Tomorrow's food system – Opportunities and Challenges ahead

9th European Public Health Conference
12 November 2016, Vienna
DG Joint Research Centre

Established in

1957

10

Directorates

6

Locations in 5

Member States

Around

3000

Staff

>1000

Publications per year

- European Commission’s in-house science service

- "As the science and knowledge service of the Commission our mission is to support EU policies with independent evidence throughout the whole policy cycle."
Foresight & policy making

Methodology – scenario building

Future sustainable food system

challenges

Considerations…
Foresight!

- Study the future

- Identify tomorrow’s challenges

- Prepare today

- Does not predict the future; considers it as something that can be shaped

- assumes that there are numerous possible futures, alternative developments
The approach...

Scenario building

- stories (creative combination of data, facts and hypotheses) which explore how the future could look like under the influence of a combination of driving forces.

- highlight possible futures, do not predict the future or suggest a preferred future.
Scenarios...

- **Plausible:**
  must fall within the limits of what might conceivably happen

- **Internally consistent:**
  the combination of logics within a scenario must not have any built-in inconsistency that could undermine the credibility of the scenario

- **Diverse:**
  should be structurally different, not too close to each other to avoid being simply variations of a base case
Drivers

- Forces that can exert influence, *drive* change, in a given system

Social values

- EU economic growth
- Global trade
- Agro-food industry structure
- Global population growth
- Climate change
- Food price
- Natural resource depletion
- Technology uptake
The process...

Drivers

Scenarios

Future challenges

Analysis and results

Participatory workshops
"How resilient is our food safety and nutrition policy framework in view of 2050 challenges?"

- Identify possible **future challenges** to the EU **food safety & nutrition policy and regulatory framework**
- **Assess** whether the current food policy and regulatory framework is **sufficiently resilient to deal with the challenges** and, if appropriate, develop policy recommendations
- Identify research gaps and indicator
- Collaboration with DG Health and Food Safety (DG SANTE)
"What research should we focus on in the coming years in order to achieve healthy diets by 2050?"

- Identify possible **future nutrition and dietary challenges** for the EU
- Prioritise **research areas that we should focus on** in order to support the provision and consumption of healthy diets in 2050
- **DG Research & Innovation**, support implementation of Horizon 2020
Tomorrow's Healthy Society: Research Priorities for Foods and Diets

Healthy new world

Heal the world

Me, myself and I

Eat to live

Delivering on EU Food Safety and Nutrition in 2050 – Future challenges and policy preparedness
Little climate change mitigation

Climate change impacts rural areas, agri-food chain

EU society reacts – environmental sustainability

Uphill struggle for the EU

Profound resource scarcity

Trade disruptions – food safety scares

EU abandons international trade agreements
Food and nutrition literacy

Diets plant based, local/seasonal, reduced red meat – less variety

Overall reduction in diet-related diseases, however still present in older generations

Food technologies to support local and sustainable food production, mitigate climate change/resources scarcity, waste – careful risk/benefit assessment

Short food chains, p2p trade, home and small scale food production low industry concentrations, SMEs dominant

Limited global trade

High social cohesion, food valued

Food choices driven by environmental considerations, health

Strong governance, fiscal food policies (incentives/disincentives)
**Challenges**

- Greater reliance for food safety on individuals engaging in food production
- Environmental contaminants or other hazards (e.g. animal health) from urban food production
- Re-introduction of food waste and organic side-stream products in the food chain
- Ability to perform official controls – fraud potential?
- Temporary shortages of fresh produce and food poverty in a self-sufficient system
- Cost of food production / transmission in retail prices
Policy responses

Greater reliance for food safety on individuals engaging in food production

- Local registries of food producers – license
- Digital networks – best practices, sourcing raw materials, traceability
- Expand the scope of the General Food Law, hygiene regulations and related controls to include individuals engaging in food production
- Establish a list of high risk products
- Improve food safety & nutrition education

Joint Research Centre
# Research needs

| Understanding the capacity/limits of home food production/urban farming? |
| Primary production in the urban environment & environmental contaminants |
| Understanding of long term effects of novel dietary components (e.g. alternative protein sources) |
| Developing of effective approaches for communication of novel technologies or food sources |
| Integrated analysis of practices along the food chain from a sustainability perspective – key contributors |
| Identification of effective policy measures for a sustainable food chain – cross cutting actions |
**Common considerations**

- Complexity of food system
  - Safe, nutritious, affordable, sustainable, social aspects

