



# FEED THE FUTURE

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

## Feed the Future Innovation Lab for Livestock Systems: The imperative to increase animal-source food (ASF) consumption



**Gbola Adesogan**

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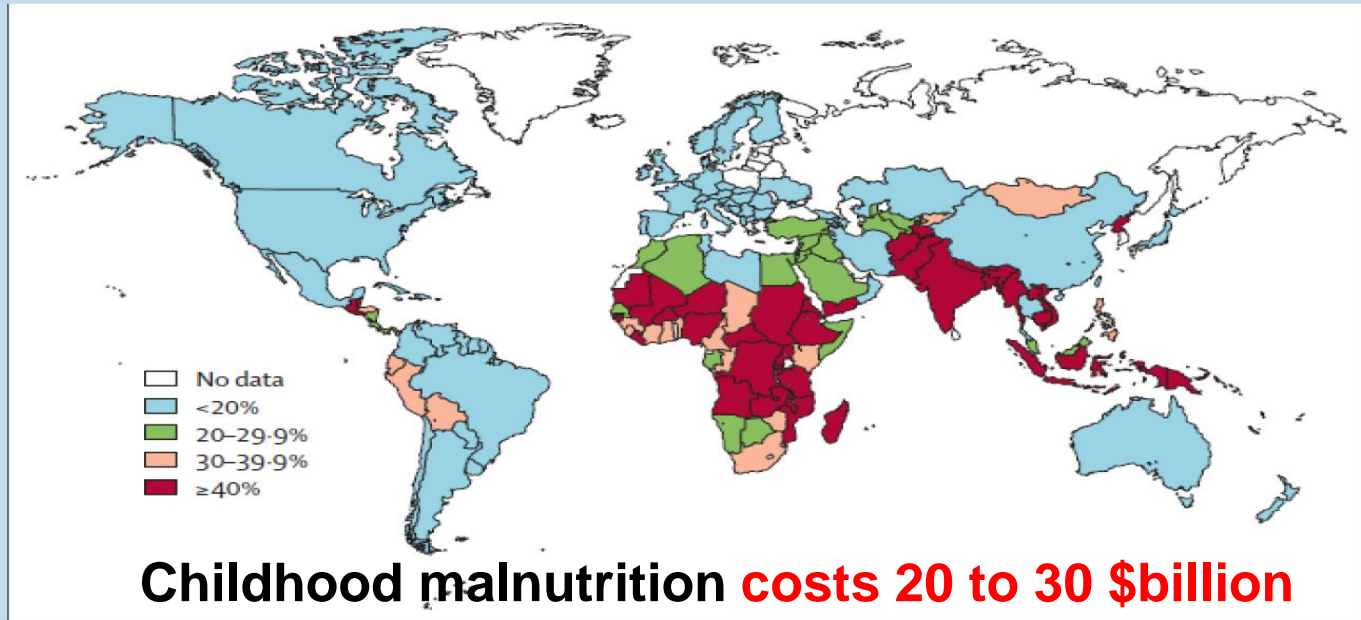
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## Global prevalence of stunting (malnutrition)



Black et al. 2008

(Horton and Ross. *Food Policy*. 2003; 28: 51-57. R Martorell et al . *J. Nutrition*. 2010; 140: 348-54.  
(Adapted from Ianotti, 2014)



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## Important quotes

- Stunting in the first 1000 days condemns children to a life time of **underachievement** and **underperformance!!!**  
- Roger Thurrow. *Former Wall Street Journal Foreign Correspondent*
- Stunting in the first 1000 days is associated with **nearly irreversible brain damage!!!** - *Senior nutritionist, World Food Program.*
- Some animal-source food consumption is **needed for the growth and cognitive development** in children and infants – *Catherine Woteki, USDA Chief Scientist and Undersecretary for Agriculture*

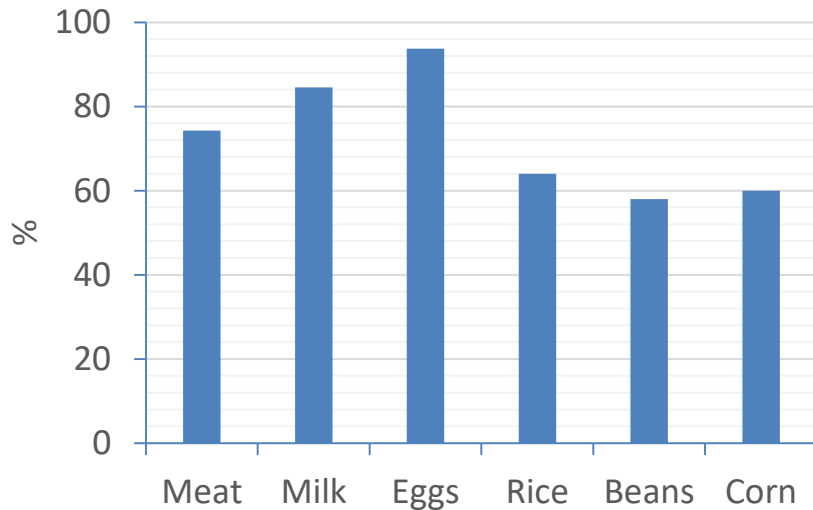


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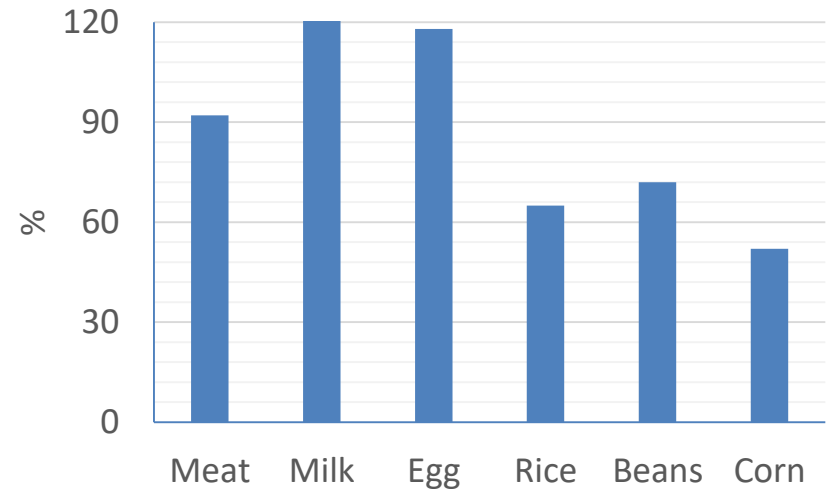
## Protein quality of animal and plant-source foods

