



# The Evolving Global Nutrition Situation: Why Forests and Trees Matter

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## Areas of Changing Understanding:

1. Forests and Conservation vs. Food Production
2. The importance of Animal Foods:  
Protein vs. micro-nutrients
3. Income necessarily improves nutrition

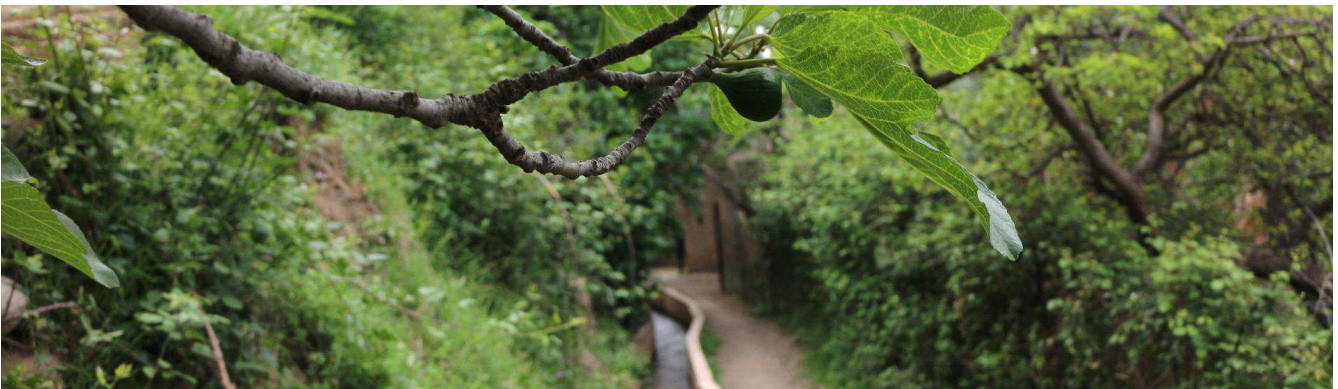


## Food Security:

World Food Summit (1996) definition:

“Food security exists when all people, at all times, have physical and economic access to sufficient safe and **nutritious** food to meet their dietary needs and food preferences for a healthy and active life.”

- Food Security: 4 pillars (availability, access, stability, utilization)... don't capture nutrition well

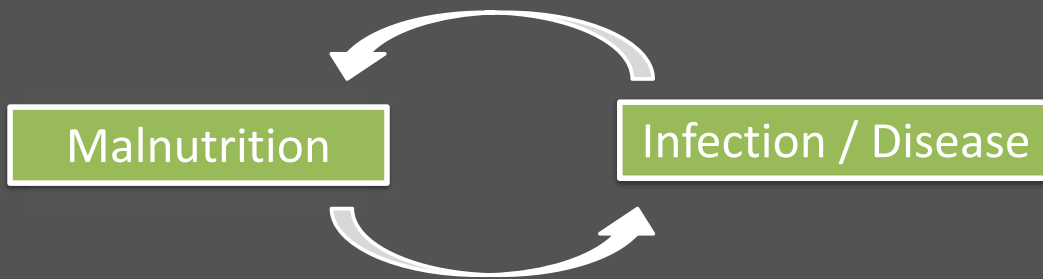


## Triple Burden of Malnutrition:

- Less than 1 billion “hungry”
  - 23.8% of children under 5 are stunted, 7.5% wasted
- 2 billion people micro-nutrient deficient
  - Anemia: 29% of non-pregnant women / 38% of pregnant women
- 2 billion adults over-weight and obesity
  - 9% of adults have high blood sugar

(IFPRI 2016, Global Nutrition Report)

## Malnutrition and Health:



- Infection increases requirements for many
- Undernutrition (low birth weight, stunting, wasting, and micronutrient deficiencies, suboptimum breastfeeding) cause 45% of all child deaths in 2011 (Black et al. 2013)
- Maternal overweight and obesity result in ↑ risk of maternal and infant mortality and morbidity
- Childhood undernutrition ↑ risk of chronic disease (diabetes, heart disease) in adulthood

# GOAL 2

END HUNGER, ACHIEVE FOOD SECURITY AND  
IMPROVED NUTRITION AND PROMOTE  
SUSTAINABLE AGRICULTURE

**SUSTAINABLE DEVELOPMENT GOALS**

More at [sustainabledevelopment.un.org/sdgsproposal](http://sustainabledevelopment.un.org/sdgsproposal)



### Common Measures of Food Security - “Hunger”:

- Most often “available calories”
- Also experiences of food shortage (but rarely/ limited attention to diet quality/ nutritional quality)

