Sustainable Diets: Can we feed the world well and protect the planet?

Jessica Fanzo, PhD
Bloomberg Distinguished Associate Professor of Global Food & Agriculture Policy & Ethics
Director of the Global Food Policy & Ethics Program
For Our Discussion

• Transitioning Diets and their Implications
• Drivers of Dietary Change
• A Re-emerging Idea: Sustainable Diets
• Ten Ideas for Solutions
Transitioning Diets and their Implications

1. Too much
2. Poor quality
3. Not affordable
4. Not sustainable
1. Too Much

2. Poor Quality

Global sugar supply per calories/person/per day in 2008
3. Not Affordable


Note: Calculated based on total consumption value in 2010 (SPPP [purchasing power parity] Values) in developing countries. Consumption groups defined based on global income distribution data: poorest = $2.97 per capita a day; poor = between $2.97 and $8.44 per capita a day; middle = between $8.44 and $23.03 per capita a day; wealthier = above $23.03 per capita a day.

4. Not sustainable

People Are Consuming More Animal-Based Protein

Nepal = 11.46 g/capita/day

The Implications of Our “Choices”

1. Health Consequences
2. Environmental Consequences
3. Social Inequity Consequences
4. Ethical and Justice Consequences
1. Health: Diet Risk is the Largest on Disease Burden

![Bar chart showing global all age Disability Adjusted Life Years (in thousands) for different risk factors.]

- Disease risk factors linked to diet
- Disease risk factors not linked to diet

Dietary risks: 230,000
High systolic blood pressure: 190,000
Child and maternal malnutrition: 180,000
Tobacco smoke: 160,000
Air pollution: 150,000
High body mass index: 140,000
Alcohol and drug use: 130,000
High fasting plasma glucose: 120,000
Unsafe water, sanitation and handwashing: 110,000
Unsafe sex: 100,000
High total cholesterol: 90,000

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.
And what you eat matters

Tilman and Clark, Nov 2014 Nature
2. Environment: Humans are not the only sufferers

The agriculture sector accounts for 24% of total GHGe globally with livestock production accounting for nearly 80% of the sector's emissions.

3. Social Inequity Consequences

• The NEED VS ACCESS: In the high- and middle-income countries and among urban populations in all income countries, meat and dairy consumption is rising (exceptions). Whereas, in many low-income countries, populations cannot access or afford animal source foods and these are of critical importance to growth, development and wellbeing.

• CONSEQUENCES of DECISIONS: Those most vulnerable and in low income countries will suffer the most from high-income country decisions regarding the environment, natural resource depletion and climate change.
Social Equality, Social Justice

- **Equality**: all people within a specific society have the same status in certain respects (freedom of speech, civil rights, property rights, equal access to services)

- **Justice**: all people share a *common humanity* and therefore have a right to equitable treatment, support for their human rights, and a fair allocation of community resources (ie social contract)

Do we have the right to eat wrongly?
What are the Drivers of Dietary Change?

1. Population growth & urbanization
2. Climate change, natural resource depletion & degradation
3. Geopolitics & conflicts
4. Complex food environments
Population Growth & Pressure, & Urbanization

UNICEF 2012 SOWC Report
Urbanization, economic growth, technological changes for work, leisure, & food processing, mass media growth

Pattern 1
Hunter gatherer societies (rare)
- Wild plants & animals – low in kcal
- Low in processed foods
- Consume mainly water/tea
- Labor-intensive

Pattern 2
Famine-prone Regions and societies
- Cereals dominate, high carbohydrates
- Minimal processed foods
- Consume mainly water, tea, alcohol
- Labor-intensive

Pattern 3
Receding famine/smallholder, rural
- Starchy, low variety, low fat, high fiber
- Increased processed, packaged foods high in fat, sodium, sugar
- Water, caloric beverages, tea, and alcohol
- Labor-intensive work job/home

Pattern 4
Modernized, rural, and more peri-urban urban societies
- Increased fat, sugar
- Increased processed, packaged foods high in fat, sodium, sugar
- Caloric beverages, alcohol
- Shift in technology of work and leisure

Pattern 5
Educated, mainly urban
- Reduced highly processed foods high in trans fat, sodium, and sugar
- Increased fruit, veg, fiber
- Increased water, reduced caloric beverage intake except alcohol
- Replace sedentarianism with physical activity for exercise

Lean & robust, High infectious diseases
- Low fertility, Low life expectancy

MCH deficiencies Stunting and wasting
- High fertility, high MCH mortality, low life expectancy