Biological value of protein



<http://www.food-info.net/uk/protein/bv.htm>

Protein digestibility-corrected amino acid scores



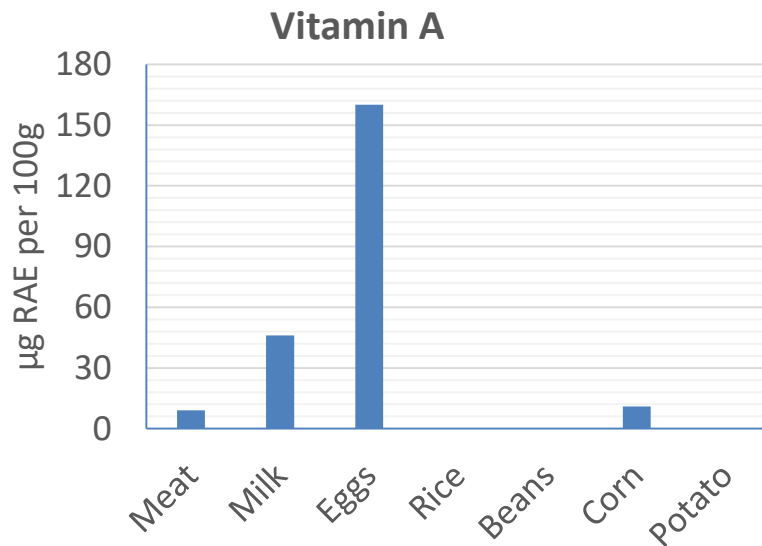
(Michaelsen et al. 2009)



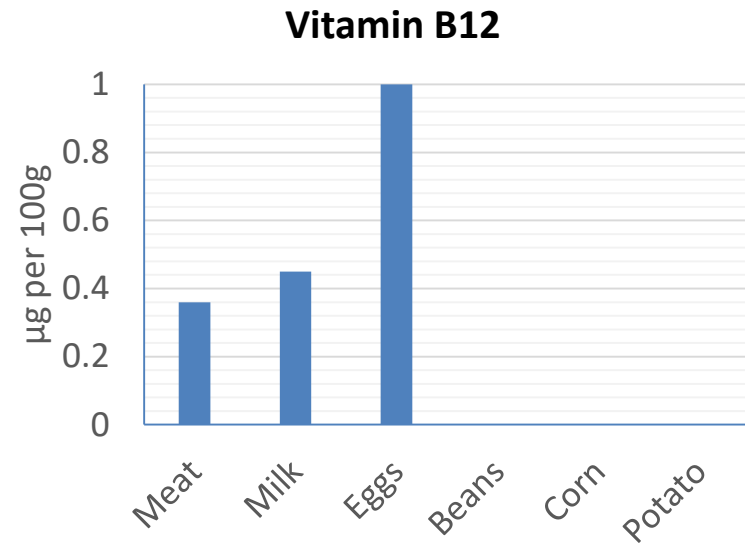
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## Vitamin concentrations in animal and plant-source foods



USDA, ARS



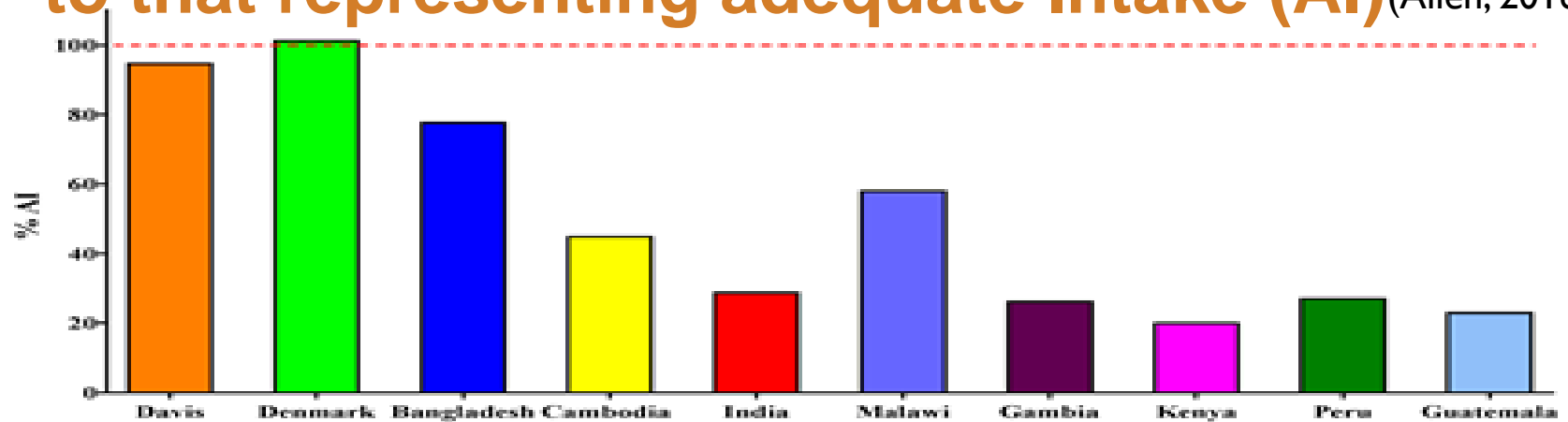
Dror and Allen (2011) and Neumann  
et al. (2002) & USDA, ARS



