What is needed for Global Monitoring of Access to Adequate Food?

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Ag2Nut and FSIN communities of practice
Feb 27, 2014

Based on a presentation at Cornell University in Dec 2013:
http://ppafest.nutrition.cornell.edu
What is access to adequate food?

And what is the agriculture and food sector supposed to do about it?
1960s-1970s: The “food shortage era”

• Prevalence of malnutrition was estimated from food supply data
  – No globally-collected data on anthropometry or micronutrient deficiencies
• Green Revolution; formation of CGIAR
• Concept of food security first defined in 1974 World Food Summit: “availability at all times of adequate world food supplies”

• “Although deficiency of vitamins and minerals may cause serious health problems, especially among children, the therapy is now well known and relatively easy to apply so that the magnitude of this problem is almost negligible in relation to the one created by lack of calories and proteins.”

  Chafkin et al., 1972 Possible World Bank Actions on Malnutrition Problems
Today

- Data on malnutrition prevalence collected in nearly all countries since mid-1990s (DHS, MICS, other)
- Malnutrition understood as resulting from inadequate food, health, and care (UNICEF 1990)
  - Current definition of food security: “physical and economic access to sufficient, safe, nutritious food to meet dietary needs...for a healthy and active life” (1996 World Food Summit)
Global indicators of the main contributors to nutrition: Food indicators have not kept pace with the updated vision and data

<table>
<thead>
<tr>
<th></th>
<th>Food</th>
<th>Health</th>
<th>Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970s</td>
<td>Dietary Energy Supply</td>
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<td></td>
<td>Protein supply</td>
<td></td>
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<td>1980s-mid-90s</td>
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<td></td>
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<tr>
<td>1998</td>
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<td>2013</td>
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</table>

*Only for the purpose of estimating vitamin A and iron deficiency

Sources: UNICEF SOWC, SCN Reports on the World Nutrition Situation, FAO SOFA and SOFI reports
Nearly a third of “high stunting-burden” countries have overweight + obesity rates >40%

Data source: WHO Global Infobase Global Obesity Comparison Tool
165 million under 5 are stunted
Projected increases in diabetes to 2030

Map: IDF Regions and global projections of the number of people with diabetes (20-79 years), 2011 and 2030

<table>
<thead>
<tr>
<th>REGION</th>
<th>2011 MILLIONS</th>
<th>2030 MILLIONS</th>
<th>INCREASE %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Africa</td>
<td>14.7</td>
<td>28.0</td>
<td>90%</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>32.8</td>
<td>59.7</td>
<td>83%</td>
</tr>
<tr>
<td>South Asia</td>
<td>71.4</td>
<td>120.9</td>
<td>69%</td>
</tr>
<tr>
<td>South and Central America</td>
<td>25.1</td>
<td>39.9</td>
<td>59%</td>
</tr>
<tr>
<td>Western Pacific</td>
<td>131.9</td>
<td>187.9</td>
<td>42%</td>
</tr>
<tr>
<td>North America and Caribbean</td>
<td>37.7</td>
<td>51.2</td>
<td>36%</td>
</tr>
<tr>
<td>Europe</td>
<td>52.6</td>
<td>64.8</td>
<td>22%</td>
</tr>
<tr>
<td>World</td>
<td>366.2</td>
<td>551.8</td>
<td>51%</td>
</tr>
</tbody>
</table>

Source: International Diabetes Federation, Diabetes Atlas 5th Ed. 2011
Top 10 causes of years of life lost
All developing countries, 2010

Source: Institute for Health Metrics and Evaluation
Top contributors to “Dietary risks”
All developing countries, 2010

Source: Institute for Health Metrics and Evaluation
Low availability and high prices of diverse diets = Inadequate access to food

Source: Herforth 2010 (in Pinstrup-Andersen, Ed.), based on FAO data. Note: analysis redone with 2009 data, same results
Share of Energy Source & Food Budget in Rural Bangladesh

Slide Source: Howdy Bouis (Food and Nutrition Bulletin Mar 2011)
Given the advances in the food security conversation and the nature of nutrition problems today...
Does it make sense to continue with the same basic food indicators we’ve used since the 1960s?
Key Recommendations for Improving Nutrition through Agriculture

- Food and agriculture policies can have a better impact on nutrition if they:
  - Monitor dietary consumption and access to safe, diverse, and nutritious foods. The data could include food prices of diverse foods, and dietary consumption indicators for vulnerable groups.
Addressing Nutrition through Agriculture is now high on agendas

• Agriculture’s main (unique) contribution to better nutrition is food.

