



# FEED THE FUTURE

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



## Livestock Systems Innovation Lab (LSIL): The Journey Continues

Lacey Harris-Coble, Hannah Salvesen and Gbola Adesogan

Virtual General Meeting, September 30, 2020



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## OUTLINE

- The journey
- The challenges
- The urgent need to press on
- Phase II plans (Saskia Hendrickx)



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## IN THE BEGINNING



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## THE INSTIGATORS



Sandra Russo



Geoff Dahl



Walter Bowen

**“Let there be a proposal”**



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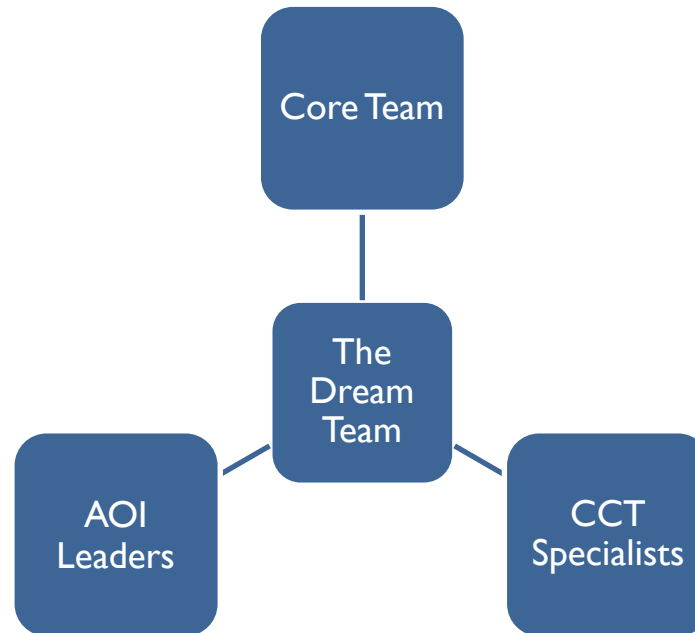
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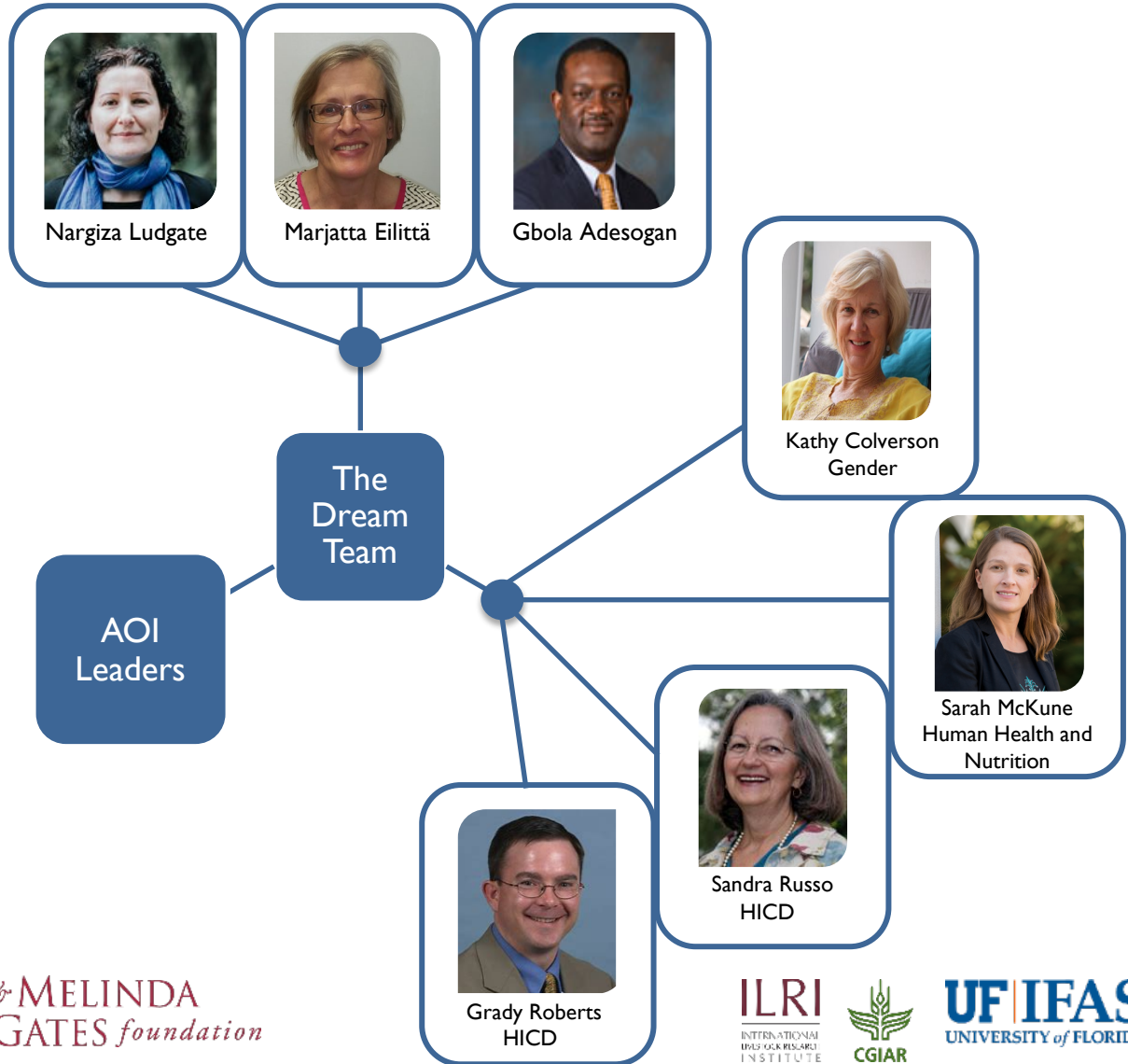






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## THE LSIL JOURNEY



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FIRST ANNUAL GENERAL MEETING, GAINESVILLE, FLORIDA

First AGM/GNS  
2017



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## ALTERNATIVE FEEDS



ETHIOPIA

Cow productivity was maintained after replacing 20-30% of expensive concentrates with home-grown pigeon pea



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## IMPROVING MILK QUALITY/PRODUCTION