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## Vitamin B12 in breast milk of women relative to that representing adequate Intake (AI) (Allen, 2016)



### Recent Kenyan study (Williams et al. 2016)

- 286 women 1-6 months postpartum
- 89% had less breast milk B12 than recommended levels



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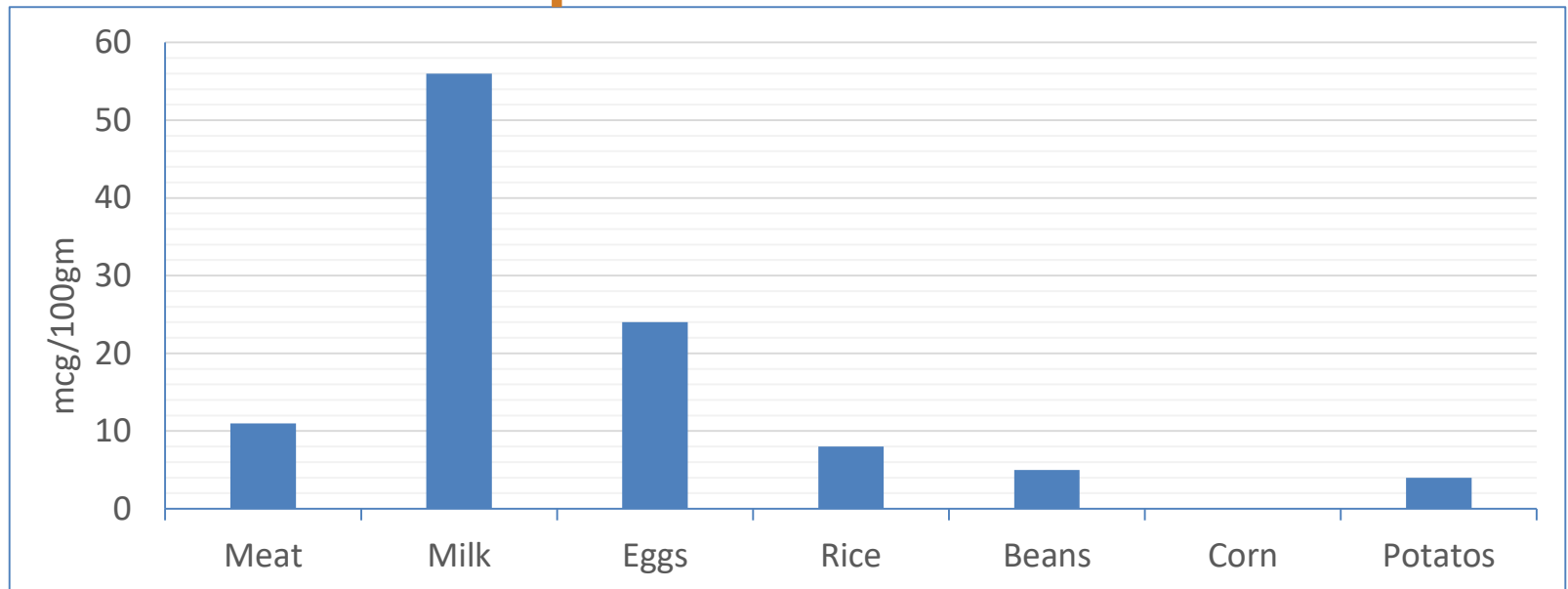
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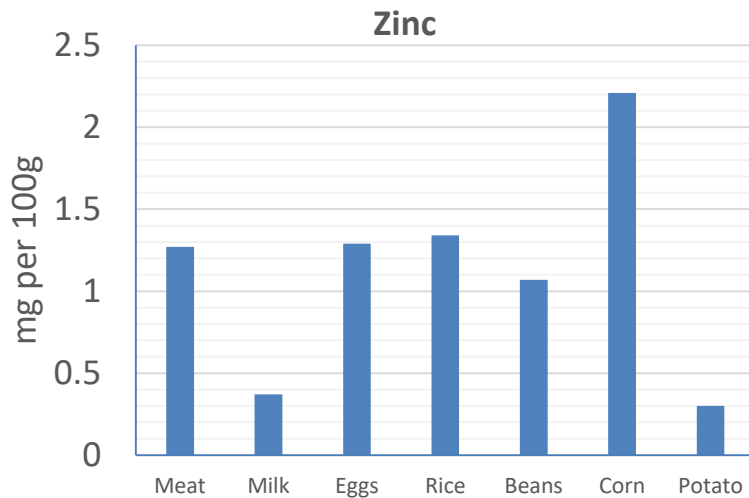
## Iodine concentrations of animal and plant-source foods



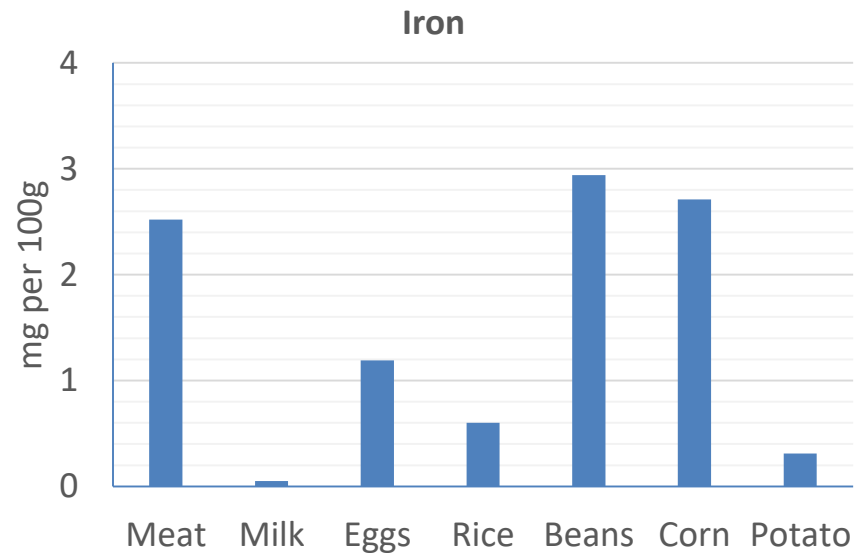
Pennington et al. Young et al., 1995;



