



**THE ATSE CRAWFORD FUND**  
Supporting International Agricultural Research

# THE LIVESTOCK REVOLUTION: A Pathway From Poverty?

**ABSTRACTS**  
(in order of presentation on the program)

**OPENING ADDRESS:**

**The Hon Alexander Downer, Minister for Foreign Affairs**

The majority of the world's poorest people live in rural areas. In recognition of this, Australia's aid program aims to reduce rural poverty by increasing opportunities for the poor to generate income. Increased income can provide the poor with the freedom to make choice about how to improve their lives. It allows them to build assets, reduce their vulnerability to disasters and improve their food security.

Livestock play an important part in keeping poverty at bay as a food source and as an aid to agricultural production. The Australian Government through AusAID and the Australian Centre for International Agricultural Research, ACIAR, work with governments in the Asia Pacific region in areas to gain maximum benefit from livestock. These include research into animal diseases, supporting microfinance schemes involving animal trading or farming or by supporting capacity building programs such as quarantine programs to enable countries to protect their livestock against introduced species.

This paper explores the role of livestock in the aid program's substantial rural development sector and the very important contribution made by the late Professor Derek Tribe. Professor Tribe's work in livestock has been applied in many developing countries to improve food security and the economic well being of whole communities.

**KEYNOTE ADDRESS:**

**NOT BY BREAD ALONE: THE NEXT FOOD REVOLUTION**

**Dr Carlos Seré, Director-General, International Livestock Research Institute, Kenya**

Livestock contribute to the livelihoods of 70% of the world's poor including farmers, traders, labourers and consumers. The next food revolution will dramatically expand production and consumption of animal products in the developing world. This revolution, however, also threatens the livelihoods of these poor livestock keepers. Public international research can mitigate these threats and thus contribute to addressing broad developmental goals of sustainable poverty reduction, food security and enhanced livelihoods.

The "Livestock Revolution" can provide tremendous opportunities to relieve poverty and hunger worldwide and could increase the ability of millions of poor people to move out of a subsistence existence and to join the market economy. But, the competitive advantages of the smallholder farmer may be lost to large-scale commercial producers, should public international research not place these concerns high on the world agenda. This shift in competitive advantage is associated with a range of forces driving change, including: population growth, globalization, and growing concerns with zoonoses and food safety.

This paper discusses the impact of these drivers of change on the smallholder systems and the capacity of these systems to contribute to social and economic development. It then examines the role public research can play in enhancing the competitiveness of smallholders by addressing the technical, institutional and policy issues that put them at a disadvantage.

Finally, the paper explores the funding position for such global public goods research, showing how benefits of such research will accrue to developed countries as well as developing nations, thus supporting the rationale for North South cooperation in this endeavour.

### **MEATING AND MILKING GLOBAL DEMAND – STAKES FOR SMALL FARMERS IN EXPANDING MARKETS**

**Dr Chris Delgado, Senior Research Fellow, International Food Policy Research Institute, Washington**

The four-fifths of the world's people in developing countries currently consume one-half the meat and one-third the milk per capita as in the developed countries, but this is changing rapidly. A "Livestock Revolution" is occurring, primarily driven by demand in Asia.

By 2020, the share of developing countries in total world meat consumption will expand to 63 percent, and by 2020 they will consume 117 million metric tons (MMT) more meat and 177 MMT more milk than they did in 1996/98. Their annual use of cereals as feed will increase by 209 MMT. Net exports of feed grains from developed to developing countries will nearly double, while net exports of beef will swell by 1.1 MMT, and pork and poultry by 3.8 MMT. Nonetheless, the inflation-adjusted prices of livestock and feed commodities are expected to fall only very marginally by 2020, compared to precipitous declines in the past 25 years.

These trends are mainly propelled by demographic and dietary changes, and involve shifts towards safer, more reliable, and more convenient foods. The incomes and nutrition of millions of rural poor in developing countries are improving, and millions of livestock "keepers" have become livestock "producers". Yet the rapid concentration of animals and people in peri-urban areas is creating serious environmental and health problems. Small-scale producers are also being edged out by rapidly industrializing livestock production.

Solutions to what is fast becoming one of the primary rural policy problems of the developing world will require coordinated new technology and improved policies focused on facilitating small-scale producer adjustment to a rapidly changing marketplace.

