FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

Pathways to Human Nutrition: *Living with Livestock*

Sarah L. McKune
Feed the Future Innovation Lab for Livestock Systems, University of Florida
Photo credits: Sarah McKune, 2007

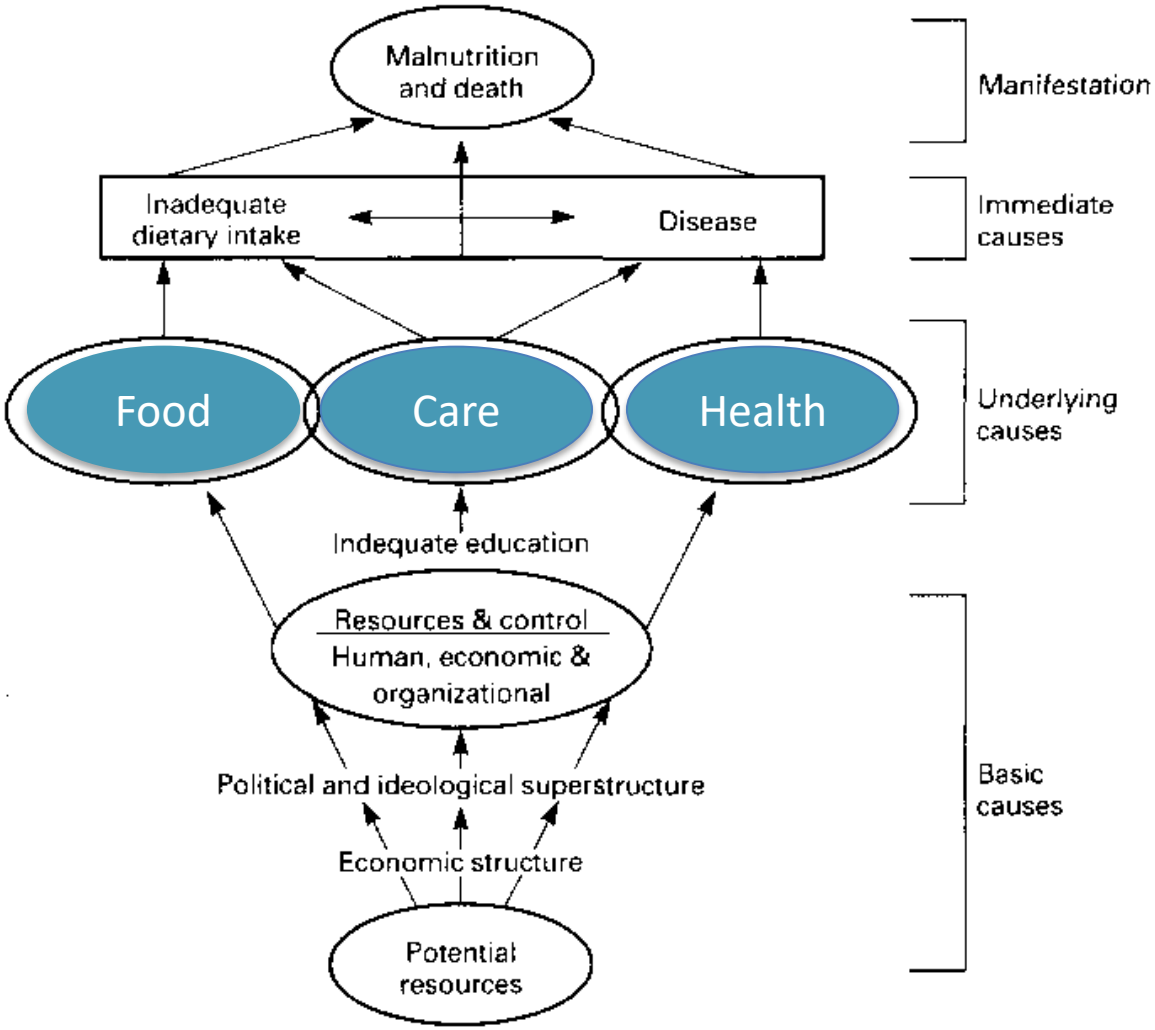
USAID FROM THE AMERICAN PEOPLE
BILL & MELINDA GATES foundation
ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
CGIAR
UF IFAS UNIVERSITY of FLORIDA

