
The Rise of Agri-Powers

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Agricultural powers—those self sufficient in food and fabric—once were unambiguously regarded as strategic powers. This has remained true throughout history: powers which were not agricultural powers could never sustain strategic power. Now, once again, a new set of nations is likely to emerge in the 21st century with significant regional, if not global, influence demonstrably based on their agricultural capacity and their ability to match capital, productive land and emerging technology on a scale which was not possible in the past. These emerging ‘agri-powers’ are benefiting from trends making agricultural commodities more strategically important, and will gain from having a significant agricultural base.

There are a number of nations which are potential beneficiaries from the trend favouring agricultural producers, especially those which are not already regional or global powers.¹ For the purpose of this paper, substantial agricultural producers are defined to have grown at least twenty million tonnes of cereal crops *per annum*. This existing agricultural base could provide the ability for these nations to become emergent agri-powers. However, to succeed, they must organise their societies, capital markets and productive land in the most efficient manner to harness this trend, rather than be captured by it.

Of nations with potential for significant agricultural production, Argentina and, especially, Zimbabwe, suffer from governance problems and unstable economies,² but have the capability to transform to become key anchor points of southern Latin America and south-eastern Africa. The emergence of agri-powers has significant relevance to regional-level dynamics and is set

¹ According to 2004 figures released by the United Nations Food and Agriculture Organization, the following nations produced at least twenty million tonnes of cereals annually, which equates to around 1 percent of global production: Argentina, Australia, Bangladesh, Brazil, Canada, The People’s Republic of China, Egypt, France, Germany, India, Indonesia, Iran, Italy, Mexico, Myanmar, Nigeria, Pakistan, Poland, Romania, Russia, Spain, Thailand, Turkey, Ukraine, United Kingdom, US, and Vietnam. Zimbabwe, while not on this list, also has great agricultural potential, as does, for example, South Africa. When considering this list, it is important to note, that most of these cereal crops are grown for domestic consumption only, and few nations have a substantial surplus for export.

² Zimbabwe, due to governance problems has experienced a significant decline in its agricultural production to the point where it requires food aid. In the recent past, Zimbabwe was regarded as the breadbasket of Africa. Argentina, while not in the same category as Zimbabwe, has had its agricultural potential limited by successive financial and political crises.

to be a key strategic variable. However, this trend has not yet been studied or analysed to any great degree and, at present, the field of International Relations has not been able to forecast the emergence, or outline the potential role, of agri-powers.

Key Limiting Factors

Prior to analysing the emergence and potential role of agri-powers, it is worth considering two key limiting factors in nations reaching this status. The twin issues of climate change and water availability will influence the ability of individual nations to reach the status of agri-power, but will impact each nation, and region, in different ways.

In a global sense, climate change will create both winners and losers. For example, a longer growing season in Canada, brought about by a higher average global temperature, may increase yields and production. However, warmer weather patterns, in other areas, could result in lower rainfall and greater evaporation, which would have a negative impact on production. The impact of drought and changing rainfall patterns is well known in Australia, with a great deal of attention on the Murray-Darling Basin and the difficult adjustments which are being made.

Water availability—in part linked to climate change³—also involves access to underground reserves of water, some millions of years old.⁴ Internationally, this water is frequently used for agricultural irrigation and, while a finite resource, can be used in the short- to medium-term, independently of rainfall. As it takes around 1000 tonnes of water to produce one tonne of grain,⁵ in irrigated farms, the most efficient way to import water is to import grain produced in this manner. While this practice can alleviate short-term pressures of water shortages, it is merely deferring the problem of water availability. Alongside India and the People's Republic of China (PRC), there are a number of other smaller nations, such as Algeria and Mexico, which have water deficits.⁶ These smaller nations already import a large proportion of their grain.

Australian Context

In Australia, aside from crops such as rice grown on irrigated farms in the Murray-Darling Basin, cereals crops are overwhelmingly grown on rain-fed

³ Research by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) indicates that a 0.5 degree change in ocean temperatures can result in a \$3-billion difference in the value of Australia's agricultural crop due to shifts in weather and rainfall patterns. CSIRO, 'Wealth from Oceans Flagship', < <http://www.csiro.au/org/WfOFOverview.html> > [Accessed 23 May 2008].

