Conference synthesis and summary

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Paper prepared for presentation at the "Ethics, Efficiency and Food Security" The Crawford Fund 2014 Annual Parliamentary Conference, Parliament House Canberra ACT, Australia 26-28 August 2014

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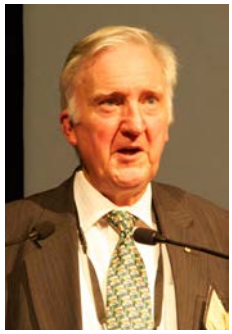

The Crawford Fund 2014 Parliamentary Conference on global food security asked how the world might be fed, well, in an efficient and ethical way, with a growing population demanding more nutritious food, in the face of a declining resource base, slowing productivity growth in the main food crops, and neglect of many traditional foods and indigenous vegetables.

Conference discussions highlighted:

- the pivotal role of women: inequitable treatment of women is both unethical and inefficient;
- the importance of nutritional security: more than 2 billion people suffer from micronutrient deficiencies, yet the incidence of overweight and obesity has doubled in the last decade;
- intertwining of the issues of population, development and food security; the sure prospect of a global population of 9.6 billion by 2050 if fertility rates continue to decline, or 10.9 billion or higher if they do not, and that a population increase of 30% will double the world's food needs;
- that a balance is needed between national self-sufficiency – still a deeply held policy conviction for some countries – and global self-sufficiency which emphasises the importance of free trade;
- trade and investment as key in global development, and the legitimate role of 'aid for trade' in encouraging a more open global trading system;
- the re-emergence of agriculture as a key tenant of a broader Australian aid strategy and the priorities of other international aid programs.

Policy change, research and training should be at the centre of responses in each of these areas. Australian Foreign Minister Julie Bishop, in formally opening the conference, confirmed that Australia is prepared to play its role with renewed priority for agriculture in its aid program, support for an open trade and investment environment (reflected in an emphasis on 'aid for trade' and 'economic diplomacy'), and continued support for the high impact research investments of ACIAR and the CGIAR.

John Kerin[1] and Tim Fischer[2] when in government had confirmed a bipartisan base for the view that Australia cannot be research isolationists and should not ignore the vast store of knowledge held globally. It is in Australia's interests to be a good neighbour, supporting research for the global public good and for the well-being of the human race, which depends on agriculture for stable civil societies. Echoing support for the priority of international investment in

agricultural research, Rachel Kyte noted that the CGIAR milestone of doubling funding to US$1 billion had been achieved, and she announced another target to double funding again by 2020.

Women and girls: 'Don't forget the ladies'

No one should have left this conference with any doubt about the pivotal role of women in agriculture, especially after the Sir John Crawford Memorial Lecture delivered on the eve of the conference by Professor Catherine Bertini. Women are at the core of the workforce even if, as conveyed in one dramatic image in her presentation, they are carrying children on their backs and therefore need short-handled hoes so they can crouch to weed the fields. In Profesor Bertini's presentation, and those of others, it was argued that:

- feeding a growing population is impossible without significant education and training of women and girls;
- inequitable treatment of women is economically inefficient;
- empowered and educated women will have lower fertility rates;
- women's groups and community organisations can create awareness of the need for training in schools;
- health clinics should target women's reproductive health concerns; and
- policy makers should be made accountable for gender equity.

Women's rights are a crucial component of fertility decline. Whilst a solution might lie in bringing fertility rates down in food-insecure countries, the concept of universality – that is, thinking in terms of global responsibilities – is important. In this view, rather than setting development goals in terms of education, fertility rates and so on for the developing countries only, as was the case in the first set of Millennium Development Goals, we should now be trying to negotiate *universal* goals for *all* countries.

Women are not valued in some societies, being placed below men and children in the priority list, such as at meal times. Women are under-represented in the corridors of power and in senior levels of the CGIAR.

Inequitable treatment of women is inefficient. Women make up 43% of the farm labour force yet they have smaller farm plots, poorer access to credit and other inputs, and they are more vulnerable to change. Evidence shows that given the opportunity they can be powerful contributors to productivity as well, with education improving the quality of care for their children. Rachel Kyte illustrated the potential gains if women are granted equal access to finance, land and other inputs, by drawing on an example of women farmers in Bangladesh.

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[1] Hon John Kerin AM was (Labor) Minister responsible for Primary Industries, or Primary Industries and Energy (1983–91), and Trade & Overseas Development (1991–93), and Treasurer (1991). He is now Chair of the Crawford Fund — and one of ICRISAT's Ambassadors of Goodwill.

[2] Hon Tim Fischer AC was (National Party) Minister for Trade, and Deputy Prime Minister (1996–99).

