Livestock: Opportunities for addressing global development challenges

Jimmy Smith, Director General, ILRI

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ILRI Offices

Main campuses: Nairobi and Addis Ababa

Offices in 16 other countries
A strategic partnership between ILRI and AU-NEPAD.

A biosciences platform that makes the best lab facilities available to the African scientific community.

Building African scientific capacity.

Identifying agricultural solutions based on modern biotechnology.
ILRI resources 2015

- **Staff:** 700+
- **Budget:** nearly US$90 million
- **Senior scientists from 39 countries**
- **34% of internationally recruited staff are women --and 50% of the senior leadership team**
- **Main campuses in Kenya and Ethiopia, and offices in 16 other countries around the world**
Animal source foods: 5 of 6 highest value global commodities (total value of these 5 = US $715 billion)

Cow milk has overtaken rice
Gains in meat consumption in developing countries are outpacing those of developed

- *developing*
- *developed*
- *developing at same per cap. as developed (hypothetical)*
% growth in demand for livestock products 2000–2030

Based on anticipated change in absolute tonnes of product comparing 2000 and 2030
Huge increases over 2005/7 amounts of cereals, dairy and meat will be needed by 2050

From 2bn–3bn tonnes cereals each year
From 664m–1bn tonnes dairy each year
From 258m–460m tonnes meat each year
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal source foods for nutrition and health

Livestock and sustainable ecosystems
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A valuable market: examples

- Livestock: 40% GDP and growing
- Market value of animal source foods in Africa in 2050 estimated as US $151 billion
- Globally disease reduces livestock productivity by 25% - valued at US $300 billion per year
- Annual global investment of US $25 billion in one health approaches could save as much as US $100 billion annually

Herrero et al. 2014
Demand for livestock commodities in developing economies will be met—the question is *how*

**Scenario #1**  
Meeting livestock demand by *importing livestock products*

**Scenario #2**  
Meeting livestock demand by *importing livestock industrial production know-how*

**Scenario #3**  
Meeting livestock demand by *transforming smallholder livestock systems*
Replacing the 90% of locally produced animal commodities with imports is not feasible

**Economically**

Africa’s food import bill (2013): US $44 billion

About one fifth is livestock (highest after cereals):
Meat: US $5 billion; Milk: US $4 billion

Business as usual: the import bill doubles
Smallholders still dominate livestock production in many countries

<table>
<thead>
<tr>
<th>Region</th>
<th>Beef</th>
<th>Chicken meat</th>
<th>Sheep/goat meat</th>
<th>Milk</th>
<th>Pork</th>
<th>Eggs</th>
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</thead>
<tbody>
<tr>
<td><strong>East Africa</strong></td>
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<td>60-90</td>
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<td>(≤ 6 milking animals)</td>
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<td><strong>Bangladesh</strong></td>
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<td>(&lt; 3ha land)</td>
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<td><strong>India</strong></td>
<td>75</td>
<td>92</td>
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<td>69</td>
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<td>71</td>
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<tr>
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<tr>
<td><strong>Vietnam</strong></td>
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<td>(small scale)</td>
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<td><strong>Philippines</strong></td>
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<td>35</td>
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<tr>
<td>(backyard)</td>
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</table>

Various sources: BMGF, FAO and ILRI
Smallholders: part of the development

• Not sentimentality or a belief in “small is beautiful”

• Based on the evidence and the dual objectives of
  – increasing animal source food supply to consumers
  – supporting rural development and livelihoods

• The evidence:
  – They produce the bulk of the livestock (and half of crop) products in developing countries so need to be part of increase supply strategy
  – They continue to be competitive so won't go away on their own
  – Does not detract from investing in larger commercial systems
Livestock and inclusive, sustainable economic growth

Transforming livestock VCs:
Opportunities for business, youth, SMEs
Not all smallholders will be part of the solution

Robust productivity solutions:
existing and new science
Delivery Markets Institutions
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal source foods for nutrition and health