### **SUCCESSFULLY MARKETING PERISHABLES - THE OUTLOOK FOR SMALL FARMERS**

**The Rt Hon Mike Moore, Senior Counsellor on Trade and Global Strategy for Fonterra Co-operative Group; and former Director General, World Trade Organisation, former Prime Minister of New Zealand**

Many livestock products are perishable, and pose particular challenges in relation to delivering a high-quality product to consumers. Developed countries have a comparative market advantage based (in part) on advanced technologies and economies of scale. Some developing countries have made determined efforts to build efficient livestock industries based on small farmers; the dairy industries in India and Thailand are examples of these efforts.

This presentation will highlight the institutional arrangements potentially available to small farmers wishing to access markets for perishable livestock products such as milk and meat; the lessons to be learnt from the experience of developing countries to date; the role of dairy cooperatives, and the logistical impediments to access to high-value markets by small farmers.

It will also include a discussion on the implications of globalisation, the Doha Development Round, opportunities for farmers large and small, and there will also be a focus on the biotechnology revolution and development ideas and principles.

## **TRANSFORMING LIVES WITH LIVESTOCK-BASED AGRIBUSINESS**

**Professor Emeritus John Longworth, Colin Brown, and Scott Waldron, China Agricultural Economics Group, University of Queensland**

In this paper, two broad categories of household are considered – diversified households and specialized households. For diversified households, lifting incomes above, and preferably well above, poverty levels is the main issue. In the case of the specialized households, increasing incomes especially relative to those in urban areas is the primary goal.

Livelihoods are largely determined first, by the way the households interface with the industries or industry in which they are involved – that is, by agribusiness – and secondly, by the development paths of these industries – that is, by government policies.

The dominant Chinese approach to industry development is policy rather than market driven. Initially, policies are introduced that target the construction of production bases with the aim of increasing physical output. At a later stage, attention turns to the development of processing facilities, hopefully, to value add. Traditionally, little if any attention is given to development of agribusiness aspects of the marketing chain or to market demand. China is beginning to make the transition from an output-oriented form of industry development to policies that aim to create “modern” agribusiness sectors. However, the interventionist-targeting approach remains dominant and the emphasis in recent years has been on the development of highly-concentrated vertically-integrated marketing chains controlled by large semi-government corporations that aim at the high-value end of the markets.

The paper concludes by arguing for a more facilitative approach to the development of livestock agribusiness in China that will allow a much wider range of households to participate in, and benefit from, the ruminant livestock revolution.

## **FEED VS FOOD: THE FUTURE CHALLENGE AND BALANCE FOR FARMING**

**Dr Zhang-Yue Zhou, Director Asian Agribusiness Research Centre, The University of Sydney**

Demand for livestock products in the past three decades has increased rapidly, especially in developing countries. This increase has resulted in, and will continue to cause, increased demand for feed.

This paper examines existing projections of global feed demand and supply with an emphasis on China. It first presents the emerging trends in demand for feed, followed by a perspective of feed demand and supply. It then highlights the challenges facing future farming in its endeavour to meet the increasing demand for feed and discusses the likely scenarios for sourcing the feed globally. Finally, the paper sheds light on whether the emerging livestock revolution will offer much opportunity to farmers, especially small farmers in the developing countries and those at home in Australia.

## **WASTE NOT, WANT NOT: MANAGING LIVESTOCK WASTE FOR INCOME AND THE ENVIRONMENT**

**Dr Jock Christoe, Chief Research Scientist, CSIRO Textile and Fibre Technology**

The world-wide intensification of livestock industries poses major challenges for waste disposal. For example, the total solids wastes discharged from livestock farms in China exceeded 1.7 billion tons in 1997 with a further 20 billion tons of waste water being discharged to the environment – only 10% of these wastes were treated!

A key element of sustainable development is cleaner production. Cleaner production is an approach in which wastes are handled in such a way that environmental pollution is avoided. Cleaner production practices include waste minimisation, pollution prevention, recycling and community-based environmental approaches.

An increase in the production of livestock products means an increase in the production of livestock wastes and, consequently, an increase in the potential for environmental pollution.