• How are planners to weigh potential policy options without any indicators of how the food environment looks, and what diets are like?
FAO SOFI 2013 lists 30 indicators

Still, few shed light on availability of and access to healthy diets.

<table>
<thead>
<tr>
<th>FOOD SECURITY INDICATORS</th>
<th>DIMENSION</th>
<th>STATIC and DYNAMIC DETERMINANTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average dietary energy supply adequacy</td>
<td>AVAILABILITY</td>
<td></td>
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<tr>
<td>Average value of food production</td>
<td></td>
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<tr>
<td>Share of dietary energy supply derived from cereals, roots and tubers</td>
<td></td>
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<tr>
<td>Average protein supply</td>
<td></td>
<td></td>
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<tr>
<td>Average supply of protein of animal origin</td>
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<td>Percentage of paved roads over total roads</td>
<td>PHYSICAL ACCESS</td>
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<tr>
<td>Road density</td>
<td></td>
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<td>Rail lines density</td>
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<tr>
<td>Domestic food price index</td>
<td>ECONOMIC ACCESS</td>
<td></td>
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<tr>
<td>Access to improved water sources</td>
<td>UTILIZATION</td>
<td></td>
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<td>Access to improved sanitation facilities</td>
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<td>Cereal import dependency ratio</td>
<td>VULNERABILITY</td>
<td></td>
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<tr>
<td>Percentage of arable land equipped for irrigation</td>
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<td>Value of food imports over total merchandise exports</td>
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<td>Political stability and absence of violence/terrorism</td>
<td>SHOCKS</td>
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<td>Domestic food price volatility</td>
<td></td>
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<td>Per capita food production variability</td>
<td></td>
<td></td>
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<tr>
<td>Per capita food supply variability</td>
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<tr>
<td>Prevalence of undernourishment</td>
<td>ACCESS</td>
<td></td>
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<td>Share of food expenditure of the poor</td>
<td></td>
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<td>Depth of the food deficit</td>
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<tr>
<td>Prevalence of food inadequacy</td>
<td></td>
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<tr>
<td>Percentage of children under 5 years of age affected by wasting</td>
<td>UTILIZATION</td>
<td></td>
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<tr>
<td>Percentage of children under 5 years of age who are stunted</td>
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<tr>
<td>Percentage of children under 5 years of age who are underweight</td>
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<tr>
<td>Percentage of adults who are underweight</td>
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<td></td>
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<tr>
<td>Prevalence of anaemia among pregnant women</td>
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<tr>
<td>Prevalence of anaemia among children under 5 years of age</td>
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<td>Prevalence of vitamin A deficiency (forthcoming)</td>
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<td>Prevalence of iodine deficiency (forthcoming)</td>
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Note: Values and detailed descriptions and metadata for these indicators are available on the companion website (www.fao.org/publications/sofi2013/en/).
Source: FAO.
Examples of food indicators

- National-level food availability: what does the picture of food availability look like?
  - % non-starches (reported in SOFI 2013)
  - Fruit and vegetable availability
  - Sugar availability (sig. assoc. with diabetes prevalence – Basu et al. 2013)

- Local-level food environments:
  - Relative prices of different food groups
  - Cost of healthy diets: on average, $21/week more than unhealthy alternatives (Rao et al. 2013)
    - Save UK Cost of Diet tool

- Household-level food security:
  - Food Insecurity Experience Scale (FAO Voices of the Hungry)
  - Household dietary diversity (HDDS) – access to diverse foods

- Individual-level diet quality:
  - Women’s dietary diversity (WDDS)
  - Fruit and vegetable dietary variety
  - Caloric share of ultra-processed food products (Monteiro and Lousada)
Conclusion

• Current global measurement of food access was made for a different world, 50 years ago.
  – Then “food shortage”
  – Now “nutritious food shortage”

• Accountability to “adequate nutritious food”: There are no relevant targets for the agriculture and food sector

• Lesson from history: Core data collected and published can change.