Livestock and sustainable ecosystems
Livestock and livelihoods

- 70% of the world’s rural poor rely on livestock for important parts of their livelihoods.
- Of the more than 600 million poor livestock keepers in the world, around two-thirds are rural women.
- Over 100 million landless people keep livestock.
- For the vulnerable, up to 40% of benefits from livestock keeping come from non-market, intangible benefits, mostly insurance and financing.
- In the poorest countries, livestock manure comprises over 70% of soil fertility amendments.
- Many employed in local informal livestock product markets
- 90% of animal products are produced and consumed in the same country or region
- Over 70% of livestock products are sold ‘informally’
Livestock and equitable livelihoods

Women in livestock raising, processing, trading – gender transformative approaches

Inclusive dairy development:
Target: 60 million smallholders in East Africa
Increased economic value
$260 million per annum

Insuring the never-before insured against catastrophic drought in the Horn
Beyond technology:
• New models for one billion to be part of the livestock sector transformation; or to exit positively
• Women, men, young people part of new livestock business solutions
• Securing assets of the vulnerable
Livestock and inclusive, sustainable economic growth

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Livestock and sustainable ecosystems
Nutritional divides among 7 billion people today

Chronic disease likely to cost $35 trillion by 2030

11% of GNP lost annually in Africa and Asia from poor nutrition
Food insecurity and under nutrition remain persistent challenges. 72 developing countries have reached the 2015 MDG 1 target of halving the proportion of hungry people. Hunger remains an everyday challenge for almost 795 million people worldwide, including 780 million in developing regions.
Most (75%) emerging diseases come from animals and cost up to US $ 6 billion annually.

Emerging zoonotic disease events, 1940–2012

ILRI report to DFID: Mapping of Poverty and Likely Zoonoses Hotspots, 2012
Antimicrobial resistance

Global antimicrobial use in food animals
(mg per 10km pixel)

Source: Van Boeckel et al. 2015
Animal source foods for nutrition and health

Worldwide livestock antimicrobial consumption is expected to rise by 67% between 2010 and 2030.

5 million consumers in Kenya and 1.5 in Assam are benefiting from safer milk.
• Controlling zoonoses; preventing pandemics
• Managing Anti-Microbial Resistance
• Improving food safety in informal markets
• Enhancing the nutritional benefits of animal source foods
Livestock and inclusive, sustainable economic growth

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Potential to double productivity and halve methane emissions. In India that means 1 million tonnes less methane per year from dairy.

Good grazing management for rangelands: potential to sequester 8.6 million tonnes carbon/year.

Improve livestock efficiency to produce more product per unit of input – land, water, labour, capital – and causing less environmental harm.

Livestock and sustainable ecosystems
As much as half of the agricultural GHG emissions come from animals

GHG per kg of animal protein produced varies hugely: Big opportunities to mitigate

Herrero et al. 2013
• Reduce the environmental footprint of livestock through improving productivity

• Generating emission indices to inform appropriate policies in tropical countries

• Rangeland management and pasture improvement for carbon sequestration
Research for development solutions

- Policies, institutions and markets
- Feed resources
- Sustainable livestock systems
- Animal genetics and breeding
- Livestock health
- Capacity development

- Food & nutritional security
- Poverty eradication
- Environment & human health
Leveraging science for development

- Proximity to the problems-challenges-opportunity
- Strong comparative advantage
- Cost effectiveness

Basic science

ILRI - Strategic & Applied

NARES - Applied and adaptive
What can be accomplished

- Contribute to attaining global food and nutritional security
- Poverty eradication, particularly among the rural poor
- Contribute to economic growth and rural transformation
- More environmentally sustainable livestock sector
- Co-benefits: learning/sharing between human and animal health (science – food safety – disease control)
THANK YOU

• Food, manure, traction.

• Livestock are central to the lives and well-being of developing country women, children and households.

• Women livestock producers, processors and sellers are essential to developing country economies.