BACKGROUND
WHY LIVESTOCK FOR NUTRITION

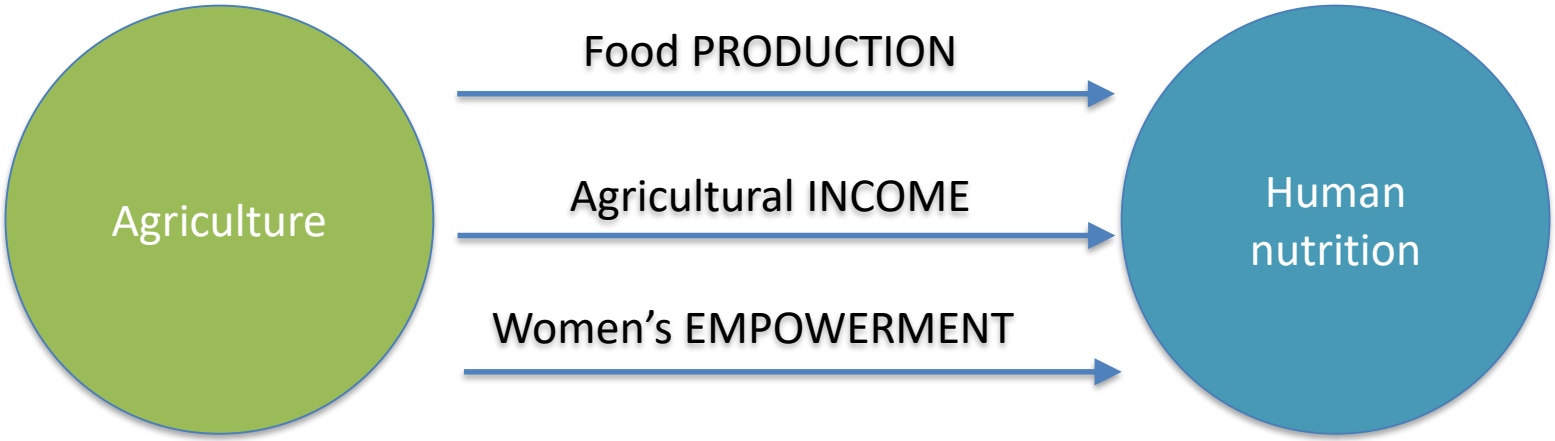
- USAID Feed the Future Livestock System Innovation Laboratory
- Growth in agriculture yields greater reduction in nutritional stunting than other economic growth (Webb and Block, 2012).
- Livestock holders are more likely than counterparts to consume AFS (FAO, 2009).
- Significantly food and nutrition insecure households are those who rely on agriculture for their livelihood (World Bank 2007; World Bank 2013).
- 155 million children under five suffer from chronic malnutrition (FAO, 2017).