• Post-MDGs: time to align current understanding of “access to adequate food” with globally-collected indicators

• Global institutions involved
  – FAO
  – DHS, UNICEF MICS, World Bank LSMS
  – Role of governments in data collection and information systems
Questions

• Access to (and consumption of) adequate nutritious food...
  – What should be measured?
  – Are any relevant indicators already being monitored at scale?
  – What research is underway to develop relevant indicators?
  – What is needed from governments and global institutions/surveys that collect data across countries?
The National Evaluation Platform (NEP)

Rebecca Heidkamp
Assistant Scientist
Evaluation data system with districts as the units

- District-level information from the entire country
- Combining data from multiple sources (routine MIS, surveys, surveillance, etc)
- Containing standard information on:
  - **Inputs** (partners, programs, budget allocations, infrastructure)
  - **Processes/outputs** (DHMT plans, ongoing training, supervision, campaigns, community participation, financing schemes such as conditional cash transfers)
  - **Outcomes** (coverage, availability of commodities, quality of care measures, human resources)
  - **Impact** (mortality, nutritional status)
  - **Contextual factors** (demographics, poverty, migration, shocks, politics, climate, etc)

Permits national-level evaluations of multiple simultaneous programs
Capacity Building

• For NEP data consumers
  – Includes higher-level policy and program planners in Gov’t Ministries, Multisectorial Nutrition Coordination groups and partners
  • Emphasis on:
    - Formulation of policy-relevant evaluation questions
    - Interpretation and application of NEP findings

• For those who do NEP analysis
  – NEP Home Institution independent of program implementation (e.g. NSO)
  – NEP Working Group with 8-10 total M&E / data-focused representatives from stakeholder institutions
    • Series of working meetings to develop and apply “core competencies” (e.g. data mapping, data quality assessment, analysis, LiST, interpretation and application of findings)
  • Cross-country teaching and learning encouraged
Carlo Cafiero
Terri Ballard

FAO Statistics
The severity of food insecurity

The FIES:
a set of questions revealing experiences spanning the range of severity

Food insecurity

Worries Compromising food quality and variety
Compromising food quantity
Hunger

Welfare reduction (Psychological costs, reduction of other essential expenses)
Malnutrition (obesity, micronutrient deficiencies, reduced work capacity)
Undernutrition (stunting, wasting)
Starvation

Wellbeing

consequences

experiences
The Food Insecurity Experience Scale

“During the last ...(1 – 3 – 12) months, was there a time when, because of lack of money or other resources:

1. You were worried you might not be able to get enough food to eat?
2. You were unable to eat healthy and nutritious food?
3. You ate only a few kinds of foods?
4. You had to skip a meal?
5. You ate less than you thought you should?
6. Your household ran out of food?
7. You were hungry but did not eat?
8. You went without eating for a whole day?”
Innovations compared to HFIAS, ELCSA, and other previous attempts

• Measurement theory foundation
  – Item Response Theory

• Focusing on the severity dimension
  – Frequency is a distinct dimension, that has implications for scoring

• Providing the means for equalization of the scales obtained in different applications
  – Across countries, across subpopulations within a country, over time

• Attention to simplicity of administration and timeliness of results
  – Six to eight questions that admit easy yes/no answers
Linking food security and nutrition: Food Security and Nutrition Surveillance Project (FSNSP) in Bangladesh

Erica Roy Khetran
Country Director
Helen Keller International

Ag2Nut Community Call
February 27, 2014
Bangladesh’s data needs

- **Context**
  - Multiple development targets set by GoB
  - Vulnerable to shocks that lead to food insecurity and high levels of malnutrition

- **Existing systems**
  - Several intermittent data collection systems on nutrition and health (BDHS, HEIS, MICS)

- **Past systems**
  - Since the end of the nutrition surveillance project in 2006: no sources of seasonal data and few sources of nationally representative data
Food Security and Nutrition Surveillance Project
- Funded by European Union
- Jointly implemented by JPG School of Public Health and Helen Keller International in partnership with the Bangladesh Bureau of Statistics
- Funded June 2008; data collection began in January 2010
Changes in vulnerability to food and nutrition insecurity

- Care for women and children
- Natural environment
- Education
- Livelihoods
- Sanitation and hygiene
- Health access
- Political environment
- Economic environment
- Changes in external factors
- Changes in household factors
Food insecure zones

- Coastal belt
- Northern chars
- Chittagong hill tracts
- Drought prone
- Northwest zone
Design

- All households included
- All pregnant women interviewed
- Complex survey design
  - In each zone, 12 upazila are selected into the rotation
  - From the non-zone areas 22 upazila are sampled without rotation
  - In each upazila 3 villages/mohalla are randomly selected
  - In each village 32 households are systematically selected
- Final target
  - 9024 households, resulting in
    - ~4200 households with children
    - ~600 pregnant women
    - ~5000 children
Sampling strata