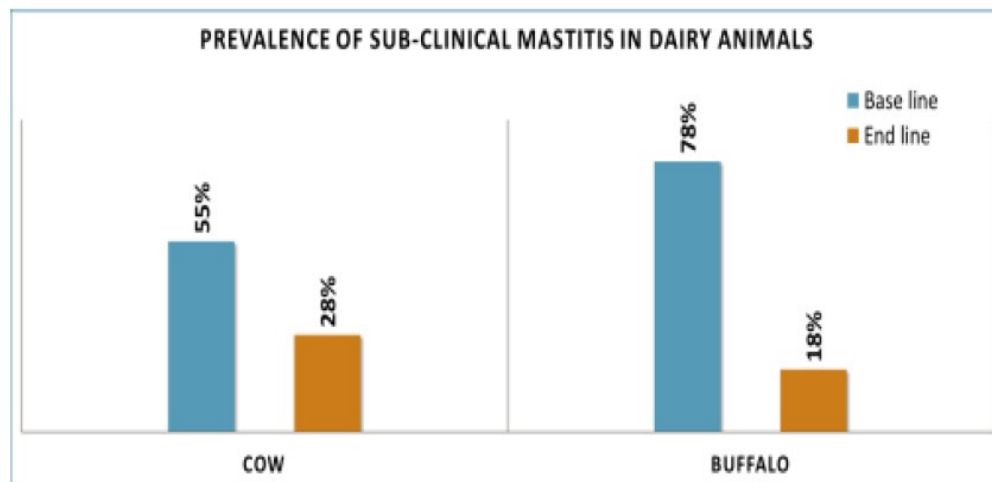


Photo credit@Hiefern Intern



NEPAL

Our prevention package reduced the prevalence of mastitis by **96%** in cows and **333%** in buffalo



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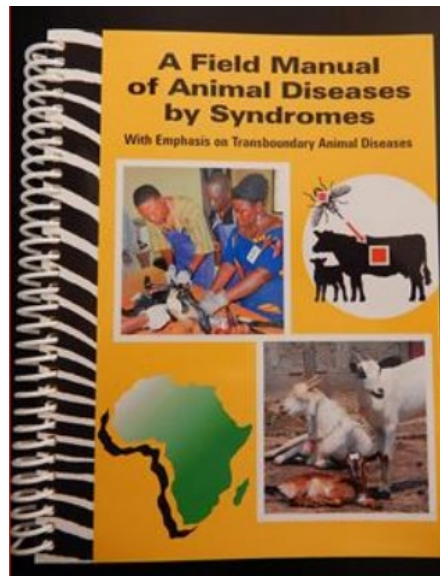
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## IMPROVING DISEASE SURVEILLANCE



### ETHIOPIA

After providing surveillance training, FAO translated our surveillance manual to **all national languages** and trained farmers across Ethiopia



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## REDUCING YOUNGSTOCK MORTALITY

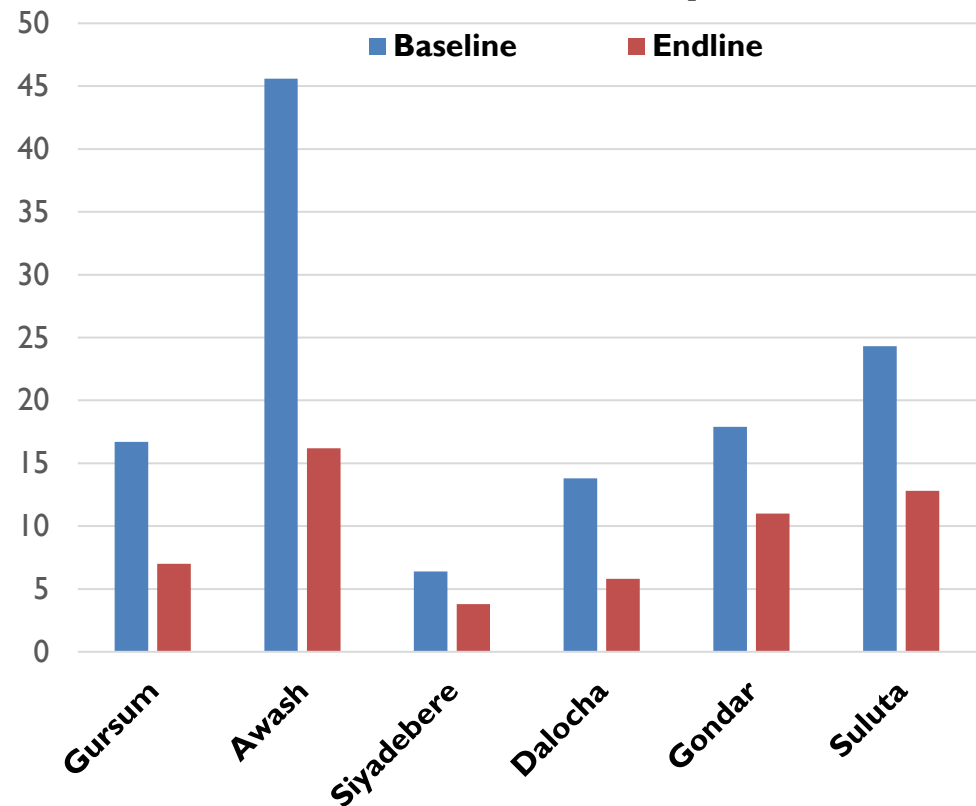


### ETHIOPIA

We identified causes of youngstock mortality and practices to reduce the problem:

- Lack of colostrum feeding
- Inadequate husbandry

### Calf mortality, %



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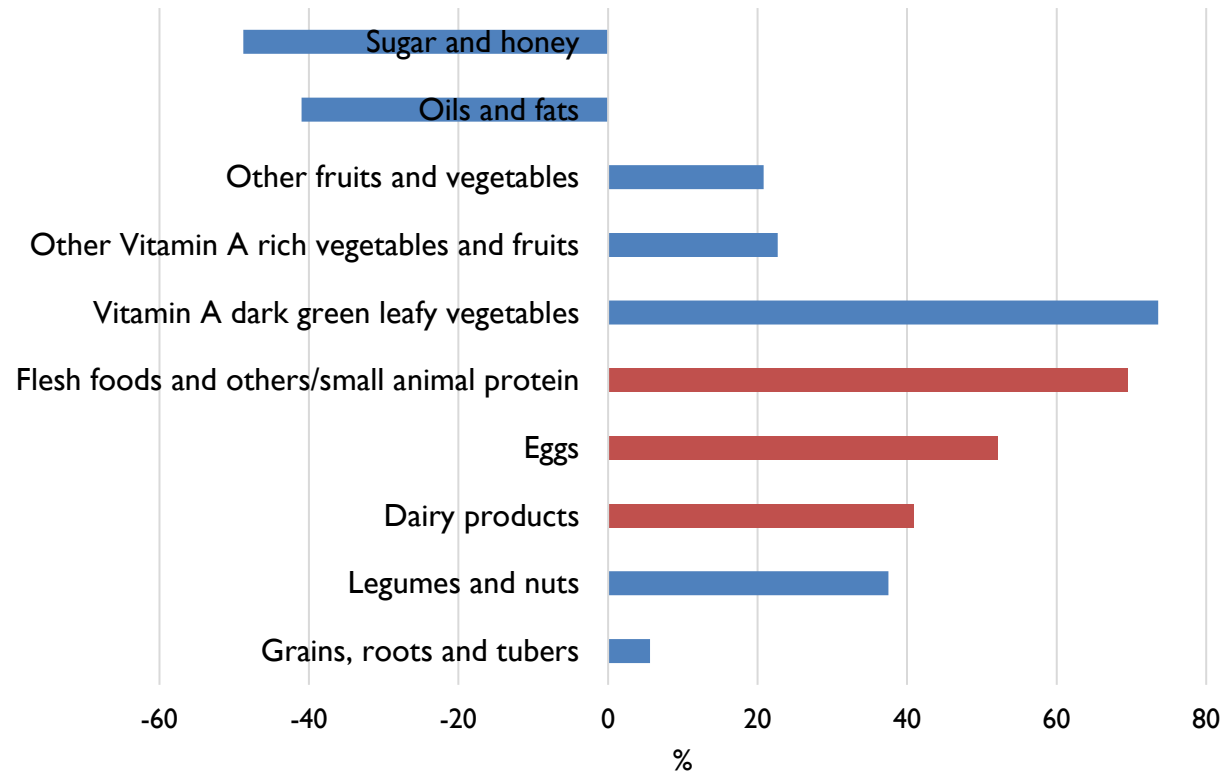
## INFORMING POLICY



