Food security: Challenges of agriculture in Finland and how they are connected to Europe and the rest of the world

Kaisa Karttunen, Turku
Agriculture: part of a food system

- Agriculture is part of a food system

- Challenges in agriculture affect the whole food system and vice versa: problems in other system parts affect agriculture

- Acknowledging interdependencies: an action in one part will affect other parts, sometimes unexpectedly

- Siloed policies and governance - fail to acknowledge interactions and interdependencies in the system

- The Finnish food system is connected to European and global food systems
Food security and food system

One of the outcomes of a well-functioning food system is food and nutrition security that is achieved with minimal negative environmental impact.
Undernourishment on the rise

Source: SOFI 2019

Kaisa Karttunen 10.9.2019
Undernourishment in the World 2018 (in million)

Source: SOFI 2019
Every country in the world is affected by malnutrition

Countries with a burden of at least one of: childhood stunting, anaemia in adult women, overweight in adult women

- At least a single burden
- At least a double burden
- A triple burden

Source: The Global Nutrition Report 2018
Why are nutrition problems increasing?

Climate variability and extremes

Conflicts

Economic turbulence

Photos: FAO et al.
Disasters related to climate extremes

**Figure 15**
Increasing number of extreme climate-related disasters, 1990–2016

- **Year**: 1990 to 2016
- **Y-axis**: Total number of events
- **Legend**:
  - Drought
  - Flood
  - Extreme temperature
  - Storm
  - Total events

Global: Projected climate change impact on agricultural yields

"A key culprit in climate change – carbon emissions – can also help agriculture by enhancing photosynthesis in many important (...) crops such as wheat, rice, and soybeans. The science, however, is far from certain on the benefits of carbon fertilisation."

This map represents the case of beneficial carbon fertilisation processes.

Source: Cline W., 2007, Global Warming and Agriculture.
By 2050, CROP YIELDS will DECREASE by 25% if we don’t address climate change now.
Global: Emissions by sector

- Energy: 35%
- AFOLU: 24%
- Industry: 21%
- Transport: 14%
- Buildings: 6%

FAO 2015 (originally IPCC)
Global: Agrobiodiversity under threat

- More than 6000 plant species have been cultivated for food on Earth
- Today, fewer than 200 contribute to food production globally, regionally or nationally
- Only 9 account for 66% of total crop production

Data and photos: FAO
Global: Centralisation, concentration

**INPUTS**
50%
- SEEDS
  3 companies control 50% of the market: ChemChina/Syngenta, Bayer/Monsanto, Dow Chemical/Dupont

**TRADING**
90%
- TRADERS
  4 major traders control as much as 90% of the global grain trade: Bunge, Archer Daniels Midland, Cargill, Louis Dreyfus

**PROCESSING**
$1.1bn
- FOOD & BEVERAGES
  10 companies own the biggest product brands and manufacture most of consumer shopping carts, collectively generating revenues of more than $1.1bn a day: Associated British Foods, Coca-Cola, Danone, General Mills, Kellogg's, Mars, Mondelez International, Nestlé, PepsiCo, Unilever

**DISTRIBUTING**
40%
- RETAILERS
  10 retailers share 40% in worldwide sales. In most OECD economies, one retailer controls between 15-30% of national supermarket sales: Tesco (UK), Carrefour (France), WalMart (USA), Edeka (Germany).

Bailey, B. 2017 Hoffman Centre
Challenges in the (Finnish) food system

- Low agricultural profitability
- Nutritional issues: overweight, obesity
- Environmental sustainability
- Food loss and waste
- Some people dependent on food aid
- Concentration of power & decision making
Finland: Low profitability of agriculture

- During the past 15 years, agricultural productivity increased substantially, whereas profitability declined
- Input costs (fertilizer, machinery, land) increasing
- Farmers’ share of food retail prices declining
- Weather-related losses
- Number of farms declining, farm size increasing
Finland: Overweight and obesity

In 2017, 26 % of men and 28 % of women were obese

Main challenges in diets:

- not enough veggies, fruits and berries (differences btw men and women)
- men eat too much red meat compared to recommendations
- fat intake higher than recommended
- inadequate intake of fibre

Source: THL FinRavinto
Finland: Environmental concerns

- Nutrient management: eutrophication of lakes and the Baltic Sea
- Soil erosion
- Climate change: adaptation and mitigation
- (Agro)biodiversity
- Food loss and waste
Finland: Food loss and waste 400 mill kg/year

- **Households**: 30%
- **Food processing**: 20%
- **Wholesale and retail**: 18%
- **Catering, restaurants**: 20%
- **Agriculture**: 12%

Source: Luke
Finland: Climate change adaptation needs

- Climate variability and extremes
- Diseases and pests
- Weeds
- Variation of yields
- Winter conditions
- Frost
- Need for irrigation

Luke 2017
Fairness of the food system

- Access to nutritious food constrained from many
- In Finland, tens of thousands of people partly dependent on food aid, globally hundreds of millions
- For these people, food price matters. But price matters also to producers who cannot cover their production costs.
- The physical distance between producers and consumers is growing. Only few can participate in decision making - concentration of power.
Finland’s role?
<table>
<thead>
<tr>
<th></th>
<th>Finland</th>
<th>EU</th>
<th>World</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>5.5 million</td>
<td>510 million</td>
<td>7 600 million</td>
</tr>
<tr>
<td>Agricultural land</td>
<td>2.2 mill ha</td>
<td>175 mill ha</td>
<td>1 500 mill ha</td>
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<tr>
<td>Agricultural land/capita</td>
<td>0.40 ha</td>
<td>0.34 ha</td>
<td>0.20 ha</td>
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<tr>
<td>Cereal production</td>
<td>3.7 mill tn</td>
<td>317 mill tn</td>
<td>2 400 mill tn</td>
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<tr>
<td>Milk production</td>
<td>2.3 mill tn</td>
<td>168 mill tn</td>
<td>747 mill tn</td>
</tr>
</tbody>
</table>

Source: Karttunen 2018
Finnish food

- 78-80% of our food consumption from Finnish origin (Luke)
- High dependence on imported inputs
- A major environmental impact outside our borders: outsourcing water and land use, displacing biodiversity loss and GHG emissions
- Production practices under or beyond our control
- Short-term food security achievable by importing, in longer term several risks may materialize
- We need a responsible, fair and sustainable food system (see Twitter @justfood_stn)
Thank you!