MCH deficiencies Stunting and MNDs
- Slow mortality decline Slow stunting decline

Obesity emerges Diet-related NCDs
- Increased life expectancy but increased disability Increased NCDs

Reduced obesity, Reduced diet-related NCDs
- Extended lifespan Reduced mortality due to NCDs

Source: Popkin 2006; Crino et al 2016; Revised Fanzo et al 2017
Climate change & severity of natural disasters

“geological uncertainties”
Depletion of Natural Resources in the Food Supply

A study of the world’s countries finds that over the last 50 years, diets have become ever more similar. Each country’s food supply composition in contribution to calories in:

- 1961
- 1985
- 2009


Khoury et al 2014 PNAS; Stockholm Resilience Center; Science 2013; Rockstrom et al
Food Geopolitics: Food Crises & Social Unrest

Complex food environments

Source: Swinburn et al., 2014
Sustainable Diets – How do we get there?

- Globalization
- Urbanization
- Food chain consolidation
- Governance systems

- Climate change
- Fossil fuel
- Natural resource depletion

Macro political economic context

Health
- Disease
- Well-being
- Diet diversity
- Health care

Ecological
- Land use
- Water use
- Energy use
- Soil health
- Biodiversity
- Pollution
- Farm management
- Ecosystem services

Sustainable Diets

Social
- Rights
- Equity
- Access to resources
- Agency
- Markets
- Food traditions
- Knowledge
- Political participation
- Religion
- Gender
- Class
- Race

Global ecological context

Jones 2016; Adv Nutrition
Ten Ideas Towards Solutions: From Macro to Micro
1. Global Goal Setting Matters

UNSCN 2016 Trade Impacts on Nutrition Report
3. Align national dietary and food policies

US and Swedish food-based dietary recommendations in weight compared with global supply averages for 2009

Wiggins and Keats 2013 ODI Dietary Shifts Report
Maximize Entry Points, Minimize Exit Points for Nutrition

Net increase of nutrition along the value chain

Maximize nutrition “entering” the food value chain

- Improved varieties, bio-fortification strategies
- Aflatoxin control, refrigeration
- School feeding programs, voucher schemes, targeting of vulnerable groups
- Home fortification with MNP (fish powders), training in nutritious food preparation, time management, food preservation

Focus on women farmers, diversification, extension, insects
Fermentation, drying, fortification, product reformulation (reduce salt, sugar, unhealthy fats)
Messaging on the importance of nutrition, benefits of certain foods
Messaging on the importance of nutrition, benefits of certain foods

Maximize nutrition “exiting” the value chain

- Lack of knowledge of improved varieties, nutritious crops
- Nutrient losses during milling, combination with unhealthy ingredients
- Advertising campaigns for unhealthy foods
- Lack of knowledge of nutrition, nutrient losses during food preparation, addition of salt, sugar, unhealthy fats

- Lack of access to inputs (seeds, fertilizer, extension)
- Contamination, spoilage
- “Food deserts”, export/import impacts on prices and availability

Fanzo and Downs 2016
5. Double duty: Create economic and nutrition incentives along the value chain

• tax incentives for “nutrition retail zones”

• premiums paid to wet market retailers if they meet above minimum food safety standards

• leverage start up funds for SMEs that are engaged in value chains for healthier foods

• incentives to street vendors to use healthier ingredients

• corporate tax rates that incentivize higher nutrition quality product lines

6. Think About Trade-offs Along the Value Chain

Promotion of grass fed beef, potential omega 3 benefits
Increased methane gas production

Promotion of Mediterranean diet & olive oil for heart health
Increased use of significant amounts of water
7. Taxes: Not a Panacea but One Tool

"Putting Sugary Soda Out of Reach"

By Andrew Rosenthal May 3, 2016

A Carbon Tax on Meat?

Officials say taxing red meat could improve people’s diets and lower greenhouse emissions, but economists say it won’t work.

By Nina Hlobko

Climatewire on February 4, 2016
8. Change Perverse Food Environments & Eliminate “Food Deserts”
9. Consider Nudges & Choice Architecture

- Nudging includes positive reinforcement and indirect suggestions to encourage better choices.
- Nudging does not include direct instruction, legislation, or enforcement.
- Nudging alters people’s behavior in a predictable way without forbidding any options.

SR showing nudge interventions on average cause a 15.3% increase in healthier consumption decisions
10. Sustainable Alternatives & Reformulations

“Eat Food. Not too much. Mostly Plants.”  
*Michael Pollan*
Thank you!

Foodandnutritionsecurity.org
@jessfanzo