Achieving Agenda 2030: Livestock research and the transformation of small-scale production

Jimmy Smith, Director General, ILRI
ACIAR, Canberra, Australia, April 2017
Key messages

• Global demand for meat, milk and eggs continues to rise rapidly
• Almost all the increased demand is in developing countries
• Smallholders are currently producing much of the animal-source foods in these regions
• Many SDGs can be addressed by transforming smallholder production into a vibrant, productive and resilient food system . . . with particular opportunities for women and youth
• Livestock research plays a key role in such transformation
Animal-source food: 5 of 6 highest value global commodities (total value of these five: US Int $ 715 billion)

Cow milk has overtaken rice
Demand for animal-source foods

Commodities
- Eggs HIC
- Eggs LMIC
- Milk/10 HIC
- Milk/10 LMIC
- Pork HIC
- Pork LMIC
- Poultry HIC
- Poultry LMIC

<table>
<thead>
<tr>
<th>Production (millions of tonnes)</th>
<th>LMICs</th>
<th>HICs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1975</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2025</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2050</td>
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</tbody>
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ILRI
CGIAR
On 25 September 2015, the United Nations General Assembly formally adopted the universal, integrated and transformative 2030 Agenda for Sustainable Development, along with a set of 17 Sustainable Development Goals and 169 associated targets.
Livestock and the SDGs

Livestock development relates to almost all SDGs
- It can make both positive and negative contributions
- It is highly diverse, depending on location, system, commodity
- It is complex, involves hard trade-offs
- It is highly dynamic and in big transition
- It is conspicuously absent from SDGs/indicators

*Insufficient attention to this fastest growing, often controversial agricultural sector could threaten attaining the SDGs*
Opportunities and challenges in the livestock sector

Provides food and nutritional security
BUT overconsumption can cause obesity

Powers economic development
BUT equitable development can be a challenge

Improves human health
BUT animal-human/emerging diseases and unsafe foods need to be addressed

Enhances the environment
BUT pollution, land/water degradation, GHG emissions and biodiversity losses must be greatly reduced
Livestock and livelihoods

- Almost a billion people rely on livestock for livelihoods.
- 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 people are 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’
## Smallholders still dominate livestock production in many countries

### % production by smallholder livestock farms

<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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>East Africa</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>60-90</td>
</tr>
<tr>
<td>(≤ 6 milking animals)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Bangladesh</strong></td>
<td>65</td>
<td>77</td>
<td>78</td>
<td>65</td>
<td></td>
<td>77</td>
</tr>
<tr>
<td>(&lt; 3ha land)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>India</strong></td>
<td>75</td>
<td>92</td>
<td>92</td>
<td>69</td>
<td></td>
<td>71</td>
</tr>
<tr>
<td>(&lt; 2ha land)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Vietnam</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>80</td>
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<tr>
<td>(small scale)</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Philippines</strong></td>
<td>50</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>35</td>
</tr>
<tr>
<td>(backyard)</td>
<td></td>
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</table>

Various sources: BMGF, FAO and ILRI
Smallholders: Central to development

• Smallholders are not ‘subsistence’ farmers

• Smallholders are central to:
  – increasing food supplies to poor consumers
  – enhancing rural development and livelihoods

• Smallholders produce the bulk of livestock
  — and half of crop—products in developing countries

• Smallholders continue to be competitive

• Investing in smallholders does not detract from investing in larger commercial systems
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal source foods for nutrition and health

Livestock and sustainable ecosystems

Also from the Global Agenda for Sustainable Livestock
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal-source foods for nutrition and health

Livestock and sustainable ecosystems
Demand for livestock commodities in developing economies will be met

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 unfeasible

Economically

• Africa’s food import bill (2013): USD44 billion

• About one-fifth is livestock (highest after cereals):
  - Meat: USD5 billion
  - Milk: USD4 billion

• Business as usual:
The import bill doubles
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
Smallholder beef sector in Botswana

This recent 3.5-year (2012–2016) ACIAR-funded project found great scope for enhancing smallholder livestock competitiveness in Botswana through better:

• Market-oriented policies
• Disease control and government-supported private animal health services in rural areas
• Control of FMD for increased livestock marketing in southern Africa
• Meat quality for the lucrative EU market
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal-source foods for nutrition and health

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Livestock and equitable livelihoods

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

Inclusive dairy development:
Target: 10 million smallholders in East Africa
Increased economic value
$260 million per annum

Insuring the never-before insured against catastrophic drought in the Horn
Smallholder pig value chains in Vietnam

This current 9-month (2016–2017) ACIAR-funded project is assessing the scope for smallholder pig competitiveness by ethnic minorities in northwest Vietnam.

