Spend (%)
Saving lives View all initiatives	15
Promoting opportunities for all View all initiatives	35
Sustainable economic development View all initiatives	32
Effective governance View all initiatives	13
Humanitarian and disaster response View all initiatives	4
Cross cutting	1
Total	**100**

Figure 17 Total Australian aid budget to Indonesia 2011-12 ttp://www.ausaid.gov.au/countries/eastasia/indonesia/Pages/home.aspx

There now exists a unique opportunity to link Australian know-how with the potential of the Indonesian agricultural market that could have implications for trade, peace and regional stability not seen since the European Coal and Steel Agreement of 1952[17]. For just as that agreement linked the coal and steel industries of Western Europe in such a way that conflict became far too costly, realising such synergies between Australia and Indonesia would undoubtedly enhance stability through increased trade and investment. Perhaps more importantly, such an agreement would also increase yields and prosperity and thus dramatically reduce threats to food security that could otherwise see untold human suffering across the region.

Australian agriculture has the best technology, infrastructure and management of large-scale agricultural enterprises in the region and to stay relevant Australian agriculture must engage within Asia under a Cooperative Research and commercial model, as opposed to the traditional capacity building model.

I have identified 5 areas where there is need in Indonesia and where the Indonesian and Australian Governments and businesses can co-operate in a Cooperative Research model for mutual commercial benefits.

1.Agricultural development blueprint

2.Technology transfer

3. Water Management and medium term climate forecasting

4.Post harvest handling

5.Consumer education

1.Agricultural development blueprint

Indonesia needs a master plan for the regional development of commodities that suit the conditions of the country's various regions; Indonesia has 77 million hectares of deforested land not yet in agricultural production. Anecdotally I have heard that the Dutch did such a plan but this was before modern satellite mapping technology was available and despite what is currently available a modern blueprint should be developed; land systems and microclimates do not recognize the lines that were drawn on maps by people.

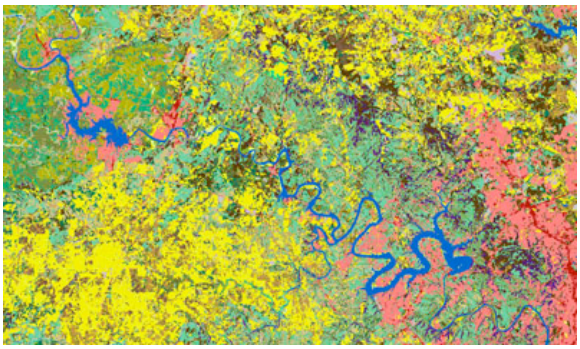

Figure 18 Satellite land systems Identification

Any development blueprint must start with the agricultural science, the soil, water, topography, and climatology first and then focus on infrastructure requirements, human resources and markets.

All agricultural commodities have competitive and comparative advantage relative to the climatic regions in which they are grown. Most foods can be grown almost anywhere, NASA can grow food in space, but the question that must be posed is, "***Can an agricultural commodity be grown at a cost that will make it competitive in a global market*?"**

Competitive advantage in Indonesia is perhaps best seen in palm oil production, where climate and wage structures have allowed for rapid expansion and export growth. However, this massive monoculture is fraught with risk. The 25-year life span of oil palm genomes makes the crop vulnerable to pests and disease, especially in a hot, wet environment. This alone should serve as sufficient warning to look to the introduction of a variety of crops to lessen the threat of wide-scale and catastrophic consequences that are an increasing threat if this monoculture is allowed to grow without biological balance.

Indonesia imports 100% of its wheat requirements and always will, as the climate and topography does not suit wheat production, meanwhile the "wheat belts" of Australia are better suited to this end as they are zones where wheat growing is globally competitive.

Figure 19 Broad acre wheat farm in Australia

Meanwhile Indonesia can grow crops such as sweet potato which can be grown as a perennial crop in the tropics. China is currently the world's largest sweet potato producer, producing 105 million tons a year out of the total global output of 127 million tons. However, China only has sweet potatoes in August, September and October. Over 10% of the annual production is processed into starch, which is used for noodle production. [18]

Figure 20 Gluten free noodles made from sweet potato starch, an affordable substitute for wheat noodles

Another example where comparative advantage needs to be recognised is in the current ***live cattle vs beef vs self sufficiency*** debate in Indonesia. It makes absolute sense to breed cattle in the north of Australia and ship them at 350 kilograms to Indonesia to be finished and slaughtered. A large scale, low cost cattle breeding, calf production operation requires large areas of land, which the north of Australia has and Indonesia does not. Because of a lengthy dry season the north of Australia cannot finish cattle on a twelve month basis, but Indonesia can. This integrated system is a perfect synergy and capitalizes on the strengths of both countries. However this system does not address food security issues for basic animal protein in Indonesia when the supply of animals can be stopped overnight without consultation between the parties.

