Global perspectives on emerging technologies for smart and climate-resilient animal husbandry

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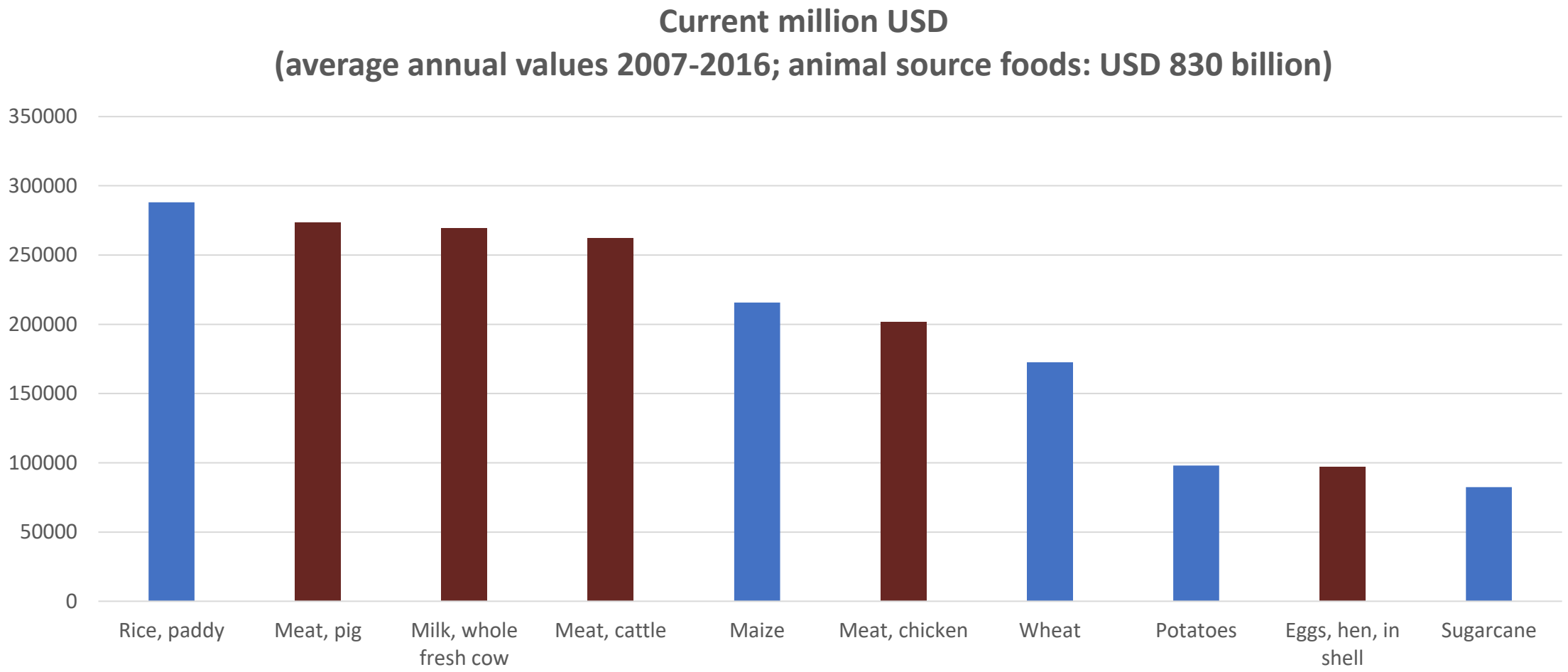
Why livestock matter globally for livelihoods?

