UNDERSTANDING AND SHAPING WHAT THE WORLD EATS:
IFPRI Leadership in Research to Support Better Diets and Nutrition

CGIAR Systems Council Event
Washington, DC
May 10, 2023 | 1:00 to 2:30 pm
Event summary

▪ What the people of the world eat today is a long way from ideal. Dietary challenges around the world range from not having enough food to eat, to not being able to afford a healthy diet, to overconsumption, often of unhealthy foods. A tenth of the world’s population has difficulty procuring sufficient food to meet their energy needs. A much higher share of the global population - around 40% - cannot afford a healthy diet, while others who can afford healthy diets do not consume them for a variety of reasons.

▪ A result of the global dietary challenge is that about one quarter of the world’s population suffers from micronutrient deficiencies. Poor quality diets also contribute to an increasing burden of overweight and obesity, leading to non-communicable diseases even in countries where other dietary and nutrition challenges persist. Adults in low- and middle-income countries now account for 70% of the global burden of overweight and obesity. The implications of improved diets in terms of realizing human and economic potential are enormous.

▪ Ensuring healthy diets for the future requires that we understand the challenges of today; identify and deploy solutions, notably those that reach the most vulnerable; and support governments and other food systems actors to better nourish their populations.

▪ IFPRI is a leader in bringing nutrition issues into focus and has been generating evidence on how to tackle this massive global challenge from multiple angles. This session will provide insights into ongoing research by IFPRI and our partners across the food system on nutrition and healthy diets and showcase how these efforts can come together to support global, regional, national, and sub-national governments and food systems actors to develop policies and strategies to improve diets.
## Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>1:00-1:02</td>
<td>Welcome by Neha Kumar and introduction of first three speakers</td>
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<tr>
<td>1:03-1:10</td>
<td>Introduction and stage setting, Jo Swinnen, IFPRI Director General</td>
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<td>1:10-1:40</td>
<td>Presentation on IFPRI’s research on diets and nutrition, Purnima Menon and Channing Arndt, Senior Directors</td>
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<td>1:40-1:50</td>
<td>Initial comments from SC members (2-3 mins each):</td>
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<tr>
<td></td>
<td>• Himanshu Pathak, ICAR, India</td>
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<td></td>
<td>• Patrick McManus, DFA, Ireland</td>
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<td></td>
<td>• Innocent Musabyimana, African Development Bank</td>
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<td></td>
<td>• Alan Tollervey, FCDO, United Kingdom</td>
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<tr>
<td>1:50-2:00</td>
<td>Comments/responses by IFPRI researchers (2mins each)</td>
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<tr>
<td></td>
<td>• Sherwin Gabriel (online)</td>
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<tr>
<td></td>
<td>• Liz Ogutu (online)</td>
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<td></td>
<td>• Sunny Kim</td>
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<tr>
<td></td>
<td>• Shalini Roy</td>
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<tr>
<td>2:00-2:24</td>
<td>Moderated open discussion</td>
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<tr>
<td>2:24-2:30</td>
<td>Wrap-up 1-minute reflections from IFPRI speakers</td>
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</tbody>
</table>
What is a healthy and sustainable diet?

- Promotes health and prevents illnesses
- Enough fruits, vegetables, nuts, seeds, whole grains and legumes
- Sufficient but not excessive calories, starchy staples, animal-sourced foods (milk, eggs, poultry, fish)
- Limited or no foods that could lead to health risks (sugar-sweetened beverages, processed meat, ultra-processed foods)
- Diversity of nutritious and safe foods available, affordable, and yet low environmental footprint
A systems view is essential to understand what people eat and why

- Across the life course, what we eat is shaped by multiple forces.
- Food environments are critical to shaping diets of consumers.
- What happens in food systems affects both people and the planet.

CONSUMER preferences, affordability, health and nutrition knowledge, time, gender, and physical accessibility.
Over 3 decades of research on agriculture and nutrition has helped shape our understanding of the complexity of relationships between agriculture and diets.
Why we do what we do: The staggering scale and consequences of poor diets, malnutrition
Population living in extreme poverty (1990-2019)

Share below $2.15/day (2017 prices)

Number below $2.15/day (2017 prices)

Source: World Bank Poverty and Inequality Platform
Children are doing much better around the world, but challenges such as childhood stunting remain as we look to the SDGs.
Rising overweight/obesity and stagnant anemia point to the failure of food systems to deliver diets of adequate quality

