Australian Government
Australian Centre for International Agricultural Research

THE UNIVERSITY OF QUEENSLAND
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Regional Workshop on Beef markets and trade in China and Southeast Asia

Key developments, questions and strategies for regional beef industries

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HELVETAS
Swiss Intercooperation

Beef industry and rural development in China and SE Asia

Focus

- ❖ Domestic industries
- ❖ and on development

Presentation:

1. Macro trends ("The livestock revolution")
2. Industry development
3. Rural development
4. Questions for the workshop

1. The Livestock Revolution

- Delgado et al. 1999. Livestock to 2020. IFPRI / FAO.

- Bigger than the Green Revolution
  - and different – demand-driven

- A revolution of the developing world
  - Livestock consumption and production in the 1980-90s:
  - stalled in the developed world (1% p.a)
  - but doubled in the developing world (5% p.a)

- The trends were projected to continue to 2020
  - Where in increases in consumption would be matched by production

1. The Livestock Revolution

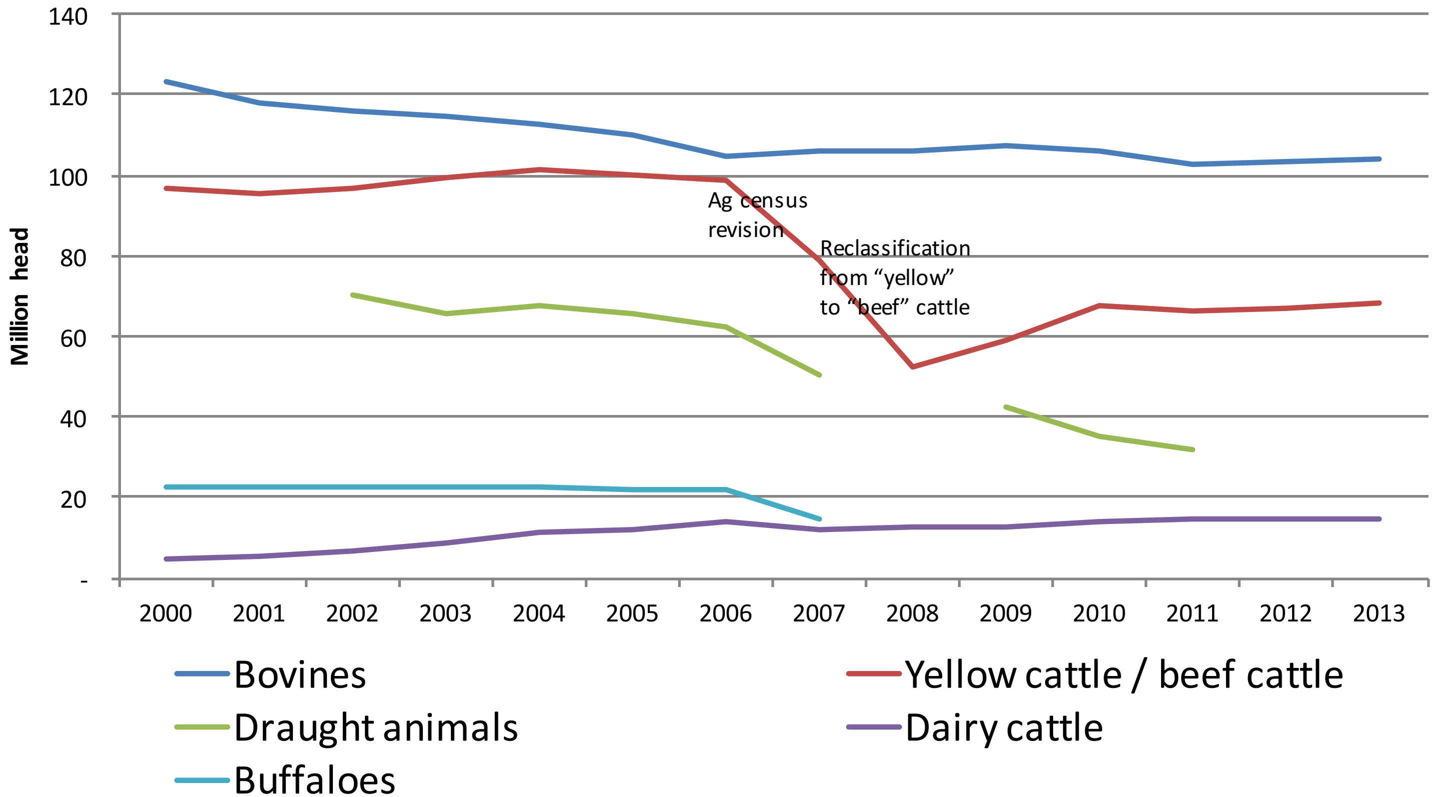
With benefit of 15 years hindsight, how have the forecasts played out in China & SE Asia?