### ETHIOPIA

We demonstrated steep increases in animal-source food (ASF) prices within three years

#### Change in 2018 versus 2015 price, %



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## IMPROVING NUTRITION



### RWANDA

Our nutrition intervention informed:

- National nutritional counselling cards
- Egg distribution and ASF messaging during the pandemic



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## EMPOWERING WOMEN



NEPAL

Providing distance learning training for animal health workers made self employment attainable for more **(24%)** women



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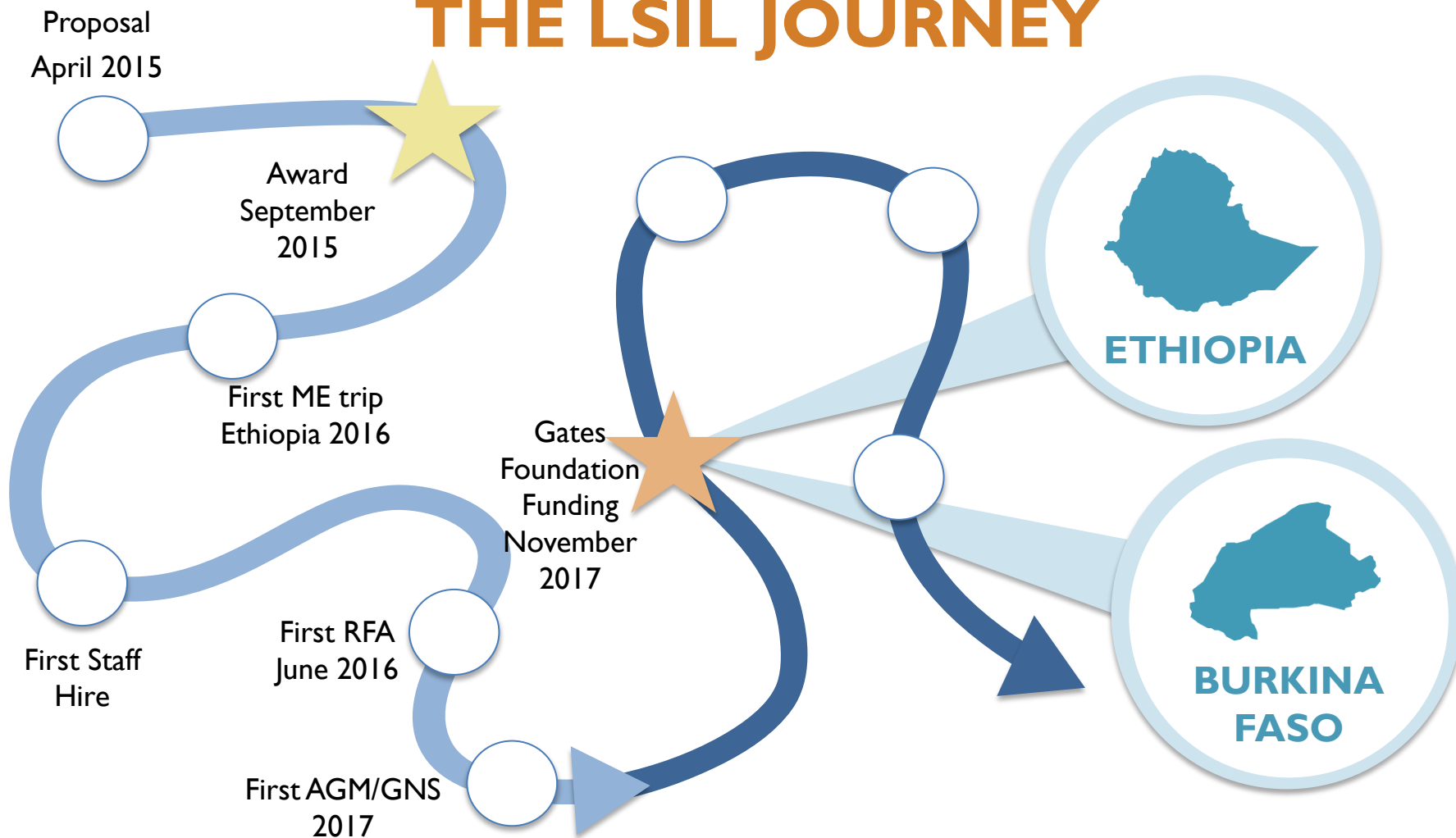




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## ENVIRONMENTAL ENTERIC DYSFUNCTION

- Detected high prevalence of EED (50%), Campylobacter (50%) and stunting (41%) in infants in Haramaya woreda, Ethiopia
- Now conducting a study to identify main environmental reservoirs of Campylobacter



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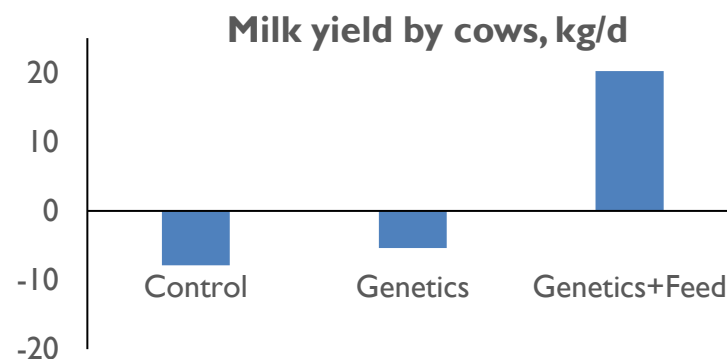


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## FEED PROJECT

- Developing comprehensive feed databases (> **2000+ feeds** per country); feed demand supply status
- Validating and incentivizing adoption of introduced high yield and quality fodder
- Formulating improved rations that increased returns **by 345%**
- Determined nutritional requirements of tropical cows