## Zinc and iron concentrations of animal and plant source foods



USDA, ARS



USDA, ARS

Many plant foods have higher zinc and iron levels but they are bound to phytate and fiber and therefore less available



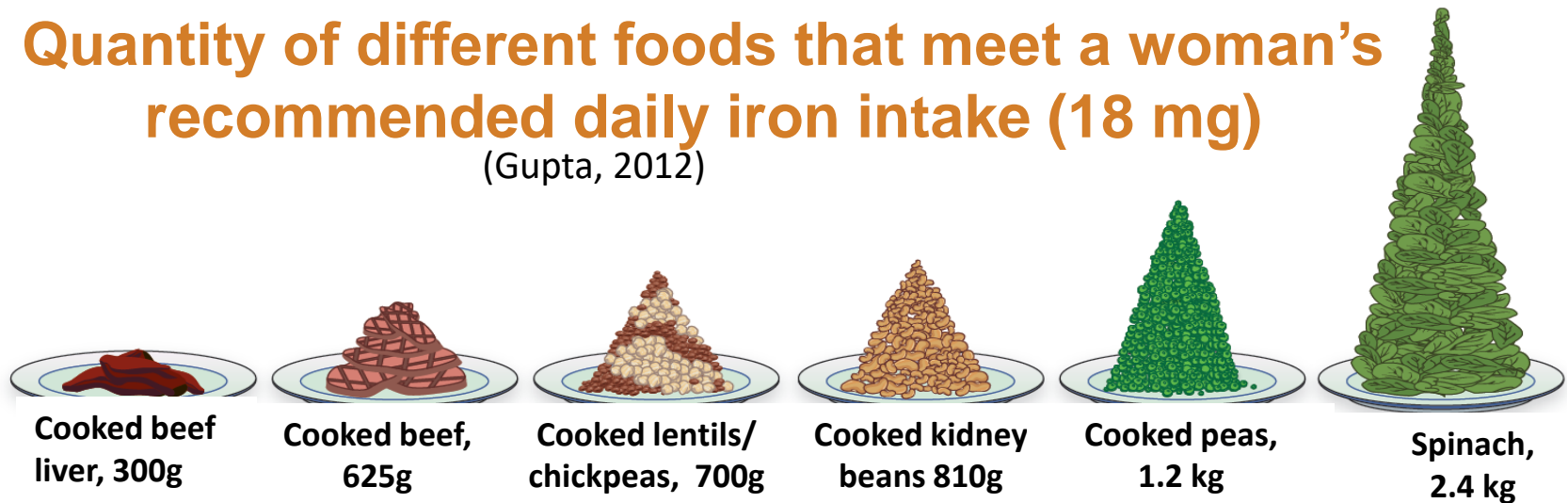


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## Quantity of different foods that meet a woman's recommended daily iron intake (18 mg)

(Gupta, 2012)



(Dominguez-Salas and Bruyn)



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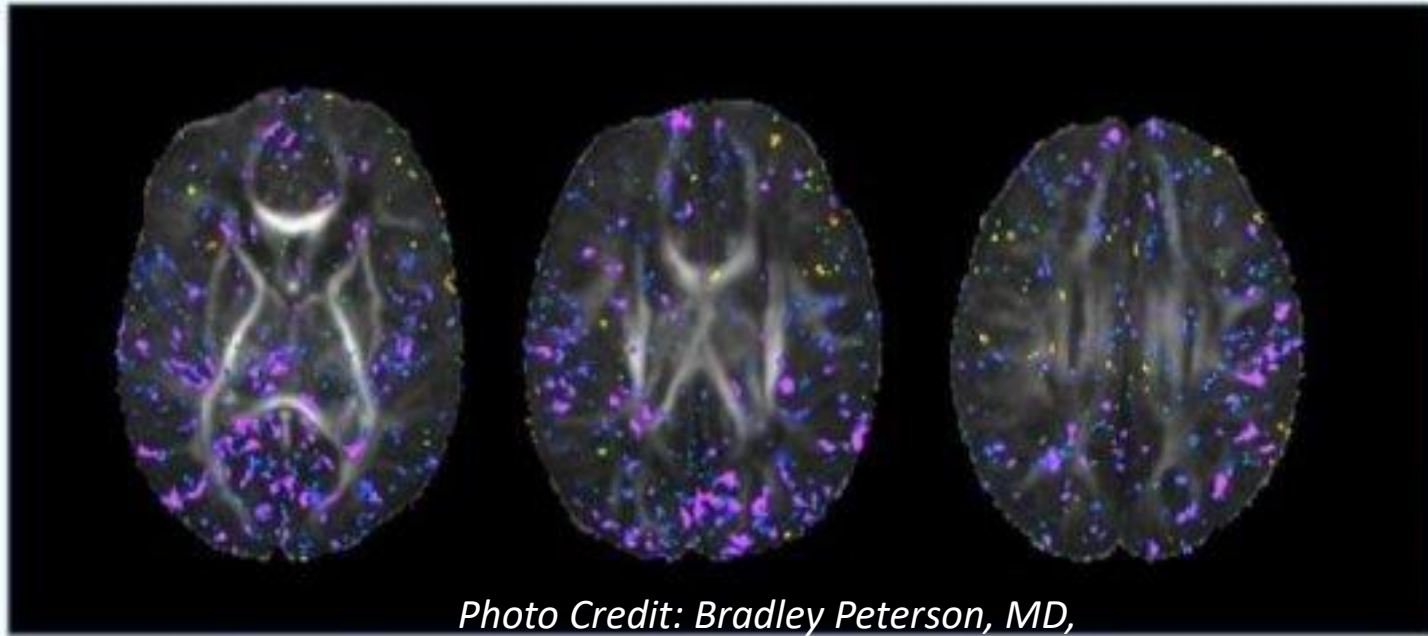
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## Maternal prenatal iron intake (purple) correlates with fetal brain tissue organization