- IFPRI correct on large increases in consumption
  - With high growth in countries (e.g. China and Vietnam) *and many cities*
- But not accompanied by a strong supply response
  - At least in terms of cattle numbers

Obvious reasons

- Increasing opportunity costs of rural labour
  - THE major driver in countries with high, broad-based growth (China, Vietnam, Thailand)
  - Overwhelms other factors like feed-beef price
- Farm mechanisation
  - Farmers selling draught cattle (and buffalo) and cashing in on high prices
  - *Throughout the region*
  - Except with official ban in Myanmar. Draught cattle numbers in China fell by 40 million 2002-2011
  - One-off culling program, leaving more beef cattle?

Chinese bovine composition (2000-2013)



Draught cattle numbers in China fell by 40 million 2002-2011

Source: China Livestock yearbook, various years

1. The Livestock Revolution

Has there been a productivity response?

- The macro data suggests there has
- To lead to increased beef output

Even so:

- This hasn't kept pace with consumption
- Leading to higher prices and trade volumes than could have been envisioned only 15 years ago

Average annual growth in production vs consumption, 2000-2013

	Average annual growth	**Weighting China**	**Weighted average annual growth**
	8 countries in region		
Cattle numbers	1.6	69	**-0.3**
Turnoff or slaughter	3.1	89	**1.9**
Cattle meat	4.1	83	**2.5**
Compared to			
	China consumption		
Urban in-home			**2.5**
Urban in & out-of-home			**3.4**
Rural			**6**

Data source: FAO statistics, China Livestock Yearbook, China Statistical Yearbook.
All annual growth rates are compounded

1. The Livestock Revolution

The role of livestock in development

- Livestock as a ”*pathway out of poverty*”
  - Poor earn a bigger proportion of income from livestock than wealthier households
  - Livestock suited to areas undergoing land intensification
  - Will benefit from exposure to expanding markets
- But also concerns that small households will be *marginalised* by large producers
  - Intensification, contracts, less perishable products

As it turns out … for cattle

- On both counts, there are discernible but not major trends either way
- But to examine this, need to step “inside” the industry

2. Industry development

An industry framework

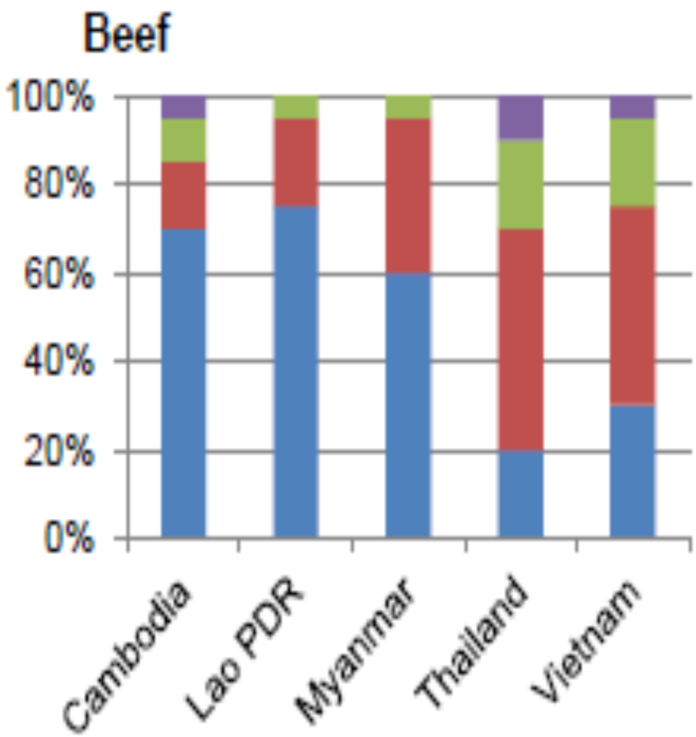
- ❖ Built for China
- ❖ But applicable / adaptable for other developing Asian countries