- Holistic, integrated policy approach

- Future stresses
  - Challenging resilience, adding complexity

- Trade-offs?
Thank you!
Regional Food

- Climate change, natural resources depletion, global population growth
- Fragmented global trade; intra EU – trade and bilateral agreements – tariff and non-tariff barriers in place
- Selected uptake of technologies – thorough environmental & health risk assessment – focus on environmentally sustainable local production, waste re-use and renewable energy
- SMEs thrive in short and local food chains – P2P and direct from producer food businesses – high food prices – lower variety
- High social value of food – choices driven by environmental sustainability, local/seasonal, fair/ethical/animal welfare – plant based – high cooking skills and food literacy
- Strong sense of communal values - solidarity
<table>
<thead>
<tr>
<th>Main Challenges</th>
<th>Policy Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greater reliance for food safety on individuals engaging in food production</td>
<td>Expand the scope of the General Food Law, hygiene regulations and related controls to include individuals engaging in food production</td>
</tr>
<tr>
<td></td>
<td>Implement the registration and vaccination of all livestock</td>
</tr>
<tr>
<td></td>
<td>Establish a list of “high-risk” products</td>
</tr>
<tr>
<td></td>
<td>Improve food safety education</td>
</tr>
<tr>
<td>Failure to provide appropriate food safety information to the consumer</td>
<td>Promote the use of social networks and ICTs by individuals engaging in food production to provide food information to their peers</td>
</tr>
<tr>
<td>Re-introduction of food waste and organic side-stream products in the food chain</td>
<td>Expand the scope of the General Food Law and feed hygiene regulations to individuals engaging in food production</td>
</tr>
<tr>
<td></td>
<td>Establish communal food waste handling or recycling centres</td>
</tr>
<tr>
<td></td>
<td>Educate individuals engaging in food production on the re-use of food waste</td>
</tr>
<tr>
<td>Temporary shortages of fresh produce and food poverty in a self-sufficient food system</td>
<td>Establish emergency mechanisms for food re-distribution</td>
</tr>
<tr>
<td></td>
<td>Introduce production quotas to ensure balanced diets during temporary shortages</td>
</tr>
<tr>
<td></td>
<td>Educate consumers to ensure adequate nutrition during temporary disruption of fresh produce</td>
</tr>
</tbody>
</table>
Shaping and coping with the 2050 food system

Understanding the social role of food
- Role of food beyond nutrition
- Implications of individualised lifestyles & eating habits
- Implications of loss of food traditions
- Implications of separation of food from health

Towards a sustainable food system producing safe, affordable and healthy dietary components
- Effective & integrated approaches to establish, promote and support a sustainable food chain (policies, waste, local production etc.)
- Measures to ensure integrity of food system regarding food safety and quality

Supporting technologies to meet societal needs
- Novel or alternative production processes for better nutritional profiles of food
- Methodologies for impact assessments of technological developments
- Effective approaches to communication of new, potentially beneficial food sources and technologies
## Drivers

- Certain Vs Uncertain development, degree of importance
- Various combination of drivers → scenario skeleton

<table>
<thead>
<tr>
<th>Driver</th>
<th>“Global Food”</th>
<th>“EU Food”</th>
<th>“Partnership Food”</th>
<th>“Pharma Food”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global trade</td>
<td>Full liberalisation</td>
<td>Disrupted and fragmented</td>
<td>EU trade focus on the US &amp; Canada</td>
<td>Full liberalisation</td>
</tr>
<tr>
<td>EU economic growth</td>
<td>Medium</td>
<td>Decoupled, GDP no longer used as indicator</td>
<td>Stagnation</td>
<td>High</td>
</tr>
<tr>
<td>Agro-food chain structure</td>
<td>Concentration</td>
<td>Diversification, alternative food chains</td>
<td>Concentration</td>
<td>Concentration</td>
</tr>
<tr>
<td>Technology uptake</td>
<td>High</td>
<td>High with focus on environmental sustainability</td>
<td>High</td>
<td>High with focus on nutrition &amp; health</td>
</tr>
<tr>
<td>Social cohesion</td>
<td>Low</td>
<td>High</td>
<td>Limited to local community</td>
<td>High</td>
</tr>
<tr>
<td>Food values</td>
<td>Low</td>
<td>High with focus on local production &amp; quality</td>
<td>Low</td>
<td>High with focus on nutrition &amp; health</td>
</tr>
<tr>
<td>Climate change</td>
<td></td>
<td>2°C threshold of temperature increase will be reached by 2050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depletion of natural resources</td>
<td></td>
<td>Progressive natural resource depletion towards 2050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>World population growth</td>
<td></td>
<td>World population will increase to about 9 billion by 2050</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Driver</td>
<td>Main characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Climate change</td>
<td>• 2°C threshold of temperature increase will be reached by 2050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depletion of natural resources</td>
<td>• Progressive natural resource depletion towards 2050</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>World population growth</td>
<td>• World population will increase to about 9 billion by 2050</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Social Cohesion                       | • High social cohesion  
  • Solidarity is a key value                                                                                                                              |
| Food values                           | • Society values: food and its integral role in nutrition, health, environment, culture and social cohesion  
  • Food choices primarily driven by health, environmental sustainability, local production, fair trade/ethical, animal welfare  
  • Diets mainly comprised of food products produced locally/seasonally, lower consumption of animal proteins including red meat and dairy products  
  • Cooking skills and nutrition education are considered important                                                                                       |
| Technology uptake                     | • Selected uptake of technological advancements  
  • Thorough environmental and health risk assessment  
  • Technology development is focused on:  
    o Optimisation of existing technologies  
    o Local and sustainable food production  
    o Mitigation of resource scarcity and climate change  
    o Renewable energy sources  
    o Overcoming vulnerabilities of circular economy  
    o Waste reduction/re-utilisation, including the food chain                                                                                         |
| EU economic growth                    | • Circular, largely self-sufficient economy, with recognised vulnerabilities  
  • GDP as an indicator of economic performance has been replaced by other indicators including environmental performance and social well-being |
| Global trade                          | • Disruption and fragmentation of international trade, no global food system  
  • Intra-EU trade and targeted bilateral agreements to satisfy specific needs (e.g. raw materials)  
  • Tariff and non-tariff barriers (both import and export) in place to buffer food prices, to protect local production, and to keep high safety standards for food products and technology applications |
| Agro-food industry structure          | • Low industry concentration and SMEs thrive across the shorter, more local food chains  
  • Alternative/informal food businesses increase (direct food exchange, purchase from producers)  
  • Higher food prices due to lower economies of scale  
  • Lower variety of foods both processed and fresh available due to reliance on short food chains  
  • Potential occasional shortages of fresh produce due to climate change effects and fragmented trade |