Figure 21 Australian cattle in Indonesia feedlot

The live export debate in Australia is driven by emotion, again community expectations vs national productivity. Animal welfare issues can and are being addressed, animal rights for domesticated animals that are bred to die are nonsense, rights are a concept by humans for humans.

There is the potential in Indonesia to significantly increase production in sugar, soya bean, rice, corn, cassava, sweet potato, mango and other horticultural crops. Where these crops should be grown should be decided by the science that would flow from the development of such an agricultural blueprint.

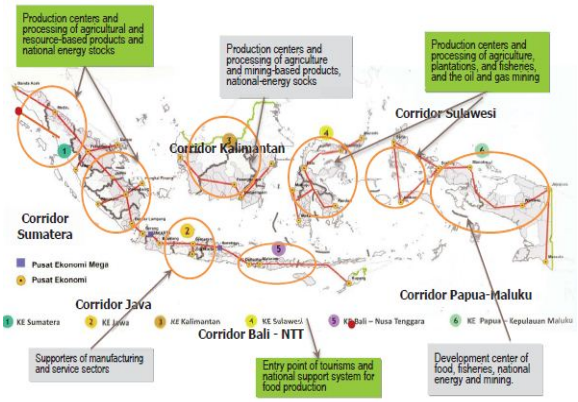

Figure 22 Production need to be determined by science

Java, the current rice bowl of the nation, could realise significantly higher financial returns if planted under different crops, if the relatively easy task of growing rice were shifted elsewhere. One area that could serve this purpose is the Merauke Integrated Food and Energy Estate in Papua province. The government in 2008 planned for 300,000 of 1.2 to 2.5 million hectares of land on the estate to be given over to mechanized rice farming to augment domestic supply, but as of 2010, only 500 hectares had been planted under rice.

2.Technology Transfer

Indonesia needs to develop a world's best practice agricultural facility for transfer of world's best farming practices, agricultural sciences and technologies. Once Indonesia has identified the regions and areas that are most suited to the respective crops the regions should be farmed using world's best practice technologies. If not the best efforts will be in vain and commodities produced will not be competitive.

World's best practice involves mechanization of farming techniques, with application of fertilizers, pesticides and other inputs carried out with scientific rigour.

Political leaders in Indonesia cannot only focus on agricultural production as the solution to the development of agriculture. Increases in agricultural production can result in periods of oversupply which in turn result in lower prices. This can result in social upheaval as communities restructure and the number of people employed in agriculture decreases, I argue such change in agriculture is inevitable. Economic development and the transition from underdeveloped, through developing to developed state has only ever seen a decrease in the number of people employed in agriculture to the point where the most industrialised countries, have no more than 4 percent of their total population employed in agriculture.

Figure 23 Australia has dealt with significant rural adjustment such as the Murray Darling restructure

Agriculture in Indonesia will be restructured, this restructure takes place whether people like it or not, it is an inevitable part of economic growth. It is complex and how farmers handle this restructure varies, one need only look at how agricultural reform has affected Indian farmers in the past decade. National Crime Records Bureau (NCRB) stated that there were at least 16,196 farmers' suicides in India in 2008, bringing the total since 1997 to 199,132. There are many theories as to why these suicides have occurred however one study suggests that the increase in farmer suicides is due to a combination of various socio-economic factors. These include debt, the difficulty of farming semi-arid regions, poor agricultural income and absence of alternative income opportunities.[19] Governments have an obligation to be ahead of this development curve and manage the transitions as they occur.

With its sophisticated rural adjustment models, Australia is uniquely positioned to assist Indonesia in adapting to these changes. In Australia we have seen the

decline of rural towns and services when only commercial issues are considered, the contrast with the EU is stark where subsidies has seen the preservation of a vibrant and dynamic rural countryside. It can be argued that the EU model is not sustainable and the Australian model is too extreme, there must be a balance that considers both social and commercial issues.