Prevalence of overweight and obesity among adults


Source: WHO, Global Health Observatory
Poor diets are top contributors to the global burden disease around the world

“…suboptimal diet is responsible for more deaths than any other risks globally, including tobacco smoking”

GBD Diet Collaborators, 2017. Lancet 2019
Poor diets are shaping the future of human society and the planet

- **Diet-related challenges we face today**
  - Shocks to food security
  - Not having enough food to eat, even in stable societal conditions
  - Approximately 40% of the world’s population not able to afford a healthy diet
  - Not having access to information about a healthy diet
  - Overconsumption, including of unhealthy foods

- **Short- and long-term consequences of poor diets**
  - Maternal and child undernutrition
  - Adolescent nutrition
  - Overweight and related NCDs
  - Reduced human capability to respond to climate change while contributing to emissions and other forms of environmental degradation.

*Herforth et al. 2020*
Our research, partnership and engagement approach
Moving an agenda in public policy is complex. A comprehensive approach to bringing evidence to policy is essential.

- **Recognize**: Yes we have a problem
- **Align**: We agree on drivers and solutions
- **Act**: - Policy instruments and innovations
  - Invest in effective actions
- **Learn**: - Monitor
  - Recalibrate

The evolution of science and evidence, policy, finance, politics, administrative, societal and cultural perspectives….

Working with a wide range of partners, our research helps tackle the challenges of diets and nutrition in three ways:

<table>
<thead>
<tr>
<th>Clarifying the situation and outlook for diet and nutrition challenges</th>
<th>Testing diverse solutions to improve diets and nutrition</th>
<th>Shaping enabling environments for healthy diets</th>
</tr>
</thead>
</table>
| • Monitoring  
• Foresight  
• Measurement innovations | • Technical innovations  
• Shaping consumer choices (information and preferences)  
• Reducing structural barriers (affordability, gender and equity) | • Public policies and investments  
• Food environments and markets  
• Political economy and governance |
What we do: Diverse types of data & evidence to support policy and program communities in enacting change

Analyses and modeling with large data sets
- Describing challenges
- Understanding drivers
- Foresight and modeling

Field-based research and evaluations
- Impact evaluations and trials of innovations
- Concurrent evaluations and implementation research with large-scale programs
- Evidence syntheses

Policy and program support
- Financing research
- Governance and political economy studies
- Active evidence-building with and for policy and program communities
Research area 1: Clarifying the situation and outlook for diet and nutrition challenges

- Monitoring
- Foresight
- Innovations in measurement
Development and validation of a health and nutrition module for the project-level Women’s Empowerment in Agriculture Index (pro-WEA)\(^\text{H+HN}\)

Jessica Hacker\(^2\) | Elana M. Martinez\(^2\) | Greg Seymour\(^2\) | Audrey Pereira\(^2\) | Shahnawaz Roy\(^1\) | Sunny S. Kim\(^2\) | Hardal Molavi\(^2\)

Gender and diets/nutrition: Measurement remains critically important to shine a light on challenge areas.
## Building methods and measurement around factors influencing food choice

Ongoing collaboration with an emerging Drivers of Food Choice network across nutrition-linked initiatives

<table>
<thead>
<tr>
<th>Food choice behaviors</th>
<th>Intrapersonal drivers of behaviors</th>
<th>Socio-cultural drivers of food choice</th>
<th>Personal food environment</th>
<th>Material assets and resources</th>
<th>Person-state drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acquisition</td>
<td>Time use</td>
<td>Gender and women’s empowerment</td>
<td>Affordability</td>
<td>Facilities</td>
<td>Biological features</td>
</tr>
<tr>
<td>Preparation</td>
<td>Roles</td>
<td>Lifecourse perspective</td>
<td>Convenience</td>
<td>Food, water, and housing security</td>
<td>Physiological needs and conditioning</td>
</tr>
<tr>
<td>Allocation</td>
<td>Identity</td>
<td>Values</td>
<td>Accessibility</td>
<td>Wealth</td>
<td>Psychological components</td>
</tr>
<tr>
<td>Consumption behaviors</td>
<td>Knowledge, attitudes, and beliefs</td>
<td>Social relationships</td>
<td>Desirability</td>
<td>Transportation</td>
<td></td>
</tr>
<tr>
<td>Food safety and storage</td>
<td>Self-efficacy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Waste and disposal</td>
<td>Motivation and expectancies</td>
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<tr>
<td></td>
<td>Preferences</td>
<td></td>
<td></td>
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<td></td>
<td>Habits and routines</td>
<td></td>
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<td></td>
<td>Goals and prioritization</td>
<td></td>
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</tr>
</tbody>
</table>