### Common Measures of Malnutrition:

- Stunting and Wasting (which are also due to infection)



### Diet Quality:

- Most measures of food security, and even measures of malnutrition, fail to adequately include diet quality
- Diet quality is essential for both over-nutrition and chronic disease prevention and adequate intake of micronutrients



## Diet Quality – Fruits and Vegetables

- Fruits and vegetables are listed by WHO as one of top 10 risks of mortality globally
- Globally, very few people consume the recommended 400g/ day (5-10 servings) of fruits and vegetables (Hall et al. 2009, Ruel et al. 2005)
- Globally, fruit and vegetable production falls far short of (Siegel et al. 2014)



## Diet Quality – Animal Foods and Insects

- Not necessary for human health and nutrition
- Overconsumption of red meat associated with both negative impacts on human health and global environment/ climate
- **However**, in places where diets are high in carbohydrates and micronutrient deficiency is common, are an important source of micronutrients (Murphy et al 2003, Golden et al. 2011)
- Micronutrients (e.g. iron and zinc) are easier to absorb from animal foods than plant foods



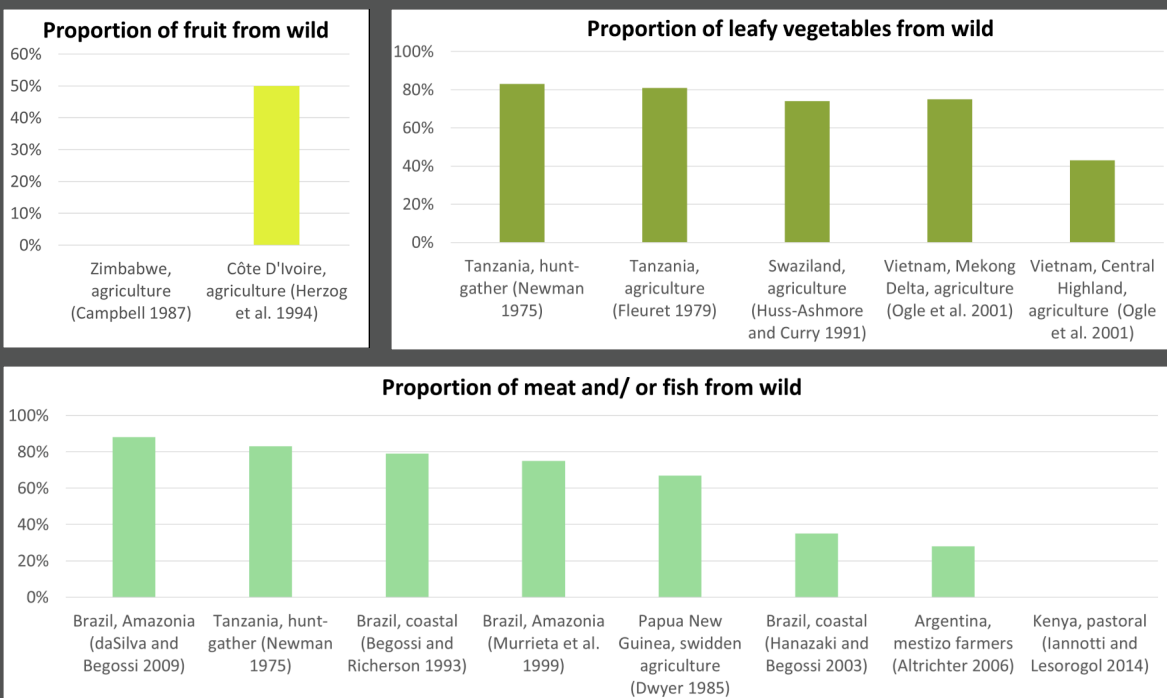
## The Protein Myth:

- 30 years ago, severe undernutrition was thought to be due to inadequate protein intake “protein-energy-malnutrition”
- Now out dates, has led to widespread literature on the importance of bush-meat for “protein”
- In many locations (e.g. Congo basin, Amazon Basin, some rural parts of North America) bush meat is an important source of affordable, animal foods that are high in bio-available micronutrients and lower in fat than domestic meat

## Improving diets with wild and cultivated biodiversity from across the landscape

Bronwen Powell<sup>1</sup> • Shakuntala Haraksingh Thilsted<sup>2</sup> • Amy Ickowitz<sup>1</sup> •  
Celine Termote<sup>3</sup> • Terry Sunderland<sup>1</sup> • Anna Herforth<sup>4</sup>