Under a new interpretation of the term 'G20', the organisation G(IRLS)20 'brings together one young woman delegate from each G20 country plus a representative from the European Union and African Union ...[in] a year-long program and global Summit that generates ideas that are presented to G20 Leaders'.[3]

Population and food and nutrition security

Declining human fertility should mean that the human population will peak at around 9–10 billion after 2050 although the numbers are clouded by complexity, cultural variance and unreliable data. The numbers could be bigger. Much depends on whether women are empowered with the right to choose the number and spacing of childbirth or whether the pattern is left to chance. An improving trend depends, in turn, on a set of factors: most importantly the education of girls and women in sexual health and reproduction, their ability to participate happily and productively in the economy and workforce, and food security – food insecurity is at the highest levels in countries with the highest fertility rates. Cultural and religious factors can make outcomes better or worse. Education is surely the answer here, too.

The number of chronically hungry people in the world, over 800 million, is still too high. However, apart from spikes in the number during food price crises in 2008 and 2011, this absolute number has not increased since 1970, even though the human population doubled to over 7 billion in the period. As an example of the gains made, national food indicators in Vietnam are said to have improved, with the proportion of the population undernourished reducing from 31% in 1990 to 9% currently. The global population will almost certainly grow to over 8 billion by 2025. Already, every minute there are 150 more people to feed.

At the same time, malnutrition is an increasingly serious issue: more than 2 billion people suffer from micronutrient deficiencies; and overweight and obesity, which have doubled in incidence in the last decade, have serious consequences for people's health, happiness and their ability to contribute to society. An estimated 5% of global gross domestic product is lost through under-nutrition and over-nutrition. Obesity is not just a rich country problem; the number of obese or overweight people in developing countries – over 900 million – now exceeds the number of people in the developing world who are chronically hungry.

As Rachel Kyte pointed out, hunger exacts a terrible toll, with impacts compounding through stunted growth, diminished learning ability, and prospects of only relatively low earnings and productivity.

Nutritional security is often not addressed in agricultural research and development programs, although it is now a priority consideration in agencies such as the Australian Centre for International Agricultural Research (ACIAR) and the United Nations' International Food Policy Research Institute (IFPRI). Plant breeding might pay more attention to nutritional traits. Social attitudes

[3] see <www.girls20.org>

can affect consumption patterns and therefore nutritional intake. For example, as explained by Dr Norah Omot, the 'orange sweet potato' introduced into Papua New Guinea has good nutritional value but is not popular because it is 'soft' when cooked and people feel hungry again too soon after eating it; and some traditional vegetables have a low status. Poorly educated people may not be able to read nutritional information on food packaging and might be guided, or misguided, by colourful package illustrations. Changes in lifestyle may lead to more processed, and less nutritious, food consumption. As we heard in the Q&A, there is scope for practical measures such as promotion of recipes for tastier ways to prepare traditional food, to illustrate eating options through attractive pamphlets through schools, community groups and at community health clinics. Closer liaison between agriculture and health ministries, and accountability for nutritional as well as production outcomes, might help.

One questioner noted, in respect of the targeted increase of funding from US$1 billion to US$2 billion, that 90% of investment was directed at increased production. Might it not be more balanced to include investment in, for example, biosecurity? Rachel Kyte responded that the shift in the CGIAR (and CGIAR Research Programs) is to research that cuts across disciplines and systems to focus, for example, on nutrition and on landscapes. She agreed that the globe is vulnerable to continued outbreak of zoonotic diseases where more research and capability are needed.

Dr Shenggen Fan added that some $150 million had been invested over a number of years in nutrition research and food safety. IFPRI has a large concentration of nutritionists (25–30) and a number of health and food safety people. He added that cross-boundary diseases, bio-terrorism and diseases such as Ebola could shut down the movement of people, which means that food cannot move.

Traditional and modern breeding approaches also afford the opportunity for bio-fortification of foodstuffs such as has been achieved with 'Golden Rice'. Although there is debate around the impact of genetic modification (GM) on nutritional quality of grains, it remains true, according to a comment from the floor, that some 90% of corn produced in the United States is from GM crops, delivering yields of 10.6 tons per hectare. Another comment from the floor referred to studies from Argentina showing effects by Roundup® through chelating, which reportedly diminished the availability of micronutrients to crops and hence had an adverse impact on human nutrition; this speaker was asked to cite the publications to which he referred.

Food security and free trade

A change in mindset from an aspiration for national self-sufficiency in food production to global self-sufficiency is needed. As Shenggen Fan noted, we need to avoid repeating past mistakes such as large subsidies and export bans. Whilst an ambition for self-sufficiency in the main food grains is deeply embedded in the national psyche of many developing countries, there are encouraging signs of change as policy capability increases, and reliance on subsidy and trade restrictions decreases.