**Source:** Christine Blake and Morgan Boncyk, University of South Carolina
Building methods on drivers of food choice: A 2023 multi-partner workshop in S. Asia

Multiple institutions: IFPRI, CIMMYT, IRRI, HKI, Uni. of South Carolina, Wageningen Uni., Wayamba Uni., Uni. of Dhaka, Center for Qualitative Research, icddr,b, National Institute of Nutrition (India), Nutrition International, GAIN, BRAC

Multiple CGIAR initiatives: TAFSSA, FRESH, SHIFT, Resilient Cities, NEXUS Gains
IFPRI’s RIAPA Data & Modeling System

Rural Investment and Policy Analysis (RIAPA)
Forward-looking economywide framework that captures entire national economies, unpacks agrifood systems and subnational regions, and tracks how policies, investments, and climate risks affect different sectors, workers and population groups

Integrating Models

- Dynamic economywide model
- Value chain tools (PPVC)
- Investment tools (AIDA)
- Biophysical tools (roads, water, power)
- Infrastructure tools (crops, livestock)
- Nonfood policies & investments
- Demography & macroeconomy

Capturing Agrifood Systems

- Agrifood system components
- Input suppliers
- Agriculture
- Traders
- Processors
- Food services

Capturing Agrifood Systems Chart

- Share of agrifood GDP in 2019 (%)
- World
- LIC
- LMIC
- UMIC
- HIC

- Agric. jobs
- Global GHGs

Covering Developing Countries

- 35 countries with RIAPA models
- (3 still under development)

Contact Karl Pauw or James Thurlow

Population
- 52% Poor
- 82% Hungry

Weblink

RIAPA Models
Factoring diets into decision-making

- Should consider dietary change alongside poverty, jobs and other policy goals
- In addition to consumer preferences, diet quality depends on the availability, cost, and affordability of healthy foods
- RIAPA is a model that tracks both product markets/prices and household incomes
- ReDD index is a gap measure: tracks how far consumption levels are from a healthy diet, rather than just counting deprived people
- ReDD can be tracked over time using household surveys (not only used in models)

ReDD is a compound deprivation measure

- **Incidence**: Share of pop. deprived in at least one food group
- **Breadth**: Number of food groups households are deprived in
- **Depth**: Average six of food consumption gap across groups

See Pauw et al. (2022)
Foresight and Rapid Response Modeling Systems (FARRMS)

Responding to Crises

- **FARRMS** is IFPRI’s Foresight and Rapid Response Modeling System
- Modeled impacts of **global crises** on poverty, hunger, and diet quality
- Impacts vary by country, but **COVID-19** had a large persistent effect on incomes and poverty
- Higher food and fertilizer prices, caused by the **Russia-Ukraine war**, had a more significant impact on household diets

See Arndt et al. (2023) and Diao and Thurlow (2023)
**Myanmar:** the energy standard typically used to define food poverty lines results in a food basket heavy in starchy staples & deficient in most essential nutrients

<table>
<thead>
<tr>
<th>Nutrient</th>
<th>Energy standard</th>
<th>Healthy diet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protein</td>
<td>152</td>
<td>207</td>
</tr>
<tr>
<td>Calcium</td>
<td>48</td>
<td>110</td>
</tr>
<tr>
<td>Iron</td>
<td>100</td>
<td>136</td>
</tr>
<tr>
<td>Magnesium</td>
<td>89</td>
<td>137</td>
</tr>
<tr>
<td>Phosphorous</td>
<td>132</td>
<td>172</td>
</tr>
<tr>
<td>Zinc</td>
<td>85</td>
<td>105</td>
</tr>
<tr>
<td>Copper</td>
<td>200</td>
<td>266</td>
</tr>
<tr>
<td>Vitamin C</td>
<td>62</td>
<td>212</td>
</tr>
<tr>
<td>Thiamin</td>
<td>79</td>
<td>119</td>
</tr>
<tr>
<td>Riboflavin</td>
<td>47</td>
<td>82</td>
</tr>
<tr>
<td>Niacin</td>
<td>105</td>
<td>128</td>
</tr>
<tr>
<td>Vitamin B6</td>
<td>95</td>
<td>130</td>
</tr>
<tr>
<td>Folate</td>
<td>71</td>
<td>166</td>
</tr>
<tr>
<td>Vitamin B12</td>
<td>52</td>
<td>146</td>
</tr>
<tr>
<td>Vitamin A</td>
<td>56</td>
<td>136</td>
</tr>
</tbody>
</table>

Mahrt et al. 2022
Nutrition (healthy diets) as a basic need recasts poverty estimates

- The poverty measures published by the World Bank are anchored in a **basic food basket** that meets caloric needs.

