The Livestock Revolution: A Pathway out of Poverty?

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Introduction

Derek Tribe would have loved to have been at this seminar that has been dedicated to his memory. He would have contributed frequently throughout the proceedings because the topic was one that was very close to his heart and his life's mission.

Today we posed the question: The Livestock Revolution: A pathway out of poverty?

Has it been answered? It is a complex question and the answer to it, as far as the poor smallholder farmers in the third world are concerned, can only be guessed, and depends on a lot of 'ifs'. Of course if one looks at the history of own country, as Minister Downer pointed out (Downer, these proceedings), the creation of the wool industry by our pioneers generated a 'livestock revolution' of sorts that resulted in a pathway out of poverty for many of our early farmers. Later in our history, refrigerated shipping provided the necessary means by which our meat producers could participate in world trade and take a large step forwards from the relative poverty of being tallow producers to being suppliers of a higher-value product, meat.

And very close to Canberra I had an aunt who, during WWII, fed her hens on surplus wheat to produce eggs, which were taken to Hall Village every week. This maintained a cash flow that kept the family going between the receipt of the wool and the grain cheques. Livestock formed a very important component of their existence and fulfilled a very important need.

Similarly, since the early and mid years of the 20th century, we have seen the evolution in the dairy industry from a large number of small dairy farms with a few cows delivering their milk to nearby houses from large cans in horse-drawn carts, to a few major milk processing plants, producing a large variety of products and delivering through very sophisticated distribution networks.

We can safely say that, based on history here and elsewhere, livestock **can** provide a pathway out of poverty and, given the present trends, such pathways will evolve.

Today we learned that 1.2 billion people live in poverty (incomes of less than 1 USD per day), that a high proportion of them are in rural areas and most of them are women. We learned also of the pivotal position of livestock in the welfare of the households and to the national economies of developing countries, and in overall global land use (Seré, these proceedings). Based on such a scenario and on history, livestock have been, and would appear to be, a major springboard for economic and social development amongst the rural poor.

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But, given the dependence of the outcome on access to markets and trade, as well as on production, processing, transport technologies and the types of policies and regulations that are introduced in the food industry as it develops (Seré, these proceedings), can it be assumed that the pathways from poverty, provided by a livestock revolution, will benefit the poor farmers?

I would like to summarise the preceding papers in our 2003 Parliamentary Seminar and answer this question by posing five further questions, only some of which have been answered today:

- is there such a thing as a 'livestock revolution'?
- what is driving it?
- can the potential benefits be realised?
- what are its threats?
- what are its opportunities:
  - — for the poor?
  - — for Australia?

Is there such a thing as a 'livestock revolution'?

This phrase was coined by the IFPRI/ILRI/FAO study in the 2020 Vision publication *Livestock to 2020: The Next Food Revolution* of which Chris Delgado was the senior author (Delgado *et al.* 1999). Whether it is technically correct to call it a 'revolution' does not matter; what is clearly evident is that there is a large and rapid change occurring in the dietary preferences of people, manifested particularly in developing countries, and the consequences are that a lower proportion of their dietary calories is being derived from cereals and other plant material and a higher proportion is being derived from animal products. In the last 25 years the proportion of dietary calories coming from livestock products (meat, milk and eggs) in developing countries has increased from 6% to 10%. In developed countries the proportion has remained constant at around 20%. By 2020 it is predicted that these changes will be much more pronounced: the per capita consumption of both meat and milk is predicted to increase by about 40%. Pork and poultry, which presently total about 74% of all meat eaten in developing countries, are predicted to fall to about 68% in 2020, mainly because of increases in the proportion of beef eaten. By contrast, the per capita consumption of animal products in the developed world is not increasing or if it is, it is doing so only slowly.

Whilst increases in per capita consumption is a phenomenon largely of East and SE Asia, overall consumption of meat and milk is increasing in South Asia and Sub-Saharan Africa because of the population increases.

What is driving this livestock revolution?

The two key drivers are population increases and increases in per capita income. Prices too, of course, have an influence. Growth in GNP is similar for low- and middle-income developing countries, as for the OECD countries, at slightly over 2% annually (Delgado *et al.*, these proceedings). The world's two most populous countries, China and India, are sustaining healthy rates of increase in the GNP per capita, in contrast to Sub-Saharan Africa and parts of Latin America where GNP per capita is declining.