*Photo Credit: Bradley Peterson, MD,*

(Monk et al., 2015; sciencedaily.com)



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# **Role of Animal Source Foods to Improve Diet Quality and Growth and Development in Kenyan Schoolers**

## **Principal Investigators**

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**Suzanne P. Murphy, Ph.D, RD**

**U of Hawaii**

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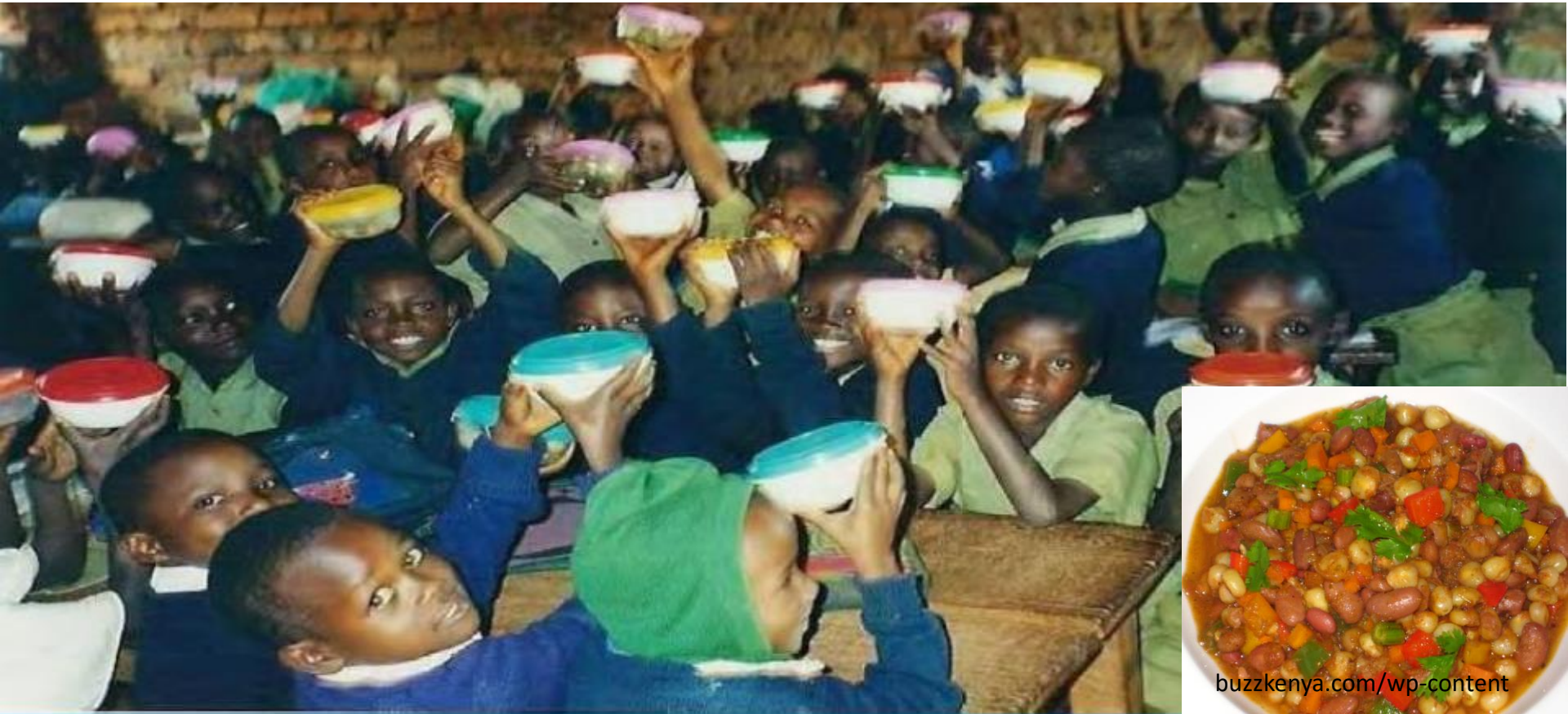




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## Role of ASF in diets of Kenyan children



[buzzkenya.com/wp-content](http://buzzkenya.com/wp-content)

- Adapted from Demment, 2013



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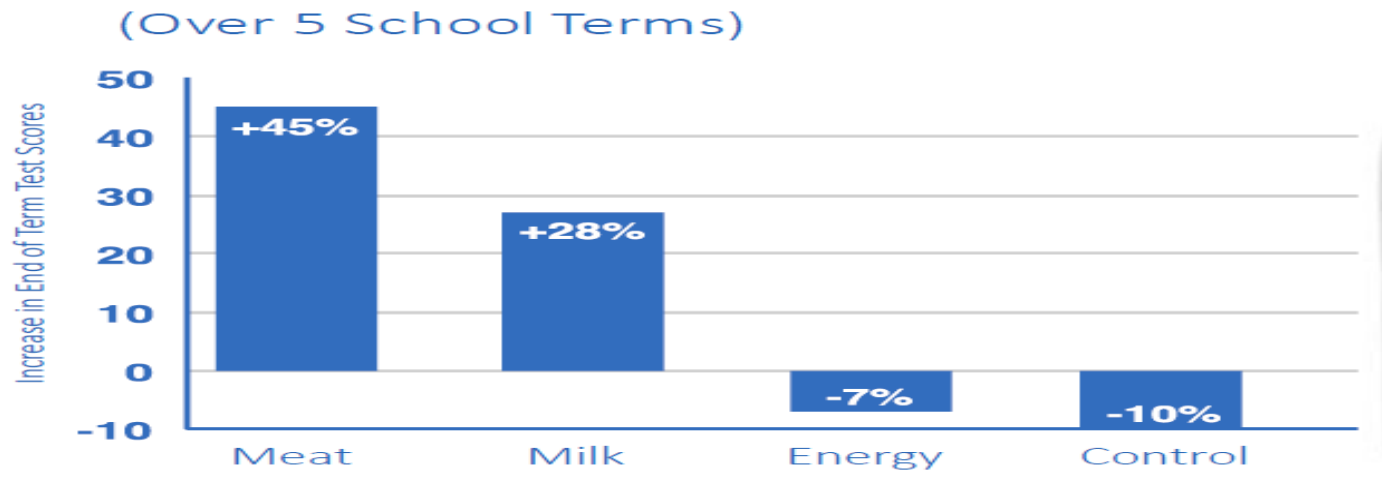
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## ASF supplementation effects on children's test scores