More efficient food production makes sense not only because of the principle of comparative advantage and free trade but also because it will result in a net lower impact on the globe's scarce natural resources – which was the focus of the Crawford Fund's 2012 Parliamentary Conference, on 'The scramble for natural resources'.

Change in policy and practice will be critical: small farmers have to 'move up or move out of farming', as Dr Fan explained: possibly moving up when there are opportunities for commercialisation or better market links, or moving out when non-farm work is available. Land title, smallholder-friendly (and women-friendly) financial services, some form of market-based price stability, and social protection such as Ethiopia's social safety net program – which meant that they were able to deal relatively effectively with food shortages in 2013–14 – are all policy options that could be explored. Lifting of export bans is good economics and 'the right thing to do.'

Presentations on the demand for food from Asia noted that demand from Korea and Japan is already high-value, and that urbanisation in China and an associated growth in incomes will lead to changes in consumption patterns and to greater demand for beef, sheep and goat meat. Fruit and vegetable consumption is already high and national production increasing, so prospects for export growth into North Asia in these food types on such a high base may be modest; India has a self-sufficiency policy in rice and wheat but the vegetarian sector of its society may be increasingly looking to dairy.

Demand for dairy and meat is on an upward trend in Asia and especially in countries such as Indonesia and China. Some countries will seek to enhance their own livestock production through pasture improvement and animal breeding but also continue to rely on imports, including of live cattle. Increasingly, consumers are demanding higher levels of food safety and food traceability, with many willing to pay a premium price for clean and green food.

Australia, as an efficient agricultural producer, has a high stake in free trade and is also in a position to contribute through its research skills and experience to global food security whether through aid or trade channels. Directly, Australia contributes to the diets of some 60 million people and through the delivery of research, technical and education services can contribute to the diets of around 400 million. It has a strong tradition of free trade and open investment policies; it has negotiated free trade agreements, most recently with Korea and Japan; and is a middle order contributor to the CGIAR. The removal of trade barriers in Korea will have a favourable impact on beef exports from Australia and similarly for cheese. Asia already dominates Australia's agricultural exports but, to place the ratios in a converse perspective, Australia delivers only 6% of the region's food imports, and the rate of growth is slower than for competitors such as Brazil and New Zealand from which Australia faces tough competition.

Nevertheless, there are measurable trade opportunities in the Asian food market, including for Australia, and the absolute size of prospective export volumes is still significant. In Australia's case, strong partnerships will be needed across the supply chain and across national borders, including strong working relationships between its private sector and supermarkets and hypermarkets in

Asia as power in the supply chain shifts to the retailers. Traceability and the use of digital media (including through the use of 'felfies' showing the human face of clean green farming in Australia) will be important, we heard.

According to presentations and the Q&A, Australia can grow its exports, particularly into Asia, as a quality niche provider albeit for a relatively small share of the higher-price and high-quality end of the market, and it faces tough competition from North America and Brazil. Whether competition comes from low cost or subsidised production – or countries with access to cheap energy – the squeeze on Australian farmers will become tighter. The biggest challenge in building farmer profitability, according to Rabobank, is that we have relatively high production costs for commodities such as wheat. As well as higher quality produce we have a significant advantage in the cost of freight for exports to our near north, but the cost base of labour and energy has been rising. Australia needs to find higher value markets because we cannot compete at the lower end against, say, the Ukraine and Russia. Also we need to shift our export focus to Asia and away from North America and the Middle East where we cannot compete.

Ironically, perhaps, the 'squeeze' on farmers (as the impact of increased input costs and downward pressure on food prices was characterised) will continue. Australian farmers are 'fed up' with hearing about wonderful opportunities in Asia while their terms of trade have been worsening. Unless farmers are seeing a return from markets prepared to pay the price for our goods, they are not going to have the incentive to invest in the production of high quality foodstuffs. One questioner said that the appreciation of Australian currency has increased costs significantly and that the Dutch had solved their problem, in part, through investment in R&D.

Competition for resources: Feed for livestock and energy

Competition for resources was also illustrated at the conference through case studies of food for people, feed for animals and feedstocks for energy. For every one kilogram of meat consumed, demand for feed grows by 10 kilograms, intensifying pressure on crop and forestry lands and adding to greenhouse gas emissions.

It was suggested that some 40% of American corn is converted into biofuels. Does it make sense for countries in Asia to devote arable land to animal production and to biomass for energy generation from biofuels? Would it not be better to focus on food-crop production, including through intensified systems? Reforms appear to be tending in this direction, while it is hoped that research and development will enable utilisation of poorer land to deliver multiple purpose crops such as sweet sorghum, with by-products providing for energy and animal feed.