NUTRITION

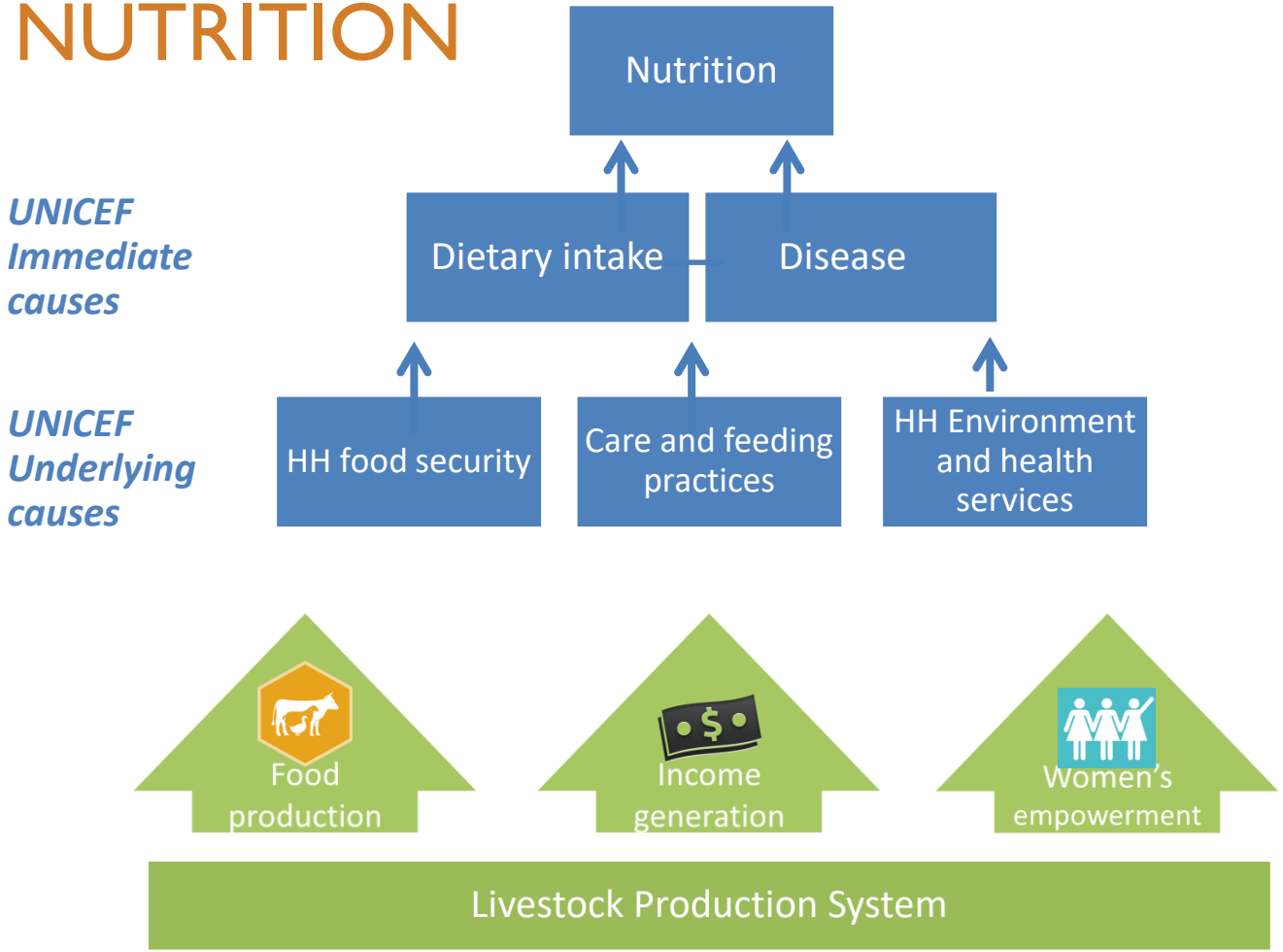
- UNICEF 1990 Conceptual Framework of Young Child Nutrition
- Complex drivers of malnutrition
- Significant role of agriculture