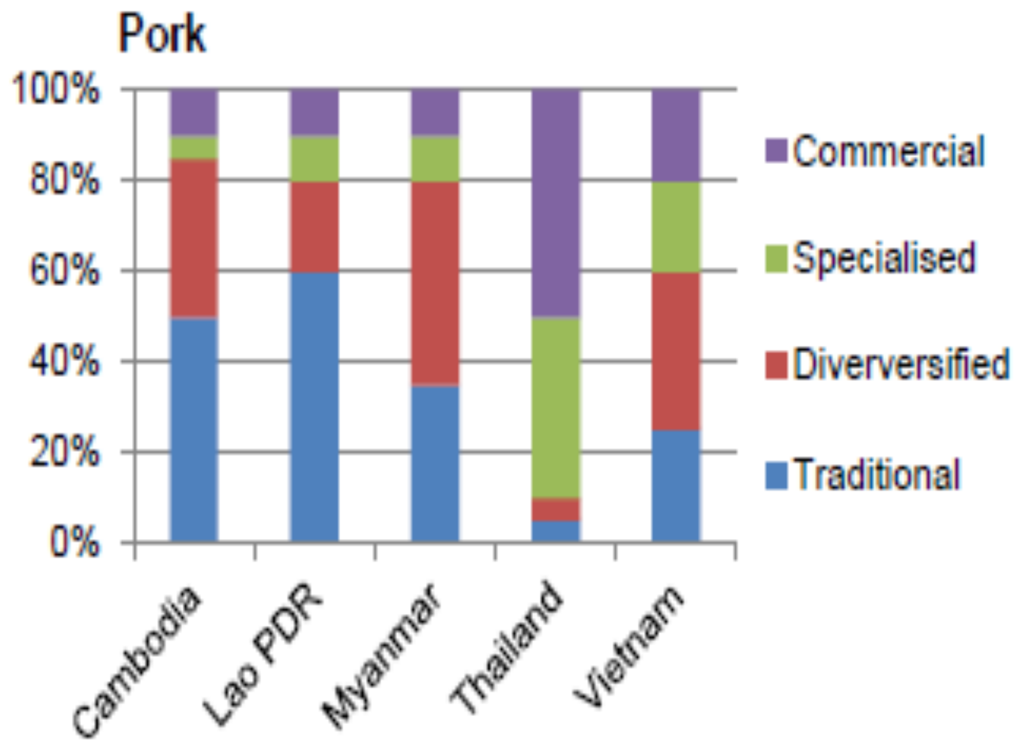
To show

- ❖ Industry structures and dynamics
- ❖ Industry change
- ❖ Participation of industry actors