⁴ It should be noted that in some underground water systems, there is recharge from rainfall.

⁵ L. Brown, 'Draining Our Future: The Growing Shortage of Freshwater', *The Futurist*, vol. 42, no. 3 (May-June 2008), pp. 16-22.

⁶ *Ibid.*

land, that is, on land which does not use irrigation. In terms of staple cereal production, climate change and water availability will have a significant impact on global, and Australian, agricultural potential. However, because of the *de facto* ability to import water, through irrigated wheat or other cereals, the impact of these forces will have relatively immediate global impact on almost all nations when water shortages reach a critical level.

Nevertheless, adaptation to climatic variances, which has been a feature of agricultural production since 1788, and assured access to water, will need to be factored into planning for maintaining, and potentially expanding, Australia's agricultural base. While not understating the broad impact of these forces, other factors, such as exchange rates, access to sophisticated technology, fertiliser and chemical availability, will also play an important role in the direction of agriculture.

The strategic role of Australian agriculture has evolved over the past two centuries and it is now reaching a potential tipping point, which may see it decline and cease to be a substantial, self-sufficient industry, or become reinvigorated and form part of Australia's strength in the 21st century. For the purposes of looking at agriculture, in its broadest sense, the agricultural industry includes not only productive farm land, but the ability to produce and maintain the implements needed to farm the land and also access the necessary inputs (such as fertiliser and pesticide), as well as global positioning satellites, which is now becoming standard in broad-acre cereal production. Removing any one of these components, especially for a period of time, would significantly diminish the agricultural capacity of the nation. Also, given the heavily reliance on machinery, a shortage of motive fuel in key planting or harvesting periods would significantly restrict production.

The relative decline of Australian agriculture,⁷ as a key sector of the economy, has been, in part, due to its staggering success, which has increased production rate and yields and yet reduced the number of people living on farms, in the agricultural workforce and regional communities, to a mere fraction of where they once stood.⁸ Ironically, as agriculture takes a much lower political priority—at both the state and federal level, due to less political representation—and the de-population of rural and regional areas accelerates, the agricultural sector, for the first time since flax and tall trees were used to build naval ships which was critical for naval power projection in the age of wind and sail, appears likely to become a key component of grand strategy.

⁷ In the 1820s agriculture contributed to half of Australia's GDP. In 2008, it is under 3 percent. J. Poprzeczny, 'Get big or get off the land', *WA Business News*, 24 January 2008, p. 32.

⁸ *Ibid.* Illustrating this trend are the changing economies of scale. This has meant that in the Western Australian wheat-belt, in the 1960s, a sizable farm would be 2 000 acres. In 2008, the equivalent is around 20 000 acres.

Despite the potential for agricultural capacity to become a strategic asset, there is not yet a comprehensive Australian approach towards agriculture and agricultural production, other than what seems to be managing the decline of the sector. The restrictions placed on genetically modified (GM) crops, while appealing to certain sections of the electorate, are limiting the potential of agricultural production.⁹

Global Trends

In the period towards 2050, when global population numbers are forecast to surge to around ten billion,¹⁰ agricultural capacity will be used by nations to a much greater degree than it is today. The economic and strategic value of agricultural surpluses, if only for nutritional requirements, will see many governments rethink how agriculture is undertaken and a greater likelihood of conflict over control of exports, and even productive land itself. In February 2008, Kazakhstan, one of the largest grain exporters, announced it would impose export tariffs, in an attempt to curb sales. Russia, Egypt and Argentina, also large grain exporters, have introduced similar export restrictions. Prior to conflict over agricultural land there will be greater competition over key inputs, such as fertilizers including nitrogen, phosphate and potash,¹¹ pesticide and water. There is also emerging evidence that investment, into farms in Australia, is coming from international sources and an increasing number of entities which have not traditionally been involved in the agricultural business.

As prices and availability of key agricultural inputs become more volatile, production rates and output are expected to vary, with all the problems relating to internal stability and malnutrition that this will bring. A greater immediate issue will be the extent to which agricultural surpluses start to become diverted to biofuels. While still in their infancy, the growth of biofuels has already contributed to price pressure on commodity prices and, as biotechnology improves, there is significant potential for other commodities, which form staples for the significant parts of the global population, to be used as inputs for industrial processes.¹²

⁹ W. Acworth, A. Yainshet, and R. Curtotti, *Economic impacts of GM crops in Australia* (Canberra: Australian Government Department of Agriculture, Fisheries and Forestry, 2008), p. 1.