- **Healthy diet food poverty lines** reflect food-based dietary guidelines and cultural food norms of relatively poor households.

- Aligns poverty measurement practice with the modern paradigm of a healthy, balanced diet for all.

- **Implications**: Applying a healthy diets lens to poverty measurement dramatically increases the proportion of the poor in Myanmar.

[Graph: Poverty Rate in Myanmar (% of population)]

Mahrt et al. 2022
2. Testing diverse solutions to improve diets and nutrition

- Technical innovations
- Shaping consumer choices (information and preferences)
- Reducing structural barriers (affordability and equity)
Technical innovation: Nutrient Enriched Crops

- Breed for multiple traits: yield, hardiness, nutrition, and more
- More than 400 nutrient enriched varieties released and now mainstreamed into the One CGIAR and NARES systems.
- Target communities become more nutritionally resilient if shocks shift diets back towards staples.

Introduction of OSP to farming households significantly increased vitamin A intake among children and women

Biofortified varieties released by crop and region

- Iron Lentils
- Zinc Sorghum
- Zinc Rice
- Zinc Wheat
- Zinc Maize (Zn)
- Iron Beans
- Vitamin A Cassava
- Vitamin A Maize
- Iron Pearl Millet
- Vitamin A Sweet Potato
- Vitamin A Banana/Plantain
- Iron Cowpea

HarvestPlus delivers sustainable impact at scale

- Today, over 86 million people in farming households are eating biofortified foods—progressing rapidly towards 100 million in later 2023.
- Advocacy led to an African Union declaration in 2022 to scale up biofortification in Africa to make nutrient-rich foods available, accessible, and affordable.
- Zinc wheat in Pakistan expected to reach 30-40% of total wheat growing area in Punjab state.
Shaping diet quality among vulnerable populations:
A 14-year journey of testing behavior change innovations at scale

- **Alive & Thrive**: large-scale behavior change interventions targeting diets of young children in Bangladesh, Vietnam, Ethiopia (2009-2014)
  - Improvements in child dietary diversity
  - Substantial variability by context
  - Impact: Systems strengthening interventions scaled up into large-scale programs globally

- **Alive & Thrive**: behavior change and systems strengthening interventions to support maternal diets during pregnancy in Bangladesh, Burkina Faso, Ethiopia and India (2015-2023)
  - Improvements in maternal dietary diversity, varied by context
  - Improved consumption of iron supplements
  - Insights on systems levers for nutrition improvements in health systems.
  - Impact: Maternal nutrition efforts being scaled into health systems in focus countries

Improving diets of future generations: School-based behavior change programs in Ethiopia

- Despite pandemic disturbances, interventions delivered at schools in Ethiopia demonstrated
  - Increased dietary diversity
  - Increased consumption of nutritious foods
  - Increased meal frequency
  - But NO impact on unhealthy foods/snacks

- School-based program being explored for scale-up by Government of Ethiopia

Kim et al., revise & resubmit at Lancet Child & Adolescent Health
Tackling food affordability: Evidence from the Impact Evaluation of Egypt’s Takaful and Karama Program

- **Impacts on household consumption: 8.8 percent**
  - About 1/3 of the total value of the transfer received

- **Significant impacts on expenditure on higher value food groups: fruits and meat**
  - No significant impact on household dietary diversity, or dietary diversity for woman or children

- **Context matters:** Households near the threshold already have relatively diverse diet, but transfers increase consumption of high value foods
Tackling affordability of nutritious diets by combining social protection and nutrition behavior change in Bangladesh

Cash plus behavior change had the greatest impact on diversity of diets

<table>
<thead>
<tr>
<th>NORTH</th>
<th>SOUTH</th>
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<tbody>
<tr>
<td>Cash</td>
<td>Eggs</td>
</tr>
<tr>
<td>Food</td>
<td>Legumes</td>
</tr>
<tr>
<td>½ Cash, ½ Food</td>
<td>½ Cash, ½ Food</td>
</tr>
<tr>
<td>½ Cash, ½ Food Legumes</td>
<td>No significant impacts</td>
</tr>
</tbody>
</table>