The world's population today is around 6.25 billion. By 2050 it is estimated that the population could be close to 9 billion, and by early in the next century, will be stabilised at possibly around 11 billion. From then on it will slowly fall (UNDP 2001). In the early 1950s, women in developing countries gave birth, on average, to more than 6 children compared to around half that today. Several developing countries are now experiencing birth rates of around 3.1 children per family.

There is large variation in the population growth between countries. Currently, 7 of the 10 countries with the highest population growth are in Sub-Saharan Africa, with rates of increase between 3.27 and 5.53% (Liberia), and 5 countries exceeding 4%. In contrast, China at 0.9% (excluding Hong Kong and Macao) is now matching many developed countries e.g. Australia (1.15%), USA (1.05%) but still some way to go to catch the European countries e.g. UK (0.27%), Sweden (0.03%), France (0.37%), Germany (0.09%). India (1.60) is expected to have a larger population than China by 2050 (1.57 billion vs. 1.46 billion). Indonesia and Vietnam, with growth rates of 1.41% and 1.40% respectively, are making better headway than the Philippines (2.03%). But the real problem areas are in Africa and to a slightly lesser extent, the Middle East and parts of South Asia.

Coupled with these changes in the total population are changes in the age structure and changes in the ratio of urban to rural dwellers. In 1950 only 0.5% of the world's population was over 80; today it is 1% and by 2050 it is estimated that 10% of the

population with be over 80. Furthermore, population growth from now on will be in the cities. By about 2007, for the first time in history, over 50% of the population will live in cities.

These are the key drivers of the changes in the global and regional variations in the consumption of livestock products and will determine, to a large extent, the location and types of production systems used to supply that consumption.

How can the benefits be realised?

Given that a scenario of increased consumption of livestock products will continue unabated, there will be large benefits to be captured in various parts of the economy. The producers should capture some of these benefits, but who will be the major beneficiaries — large-scale commercial enterprises, smallholder farmers with access to capital, technology and markets, or some admixture in transition?

Whilst there are some shining examples from China (Waldron *et al.* and Zhou, these proceedings), not all the countries involved have the politically powerful infrastructure of China to deal with the policy issues that have enabled farmers there to become more market and income oriented. Even the centralised model favoured in China, or the admix of centralised and *laissez-faire* that actually operates, can create distortions and inequities (Waldron *et al.*, these proceedings).

In fact, as Moore (these proceedings) highlighted, governance issues are central to the implementation of improved policies. In countries that have weak administrations or corrupt politicians, police, customs or other officials, the system can be more easily manipulated by the strong and powerful so that the benefits of increased production and market access, and the flow of benefits along the production chain, is impeded or non-existent. Macro- and micro-policies have to be tightly aligned. Global trading agreements and regulations have to be conducive to and harmonised with the domestic national policies for benefits to flow through the economy.

What are its threats? Apart from inept, bad or unworkable ideologically-based policy settings that corrupt the appropriate flow of benefits to smallholder producers, the other threats of the Livestock Revolution can be broadly classified into the following major headings:

1. feed supply — where will the feed come from that will be essential for it to happen?
2. environmental degradation — from poor cropping practices associated with the production of feed and inadequate waste management of on-farm and off-farm production chains, causing soil, water and atmospheric pollution
3. animal ethics and welfare problems — associated with intensification including disease control, housing, transportation and processing, all of which can have impacts on production efficiencies, consumer attitudes and thence marketing and trade prospects
4. diseases of livestock and zoonoses, a major threat
5. tensions generated within the national domestic farming community whose members can perceive that developing countries are benefiting at their expense.

Zhou (these proceedings) produced very sobering data and information that highlights the enormous impact of China on the world demand and supply of food and feed. For example, in 1997/99, the global feed-grain demand was 657 million t and predicted to rise to 911 million t in 2015 and 1148 million t in 2030. In 2015 and 2030, total cereal demand for food, feed and other purposes is projected to be 2379 and 2831 million t, respectively. Fortunately demand is projected to match supply with even a small global surplus. The paper predicts that in industrial countries and transition countries, overall cereal supply will be greater than demand; it is in the developing countries where there will be a shortage of cereal supply.

Zhou warns that if China experiences a faster per capita income growth than projected, and is consequently able to export livestock products to the world market, the demand for feed grains will be greater than those quoted. However, the challenge for developing countries to produce feed is greater, because their farming resources have already been severely stretched through lack of suitable technology and physical inputs; unless there are some dramatic technological break-throughs, there will be additional stresses on the human and natural resources in developing countries. Moore (these proceedings) graphically illustrated the likely impact of HIVaids on human resources and farm labour in developing countries, quoting the need to hire three people in southern Africa because two will die. Six hundred people are dying daily in South Africa from HIVaids; in addition, countries are war-torn; with a large proportion of the popula-

tion being 15 years or younger, the future for food and feed production does not look bright for sub-Saharan and southern Africa. This region was also largely by-passed by the Green Revolution.