¹⁰ For a discussion on the broad strategic trends of an increasing global population, see G. Copley, A. Pickford and B. Patterson, *Australia 2050: An Examination of Australia's Condition, Outlook, and Options for the First Half of the 21st Century* (Melbourne: Sid Harta Publishers, 2007), pp. 4-62.

¹¹ The world price for superphosphate has substantially increased over the past year, from an average of US\$45-50 per tonne to US\$300-600 per tonne on the spot market. O. Hembry, 'Fertiliser price shock set to cut farm production', *The New Zealand Herald*, 9 May 2008, <http://www.nzherald.co.nz/section/3/story.cfm?c_id=3&objectid=10508958&pnum=0> [Accessed 12 May 2008].

¹² Biotechnology-related research has the potential to harness growing plants for key industrial inputs. For example, there is already research and development activities which is attempting to

In this perfect storm of an increasing global population, greater demand from non-traditional uses of agriculture—such as energy producers and, potentially, industry—alongside reduced areas of productive land, strategists will start to look more closely at agriculture. At some time after the first major conflict over water,¹³ agricultural commodities or productive land will be proclaimed as the next major flash point for war. Similar lagging analysis, in the period leading up to 1900, did not foresee the eventual impact of crude oil on national strategy. Despite a rapid revision of key assumptions, following World War I, most analysis was reactive. At the time when crude oil became categorised as a strategic input, many of the then key producing regions had been secured either directly or indirectly by Britain.¹⁴

The question which must be asked is: what comes after oil, as both a strategic input for nations and energy source, and will agriculture soon be producing strategic inputs necessary for national power projection? At the point that an input takes on a strategic dimension, ownership patterns, usage modalities and standards become set and a new strategic environment is clarified and then solidified.¹⁵ While it may be too early to determine if agricultural commodities are an emerging strategic input of the 21st century, several indicators are foreshadowing its increase in relative importance:

- **Price of Commodities.** *The Economist's* commodity price index in 2008 had reached a new high, with the forward price for grain and soya bean at record levels. Strong demand, low global stocks and limitations on bringing new land into production indicates that higher agricultural prices will remain high for most of 2008. While some price relief may arrive in 2009-2010, there are some suggestions that due to higher global demand, new food consumption patterns in India and the PRC, and increasing diversion of agricultural commodities into energy production, the long-term structural price of commodities will remain high.

develop a strain of plants which grow a plastic polymer. V. B. Kennedy, 'Plastics that are green in more ways than one', 26 October 2007, <<http://www.marketwatch.com/news/story/bioengineers-aim-cash-plants-make/story.aspx?guid=%7B7F35EAE4-CA2D-4E0D-9262-D392566E906B%7D>> [Accessed 1 May 2008].

¹³ It may be argued that some conflicts have been exacerbated by water issues. However, over the course of the 20th Century, water has not been the strategic priority that oil has. This may change in the 21st Century if agri-powers become more important political players.

¹⁴ The United States consolidated control of oil producing regions after World War II, often displacing Britain.

¹⁵ In 2008, crude oil is traded in barrels, which equates to 42 gallons. In western Pennsylvania, in the US, during the 1860s, a standard barrel size emerged. This size was drawn from England, where a 1482 statute of King Edward IV established 42 gallons as the standard size barrel for herring, in order to regulate the packing of fish.

- **Emergence of Biofuels.** As crude oil has increased in price, and there have been moves towards 'energy independence', the practice of converting agricultural commodities, such as grains, sugarcane, and corn, into motive, or biofuels has increased. For example, US President George W. Bush in 2007 signed legislation into law which required a fivefold increase in biofuel production, to thirty-six billion US gallons by 2022.
- **Industrial Applications.** While not a major industry, the emergence of bio-technology industries, which utilise agricultural commodities as inputs, may revolutionise many industrial processes and manufacturing. Despite not currently being a factor in industrial demand, there is nothing preventing industrial demand emerging as a factor in grain production and potentially representing a large part of the market.