Adapted from Demment, 2013; Weldon 2016



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## Meat group

- Highest Raven scores
- Higher Vit. B12 status
- More physical activity
- More Arm muscle mass
- More leadership
- Higher test scores
- More playful

## Milk group

- Improved growth
- Higher test scores
- Higher B12 status



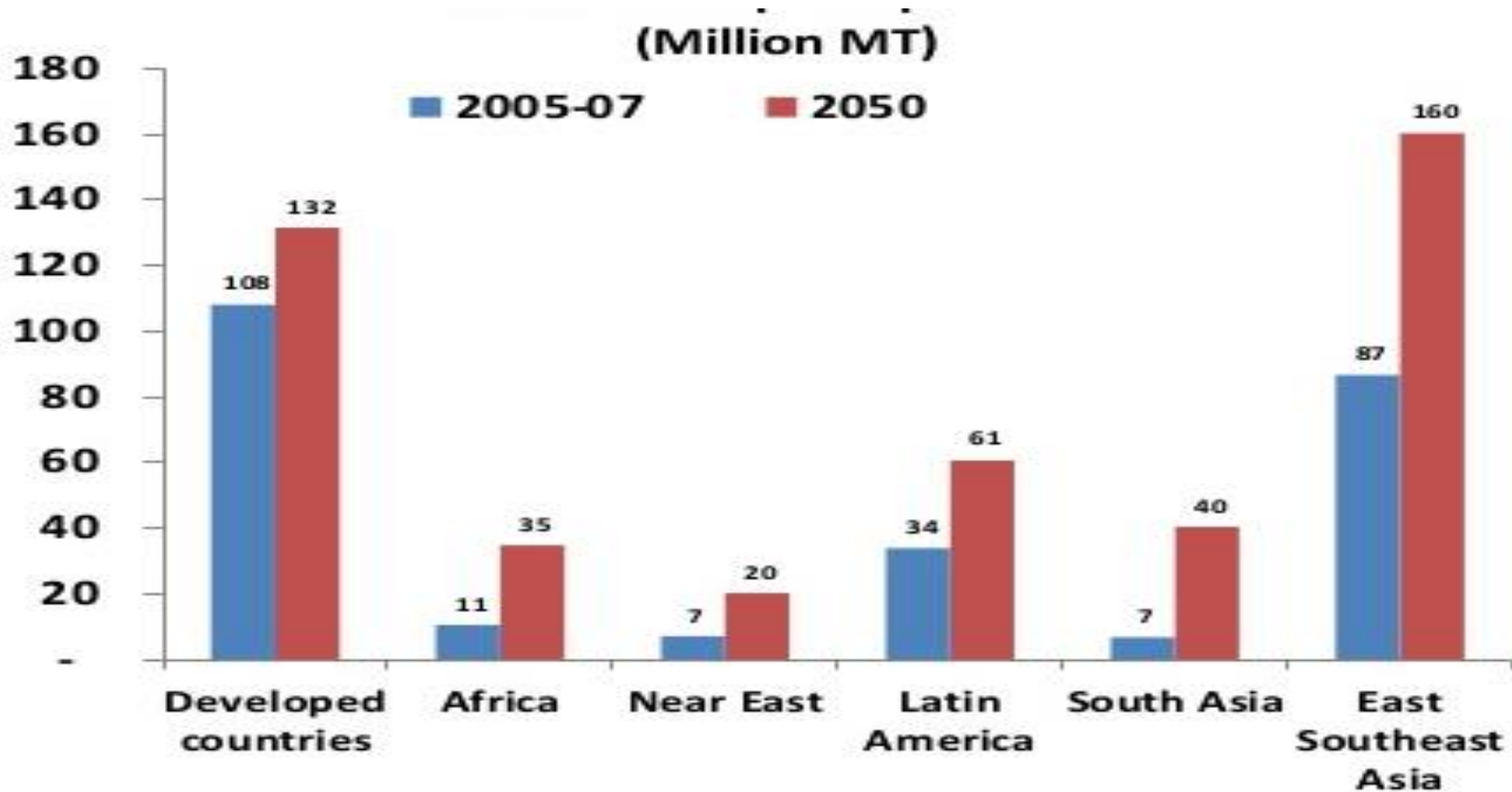
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## Global meat consumption in 2005-7 vs. 2050



Data derived from WB, FAO, AU-IBAR, ILRI report, 2013





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## Feed the Future Innovation Lab for Livestock Systems

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## Vision

*To sustainably intensify animal-sourced food production in order to increase the incomes, livelihoods, nutrition and health of vulnerable people.*



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*Photo credit: International Livestock Research Institute*

## FOCAL COUNTRIES

- West Africa – Burkina Faso and Niger
- East Africa – Ethiopia, Rwanda & Uganda
- South Asia – Nepal and Cambodia