Current spend on Research & Development in Indonesia is < 0.1 percent of GDP, or 7 times lower than that in Malaysia and 14 times lower than China.[20]

R&D Funding

	Billion $	%GDP
Korea	20.8	2.5
Taiwan	12.2	2.3
Singapore	2.2	2.2
China	72.0	1.3
Malaysia	1.5	0.7
Thailand	1.1	0.6
Philippines	0.4	0.1
Indonesia	0.3	0.1

Reff. *World Bank & UNESCO* (2006)

Figure 24 R&D spending in Asia

Despite this current lack of focus on R&D by the Government of Indonesia there is a strong focus on science and technology in Indonesia. For example the Surya Institute, founded by Professor Yohanes Surya is a shining beacon of hope for the future of Indonesia. Professor Yohanes Surya has a vision to create 30,000 PhD students from Indonesia by 2030 and he is well on his way with his students having thus far won 81 Gold, 60 Silver and 88 Bronze medals in Science and Mathematics competitions around the world. These students have gone on to placements in some of the world's best Universities and are causing a great multiplying affect that will accelerate the development of Indonesia. It is essential that agriculture in Indonesia receive this same level of professional attention.

Figure 25 Surya Institute Jakarta, Indonesia http://www.suryainstitute.org/en/index.php

3.Water management and medium term climate forecasting

Indonesia needs a whole country and modern approach to the management of water and medium term climate forecasting. Indonesia lies on the equator as a result rainfall is very high and water is abundant.

Figure 26 Aging irrigation infrastructure in Java

As a result of this abundance of water, apathy in water management has developed. It is estimated that currently as much as 40-50 percent of all irrigation systems nationwide are currently in disrepair. In addition, the growth rate of

new irrigation system development is also slowing compared to previous decades, as government budgets are largely targeted toward more politically palatable crop subsidy programs for fertilizer and seed.

In Australian supermarkets a litre of water is more valuable than a litre of milk.

Water is required to sustain life and one of the most valuable commodities of any country. I have heard more than once that wars will be fought over water in this century and it only makes sense to optimise the management of such a valuable commodity while it is abundant.

Climate in agriculture is all about certainties and probabilities, it is certain that every day the sun will rise and it is certain that it will rain, what is not certain is when it will rain.

Figure 27 Without water there is no life

The probability of when it will rain is a probability based on the time of the year; historical weather patterns and weather forecasting that can include radar images of actual rain movements. Despite the fact that Java is affected by long dry periods under an El Nino influence most Indonesian farmers would not know what El Nino or the Southern Oscillation Index, (SOI) is. Whilst nearly all farmers in Java are currently suffering due to an extended dry period right now [21] I know of one farmer in Indonesia who has been monitoring the SOI and has adjusted production schedules to meet a forecast shortage of water over the last three months. All farmers in Indonesia should be made aware of this science so that production can be planned accordingly.

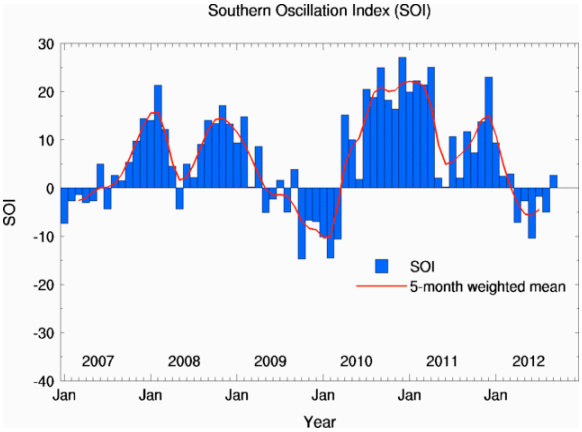

Figure 28 SOI is science and an essential tool for farmers

Likewise as Indonesia moves towards more mechanization of commodity production weather forecasting and planning becomes crucial for the time critical harvesting of annual crops. Australian farmers have been battling droughts and floods since the beginning of agriculture and this practical expertise is invaluable at seeding and harvesting time.

4.Post harvest handling infrastructure and technologies

Indonesia lacks agricultural infrastructure. It can be argued that agricultural produce has no value until it leaves the farm gate. Some produce is highly perishable and product integrity must be maintained to achieve optimum price in the market place. This can require cold or frozen storage and transportation, modified atmosphere, specialised packaging for branding and labelling to meet governmental requirements. All of these processes are becoming more relevant as Indonesia transitions from traditional markets to modern supermarkets. These processes also add cost to produce and require an

educated and sophisticated consumer to appreciate the quality and integrity of the produce.

Effective post harvest infrastructure can open up lucrative new markets. One such example is the Indonesian Harum Manis mango which when ripe still has a green skin colour this is initially confusing to the uninitiated, however one taste and all is forgotten.