The aggregate impact of these trends, alongside increasing global population numbers, is putting pressure on both grain producing and consuming nations. The price pressure on agricultural commodities is starting to cause tensions and food riots in places such as Haiti, Senegal and Pakistan.¹⁶ According to the International Grains Council in early 2008, measures were taken in several countries to cut import tariffs or to lift consumer subsidies for certain food staples. The economic impact of rising food prices, termed "agflation" by *The Economist*¹⁷ is also creating internal tensions within nations, as an increasing share of household income is being diverted to food purchases.

As in Roman times, when a ready supply of bread to the capital was necessary to maintain peace and a stable urban environment, the prospect of food prices increasing further, with shortages or astronomical prices for some goods, is a concern for many governments. This concern will magnify as the urbanisation trend accelerates. While developed nations may not experience food riots,¹⁸ a volatile electorate paying, in their mind, unreasonable prices for basic foods, has the potential to destabilise all governments, though voter concern for high food prices and the inflationary pressures which this brings.

If, on balance, it is thought that agricultural capacity and production will take on a strategic dimension, or represent a threat to civil stability, perhaps as

¹⁶ It must be noted that, in some areas, the simplistic food versus energy debate is not as clear cut and as directly linked as claimed by some commentators in the main-stream media. Also, given the fact that agricultural produce is traded on global commodity markets, in the short- to medium-term, importers of food will have to adjust as best they can.

¹⁷ 'Rising food prices: The agony of agflation', *The Economist*, 25 August 2007, <http://www.economist.com/finance/displaystory.cfm?story_id=9707029>. [Accessed 8 May 2008].

¹⁸ For a summary on the negative effects of the increase in the price of food see: A. Faiola, 'The New Economics of Hunger', *The Washington Post*, 27 April 2008, p. A01.

early as 2015 or 2020, Australia will need to reconsider its approach to the industry and formulate a long-term plan which prepares for this new reality. In this new environment, where agricultural commodities incur a strategic premium, of particular importance is how Australia relates to, and interacts with, the dynamic Asia-Pacific Indian Ocean regions.

Strategic Ramifications

Present demographic, economic and political trends indicate that the global centre of geo-political power is shifting to the Asia-Pacific and Indian Ocean regions.¹⁹ When great power competition begins to take place in the Indian Ocean, Australia, and specifically Western Australia, is set to be at the front line of these changes. Western Australia already has an extensive history trading commodities in the Indian Ocean. Sandalwood exports, from Western Australia to India, financed much of the state's initial development. In the 21st century, Western Australia is particularly well placed for a more prosperous Indian Ocean region, which is demanding a much higher level of agricultural commodities, and is geographically close to markets. Western Australia has a relatively high-level of cereal grain production and a small population, allowing for substantial volumes of food surpluses, not required for human consumption, to be used for other purposes. In 2005/06, Australia wide, 24.3 million hectares of land was sown to crops.²⁰ Western Australia, individually, cropped eight million hectares.²¹ Significantly, Australian 2005/06 production of wheat, the major cereal crop, was 25.7 million tonnes, with around 60 percent of this harvest exported for human consumption.²²

The scenario in which Australia, and Western Australia, is a breadbasket for the prosperous Indian Ocean region, which may contain two billion consumers, would change the relationship of the nation with the region. It would also mark the continuation of forces which began when humans first adopted farming techniques in the Fertile Crescent around 11 000 years ago.

Throughout human history, complex societies have arisen near areas of fertile land which has provided an agricultural surplus that allowed a division of labour, specialisation and the accumulation of wealth. As a society becomes more complex, peaceful conditions allow a larger scale of agricultural production, often a long distance from final consumption. However, this process then places a great deal of reliance on the

¹⁹ For discussion on this trend see: J. F. Hoge, Jr., 'A Global Power Shift in the Making', *Foreign Affairs*, July/August 2004, < <http://www.foreignaffairs.org/20040701facomment83401/james-f-hoge-jr/a-global-power-shift-in-the-making.html> >. [Accessed 8 May 2008].

²⁰ Australian Bureau of Statistics, *2008 Year Book* (Canberra: Commonwealth of Australia, 2008), p. 483.