Like all changes, the livestock revolution will not affect all people equally. Zhou (these proceedings) notes that the larger farmers in developing countries with access to credit and knowledge are likely to benefit, but the smaller and more disadvantaged farmers will find it more difficult unless Governments establish pro-poor policies and institutions targeted towards smallholder farmers.

A careful analytical study by Fischer *et al.* (2001) of the world's eco-systems, however, indicates that the world is capable of supporting the levels of food and feed production predicted for 2020 without necessarily sustaining further major ecological damage, provided technology continues to play its role in lifting productivity.

Christoe (these proceedings) recognises the large and mainly negative potential impacts of animal industry wastes, whether generated on-farm or as part of the processing chain. He defined the nature and the extent of the 'waste management' problems from intensive production systems, wool and hide processing, and the wastes of meat processing. He suggests an approach that engenders a culture in the industry and, more broadly, in the community, that thinks of 'waste' as 'by-products', 'residuals' or 'manure and fertiliser', and treats this issue positively and as a source of income or benefit. The phrase he used was the need for a 'paradigm shift that will take us from chaos to compost'! This approach heralds a good sign for the future. Technology is serving human welfare well in this area. Innovative technology has a lot to offer in this area as Christoe's references to ACIAR projects in China and India demonstrate. Many technologies require very small adaptations to make them applicable in developing countries. The whole area of meat processing has received significant attention in Australia over the last two decades that has resulted in water savings and by-products that are of economic and environmental value, and without detriment to food safety or good hygiene (www.mla.com.au).

Animal welfare and ethical issues will loom large as intensive livestock production continues in developing countries. Blackshaw (these proceedings) has given us a timely reminder of the doubtful morality of imposing the values and regulations that have evolved over the last century in industrialised countries on emerging and transition economies that are still seeking better diets and health for their communities. This is a dilemma that could face future trade agreements between industrialised and developing countries. My personal experience is that animal welfare is pretty low on the political agenda when there are some people no better off than the animals around them. I am reminded of the comment by Jeffrey Sayer, who was then the Director General of the Center for International Forestry Research, that you can afford to be a good greenie only when you are getting three meals a day. One can draw a parallel in the case of livestock. In a country where you can walk into any supermarket and buy a variety of meats — humanely slaughtered, hygienically processed, uncontaminated and safe to eat, at very affordable prices — should we be trying to impose the related standards right now on developing countries, or do we just try to speed up the process of evolution, and the allied attitudes? The live trade is a contentious issue in Australia, but without a live trade many people elsewhere would not have access to meat. There is no cold chain in many of the countries buying live cattle to support a trade in boxed meat. Ironically, the live trade is just adopting measures that the British Admiralty adopted 200 years ago in the transport of convicts — payment on the number arriving at their destination alive instead of the number leaving! Community concerns will drive the policies that will further enhance the humane treatment of animals in our society, but let us not sacrifice the welfare and health of the people from poorer nations by setting the regulatory bar too high too early.

The threat of livestock disease has two faces. There is the threat to productivity and the costs of control measures and there is the face that threatens the human population directly — the 'new' zoonotic diseases that have proved so devastating to the human population, some of which have been traced to the intensification of livestock production.

Jeggo (Jeggo and Eaton, these proceedings) provided an excellent analysis of the causes, conditions and controls for emerging diseases. Livestock diseases are a global problem. The rapid movement of people and livestock around the world emphasises the global nature of the threat. Recent events such as the continuing concerns with BSE, the FMD outbreak in the UK and more recently elsewhere (BSE in Japan and Canada), and a string of viral diseases in the past decade, emphasise the devastation that diseases can inflict, and the impacts that they can have on national economies

through other pathways such as tourism, travel, the health systems, and peoples' lives and livelihoods. To quote Mike Moore (these proceedings) 'someone coughs in Hong Kong and Toronto closes down'! Some of these emerging diseases are associated with the closeness of people to their livestock, often keeping livestock in their homes for home consumption. Given the increasing urbanisation of world populations, this practice will increase, and this could increase the frequency of appearance of new diseases of humans. New technologies are helping our understanding of the origins and nature of these diseases, and providing technologies for their diagnosis and control. Unfortunately, access to this new technology and its products is very limited amongst the countries that have the greatest need and a lot to gain. Science-based risk management is now the strategy. But this approach is powerless without the eyes, ears and communication provided by proper surveillance. Surveillance, however, is expensive, requiring well-trained field and laboratory operatives and significant infrastructure for diagnosis, record keeping and reporting. Although the requirements for participation in international trade are very stringent — conformation to international standards — there is room for a less demanding framework for local trade to meet local demand (Seré's examples, these proceedings). This factor could provide some developing countries with breathing space whilst economic development proceeds.