Findings

• **BREEDS:** Farmers are beginning to switch from local to cross-bred pigs.

• **FEEDS:** Farmers can feed their pigs too much maize, which increases their fat and reduces market interest.

• **SOILS:** Traditional maize cultivation of the hill slopes have degraded soils and reduced maize yields, causing farmers to reduce areas planted to maize to feed their household pigs.
Smallholder crop-livestock systems in Zimbabwe

This current 5-year (2012–2017) ACIAR-funded project is enhancing mixed farming practices through better technologies and practices.

• Farmers growing legumes for feed are significantly increasing their dairy and beef profits.
• Farmers switching from maize stover to thatch grass for mulching are generating more dry-season stover feed supplements for ruminants.
• Farmers feeding their stock home-grown fodder & crop residues are reducing pressure on communal rangelands.
CGIAR research program on Livestock and Fish: more meat, milk and fish by and for the poor

- 1st Phase: 2012-2016: focus on nine selected value chains, supported by IPG research on productivity drivers (genetics, health, feed) and social sciences, to design value chain interventions together with national stakeholders and development actors
- Strong, consistent support from ACIAR: $600-700K/year
- 2nd phase 2017-2022: Two separate CRPs: Fish and Livestock

Highlights:
Demonstrating potential for smallholder pig production in Uganda
Benefits of small-scale aquaculture in Bangladesh
Needed beyond technology

• New models to enable one billion people to take part in the transformation of the livestock sector or to exit from it positively

• Means of ensuring that women, men and young people all have opportunities to engage in new livestock business solutions

• Support for vulnerable people to secure their livestock assets
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal-source foods for nutrition and health

Livestock and sustainable ecosystems
Nutritional divides among 7 billion people today

- Hungry people
- Stunted children
- Insufficient nutrients
- Overweight/obese
- Balanced diets

11% of GNP lost annually in Africa and Asia from poor nutrition

Less than one third well fed and nourished

Healthcare for obesity economic cost: $2 trillion
Most (75%) emerging diseases come from animals and cost up to USD6 billion annually.

Emerging zoonotic disease events, 1940–2012

*ILRI report to DFID: Mapping of Poverty and Likely Zoonoses Hotspots, 2012*
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.
This ACIAR-funded research finds:

- Animal-source foods (ASFs) are valued highly by poor people in these countries.
- The riskiest ASFs are also the most nutritious.
- Taboos and beliefs influence food choices by and for pregnant women and infants.
- The urban poor have high concerns about food safety and low trust in food systems and official quality assurance programs.
- Choices in food consumption are increasingly driven by media stories and food scares.
- Enhancing traditional food processing is an overlooked opportunity for providing better nutrition, health, income and gender equity for poor people.
Livestock and inclusive, sustainable economic growth

Livestock and equitable livelihoods

Animal source foods for nutrition and health

Livestock and sustainable ecosystems
Livestock and sustainable ecosystems

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

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

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

Livestock and sustainable ecosystems
This recent 2-year (2015–2016) ACIAR-funded project determined ways to improve feed/fodder markets:

- Most smallholders buy feed and fodder on occasion, mostly from livestock markets.
- Half of those buying feed are dairy producers.
- Household herd size and income, as well as distance to livestock markets and access to market information, influence feed purchases.
- Feed quality (amount of protein and crude fibre) and price are highly correlated.
- Some feeds are over- or under-priced, creating opportunities for designing more cost-effective ways of feeding smallholder livestock.
• Reduce the environmental footprint of livestock by improving productivity

• Generate reliable livestock greenhouse gas emission indices to inform appropriate policies in tropical countries

• Manage rangelands and improve pastures to sequester carbon
Livestock research capacity building at the BecA-ILRI Hub

- Livestock productivity: Feeds, breeds, health
- Capacity to undertake high-end livestock research to solve challenges
- Support from Australia for the Africa Biosciences Challenge Fund (ABCF) is critical
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ILRI OFFICES IN AFRICA

Map by Catherine Pfeiffer and Samuel Itheria, ILRI
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The idea behind ILRI was always to bring the best available science to African livestock problems. With modern technology, the power of that approach has been enormously enhanced.

Promoting human well-being by increasing the availability of food is perhaps the most important issue facing us.

It’s essential that Africa gets that food production right as its economies continue to develop.

One of the things that contributes most to food production is having a good science base.

Over the years, ILRI has trained more than 8,000 young scientists, many from Africa and many from other developing regions.

This has made a substantial contribution to building a science base within the developing world.

https://www.youtube.com/watch?v=8qUYpr5Bv5k
better lives through livestock

ilri.org

ILRI thanks all donors and organizations who globally supported its work through their contributions to the CGIAR system.