The applications of the principles of cleaner production for four types of livestock waste are discussed in this paper:

- With wool-scouring wastes the process streams are segregated in order to separate the raw wool contaminants so that the dirt and wool wax can either be composted to produce either a soil conditioner or a premium potting mix, or used as a fuel. The water-soluble contaminants can then be used as a source of potassium. The treated water can be recycled to the washing process thereby eliminating aqueous discharges completely.
- The pollution propensity of the wastes produced in the leather industry can be reduced by methods such as converting waste hair into a fertiliser, chrome liquor recycling and reducing salt discharges through hide drying technologies.
- In order to facilitate the adoption of cleaner production technologies with piggery wastes in the Pacific Island Countries, participatory methods and action research are being used to encourage community involvement
- Nutrient audits of farms using farm yard manure applications to improve the crop yields showed that Indian farmers under-fertilised whereas Australian farmers over-fertilised their crops.

### **TAKING ACCOUNT OF ANIMAL ETHICS AND WELFARE**

**Dr Judith K Blackshaw, Associate Professor in Animal Behaviour and Welfare, School of Veterinary Science, University of Queensland**

In many developing countries the main concern of people is their day-to-day survival with little concern for long-term ecological implications or animal welfare issues. Unfortunately many aid programs have been a waste of money with many layers of expensive bureaucracy, and recently organisations have been forced to reconsider their position on the livestock industries in developing countries.

Working with the farmers and their indigenous stock, progress can be made with seemingly simple strategies. Just the system of feeding poultry each day and confining them for part of the day and at night can produce more eggs and prevent predation. This means more money, better health for the livestock and the people. The concept of animal welfare could be built into this training with the emphasis on the benefits accruing to the people as well as to the animals.

### **EMERGING DISEASES: CAUSES, CONDITIONS AND CONTROLS**

**Dr Martyn Jeggo, Director of CSIRO Livestock Industries Australian Animal Health Laboratory**

There is no doubt of the increasing risk from new and emerging diseases and that these have the potential for profound implications for all sectors of society. The reasons behind the emergence of entirely new diseases such as SARS are usually the result of changes in the way we do things and are often difficult to predict. The increasing emergence and spread of more traditional diseases are perhaps more complex and involve as much an evolution of the causative agent as us doing something different. Whatever the cause, the risk is increasing and threatens as much those striving to emerge from poverty as the more developed groups in our society.

Understanding better the conditions that drive these changes, recognising earlier an emerging disease and having in place more effective mechanisms for responding to each threat will be critical. Increasingly though, such diseases are emerging from a complex of interactions between humans and animals and an effective national animal disease surveillance program is an essential component.

Unfortunately for many developing countries resources are not available for such systems, the risks remain unmanaged and the opportunities that the livestock revolution can offer could abruptly disappear. Importantly many of the new diagnostic and surveillance tools being developed for use in Australia will be applicable to these poorer regions and could assist the better management of such risks.

### **A ROLE FOR AUSTRALIA: CONTRIBUTIONS AND BENEFITS**

**Dr Gardner Murray, Australian Chief Veterinary Officer, and Executive Director, Product Integrity, Animal and Plant Health, AFFA**

This paper summarises Australia's contributions to the global animal disease control effort, from the perspective of the Department of Agriculture, Fisheries and Forestry – Australia (AFFA). AFFA's objectives in the context of animal health and welfare, and veterinary public health, include minimising the impact of pests, diseases and contaminants, managing emergencies, facilitating the development of national policies and strategies, and advancing Australia's trade interests.

A result of such objectives has been the establishment of a strong international program within AFFA. The program has many elements and has the dual advantage of collaboration with other countries on animal health matters, including that of aquatic animals, as well as progressing Australia's trading interests.

At a 'global level' Australia is active in multilateral standards and policy setting organisations such as the Food and Agriculture Organisation (FAO) and the Office International des Epizooties (OIE). These activities indirectly assist developing countries in numerous ways, including by promulgating standards that provide guidance in designing and implementing domestic animal health standards.

Australia's contributions are also made at a regional level, with direct and obvious benefits for developing countries such as information exchange, technology transfer, training and support. Examples include Australia's leadership in initiatives such as the OIE Regional Commission for Asia, the Far East and Oceania, the Southeast 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.

Contributions may also be through direct, bilateral assistance and collaboration, with similar benefits. There are many examples of these bilateral activities, such as emergency management training in Indonesia and foot-and-mouth disease projects with China, Thailand and Indonesia. Examples and case studies are provided in the paper to illustrate these direct and indirect contributions and benefits.