"Segmented" industry development framework

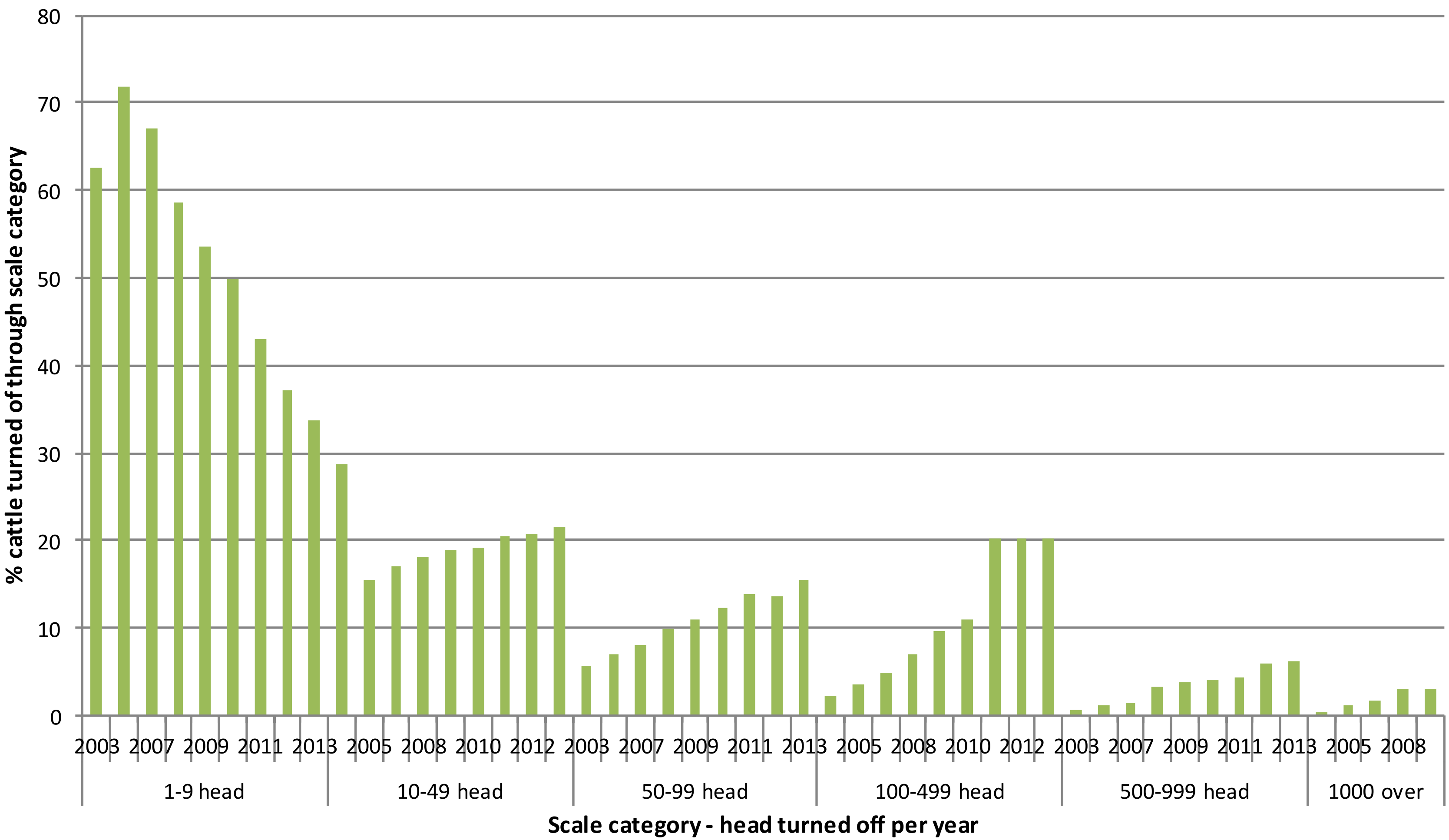
Contribution of different production systems to meat supply





Stur and Gray, 2014

Scale of cattle production in Shandong Province, 2005-2013



Source: China Livestock Yearbook

Small-holder cattle budget, Malang, East Java, 2013

Total Revenues (Rp / year)	5,900,000	
		cattle sales 92%
Total Costs (Rp / year)	3,000,000	
		feed costs 63%
Gross profit (Rp / year)	2,900,000	
Net profit (incl opp cost capital and labour) (Rp / year)	- 600,000	
Hours per day spent on cattle	3	
Returns to labour (Rp, 8 hour day)	**21,500**	“Hanging in”
Compared to	“Stepping up”	“Stepping out”
Returns to labour (Rp, 8 hour day) – **high productivity systems**	34,500	
Off-farm manual labour Malang 2013 (Rp, 8 hour day)		45,000

Figure

2 Ongole cows 280kgs, straw-based diet, AI
Low productivity system – 5% mortality, 40% calving rate, weaning 90kgs at 7 m.o, AWG 0.3kg/day, labour 3 hours/day, opp cost labour Rp45,000/day

Costs of slaughter line vs hand slaughter Surabaya, 2013

Cost item	Slaughter line	Hand slaughter
Infrastructure	Race, restraining box, slaughter line, hanging room, offal and boning rooms, drain	5 * 5m concrete area, rail and hooks, drain
Slaughter costs	**IDR350,000** slaughter fee and costs to half carcass form	**IDR75,000** for the butcher team fully butchered + IDR40,000 slaughter fee (use of facility)
Capacity	50 head per day to half carcass form, 3 hour shift (16 head per hour)	15 head per shift (3 hours) fully butchered
No. of workers	18 workers	8 workers

Figure

Industry and rural development

Change in industry structures

- Rapid change in some areas and sectors
- But not in others - resistant in change (beef)
- With implications for
  - Agribusiness
  - Development, and
  - Policy

Implications for development

- What is the scale of employment ?
- What are the mobility paths for industry actors?
- What are the implications of increased trade?