- Cash+BCC: Legumes, Leafy green vegetables, Fruit, Meat, Fish, Eggs, Milk/dairy
- Food+BCC: Legumes, Leafy green vegetables, Fruit, Fish, Eggs

Photo credit: Aminul Khandaker, IFPRI-Dhaka

Ahmed et al., IFPRI
Our research has highlighted many pathways to impact of women’s livelihoods programs in rural India

Scott et al., 2018
Gender as a structural driver of diets:
Research on large-scale multisectoral women’s group programs in India sheds light

<table>
<thead>
<tr>
<th>Diet-related outcomes</th>
<th>JEEVIKA-MC (Bihar)</th>
<th>PRADAN (5 states)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet diversity</td>
<td>↑</td>
<td>←→</td>
</tr>
<tr>
<td>Food security</td>
<td>←→</td>
<td>↑</td>
</tr>
<tr>
<td>Knowledge about food-related behaviour</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>Use of kitchen gardens</td>
<td>↑</td>
<td>↑</td>
</tr>
<tr>
<td>Use of safety nets or program funds to purchase food</td>
<td>←→</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Sources: Scott et al, Current Developments in Nutrition (2022)
Raghunathan et al., World Development (2023)
The intersecting worlds of gender, climate and nutrition change

Nutrition Dimensions

- Nutritional status influences human sensitivity to shocks/stressors and resilience
- Climate response strategies have implications for diets and nutrition
- Nutrition response strategies and dietary choices have implications for the environment and climate change
- Poor women bear the brunt of both climate and nutrition crises; a gender and equity lens helps us connect the dots
3. Enabling environments for healthy diets

- Public resource allocation
- Food environments—markets and regulation
- Political economy and governance
IFPRI works with partners to prioritize policies to drive food system transformation.

Model effects of investing in different value chains.

Some are more effective in reducing poverty or generating GDP (e.g., cereals).

Including diet quality can shift priorities (e.g., groundnuts and vegetables become more important).

See Diao et al. (2022)
A view of the future of people and the planet requires us to confront issues of markets for nutrition.
In urban Accra (Ghana), access to both sugar-sweetened beverages and ultra-processed foods is widespread for adolescents.

Food outlets selling **sugar-sweetened beverages**

Food outlets selling **ultra-processed foods**

Source: Jef Leroy, IFPRI
Supporting India’s policy community with evidence over a decade: Over 50 peer-reviewed papers and engagement with numerous policy processes and actors.

Thematic, opportunistic and responsive research and researchers embedded in policy/program context create a platform for evidence to support policy
Supporting the policy community in Bangladesh with evidence on diets and nutrition since 2009

- **Understanding the challenge**
  - The Bangladesh Integrated Household Survey – the only nationally representative survey in South Asia with detailed intrahousehold dietary data

- **Testing solutions**
  - Strengthening *behavior change* interventions focused on vulnerable populations
  - Improving *affordability of diets* through cash transfers and nutrition behavior change communications
  - Testing integrated *agriculture-gender and nutrition* programming with the government of Bangladesh

- **An enabling policy environment**
  - Supporting national government efforts to shape nutrition [Country Investment Plans; National Nutrition Services assessments]
Supporting food systems policy processes in Vietnam and food-based dietary guidelines in Ethiopia with partners

Link to IPSARD.gov.vn

Link to the FBDGs
What lies ahead on diets and nutrition research
Working with a wide range of partners, our research helps tackle the challenges of diets and nutrition in three ways:

- **Clarifying the situation and outlook for diet and nutrition challenges**
  - Monitoring
  - Foresight
  - Measurement innovations

- **Testing diverse solutions to improve diets and nutrition**
  - Technical innovations
  - Shaping consumer choices (information and preferences)
  - Reducing structural barriers (affordability, gender and equity)

- **Shaping enabling environments for healthy diets**
  - Public policies and investments
  - Food environments and markets
  - Political economy and governance
Deploying our assets and research methods to tackle major challenges to shaping healthy and sustainable diets

- **New directions for research on diets in diverse settings**: sustainability, foods such as fruits and vegetables, consumption of unhealthy foods and overall dietary patterns, diets in cities and urban areas
- **Food environments and food markets** as critical connectors between agriculture and diets
- Supporting regional, national and local **food systems transformation**
- Tackling **equity and affordability** in the context of healthy sustainable diets
- **Diets, climate change** and their critical intersections with social equity and gender
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For more information, please email:
Purnima Menon (p.menon@cgiar.org) or Channing Arndt (c.Arndt@cgiar.org)