²¹ *Ibid.*

²² *Ibid.*

establishment and maintenance of reliable infrastructure and logistical networks. For example, in situations where crops are irrigated, there is a need to maintain extensive water distribution systems.²³ Also, the need to ship, train or fly food from the point of production to consumption relies on complex logistical networks. Once a society becomes more specialised, the distance between production and consumption can become very large.

Rome experienced a growing distance between food production and consumption when it pushed its grain producing regions out from areas around the capital, to Sicily, and then Northern Africa and Egypt, to free up land for higher value-add activities or simply leisure pursuits. The same trend is happening today around major urban areas and land which were once used for agricultural production. In Roman times, the changing economics of grain production meant that, from a profit and loss perspective, "it was far easier and cheaper for Rome to import wheat by sea than to transport it from the rich grain fields of Italy".²⁴ Short-term fiscal logic exerted a significant long-term cost on the unity of empire. Just as the fiscal cost of maintaining access to crude oil is prohibitive, and potentially avoidable, so was the cost of the Roman Empire maintaining access, and control over, grain producing regions. Not only did it have to ensure open and free sea lines of communication, it also had to maintain peace and order in the grain producing provinces. Any breakdown in this production-consumption relationship can magnify dissent and instability in urban environments, and potentially become self-reinforcing.

As agricultural goods become a strategic input to a society, nations will try to secure their own agricultural production; however, those nations which can produce a large surplus which can be exported, and bring new production online, may serve as a swing producer in a similar manner to Saudi Arabia producing oil.²⁵ This could give Australia, and specifically Western Australia, a great deal more international strength; however, like Northern Africa and Egypt in Roman times, it may attract outside powers who wish to have direct control of the agricultural producing regions. This phenomenon is already being noted in the iron-ore and energy provinces, with the PRC starting to

²³ New research on the medieval temple of Angkor Wat, in Cambodia, indicates that it was once at the centre of a sprawling urban settlement. This urban settlement included complex irrigation systems. However, the urban centre required an agricultural surplus, derived from this irrigation system, as well as continuous investment in maintaining the large capital structures. When resources were not available to maintain the irrigation systems, they fell into disrepair and, arguably, contributed to the collapse of the Angkor civilisation. D. Evans et al., 'A comprehensive archaeological map of the world's largest preindustrial settlement complex at Angkor, Cambodia', *Proceedings of the National Academy of Sciences of the United States of America*, vol. 104, no. 36 (4 September 2007), pp. 277-282.

²⁴ C. A. Yeo, 'Land and Sea Transportation in Imperial Italy', *Transactions and Proceedings of the American Philological Association*, vol. 77. (1946), pp. 221-244.

²⁵ According to 2004 figures released by the United Nations Food and Agriculture Organization, the top wheat exporters, in order, were: the United States, Australia, Canada, France, Argentina, Germany, Russia, the UK, Kazakhstan and India.

take more direct control in regions where sought after commodities are located, with the most recent example being the PRC Government owned Sinosteel bid for Midwest, an Australian mining company with iron ore resources in the mid-west region of Western Australia.²⁶

In May 2008, it was noted there were signs that the PRC was becoming concerned about its agricultural capacity. Official PRC data indicates that, in 2007, the amount of arable land in the PRC, fell by 40 700 hectares to 121.73 million hectares, getting closer to the declared “critical” level of 120 million hectares which the PRC has stated that it wished to maintain.²⁷ As with guaranteed access to other key strategic inputs, the PRC’s position towards agriculture has been evolving. Press reports circulating in May 2008 indicated that PRC companies were seeking overseas agricultural resources to help meet domestic supply requirements. Zhang Xichen, head of the PRC Suntime Group, which runs agriculture projects with Mexico and Cuba, stated: “Developing the rich water and soil resources in regions like South America, Australia and Russia can lower Chinese companies’ production costs.”²⁸

As the PRC seeks assured access to agricultural commodities, by controlling farmland in other nations, it has not yet defined a pathway on how this goal will be achieved. In energy, and, more recently, mineral industries, the PRC’s approach to acquiring direct and indirect stakes in companies, which produce key inputs, has been evolving. There have been a number of lessons learnt from the failed bid by PRC’s China National Offshore Oil Corporation for the US energy firm Unocal, as well as other unsuccessful attempts to acquire foreign companies. However, the PRC government, in 2008, is much more experienced in gaining control of international resources and companies, and is getting comfortable in dealing with western financial institutions and managing political reactions to purchases it makes.