Showned handheld NIRS systems can give far cheaper yet accurate feed analysis



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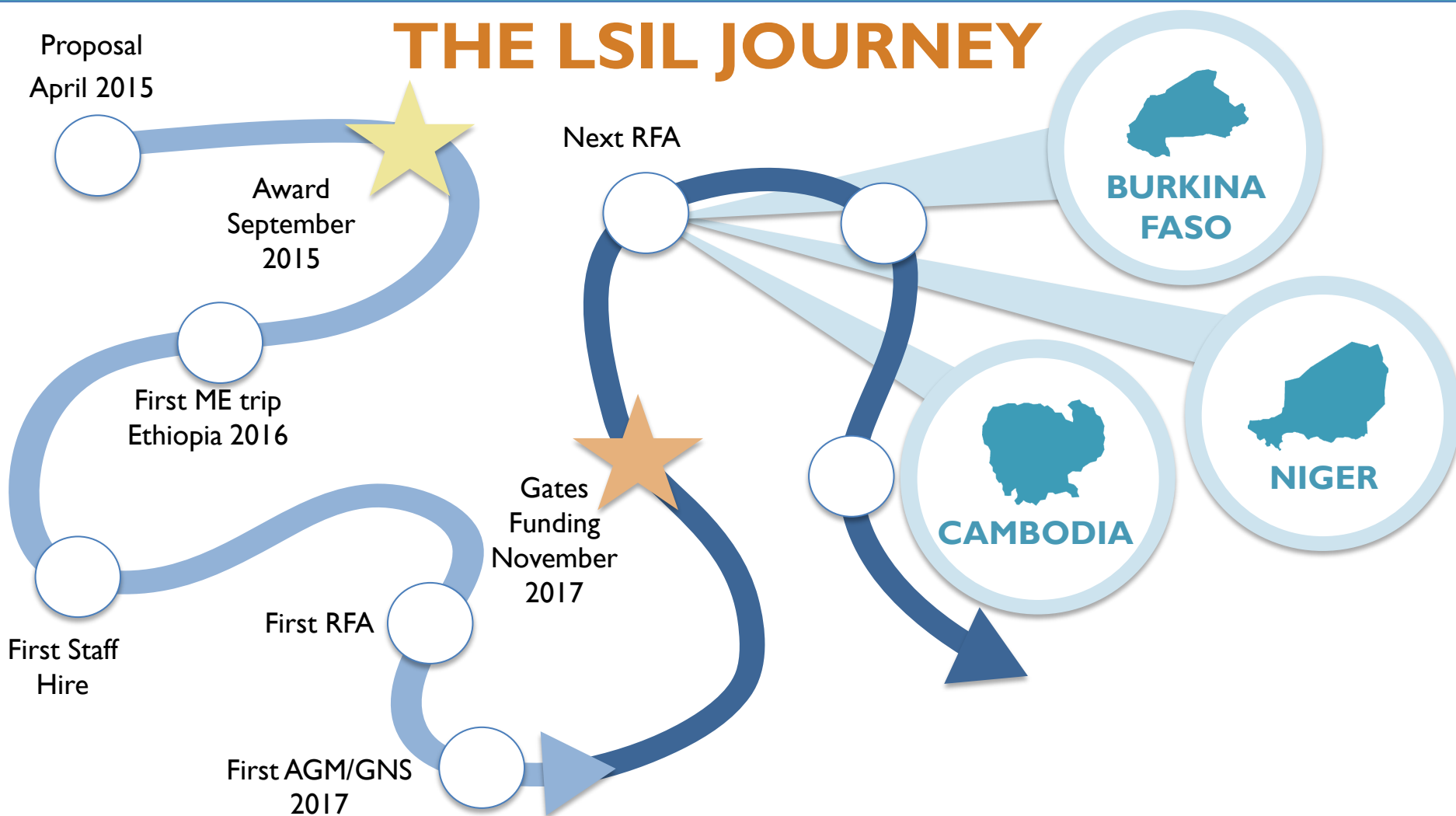
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Proposal  
April 2015

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Award  
September  
2015

Next RFAs

Second  
AGM/GNS  
2018



Photo credit: @LSIL

### SECOND ANNUAL GENERAL MEETING, ADDIS ABABA



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## FOOD SAFETY



CAMBODIA

Determined that each case of foodborne disease costs \$62

Main diagnoses:

- Acute diarrhea (74.4%)
- Food poisoning (24.4%)
- Typhoid (0.8%)
- Chronic diarrhea (0.4%)

Now piloting food safety interventions



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## IMPROVING NUTRITION & EMPOWERING WOMEN

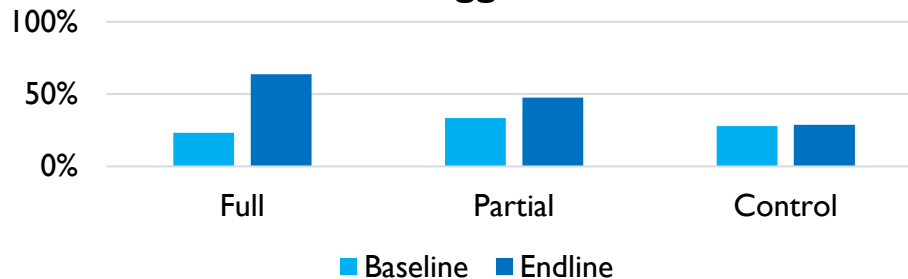


BURKINA FASO

We increased infant egg consumption from **0 to 6** eggs weekly

This significantly reduced wasting and empowered women to make dietary decisions.

Percent of women respondents reporting "Self" as decision maker about feeding eggs



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## IMPROVING MARKET ACCESS



**NIGER**

Linking livestock keepers and feed traders 800 km apart in Niger reduced feed costs by 30% and increased feed sales by 12.6 tons in 4 months (\$3600)



**Ramana Doni earned 33% more money from sales of her (well-fed) sheep.**



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## WE ARE MAKING A DIFFERENCE



NIGER

<https://youtu.be/vIK2BAGeipY>



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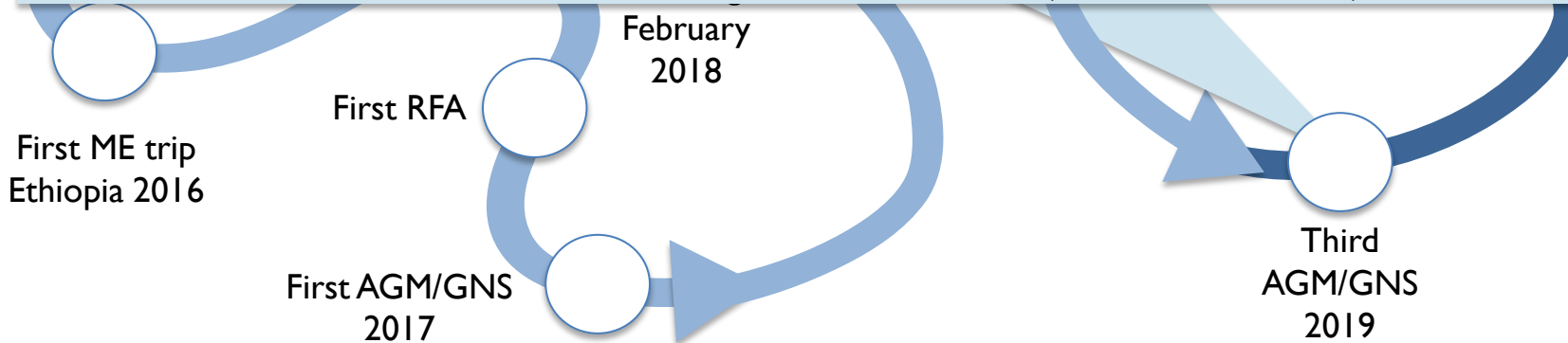