AGRICULTURE → NUTRITION PATHWAYS



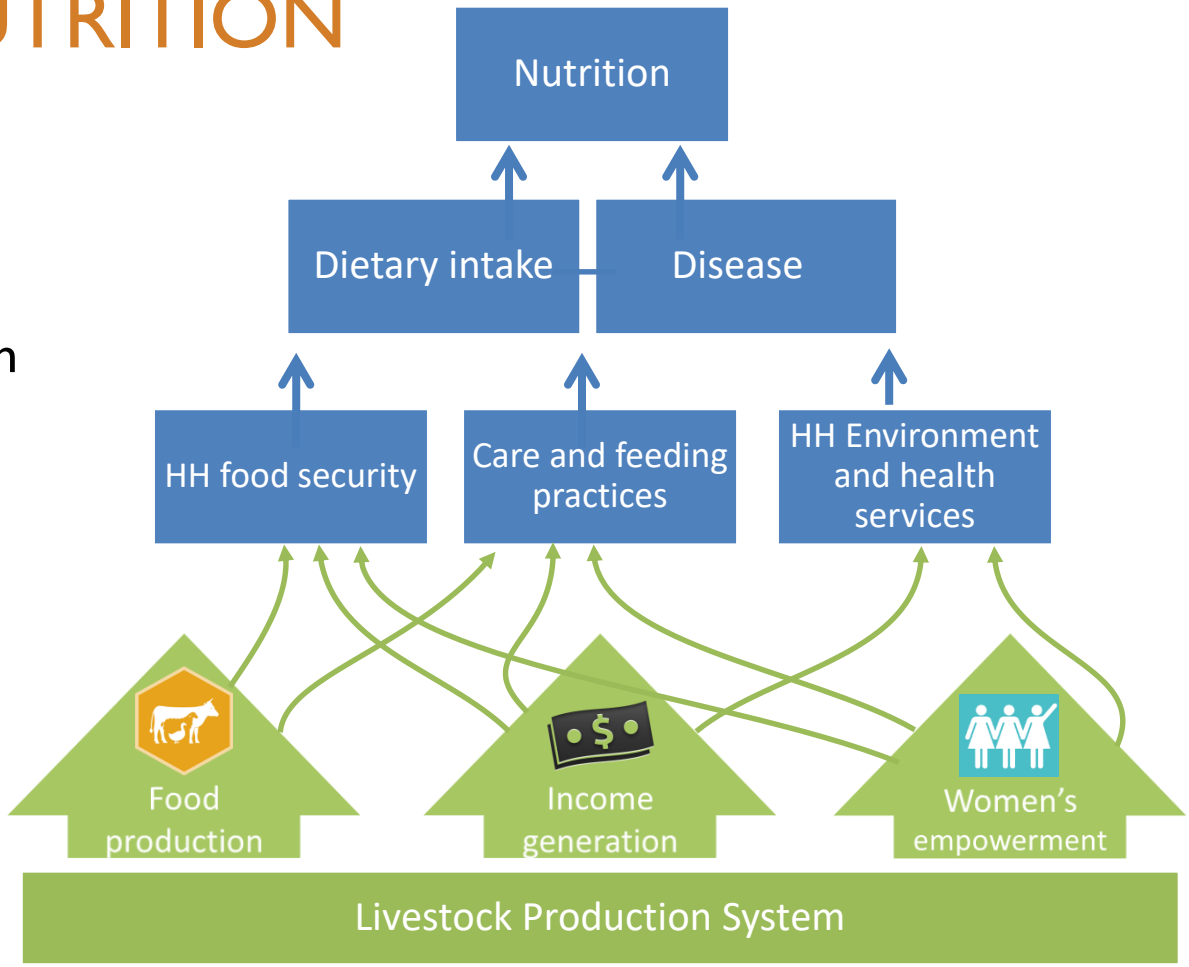
LIVESTOCK → NUTRITION



LIVESTOCK → NUTRITION

Livestock to improve nutrition

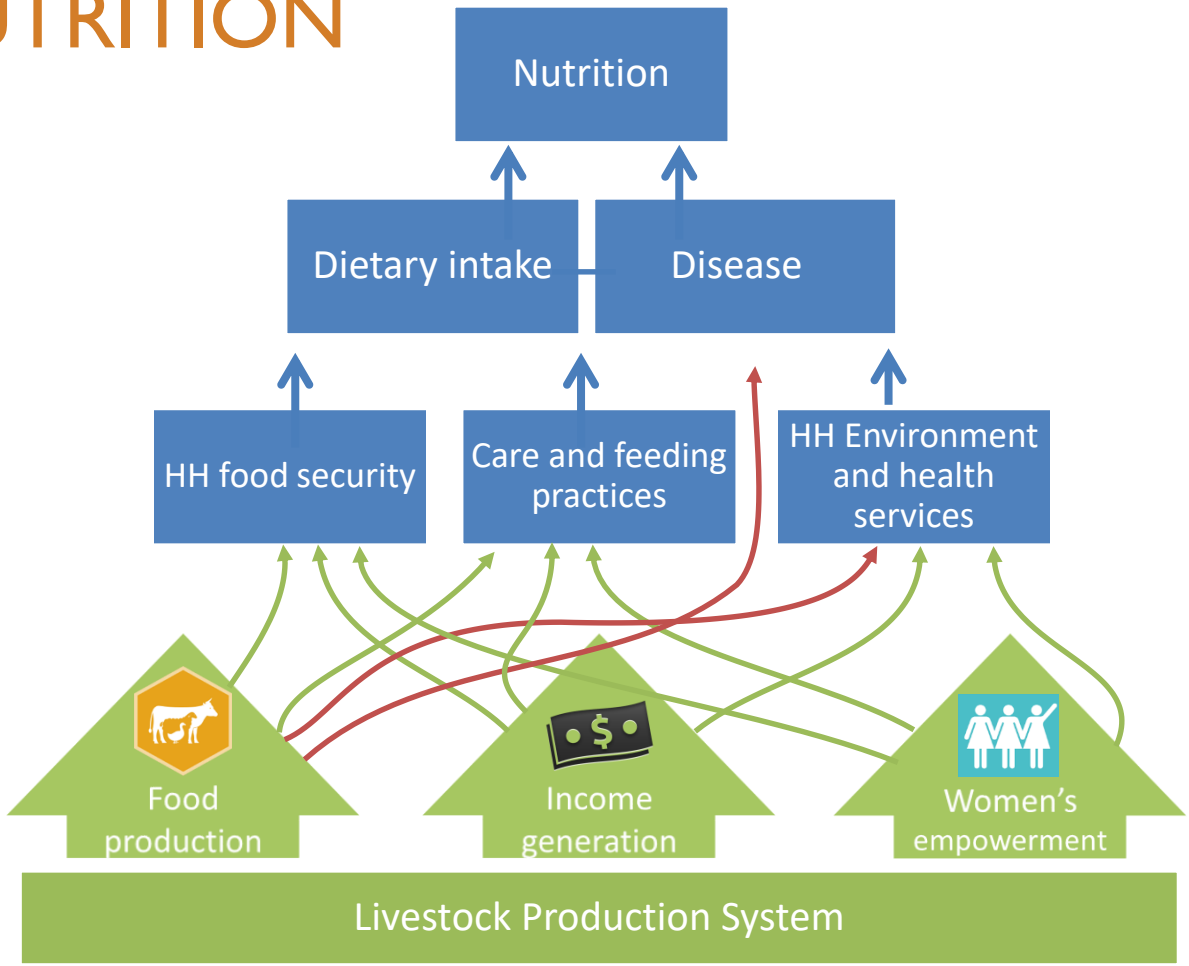
- Household consumption of ASF foods (Iannotti et al., 2017)
- Incomes to purchase enough food of nutritional quality (IFPRI, 2017)
- Resilience, livelihood diversification in the face of CC (Jones and Thornton, 2009)
- Women's control over assets and income (Jin and Iannotti, 2014)



LIVESTOCK → NUTRITION

Evidence of some risk

- Increased risk of environmental enteric dysfunction from animal husbandry, specifically chickens (Headey, 2016; Mosites et al., 2015)
- Increased vulnerability of livestock holders to food insecurity during shocks due to terms of trade meat/grain (Nori et al., 2008)



RESEARCH QUESTIONS EMERGE

1. How can we maximize the benefit of livestock for nutrition while minimizing the risks?
2. How do the Ag -> Nutrition pathways differ across contexts?
3. What are the implications for livestock research and development?

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

NUTRITION PATHWAYS ACROSS LSIL COUNTRIES

USAID FROM THE AMERICAN PEOPLE
BILL & MELINDA GATES foundation
ILRI INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE
CGIAR
UF IFAS UNIVERSITY of FLORIDA

PATHWAY ANALYSIS

- LSIL Innovation Platform meetings highlighted certain issues/pathways by country
  - Example, discussions of income in Niger
- Review of secondary literature illustrates success/failures/potential of interventions in certain pathways by country
- Review of indicators for income, women's empowerment, and production by country