Competition for resources: Food waste – making the invisible visible

Wasted food in 'our broken food system' is wasted energy and lost natural resources. Food is lost and wasted to varying degrees in the developed and developing countries: in North America and Europe, 95–115 kilograms of food

per person annually compared to 6–11 kilograms per capita in Africa, South and South East Asia. In Australia, average household waste, often discarded to landfill, is estimated at $1000 per household per year.

Losses in developing countries are mostly due to pests and diseases and infrastructure weaknesses in the supply chain. In Africa, losses reach 10–20% prior to processing. Training in seed storage, better post-harvest facilities, the raising of village gardens, and diversity in plantings can help. If that loss was eliminated and waste avoided, 48 million people could be fed.

There is a need through public awareness to 'make situations visible that have often been invisible', recalling the fair trade movement and the overall impact of scarce natural resources, and even greenhouse gases. Oxfam urges simple steps to reduce food waste: eat a little less, and watch your waste. Ethical behaviour may be a powerful factor in encouraging change amongst Australian households.

Dealing with climate change

Rachel Kyte characterised climate change as a 'threat intensifier' and said we will soon be living in a 2°C degree warmer world with consequential drops in yield. In a 4°C degree warmer world it would be even worse.

Agriculture and land use patterns must change from being part of the problem to being part of the solution through an integrated holistic approach to climate change adaptation and mitigation. We must produce more food with fewer resources: in the case of rice, 65% of which is grown in Asia where currently one hectare provides enough rice for 27 people, by 2050 that hectare will need to feed 43. This holistic approach must include increasing resilience of farmers, and reducing greenhouse gas emissions for each kilogram of food produced.

Climate smart agriculture offers a 'triple win', through increased productivity, improved resilience and greater climate change mitigation. Examples of progress or potential breakthroughs include: intercropping of bananas and coffee – taller shading banana plants can lower air temperatures for coffee trees; converting a C3 metabolic pathway to a C4 pathway (first discovered in Australia) for faster photosynthesis converting carbon dioxide and water to plant growth; and new rice varieties that increase yield but reduce water and fertiliser use.

In the Q&A session, a fibre and grain producer from southern Queensland, recalling that cost of production is a major issue and agreeing that climate smart agriculture was 'a noble initiative', asked whether it can it be done in a sustainable way.

A questioner from the University of Queensland and WorldFish agreed that nutrition is gaining traction amongst research priorities, but doubted impact at the grass-roots and program roll-out levels. There are successes in homestead gardens promoted by Helen Keller International working with women to create home gardens to produce vegetables: in Bangladesh 3.5 million people had been helped to produce vegetable gardens where women are well fed and generate incomes. The question was, however, how can we can scale up? Perhaps by making ministers responsible for nutrition.

Governance

Responding to a question on global governance, Shenggen Fan noted that the current global governance system was set up in the 1940s or 1950s. Now the world has changed and the G20 countries therefore need to ensure that voices of the emerging economies and the private sector can be heard, to drive and lead on improved trade policies, better sharing of research and information on production, and more effective investment (where emerging economies have invested most). Governments need to facilitate this, with the right policies across aid and other portfolios.

One reason for some optimism is that there is so much more awareness now of the broader issues and inter-relationship.

The answer also involves young people and the conference acknowledged with applause the presence of some 50 people under the age of 35 at the conference.

Urban agriculture

Participants showed some interest in talk about urban agriculture: Rachel Kyte responded that it is understood that urban issues will become a bigger part of the puzzle. Currently many policy makers work in separate 'silos' of urban and rural divisions. She felt that we will see a lot of work and redefinition of urban and rural landscapes.

While intensifying food production is part of the food production/resource scarcity equation globally, Luke Chandler suggested that the trend is moving the other way in Australia because, due to the fad of superfoods, intensive protein sectors are pushing away from intensive production.

The way ahead for the Crawford Fund

The Fund will be using the key messages around these issues from the conference to inform its policy, public awareness and training activities. Its 2015 conference will, for example, focus on the role of the private sector in natural resource management, sustainability and profitability.

Dr Denis Blight AO, the Chief Executive of the Crawford Fund, has had a career including positions as an Australian diplomat, public servant and chief executive. His association with international agricultural research began in earnest some 25 years ago. Prior to working for the Crawford Fund, he was Director-General of CAB International, an intergovernmental body in research, training and publishing in the life sciences, and had 15 years with IDP Education Australia, the international development program of Australian universities and colleges, including the position of Chief Executive.

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