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## THIRD ANNUAL GENERAL MEETING, KATHMANDU, NEPAL



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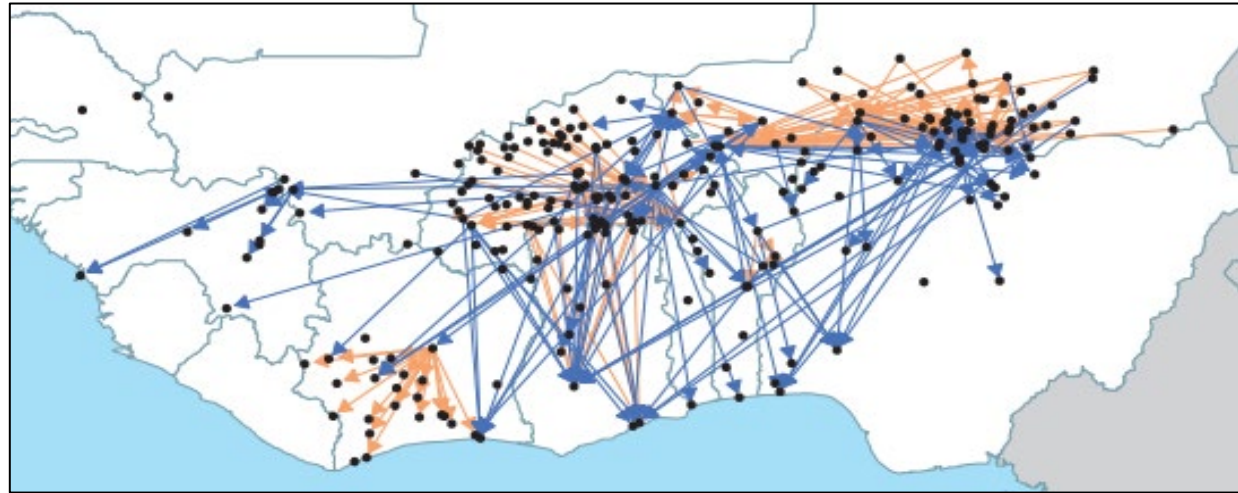
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## FUTURE LIVESTOCK SYSTEMS

### WEST AFRICA

Mapped livestock  
trade networks in  
West Africa



Shown critical trade barriers, influencers and vulnerability points that need to be leveraged or protected



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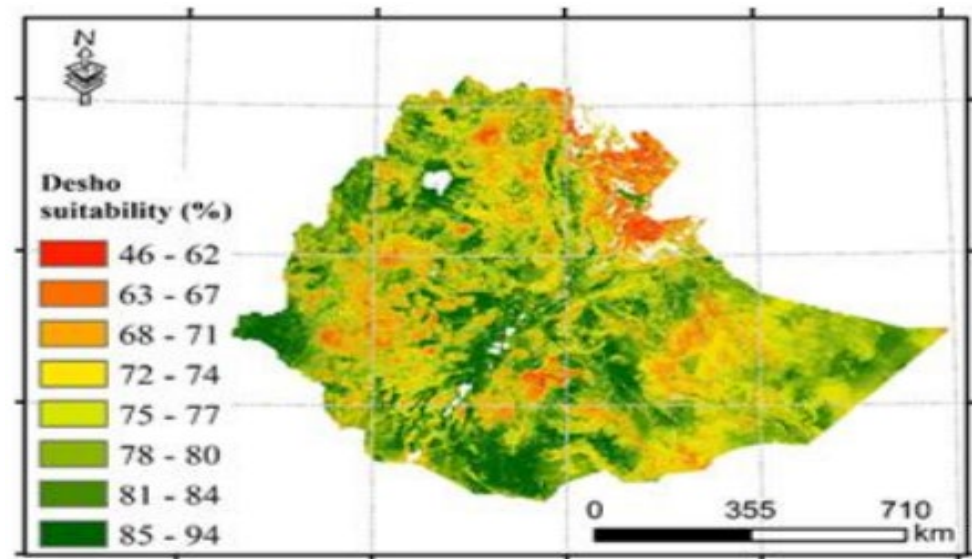
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## MODELING NUTRITION IMPACTS



### ETHIOPIA

- Mapped areas suitable for irrigated fodder production
- Showed that adopting irrigated fodder and crossbred cows can increase substantially consumption of eggs **(28-fold)** and milk **(3-fold)**



Areas suitable for growing Desho grass



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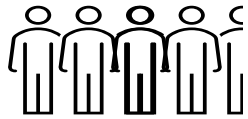


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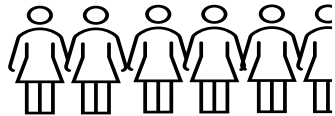
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## BUILDING LOCAL CAPACITY

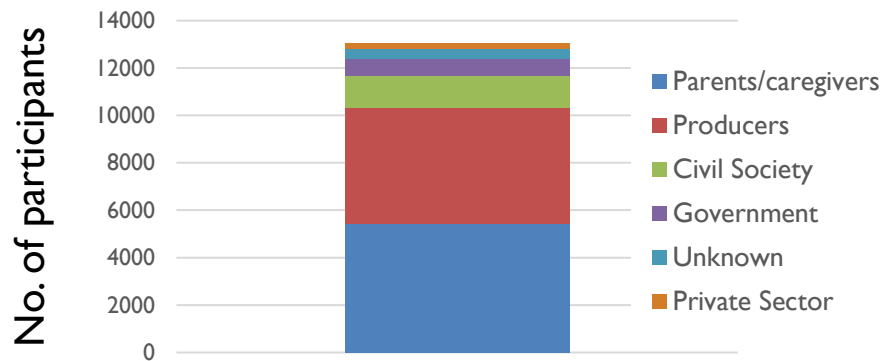
**12,924** participated in our programs




44%



56%



**3,969** trained:  47%



53%



Photo credit: B. Shrestha



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## CAPACITY BUILDING

HICD analysis foci:

- Manuals and trainings
- Gap analyses
- Assessments, studies and reports

Developed videos, manuals, trainings on:

- Qualitative research methods
- Laboratory management
- Grantsmanship
- Research administration capacity
- Participatory training for adults



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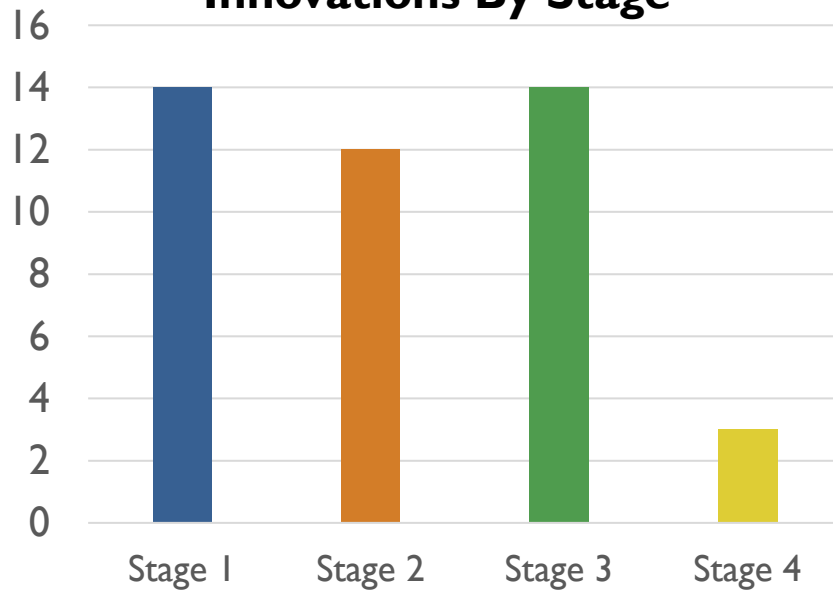
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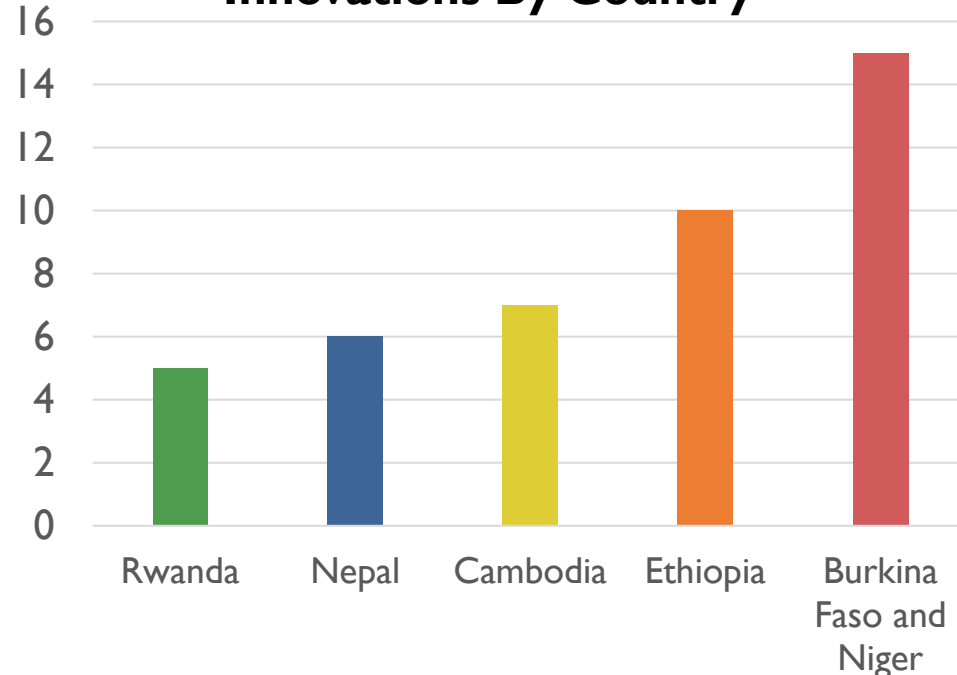
## 43 INNOVATIONS

**2,935** people are using our innovative technologies, practices and approaches

**Innovations By Stage**



**Innovations By Country**



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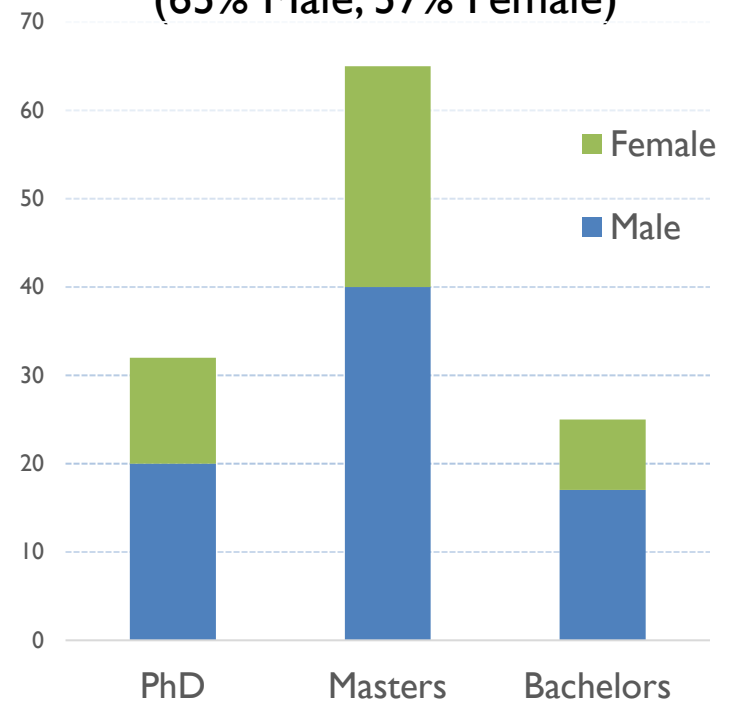
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## INVESTING IN THE FUTURE

Supported **117** degree-seeking students  
(63% Male; 37% Female)



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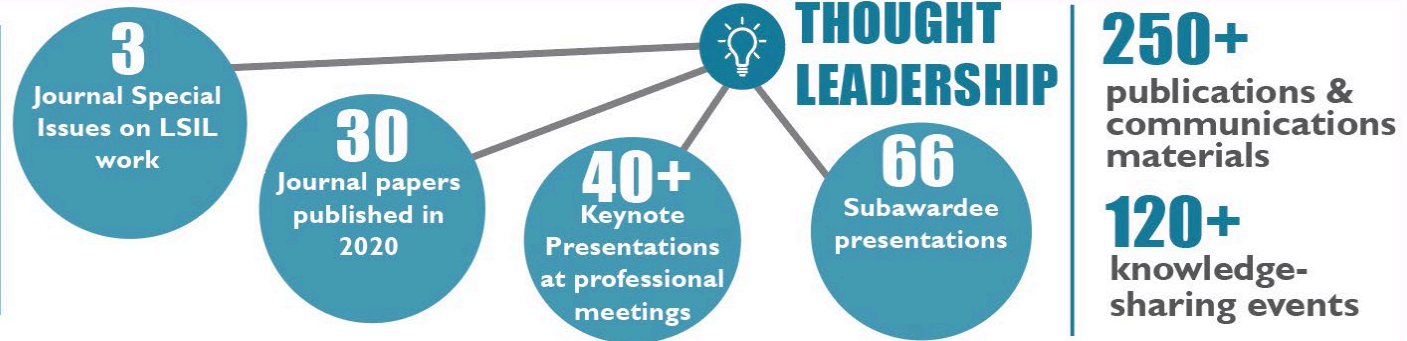
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## COMMUNICATIONS