Employment
East Java, 2013

Sector / actors	Numbers	Assumptions
Cattle producers	**1,181,825**	Cattle number by 4 head per household
Cattle traders	**12,100**	Total cattle trade (slaughter and inter-island) divided by average throughput per actor
Village traders	6,739	10 head per month
Sub-district traders	3,369	20 head per month
District traders	1,982	34 head/month (Mahendri et al., 2012)
Inter-regional traders	10	Actual
Slaughter	**16,502**	Derived from total slaughter (certified & uncertified) by average throughput per actor
Butchers	2,750	Average 20 head/month or 240 per year
Butcher crew/workers	11,001	Average 4 crew per butcher
By-product traders	2,750	Average 1 per butcher
Wet market stallholders	**5,999**	Beef production by stall sales volumes (50kgs/ day, 365 days/year)
Other		
Cattle markets	110	Official statistics, but many not active
Slaughterhouses	158	Recorded certified plants only
Cattle trucks	316	7 head/ truck/day, 365 days/year, for all cattle trade
Workers on trucks	949	3 people per truck and loading/unloading
Feed traders	??	Large numbers
Vets and AI agents	??	Hundreds
	1.3 million+ chain actors	

Employment
China, 2005

Sector / actors	Numbers	Assumptions
Production sector	**14,117,190**	
1-9 head turnoff	13,617,317	Scale data, household employment only
10-99 head turnoff	428,953	Scale data, household employment only
100+ turnoff	70,920	100-499 head (5 workers), 500-1000 head (10 workers), 1,000+ head (20 workers)
Cattle dealers and agents	**59,000**	Sum below. An average of 2.8 head per trader per day (high)
Intensive countries	50,000	50 dealers in 100 cattle intensive counties
Mid sized market places	6,000	20 dealers in 300 mid sized markets
Inter-regional markets	3,000	100 dealers in 30 inter-regional cattle markets
Slaughter sector	**278,520**	
Slaughter households	75,562	37,780 slaughter households, management + one employee
Designated slaughter point	200,000	2,000 slaughter points, 10 butchers and staff in each
City-prov abattoirs	3,000	150 GFC abattoirs - 20 workers each
Beef & offal traders & retailers	**220,600**	Sum below. 220 carcasses per trader per year (high)
Rural periodic markets	166,000	4 retailers in 42,000 townships and district or 50,000 periodic markets
County and district markets	33,600	8 retailers in 4,200 markets
Wholesale markets	6,000	20 stalls in 300 markets
Traders in intensive beef countries	15,000	150 traders in 100 intensive beef counties
	14.7 + million chain actors	

3. Rural development

Employment in the beef industry

- ❖ Large numbers of small-holders (small scale of production)
- ❖ Labour intensive in downstream sectors (rudimentary chains)

Reductions in some areas

- ❖ In China 2003-2013, 4 million small-holders exited the sector
- ❖ Feedlots, modern abattoirs and supermarkets capturing market share
  - ❖ In some areas and sectors
- ❖ Beef and cattle imports capturing market share & prices effects
  - ❖ In trade-exposed countries and in higher value chains

But not large-scale effects yet

- ❖ In an era of growing demand / market size
- ❖ Chains operate alongside each other (but with "leakage")
- ❖ Household / rudimentary chains are competitive with the corporate sector
  - ❖ In the domestic sector and in low and mid value chains

3. Rural development

But are employment numbers a good indicator in rural development?

- Instead of acting as a “pathway out of poverty”, livestock can be an “expression of poverty” (Dijkman / ILRI / CGIAR).
  - In China “only poor people raise cattle”
  - But in most others areas “poor farmers aspire to raise cattle”

Mobility paths

Figure

3. Trade effects

- Different effects for different trade flows

- Winners
  - Supply of product for industry
  - Participants in trade
  - Consumers

- Losers
  - Parts of industry excluded from the trade – competition
  - Price effects

- Ways to improve net impacts of trade and investment?

4. Questions for the workshop

Strategic questions

- What are the objectives of industry development?
  - at national, provincial, local, project levels
  - E.g. Rural employment, price stabilisation, food safety, none (laissez faire) ……
- What industry development strategies
  - Meet these objectives
  - Are feasible, sustainable & market conforming?
- What policies should be developed / revised
  - at national, industry or sector levels
  - Resources (land, capital mobility)
  - Food safety (slaughter, retail)
  - Standards and grades (cattle, beef)
  - Subsidies and preferential policies?
  - Trade policy and biosecurity
- What technologies and skills are required?
- What types of bilateral or multilateral cooperation can assist?