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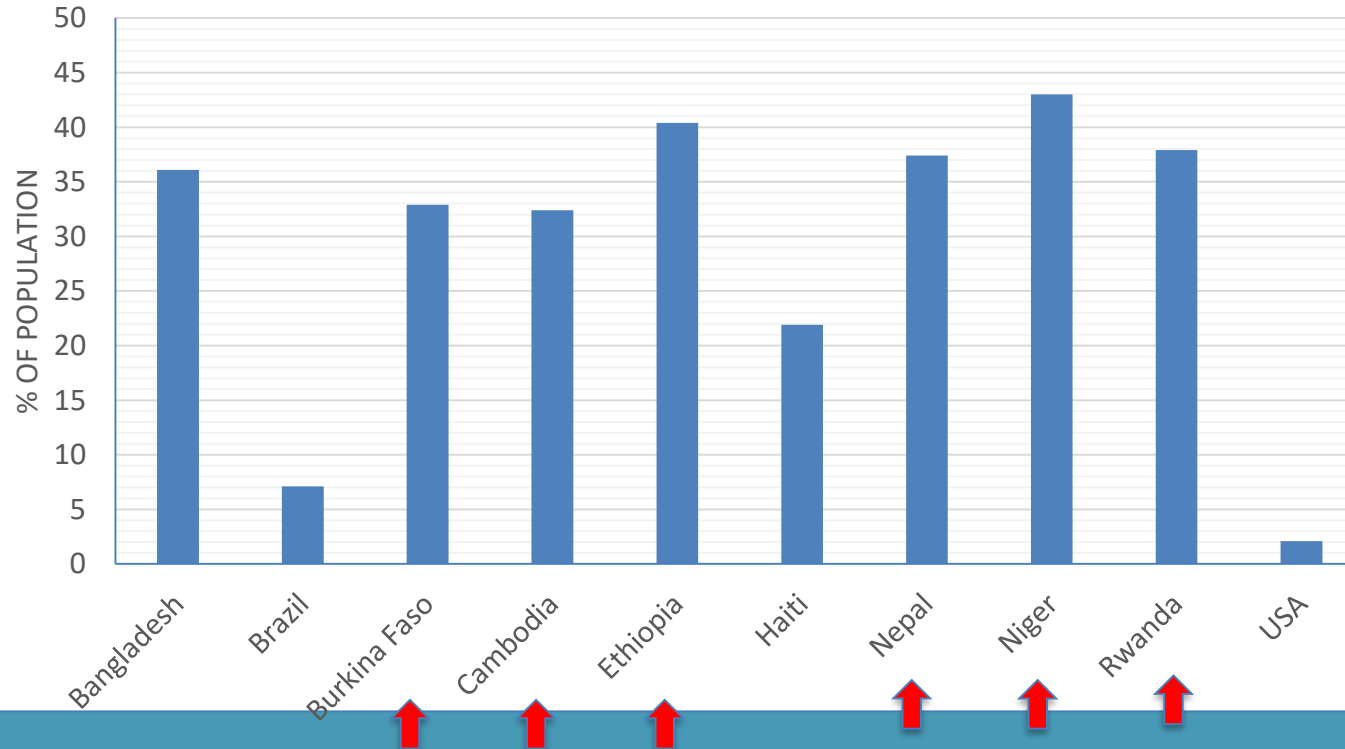
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## Stunting Levels per Country



<http://www.who.int/nutgrowthdb/estimates2014/en/>



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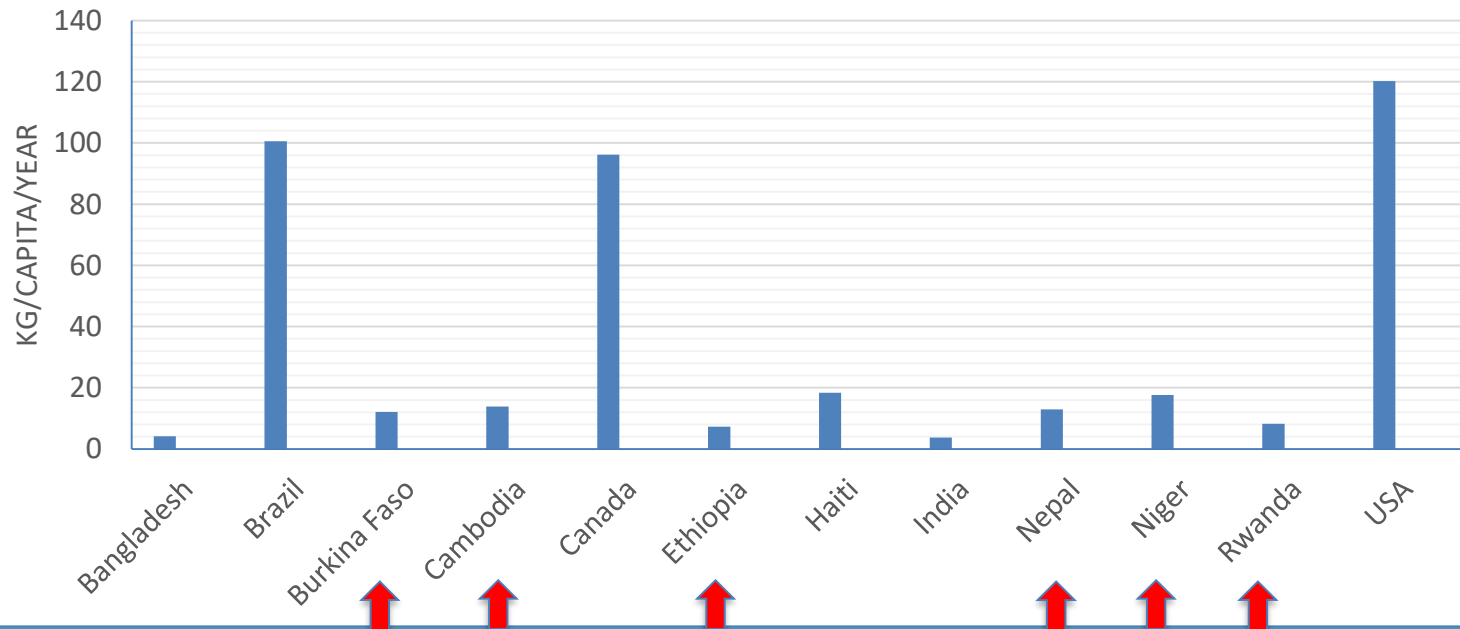
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## Meat Consumption per Country 2013