Food Security, 2015

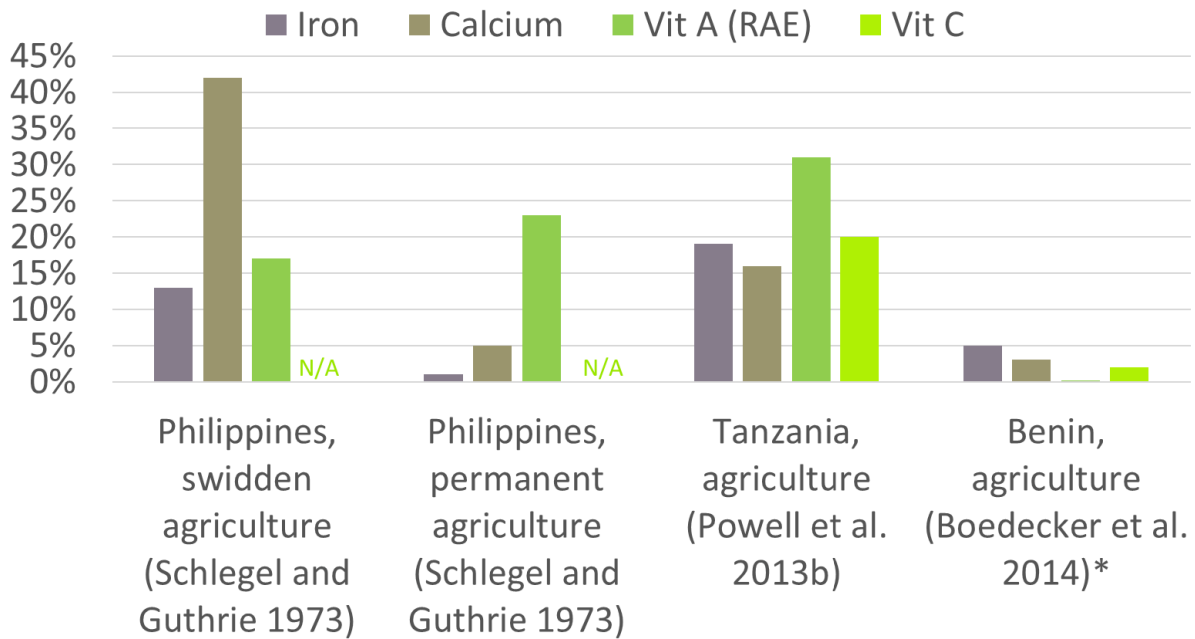


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Food Security, 2015

## Proportion of 4 micronutrients from wild



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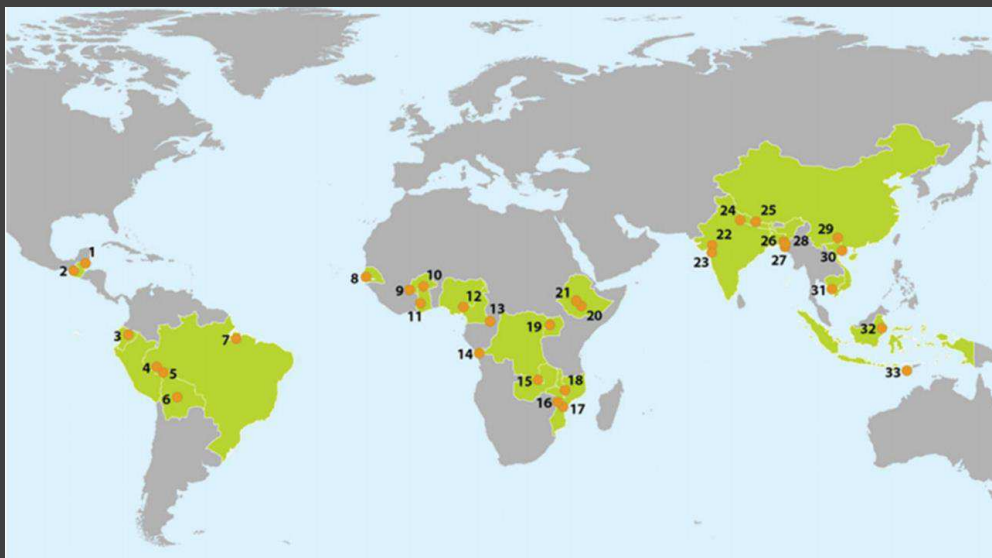
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## Forest foods and healthy diets: quantifying the contributions

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Date submitted: 11 February 2015; Date accepted: 3 May 2016



