Harnessing New Technologies & Innovations for Nutrition Assessment & Health Improvement - Can We Sustainably Feed & Provide the Nutriture for the World’s Growing Population?

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Outline

• Challenges
  – The state of the world’s food and nutrition security
  – Evolving nutrition needs and demands related to food

• Nutrition entry points in the pathways from agriculture to health
  – Food systems: supply chains and the food environment
  – “Nudging” Consumer Behavior

• Measuring sustainable nutrition security: a food systems approach

Population dynamics, Changing lifestyles affecting food & nutrient needs/ preferences, Water and land use constraints, Increasing weather and climate volatility, Complexity in value chains, Conflict & war
Undernourishment in Asia and the Pacific

- Prevalence of undernourishment (Percent)
- Number of undernourished (Million)

Prevalence of undernourishment

- 2010
- 2015
- 2016

Severe Experienced Food Insecurity

- Prevalence (Percent)
- Number (Million)

Stunting rates by wealth quintile

- Maldives
- Sri Lanka
- Myanmar
- Thailand
- Cambodia
- Indonesia
- Bhutan
- Tajikistan
- India
- Vietnam
- Laos
- Bangladesh
- Philippines
- Vietnam
- Pakistan
- Nepal
Diet-related Health Consequences

- Disease risk factors linked to diet
- Disease risk factors not linked to diet
- Dietary risks
  - High systolic blood pressure
  - Child and maternal malnutrition
  - Tobacco smoke
  - Air pollution
  - High body mass index
  - Alcohol and drug use
  - High fasting plasma glucose
  - Unsafe water, sanitation and handwashing
  - High total cholesterol

Source: Global Burden of Disease Study 2013 Collaborators (2015). Figure 5
Note: The graph shows global disability-adjusted life years (DALYs) attributed to level 2 risk factors in 2013 for both sexes combined.

Food systems for diets and nutrition

Biophysical and environmental drivers
- Natural resource capital
- Climate change

Innovation and infrastructure drivers
- Technological innovations
- Infrastructure improvements

Political and economic drivers
- Leadership
- Globalization and trade
- Conflict and human security issues
- Food price variability

Socio-cultural drivers
- Dietary preferences
- Cultural practices
- Food traditions

Demographic drivers
- Population growth
- Changes in age distribution
- Urbanization
- Migration

Food supply chains
- Agricultural production
- Food processing
- Food storage
- Food distribution
- Food retail

Consumer behaviour
- Food availability and physical access (proximity)
- Economic access (affordability)
- Food choice and consumption
- Food quality and safety

Nutrition and health outcomes
- Chronic diseases
- Malnutrition
- Environmental

Sustainable Development Goals

Political, programme and institutional actions

HLPE 2017 Food Systems and Nutrition Report
Consider Climate-Smart, Nutrition-Smart Solutions

Maximize nutrition "entering" the food value chain

- Improved varieties, biofortification, fertiliser, irrigation
- New production locations, diversification, CO2 fertilisation, focus on women farmers, extension
- Aflatoxin control, refrigeration
- Fermentation, drying, fortification, product reformulation (reduce salt, sugar, unhealthy fats)
- Moving food from areas of shortage to areas of surplus, targeting of vulnerable groups
- Messaging on the importance of nutrition and sustainability, benefits of certain foods
- Home fortification (fish powder), training in nutritious food preparation, time mgmt, food preservation

Minimize nutrition "exiting" the value chain

PRE-FARM GATE
- Growers
- Farmers

POST FARM GATE
- Food Packing and Processing
- Retail Stores
- Consumers

REQUIREMENTS
- EurepGAP
- SQF 1000
- Integrated Farming of FARRE
- UK Assured Produce
- TESCO’s Nature’s Choice
- HACCP
- BRC
- ISO 9000
- SQF 2000
- HACCP
- ISO 9000
- SQF 3000

Key components
- Pre-Farm and Post Farm Gate Standards
- Traceability
- Documentation
- Residue Monitoring

Source: U, Hoffman, UNCTAD 2006

Strengthen Systems for Safer Food

Whole Chain Assurance

Food Environment

“Nudging” Consumer Behavior towards healthier, more nutritious choices

Process – Making it Easy (removing barriers to the desired choice),
Possibilities – Making it Available (design the right choice set),
Persuasion- Making it Attractive (work with existing beliefs)
Person – Making it Motivating (tap into active goals)
1. **FOOD NUTRIENT ADEQUACY**

   Nutrient density score, population share with adequate nutrients, non-staple energy, Shannon diversity, MFA diversity

2. **ECOSYSTEM STABILITY**

   Ecosystem status, GHG emissions, net freshwater withdrawal, energy use, land use

3. **FOOD AFFORDABILITY & AVAILABILITY**

   Food affordability, GFSI food availability score, poverty index, income equality

4. **SOCIOCULTURAL WELLBEING**

   Gender equity, child labor, community rights, animal health and welfare

5. **FOOD SAFETY**

   Foodborne, disease burden, GFSI food safety score

6. **RESILIENCE**

   ND-GAIN country index, food production diversity

7. **WASTE & LOSS REDUCTION**

   Pre-consumer food loss, post-consumer food waste
Sustainable Rice Platform

The Sustainable Rice Platform (SRP) is a global multi-stakeholder partnership to promote sustainable rice cultivation. The SRP is currently focusing on 3 closely interlinked instruments:
1. SRP Guidelines for Sustainable Rice Cultivation
2. SRP Performance Indicators for Sustainable Rice Cultivation
3. SRP Standard for Sustainable Rice Cultivation

Making connections

Improving nutrition will be a catalyst for achieving goals throughout the SDGs…

…and tackling underlying causes of malnutrition through the SDGs will help to end malnutrition.

Integrate Nutrition into all the SDGs

Global Nutrition Report 2017

Useful websites

- [http://www.sustainablerice.org/](http://www.sustainablerice.org/)
- [http://www.who.int/foodsafety/areas_work/food borne-diseases/ferg/en/](http://www.who.int/foodsafety/areas_work/food borne-diseases/ferg/en/)
- [https://gain-new.crc.nd.edu/ranking](https://gain-new.crc.nd.edu/ranking)