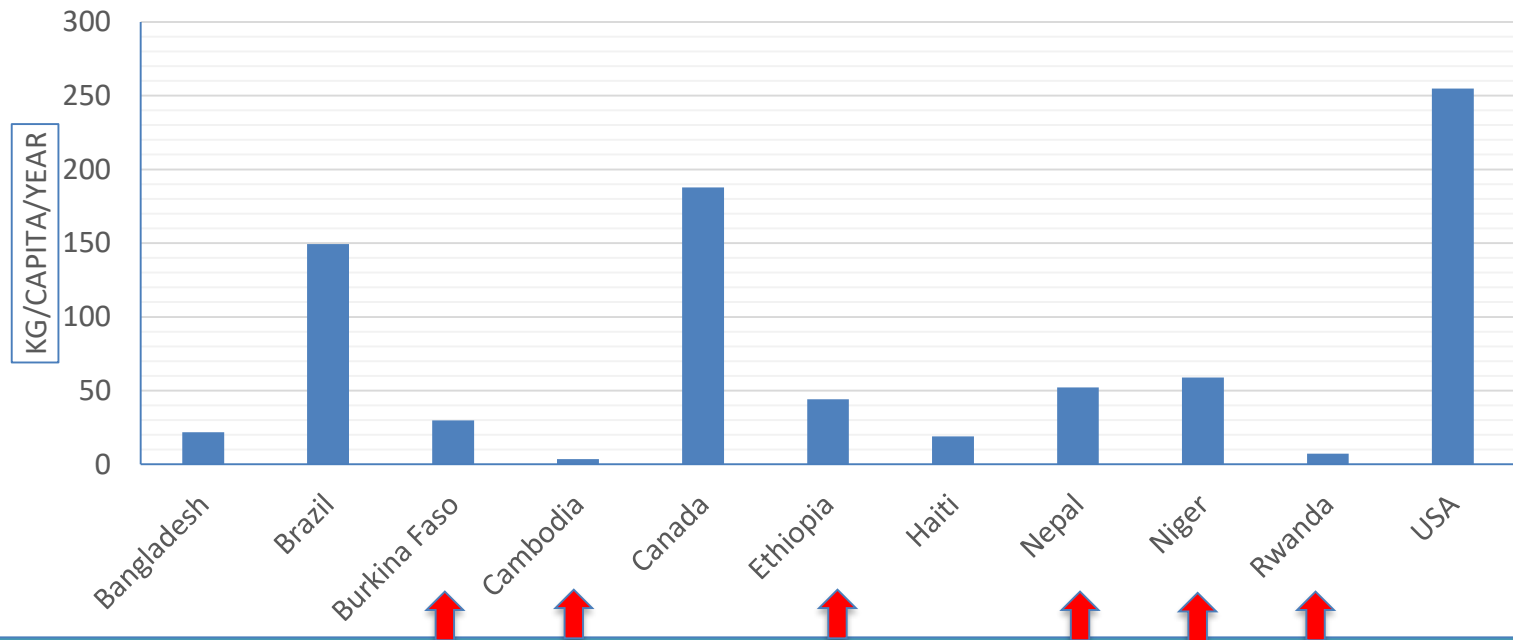
FAO 2013, Current Worldwide Annual Meat Consumption per capita (excluding fish consumption), Food and Agriculture Organization of the United Nations, viewed 4/3/17, <http://www.fao.org/faostat/en/#data/CL>.



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## Milk Consumption Per Country 2013



Milk Consumption - Excluding Butter (Total) (kg/capita/yr), FAO Statistics Division 2013, <http://www.fao.org/faostat/en/#data/CL>, viewed 4/3/17.





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## Country Innovation Platform workshops



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## Feed the future initiative

### LIVESTOCK SYSTEMS INNOVATION LAB VISION

Sustainably intensify smallholder livestock systems to increase productivity and incomes and improve nutrition and food safety

#### I. Future Livestock Systems

- Role of Gender in Livestock Systems Research
- Human & Institutional Capacity Development
- Human Health & Nutrition

2. ASF  
Production &  
Marketing

3. Livestock  
Disease  
Management &  
Food Safety

4. Enabling  
Policies for  
Livestock



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## Some LSIIL-funded projects

- Improving the quantity, quality and preservation of animal feeds (Nepal and Ethiopia)
- Reducing mycotoxins in feeds and milk (Ethiopia and Rwanda)
- Behavior change messaging to increase ASF consumption (Rwanda)
- Creating evidence for enabling policies for ASF production (Ethiopia, Nepal)
- Apps to improve marketing of ASF and disease surveillance (Nepal)
- Increasing milk quality and safety (Nepal, Rwanda, Ethiopia)
- Reducing diseases and mortality of young livestock (Ethiopia, Nepal, Rwanda)
- Eradication of Peste de petits ruminant (Uganda)





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## Conclusions

- Infant malnutrition can cause long term growth, developmental and neurological problems
- Animal-source foods should be used to diversify the diets of infants and pregnant and lactating women in resource-poor countries
- Concerted and coordinated efforts are needed to increase access to, affordability and availability of ASF
- LSIL is working at sustainably intensifying ASF production and consumption to improve the nutrition and incomes of the poor



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[www.feedthefuture.gov](http://www.feedthefuture.gov)



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