Should the PRC, or other nations, seek to acquire Australian farm land and associated infrastructure networks; there will be a number of implications for policy makers. The current upsurge in prices for grain growing farmland, leading to year on year rises as much as 50 percent²⁹ and to an increase in investment coming from corporate entities,³⁰ is set to radically change agricultural economics. Adding foreign governments into the buying mix may result in further upward price pressures and a re-organisation of the industry.

²⁶ This trend predates the current activities of the PRC sovereign wealth fund. The PRC has been gaining equity stakes in iron-ore mines in Western Australia, since the 1980s, and Western Australian gas fields since the early 2000s.

²⁷ ‘China farmland nears critical level’, *The West Australian*, 18 April 2008, p. 28.

²⁸ *Ibid.*

²⁹ ‘A record year and prices’, *Farm Weekly*, 17 April 2008, p. 168.

³⁰ ‘Elders’ record \$100m of sales’, *Farm Weekly*, 10 April 2008, p. 156.

In agricultural terms, the most significant change to the sector would be the ownership pattern of farms, transitioning from the now dominant family ownership structure, to a corporate or institutional model. This transition of farm ownership patterns, involving foreign buyers, may have an impact on regional population settlements and could pose greater challenges than foreign involvement in mining projects, which are generally in unpopulated areas. The issues associated with foreign ownership of Australia farms also raises the national interest question, such as supply during a crisis and transfer pricing, for vertically integrated entities. As Australia's strategic planning has not given a high priority to agricultural capacity, most of these questions remain hypothetical. In terms of public perception, escalating food prices in cases where there are international interests controlling Australian farmland could result in an anti-foreign backlash. This may also cause problems with bi-lateral relations.

Implications for the Future

If agri-powers do become more important international actors in the 21st century, there will be a number of implications for the international system.

Firstly, on a global level, it may mean that agricultural commodities, such as cereal crops, may be a strategic input for food, energy and perhaps industry. The value of productive farmland could soon become akin to oil fields. However, it is, as yet, unclear how expanding powers will seek to control strategically important agricultural regions and if they will use the market mechanism, or a more blunt instrument to maintain access to agricultural produce, such as conquest or subjugation.

Secondly, on a domestic level, debates surrounding genetically modified organisms (GMO) will intensify and, as the returns from agricultural production increase, will create new alliances and political splits on GMO, similar to how the nuclear debate caused disagreements within the environmental movement. Control of new GMOs, and legal protection of intellectual property, may become an area of international disputes.

Thirdly, if agricultural commodities start to include a strategic price premium, it will force a number of nations to improve their agricultural sector to boost production. In places where there are high-levels of inefficient subsistence farming, the result could push a large section of the population off the land and into urban centres. Also, where continued access to cheap food cannot be maintained for urban centres, food riots will become more common place and internal stability may be undermined. In Western countries, such as Australia, the media fascination with agricultural commodities and food shortages will see calls for some populist policies which have a negative impact on all parties. Navigating this policy landscape will be difficult.

Fourthly, the market forces of higher agricultural prices will increase investment in degraded land. While higher food prices may cause unrest in urban areas, the net effect of this trend may see substantial private funds invested in activities which have a positive environmental impact. Furthermore, there is likely to be a greater level of corporate institutions directly and indirectly becoming involved in agricultural production.

Fifthly, similar to the transition point when crude-oil become a critical strategic input, the ownership and control of key agricultural regions has not yet been clarified. It should be remembered control over oil producing regions occurred in a relatively short time. Once agricultural becomes prized, the competition for newer producing regions becomes intense and could represent future flashpoints for conflict.

Sixthly, as with mines and oil and gas fields, in 2009 and beyond, foreign companies and governments may seek to buy large sections of Australian farmland and set up large operations. The impact that this could have on agricultural economics and rural communities is not understood, and very difficult to forecast. Unlike mining, and energy, this acquisition will be incremental and will only manifest when the process is well and truly underway. Establishing a national policy on foreign acquisition of farmland may avoid bi-lateral tensions which could emerge.

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