### OUTREACH

We communicate our results to local partners and the international community

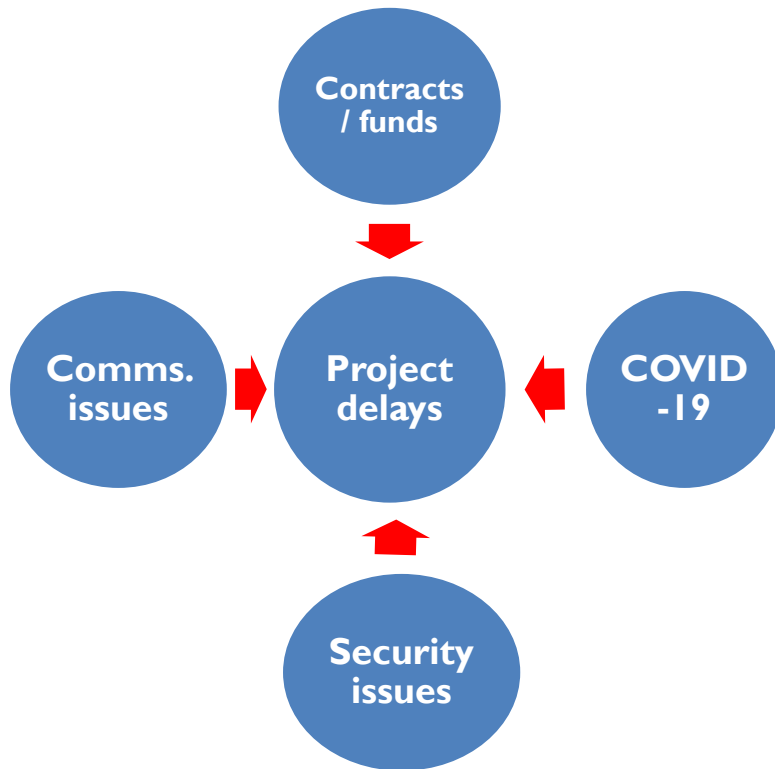




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## CHALLENGES



Despite the challenges, *particularly COVID-19 disruptions of surveys, travel, workshops, etc.,* our work progressed



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Agricultural Transformation Agency  
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biosciences  
eastern and central africa



Ethiopian Development Research Institute (EDRI)



Digital Green



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Ministry of Agriculture, Livestock and Fisheries



**MAAIF**  
Ministry of Agriculture  
Animal Industry and Fisheries

COLLEGE OF VETERINARY MEDICINE,  
ANIMAL RESOURCES & BIOSECURITY



Republic of Kenya  
Ministry of Agriculture, Livestock and Fisheries

Eden Field Agri-Seed Enterprise





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## ILRI & OUR REGIONAL COORDINATORS







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## OUR “ME” FACULTY





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## **OUR UF SUPPORT OFFICES**

**Contracts & Grants**

**Shared Services Center**

**Division of Sponsored Programs**

**IFAS Admin. & International Support Team**



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## OUR “ME” STAFF







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## THE VISION REMAINS - THE NEEDS ARE GREATER

To sustainably intensify livestock production to improve the nutrition, health, incomes and livelihoods of the poor



Photo credit: J. Vipham





## RECENT EVIDENCE ON ASF

- **Lulun I:** Egg consumption reduced stunting by 47% and increased linear growth (183 infants; lanotti et al. 2017; effects not evident 2 yr later)
- **Mazira project:** (Stewart et al 2020; 660 infants). Egg consumption did not increase linear growth but increased head circumference in Malawi. (Background fish consumption; low stunting).
- Consumption of more types of ASF associated with greater head circumference in Nepali infants (600; Miller et al. 2017)
- ASF improved **3I** cognitive function variables across 10 studies (Balehegn et al., 2019)
- **Nutrition Innovation Lab studies** – ASF consumption associated with higher linear growth and lower stunting rates (6377 infants across Uganda, Nepal Bangladesh; ASF consumption ASF supplementation matters)