- Six zones based on eight of the thirty agro ecological zones on the BARC map
  - **Active Floodplain – Lower (AL)**
    - Active Ganges Floodplain agro-ecological zone
    - 38 upazilas (excluding the statistical metropolitan area (SMA) of Rajshahi)
  - **Active Floodplain – Upper (AU)**
    - Active Tista Floodplain and Active Brahmanputra-Jamuna Floodplain agro-ecological zones
    - 47 upazilas
  - **Coastal Belt (CB)**
    - Ganges Tidal Floodplain and Young Meghna Estuarine Floodplain agro-ecological zones
    - 62 upazilas (excluding Khulna SMA)
  - **Eastern Hills (EH)**
    - Eastern southeastern portion of Northern and Eastern Hills agro-ecological zone
    - 38 upazilas (excluding Chittagong SMA)
  - **Northwest floodplain and adjacent areas (NW)**
    - Tista Meander Floodplain” agro-ecological zone
    - 54 upazilas
  - **Sylhet Basin and adjacent areas (SB)**
    - Sylhet Basin agro-ecological zone
    - 35 upazilas
  - **All other areas**
    - Stratified by division
    - 251 upazila
Since 2009, FSNSP has tracked the average price of key commodities (rice shown here).
Average costs of items in food basket

<table>
<thead>
<tr>
<th>Item</th>
<th>Round 1</th>
<th>Round 4</th>
<th>Round 5</th>
<th>Round 6</th>
<th>Round 7</th>
<th>Round 8</th>
<th>Round 9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice</td>
<td>12.7</td>
<td>15.2</td>
<td>13.5</td>
<td>13.0</td>
<td>12.1</td>
<td>11.6</td>
<td>11.7</td>
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<tr>
<td>Atta</td>
<td>0.7</td>
<td>1.0</td>
<td>0.7</td>
<td>0.9</td>
<td>1.2</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>Potato</td>
<td>3.9</td>
<td>1.2</td>
<td>0.9</td>
<td>0.8</td>
<td>1.3</td>
<td>1.0</td>
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<tr>
<td>Dal</td>
<td>1.8</td>
<td>2.1</td>
<td>2.3</td>
<td>2.4</td>
<td>1.5</td>
<td>2.0</td>
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<tr>
<td>Oil</td>
<td>3.6</td>
<td>3.6</td>
<td>3.6</td>
<td>4.5</td>
<td>1.7</td>
<td>2.5</td>
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<tr>
<td>Vegetables</td>
<td>3.9</td>
<td>3.6</td>
<td>3.6</td>
<td>4.9</td>
<td>1.7</td>
<td>2.5</td>
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<td>Milk</td>
<td>1.8</td>
<td>1.5</td>
<td>1.3</td>
<td>1.2</td>
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<td>1.3</td>
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<td>Beef</td>
<td>1.8</td>
<td>1.7</td>
<td>1.7</td>
<td>1.8</td>
<td>1.8</td>
<td>1.5</td>
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<td>Chicken</td>
<td>1.7</td>
<td>1.6</td>
<td>1.6</td>
<td>1.6</td>
<td>1.8</td>
<td>1.5</td>
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</tr>
<tr>
<td>Egg</td>
<td>1.1</td>
<td>1.1</td>
<td>1.1</td>
<td>1.2</td>
<td>1.1</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>1.1</td>
<td>1.1</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.6</td>
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<tr>
<td>Onion</td>
<td>1.2</td>
<td>1.0</td>
<td>1.2</td>
<td>1.6</td>
<td>1.3</td>
<td>1.0</td>
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<tr>
<td>Chili</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.2</td>
<td>1.6</td>
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<td>Fruit</td>
<td>1.2</td>
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<td>0.8</td>
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<td>0.9</td>
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<tr>
<td>Sugar</td>
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<td>1.0</td>
<td>0.9</td>
<td>0.8</td>
<td>0.8</td>
<td>0.9</td>
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Units: Bangladeshi Taka
Households reporting behaviours linked to food insecurity during the month prior to interview

- Worry
- Less preferred food
- Only rice
- Unusual foods
- Smaller meals
- Skipped meals
- Food ran out
- Slept hungry
- Day and night without

- Often (3+ days a week)
- Sometimes (1-2 days a week)
- Rarely (1-2 days a month)
Women’s dietary diversity score

The nine groups are starches, dairy products, legumes, dark green leafy vegetables, vitamin A rich fruits and vegetables, other fruits and vegetables, flesh foods (fish, chicken, beef, etc.), eggs, and organ meats.
Policy and Program Implications

• Data used for large scale and/or cost-effective program monitoring (government, donors).

• Analysis used in government policy documents (Country Investment Plan, Nutrition Plans).

• Research on nutrition and other factors (climate change, food price, shocks)

• Integration of surveillance into government strategic plans (statistics, nutrition).

• Issues of cost and data quality/purpose.
ধন্যবাদ

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