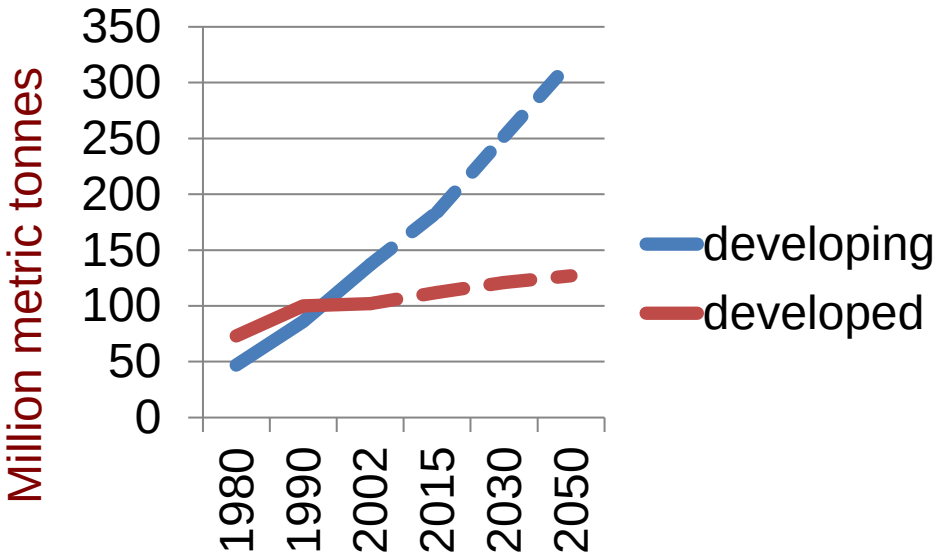
- Global asset more than 1.4 Trillion US dollars
- 70% of the world's rural poor rely on livestock for livelihoods.
- Employs more than 1.3 billion globally
- 600 million poor livestock keepers in the world, around two-thirds are rural women.
- Contribute about 40% Agri. GDP (15 – 85 %)
- 18% of kilocalorie and 39% of protein
- In the poorest countries, livestock manure comprises over 70% of soil fertility
- 90% of animal products are produced and consumed in the same country or region
- Over 70% of livestock products are sold 'informally'

Global commodity values: on average animal source foods, five of the top ten



Demand for Animal Source Foods (ASF)

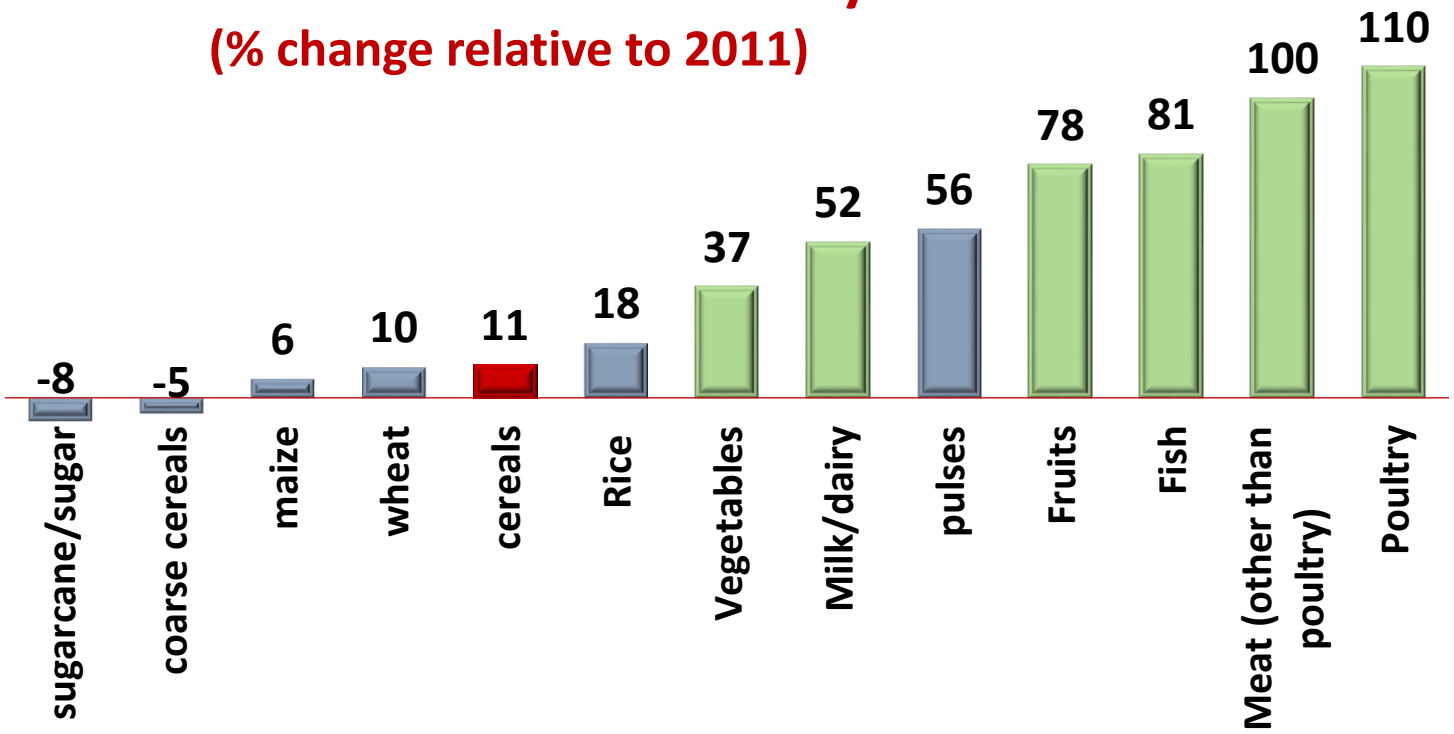
Rising demand for meat, milk and eggs is a global phenomenon . . .