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## 59% OF CHILDREN ARE NOT FED MUCH NEEDED ANIMAL-SOURCE FOODS

Percentage of children 6-23 months fed different foods



**59%** of children worldwide are not fed much-needed nutrients from ASF



**44%** of children worldwide are not fed any fruits or vegetables.

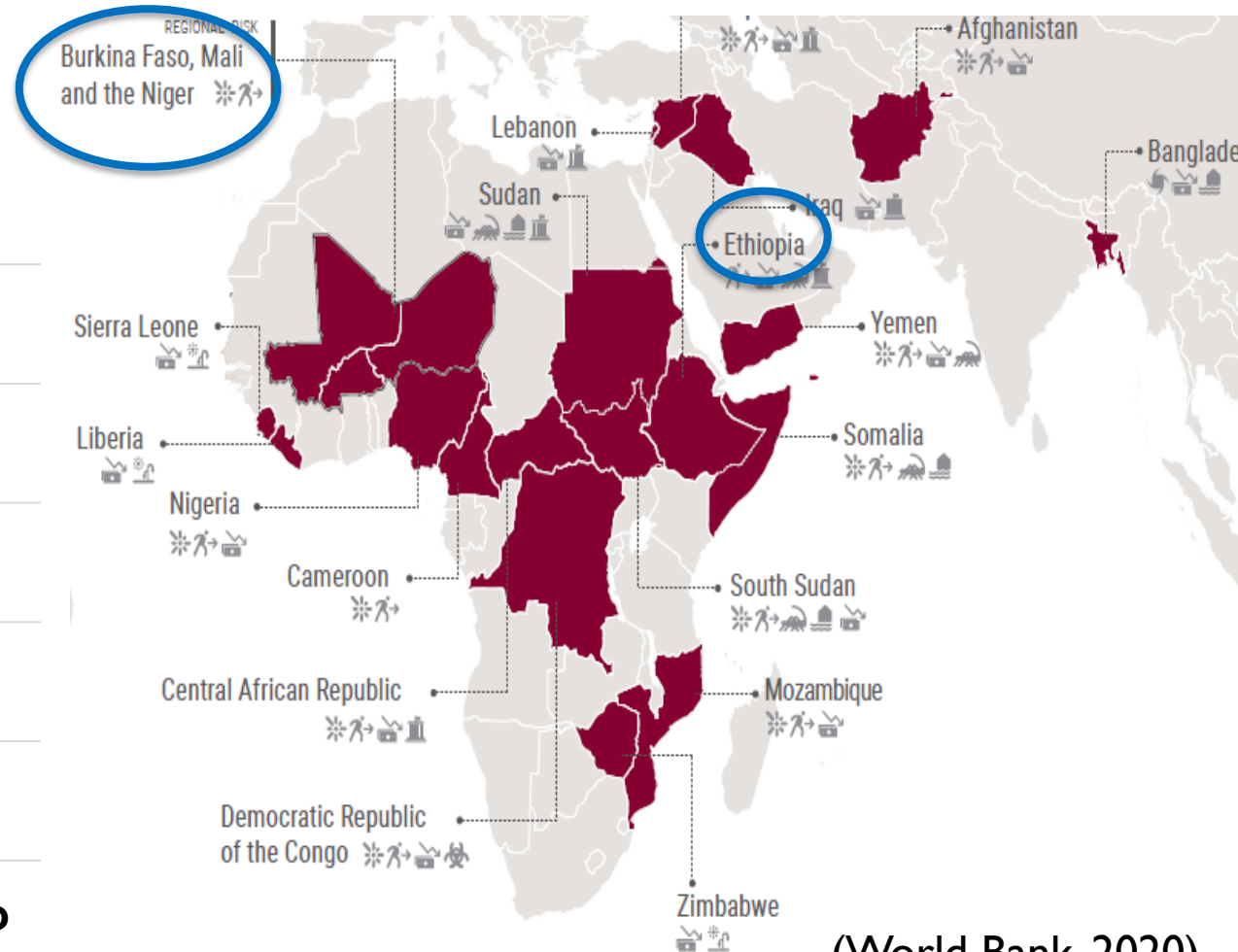
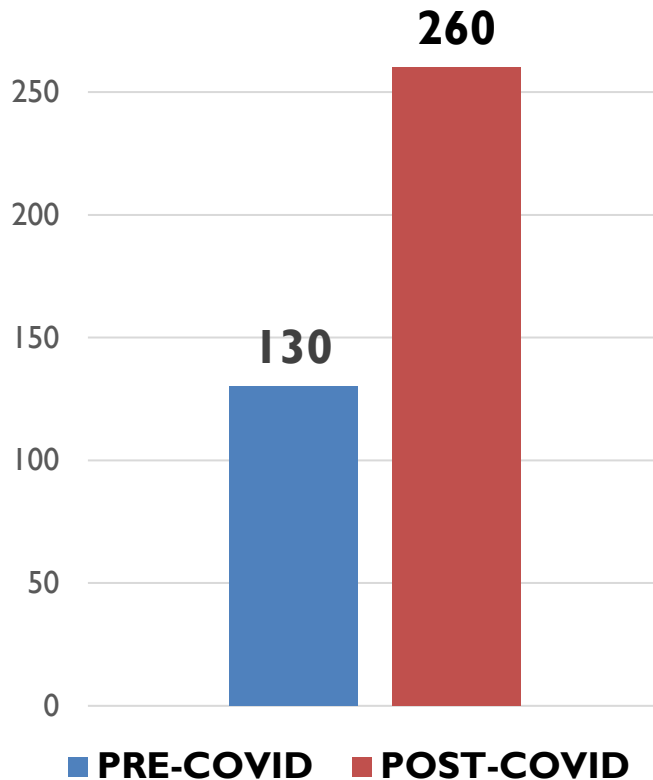


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## COVID-19 FOOD SECURITY HOTSPOTS

No. of people at risk of starvation (millions)



(World Bank, 2020)

Risk type



Tropical cyclone



Desert locusts



Conflict



Political instability/unrest



Flood



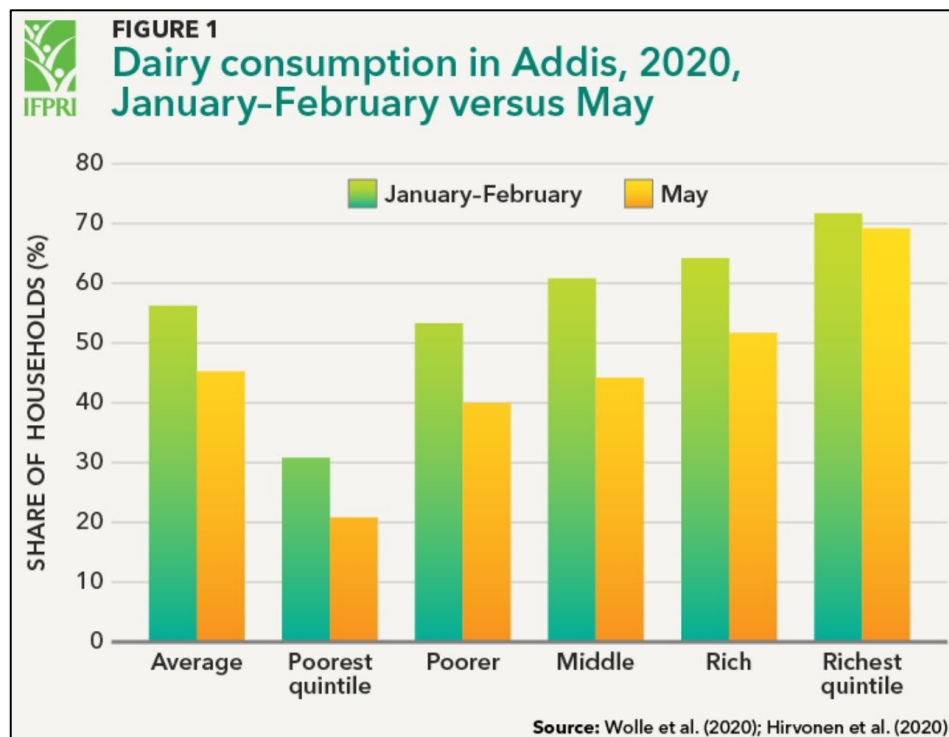
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## REDUCED NUTRITIONAL SECURITY

COVID-19 is causing avoidance of nutrient-rich foods due to:

- High cost of nutrient-rich foods
- Myths that COVID-19 can be transmitted through ASF
- Other disruptions to food systems due lockdowns/restrictions



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## WORSENING GLOBAL MALNUTRITION

In one year, COVID-19 disruptions could:

- Increase child wasting prevalence by **14.3% (6.7 million children)**
- Cause over **10,000** more child deaths per month.
- Worsen all forms of malnutrition

(Headey et al., 2020)



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## SUMMARY

- We have accomplished much.
- We appreciate your contributions.
- There is far much more to do; the needs are greater and more urgent.
- We look forward to working with you in Phase II.



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