UNDERSTANDING PATHWAYS BY COUNTRY

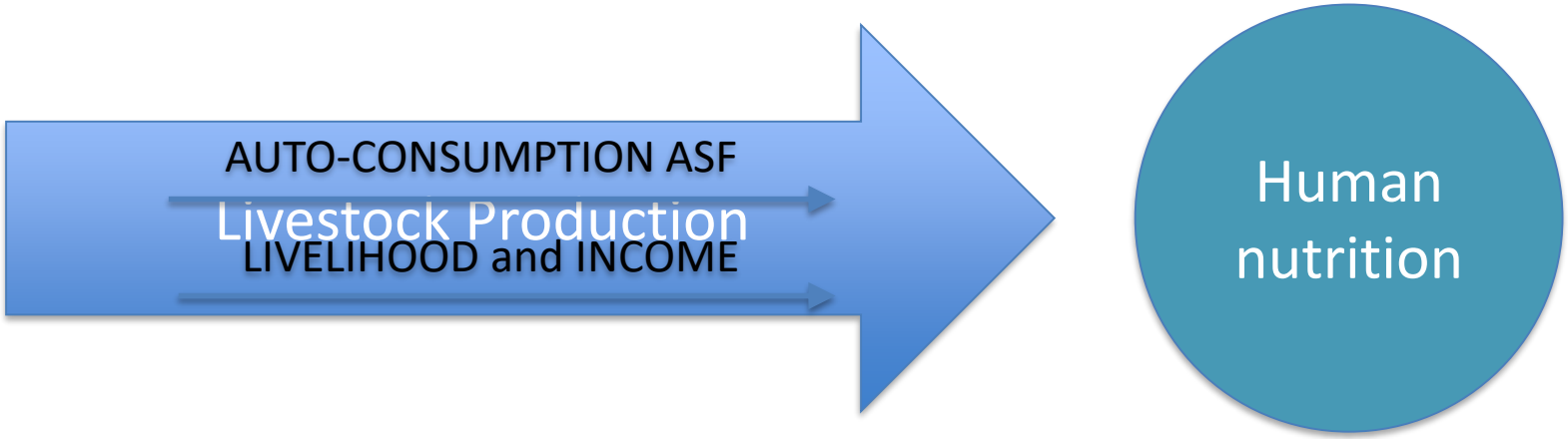
- Pathway selection:
  - **Income** in Niger
  - **Production** in Ethiopia
  - **Empowerment** in Nepal

INCOME IN NIGER

- Widespread severe poverty and large livestock sector, including pastoral populations
- Water as limiting resource
- Climate change and shifting terms of trade between livestock holders (of whom many are pastoralists) during climate crisis
  - Liquidation of livestock at near-grain prices to produce income for food purchase during crisis

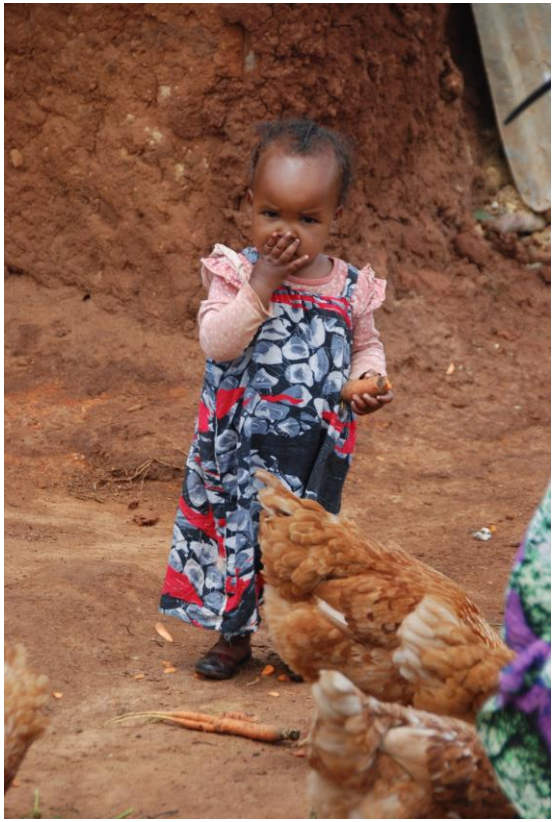
PRODUCTION IN ETHIOPIA

- Limited production affects nutrition directly (limited auto-consumption of ASF) and indirectly (livelihoods and income)