. . . but demand is greatest in South Asia and Sub-Saharan Africa

Shift in Food Demand in India by 2030

(% change relative to 2011)



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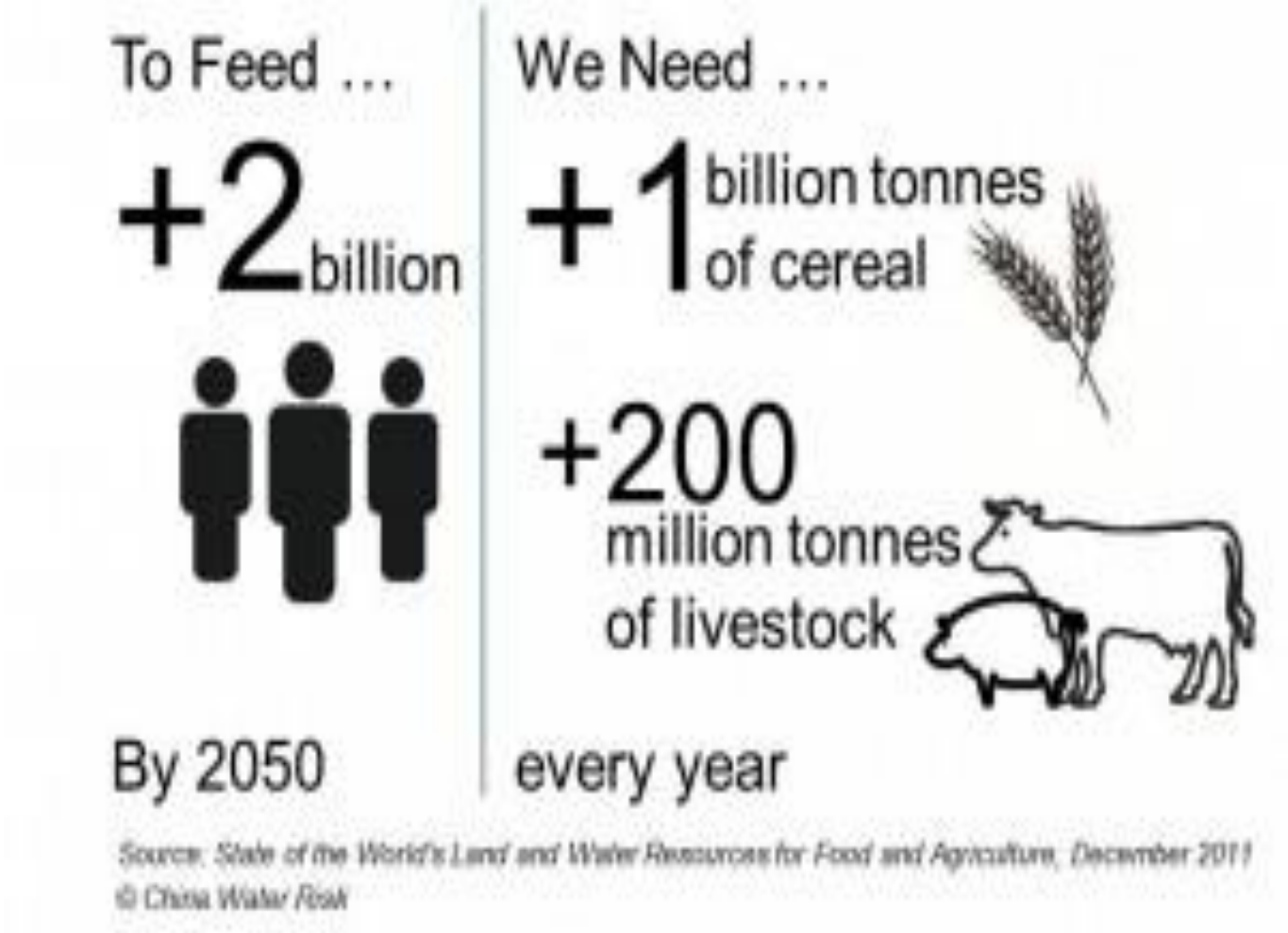
To Feed …
+2 billion
By 2050
We Need …
+1 billion tonnes of cereal
+200 million tonnes of livestock
every year
Source: State of the World's Land and Water Resources for Food and Agriculture, December 2011
© China Water Risk

Climate Change and Livestock Production

❖ **Impact of climate change on livestock sector can be seen in different ways:**

- **Production and availability of quality feed crops and forages**
- **Animal growth and milk / meat production**
- **Diseases incidence**
- **Reproduction**

❖ **These impacts are primarily due to an increase in temperature and atmospheric carbon dioxide (CO2) concentration, precipitation variation, and a combination of these factors.**

Livestock sector is primarily victim of climate change

Linking emerging technologies with "Climate Smart Livestock Production to address Global Challenges of Climate Change

- Improvement of livestock production efficiencies via
  - Health
  - Genetics
  - Feeds
- Identifying genetic opportunities to breed heat-tolerant livestock
- Exploring feed additives that reduce livestock methane emissions
- Managing manure for lower GHG emissions
- Determining the impacts of livestock diseases on GHG emissions
- Using Digital data to increase productive efficiency, better health, and reduce antibiotic use

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Livestock research addresses the genetics of heat tolerance

- **Milk yields decline during heat stress, and heat stress is rising under climate change**
- **Improvement in breeding programs that select 'climate-tolerant' animals that maintain good milk yields under heat stress while reducing their greenhouse gas intensity**

Ekine-Dzivenu C. et al., 2020 https://doi.org/10.1016/j.livsci.2020.104314

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About 620 ILRI staff work in Africa and Asia to enhance incomes and livelihoods, improve food security, and reduce disease and environmental degradation. Australian animal scientist and Nobel Prize laureate Peter Doherty serves as ILRI's patron. Organizations that fund ILRI through their contributions to CGIAR make ILRI's work possible. Organizations that partner ILRI in its mission make livestock research for development a reality.

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Better Lives Through Livestock