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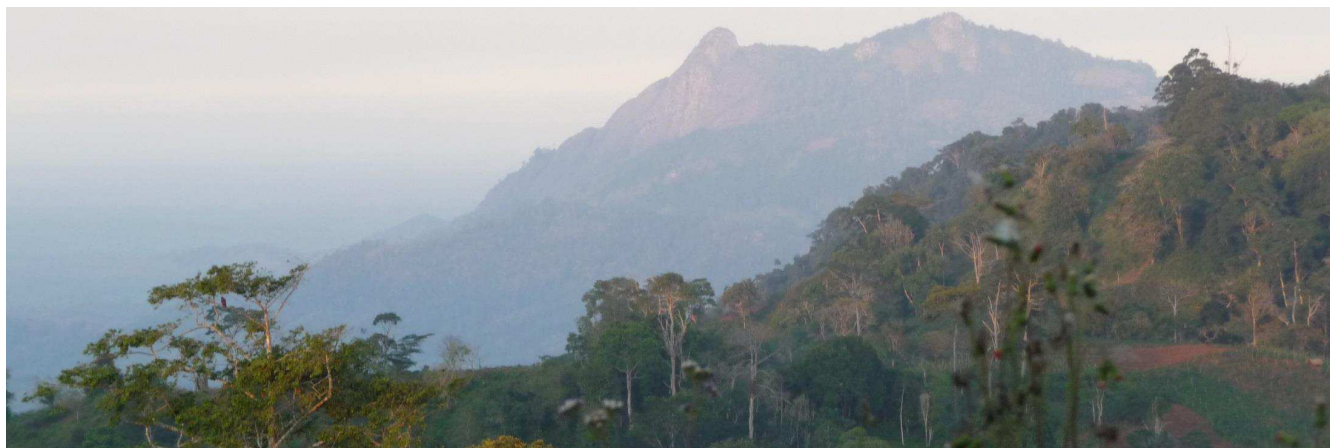
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“More than half of the households in our sample collected forest foods for their own consumption, though consumption patterns were skewed towards low-quantity users.”

“Our results suggest that while forest foods do not universally contribute significantly to diets, in some sites where large quantities of forest foods are consumed, their contribution towards dietary adequacy is substantial.”

Four different use patterns:

- ‘forest food dependent’
- ‘limited forest food use’
- ‘forest food supplementation’
- ‘specialist forest food consumer’



### Why Forests and Trees Matter:

- Human Ecology, Anthropology and other disciplines have long described cultivation of carbohydrate rich staple foods and procuring other food through hunting and gathering in subsistence agriculture communities
- In the context of the triple burden of malnutrition, we need to “get over the obsession with calories” and pay attention to production of nutritionally important foods (fruits, vegetables, legumes, and moderate amounts of lean animal source foods)





## Why Forests and Trees Matter:

- The majority of the global vitamin C, vitamin A (RAEs), calcium and much of the folic acid are supplied by animal (and insect) pollination dependent crops (Eilers *et al.* 2011)
- Vegetables and fruits are the leading crop categories in value provided by insect pollination services Gallai *et al.* (2009)
- ... and many more Ecosystem Services for Sustainability of Agricultural Landscapes



## Income and Diet Quality

- Income is often reported as one of (if not the) most important ways forests contribute to food security and nutrition
- For communities practicing traditional livelihoods, market integration can mean a diet and nutrition transition and lower dietary quality (Popkin 2014, Kuhnlein and Receveur 1996)
- FAO 2012 State of Food Insecurity: “Economic growth is necessary but not sufficient to accelerate reduction of hunger and malnutrition”



## “Economic Growth is a Double-Edged Sword for Nutrition”

- 10% increase in GDP = 6% decrease in child stunting
- 10% increase in GDP = 7% increase in over-weight and obesity in women

(IFPRI 2013)

*Thank You!*

*Chombo hakiendi ikiwa kila mtu anapiga makasia yake* – Kiswahili proverb

The boat does not get anywhere if each person rows in their own direction/manner

(i.e. To achieve change we must work together)

PENNSTATE®



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## SDG 2: More than just Hunger

2.1 - End hunger (ensure access by all people to safe, nutritious and sufficient food all year round)

2.2 - End all forms of malnutrition (including stunting and wasting)

2.3 - Double the agricultural productivity (small-scale food producers, women, indigenous peoples, family farmers, pastoralists and fishers)

2.4 - Ensure sustainable food production systems

2.5 - Maintain genetic diversity of crops and animals (and related wild species)

2.a - Increase investment in rural infrastructure, agricultural research and extension services...

2.b. - Correct and prevent trade restrictions and distortions

2.c. - Adopt measures to limit extreme food price volatility