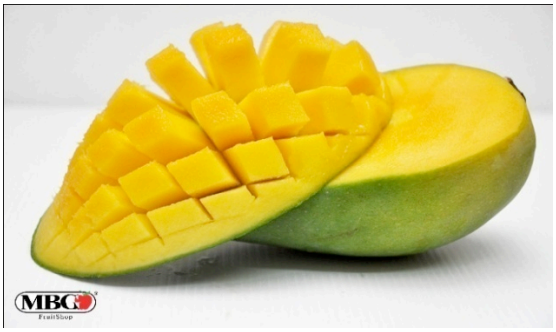

Figure 29 Harum Manis Mango largely unknown outside of Indonesia

The Harum Manis season comes online when the northern hemisphere is enjoying summer and with modified atmosphere shipping by sea container combined with a marketing and education program a substantial new export market could be established.

In the case of bulk agricultural commodities infrastructure can be on a massive scale and involve railways, ports and silos capable of storing and transporting hundreds of thousands of tons. Agricultural and mining commodities are similar inasmuch that without this infrastructure commodities are not globally competitive.

Figure 30 Grain loading Infrastructure

The large difference between agriculture and mining is that in mining the actual resource can be measured, it can be proven to already exist and banks, financial institutions and companies will finance the development of required infrastructure based on the existence and forecast value of the resource. In agriculture it is forecast that the resource will exist at some point in the future and that on an annual basis given a certain amount of rain, sunshine and nutrient a certain volume of a commodity will be harvested and can be sold. These extra variables are enough to deter banks, financial institutions and companies from making what are multimillion dollar investments and it is generally the role of Government to provide this large scale agricultural infrastructure.

Australian agriculture has had to deal with severe isolation from domestic and export markets and as such has developed world's best technology and expertise in this area from the bulk handing of millions of tons of grains to the development of modified atmospheres for long sea freight voyages.

5.Consumer education

When farmers add cost to production and post harvest processes then farmers must be rewarded financially or they will go out of business. The only way that farmers can

be rewarded is by a consumer who is willing to pay more for a better quality product.

Figure 31 Modern supermarket, all functionality, no personality

The modern Australian family will shop once a week and it is expected that all fresh food products will last in the refrigerator for one week. In Indonesia this is not yet the case, however shopping habits are rapidly changing. The Indonesian consumer is a very adventurous buyer of prepared foods and is willing to try anything new. In Jakarta for example you will find food franchises from all over the world, some survive and some don't. The challenge for the sellers of prepared food is to make the buying patterns repetitive. When it comes to buying fresh foods in many households it is often the maids that shop for food, they work to a very strict budget and have very little understanding of a price/quality relationship. The traditional wet markets still play an important role in Indonesia, however the modern supermarkets are becoming increasingly numerous and are replacing the traditional markets.

Figure 32 Consumers will pay a premium when they can have an interaction with the food seller, hence the rise in popularity of the "farmers markets"

The highest margins in food retailing are when the retailer has a personal relationship and interaction with the food consumer. The proliferation of inner city "farmer's markets" in developed countries demonstrates this. All of the supermarkets in Indonesia are increasingly promoting "home brand" products and all Australian farmers know of the extra downward price pressure this applies at the farm gate.

Carrefour is one of the major food retailers in Indonesia and on August 31st, 2012 Carrefour opened its 85th hypermarket store, (the average size of a Carrefour hypermarket grew to 9,647 square meters in 2010 from 8,927 square meters in 2000[22]). Besides the hypermarkets Carrefour also has 5,670 Alfa mart mini markets. Other large retailers such as the Lotte group from South Korea have a large footprint and are very aggressive in their growth plans in Indonesia.

In India on September 14, 2012 the Cabinet decided to permit Foreign Direct Investment ("FDI") in multi-brand retail but the exact terms and conditions attached to this policy has not yet been released officially. Those terms which have been discussed so far include: A foreign investor would need to make a minimum investment of US $ 100

million. 50% of the investment has to be used to develop back end infrastructure (such as cold storage, food processing, manufacture etc) within three years.

Figure 33 Generic branding at supermarkets forces downward pressure on pricing back to the farm gate

I saw a news item recently where an Australian dairy farmer who was producing close to a million litres of milk per annum and receiving fifty cents a litre at the farm gate was leaving the land because he was no longer viable.

Conclusion

Indonesia with a very underdeveloped agricultural sector is a more significant food bowl to Asia than Australia is and with Australia's limited opportunity for significant production increases or expansion of the existing agricultural estate in Australia it is unlikely that Australia will ever be a significant provider of food to Asia.