The processes and tools that we have in Australia are applicable globally. Failure to tackle livestock diseases anywhere in the world, whether in developing or industrialised nations, will provide a constant threat to livestock producers and human populations everywhere. Jeggo captured the message well — 'Given the scant resource available to most disease management strategies, considerable investment will be required in the developing countries by richer nations to reduce the risk associated with new and emerging diseases. The problems are global, they will have a global impact, and the problem needs to be tackled on a global basis.'

In a reassuring paper by Murray (Butler *et al*., these proceedings), Australia's role in protecting our industries and contributing solidly to the international efforts to control livestock diseases was clearly illustrated. Australia recognises the global nature of livestock diseases and makes its contributions to the global control effort through two main avenues: the Australian Centre for International Agricultural Research (ACIAR), on the research front, and through Agriculture, Fisheries and Forestry — Australia (AFFA) on the policy, regulatory and services front. AFFA is responsible for animal health and welfare issues as well as for minimising the impact of pests, diseases and contaminants, for managing emergencies, for facilitating the development of national policies and strategies, and for advancing Australia's trade interests. AFFA has a strong international program that, as would be expected, is primarily aimed at protecting Australian industry but, in achieving this, also provides major benefits to partner countries. In implementing bi-lateral and multi-lateral agreements that protect the livestock in both countries, AFFA provides training with financial assistance from AusAID.

Internationally, Australia participates in multilateral organisations such as the Food and Agriculture Organisation (FAO) and the World Organisation for Animal Health (OIE) that set standards and policies, and which assist developing countries by promulgating standards that provide guidance in designing and implementing domestic animal health standards. Australia is particularly active in our own region, sometimes leading activities such as information exchange, technology transfer, training and support. For example, Australia's leadership initiatives in the OIE Regional Commission for Asia, the Far East and Oceania, the South East Asia foot-and-mouth disease (SEAFMD) campaign, and the Network of Aquaculture Centres in Asia-Pacific (NACA). Involvement in the Asia-Pacific Economic Cooperation (APEC) forum technical working groups relating to animal and plant health has also had benefits through APEC harmonisation initiatives. Australia also acts to assist our neighbours in such activities as emergency management training in Indonesia, and foot-and-mouth disease projects with China, Thailand and Indonesia.

One of the social threats to the Livestock Revolution realising its potential to provide a pathway out of poverty for developing countries is the perception by our farmers and businesses in Australia that, by trading our technology and knowledge with those who may in the future compete for our markets, we are ruining our future economic prosperity. The arguments against this proposition have to be put forcefully and frequently to the farming sector. This perception displays a simplistic view of economics and trade, and an ignorance of how far advanced our technology, and our capacity to generate new technology, is relative to those we

are helping and who we believe will be our trading partners in the future. Australia has to make strategic choices between the trade of commodities (e.g., feed and animal products) and services (e.g., technology and management expertise), and has to recognise and alleviate the potential for conflicts of interest between our industries in these areas of activity and between local and international interests.

What are its opportunities?

The opportunities for small farmers with appropriate technology, facilitating financial policies and market access are obvious. There are three basic requirements — technologies, policies and institutions (Seré, these proceedings). For some the pathway will be to become larger and more commercial in some way, either as individuals or through cooperative arrangements and joint ventures; for others the way may be through subcontracting to larger business ventures or multinationals. The challenge is for national governments and international agencies to ensure that the benefits that are available accrue to those who are most in need, be they economic gains for farmers or better nutrition and health, and cheaper high-quality protein sources, for the wider population.

For Australia, the opportunities are in the provision of livestock products as well as the provision of knowledge, technologies and training to those countries and people for whom the Livestock Revolution is the opportunity for a pathway out of poverty. We can certainly help these countries to develop policies, technologies and institutions — the three ingredients essential for a pathway to be realised — through agreed trade or aid packages. We will then be, in the words of Derek Tribe, 'doing well by doing good'. Maybe the increased prosperity will lead to greater peace in the world!

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