PRODUCTION IN ETHIOPIA

- Auto-consumption constrained by cultural norms and taboos
- Livelihood and income constrained by animal health, production management, and livestock policy



WOMEN'S EMPOWERMENT IN NEPAL

- Women's empowerment as a pathway to improved nutrition in Nepal interacts with other mechanisms of exclusion, including:
  - Geography (access to land and markets)
  - Age (which children are buffered from crisis)
  - Ethnicity (influence of Hindu rules on Janajatis)
  - Caste (greater restriction on movement and less dietary diversity)

IMPLICATIONS OF PATHWAY ANALYSIS ON INTERVENTIONS

- Niger - income generating, livelihood resilience programming, index based livestock risk insurance
- Ethiopia - Behavior change and communication, Innovative feed development, community animal health workers, WASH interventions to limit zoonotic disease
- Nepal - Improve understanding of decision making, local perception of empowerment

IN CLOSING

- Livestock is an opportunity to improve livelihoods and nutrition, with inherent risks.
  - *What is the role of livestock excreta on child nutrition? (Is the risk of livestock greater than the benefit to HH, in what cases?)*
- ASF plays an important role in proper child development and nutrition.
  - *At what price does the benefit of eating ASF produced at household outweigh the benefit of sale?*
  - *How much of child malnutrition globally is driven by cost of ASF?*
- Behavior change remains a major barrier to improving child nutrition.
  - *How can we identify communities where behavior change is sufficient to changing diets? Who are these communities/households?*

REFERENCES

- UNICEF Policy Paper (E/ICEF/1990/L.6). Strategy for Improved Nutrition of Children and Women in Developing Countries. ISSN: 1013-1394. Page 22. 9 March 1990.
- Herforth, A., & Harris, J. (2014). Conceptual pathways between agriculture and nutrition. SPRING.
- FAO (2011). Women in agriculture: Closing the gender gap for development. Retrieved from http://www.fao.org/docrep/013/i2050e/i2050e00.htm
- Nori, Michele, Michael Taylor, and Alessandra Sensi. Browsing on fences: pastoral land rights, livelihoods and adaptation to climate change. No. 148. IIED, 2008.
- Webb P, Block S. 2012. "Support for agriculture during economic transformation: Impacts on Poverty and Undernutrition. Proceedings of the National Academy of Sciences of the USA 109:12309–12314.
- FAO, 2009. The state of food and agriculture. Livestock in the balance. FAO, Rome.
- Headey, D., Hirvonen K. 2016. is Exposure to Poultry Harmful to Child Nutrition? An Observational Analysis for Rural Ethiopia. PLoS One. 11(8):e0160590.
- Iannotti, L.L., Lutter, C.K., Stewart, C.P., Riofrío, C.A.G., Malo, C., Reinhart, G., Palacios, A., Karp, C., Chapnick, M., Cox, K. and Waters, W.F., 2017. Eggs in early complementary feeding and child growth: a randomized controlled trial. *Pediatrics*, p.e20163459.
- Jin, M. and Iannotti, L.L., 2014. Livestock production, animal source food intake, and young child growth: The role of gender for ensuring nutrition impacts. *Social Science & Medicine*, *105*, pp.16-21.
- Jones, P.G. and Thornton, P.K., 2009. Croppers to livestock keepers: livelihood transitions to 2050 in Africa due to climate change. *Environmental Science & Policy*, *12*(4), pp.427-437.
- Bachewe, F.N., Minten, B. and Yimer, F., 2017. *The rising costs of animal-source foods in Ethiopia: Evidence and implications* (Vol. 108). Intl Food Policy Res Inst.

FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

www.feedthefuture.gov

USAID
FROM THE AMERICAN PEOPLE

BILL & MELINDA GATES foundation

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

CGIAR

UF IFAS
UNIVERSITY of FLORIDA