If Australian agriculture wants to play a significant role in this "Asian Century" a new paradigm of engagement with Asia needs to be adopted. The capacity building model of Australian agricultural aid has served well but it is time for a new commercial, collaborative approach. This model should take a similar approach to the Australian Cooperative Research Centre model which the independent report by the Allen Consulting Group on the Economic, social and environmental impacts of the Cooperative Research Centres program say has delivered a $7.5 billion boost to the Australian economy.

Indonesian agriculture is entering a new quantum of growth and if Australia does not take the initiative to engage as a strategic partner in this agricultural growth beyond CPO, other countries will. Indonesia is complex, the cultures and peoples are complex and whilst this has been seen as a barrier to investment from Australia, foreign investors already control around 8.9 million hectares of agricultural plantations in Indonesia.

Brand Australia is a premium brand and through the combined efforts of business and Government Australian agricultural produce has found premium markets throughout all of Asia. It is this same expertise that could provide a gateway to take Indonesian agricultural produce to the next level. I have outlined five areas in Indonesian agriculture where Australia can immediately assist; there are of course many other issues that need to be addressed and it is hoped that through engagement, discussion and debate that strategic commercial partnerships can be formed in large scale commercial agriculture.

Finally, I always love to remind myself that the Portuguese built the first global empire in history, an empire that lasted for hundreds of years. This empire was built on the fact that the Portuguese could sail wooden ships and ride powerful horses, and how relevant is Portugal today? Will Australia continue to be relevant in this Asian Century, or will this period of Australian influence and privilege be written in the annals of history as a moment in time when demand for Iron Ore and Coking Coal created a brief period of prosperity and influence for Australia?

About the Author

Michael Sheehy is a former cattle station manager who managed a 40,000 head herd at Walhallow station on the Barkly Tableland in the Northern Territory for the Heytesbury Pastoral Group. Over an eight year period Michael was also managing director of Heytesbury Thoroughbreds and the Asian Beef Operations for Heytesbury. Awarded a Nuffield scholarship in 1992 where he studied the live cattle trade between Australia and Malaysia Michael has twenty years of experience in the food and agricultural sector of South East Asia. Michael has been living in Indonesia for the last ten years and is the chief financial officer for the AKSES Group, an Indonesian company that has business interests in mining, timber and agriculture.

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[3] Australia's major agricultural export markets are China (14 percent), Japan (13 percent), ASEAN (21 percent), other Asia (16 percent), European Union (8 percent), Middle East (8 percent), United States (7 percent) and other (17 percent).
- ABARES, Australian Commodities, December Quarter 2011

[4] Total factor productivity in Australian broad acre grew at an average of 1.4 percent annually between 1977-78 and 2007- 08. In the period 1977-78 to 2000-01, productivity grew at 2 percent a year in trend terms, but has since reversed to contract at 1 percent a year in trend terms. Productivity growth in the dairy industry has similarly proceeded more slowly after 2000-01. Source, ABARES, Science and Economic Insights, Issue 1, 2011, Global Food Security: Facts, issues and implications

[5] Genetically modified organisms (GMOs), their products, and the chemicals used to manage them, pose unacceptable threats to natural and agricultural ecosystems.

[6] Because of the isolation and extreme living conditions in the far north of Australia, it was difficult to find sufficient numbers of workers from the southern states. Following the discovery of gold at Pine Creek in 1872, Chinese people were imported to work the mines. During the construction of the Overland Telegraph in 1874, the South Australian government — which administered various aspects of the Northern Territory at the time — imported Chinese labourers from Singapore to Palmerston (renamed Darwin in 1911) to overcome the labour shortage. National Museum of Australia

[7] The Australian government's joint investigation with China into the feasibility of large-scale Chinese investment to develop our Top End into a food bowl to feed China's 1.3 billion people should be welcomed. Australian Financial Review 01 Jun 2012

[8] A CHINESE conglomerate represented by former Prime Minister Bob Hawke is bidding to buy large tracts of prized irrigated land in the Kimberley region of Western Australia to establish a major sugar industry there. SUE NEALES The Australian April 28, 2012

[9] THE Coalition is developing an ambitious plan to double Australia's agricultural production by the middle of the century through a network of new dams in the Top End, which would open up millions of hectares of under-utilised land to food production. Sid Maher The Australian September 17, 2011

[10] The Pacific Seasonal Worker Pilot Scheme concluded on 30 June 2012. The Seasonal Worker Program started on 1 July 2012 building on the Pacific Seasonal Worker Pilot Scheme http://www.deewr.gov.au/Employment/Programs/seasonalworker/Pages/default.aspx

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Jakarta Post September 19, 2012

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