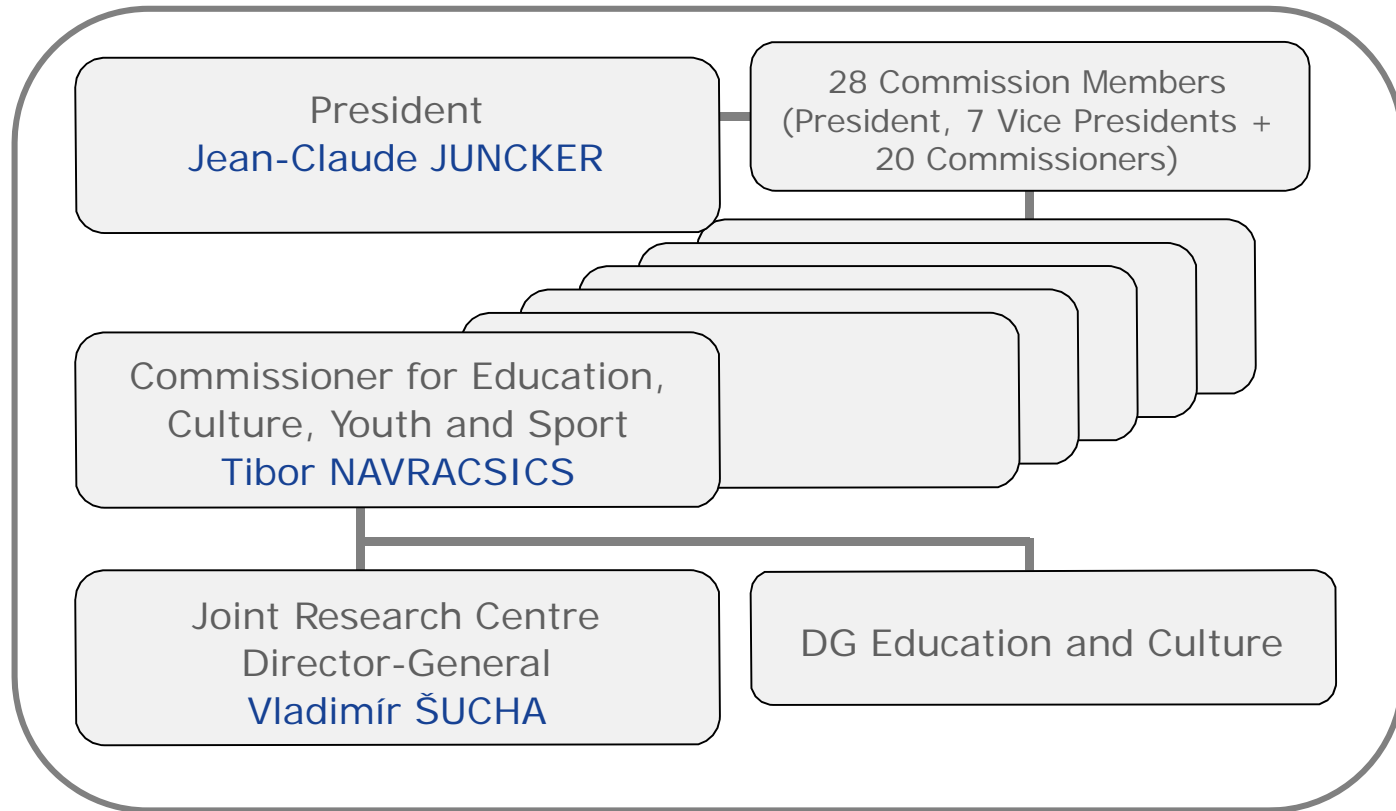


Delivering on EU Food Safety and Nutrition in 2050 -

Future challenges and policy preparedness





DG Joint Research Centre



Established in
1957



Around
3000
Staff



10
Directorates



> 1000
Publications
per year



6
Locations in
5 Member
States



42
Large scale
facilities



DG JRC Role

- Focus on the priorities of the Commission (80% of activities co-designed with partner DGs)
- Work for more than 20 policy DGs
- Expertise in a wide range of areas from economic and financial analysis through to energy and transport, health, environment and nuclear safeguards



JRC response to global challenges

- Economy, finance and markets
- Energy and transport
- Educations, skills and employment
- Food, nutrition and health
- Environment, Resource scarcity, climate change and sustainability
- People, governance in multicultural and networked societies
- Civil security
- Migration and territorial development
- Data and digital transformation
- Innovation systems and processes

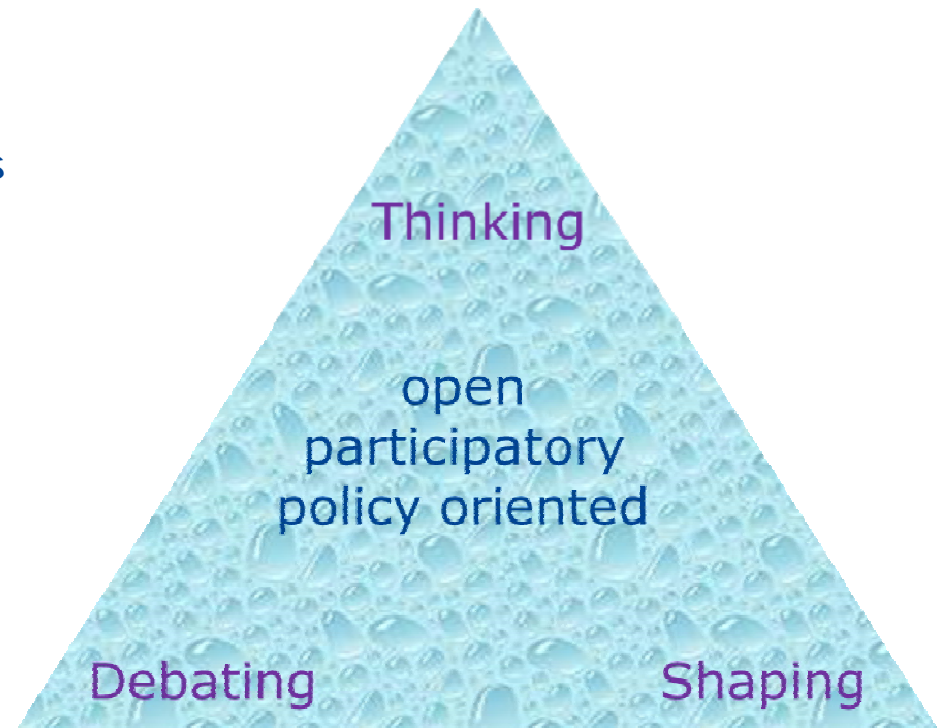


Objectives

- To identify possible future challenges to the EU food safety and nutrition policy and regulatory framework
- To assess whether the current food policy and regulatory framework is sufficiently resilient to deal with the challenges and, if appropriate, identify research needs and develop policy recommendations

Foresight approach

- Does not predict the future; considers it as something that can be shaped
- Assumes that there are numerous possible futures, alternative developments
- Gathers anticipatory intelligence from a wide range of knowledge sources in a systematic way
- Enhances future thinking beyond established pathways and links it to today's decision making





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
- **Useful for decision-making:**
should provide specific insights into the future that will inform decision-making (for us: challenging scenarios)

Study process

Drivers

- Identification of relevant drivers for food safety and nutrition
- Driver literature review: state of art and future trends
- Impacts of drivers on food safety and nutrition

Scenarios

- Plausible combination of drivers as scenario skeleton
- Fleshing out scenarios and full description
- Validation and improvement (1st workshop)
- Refining and finalisation

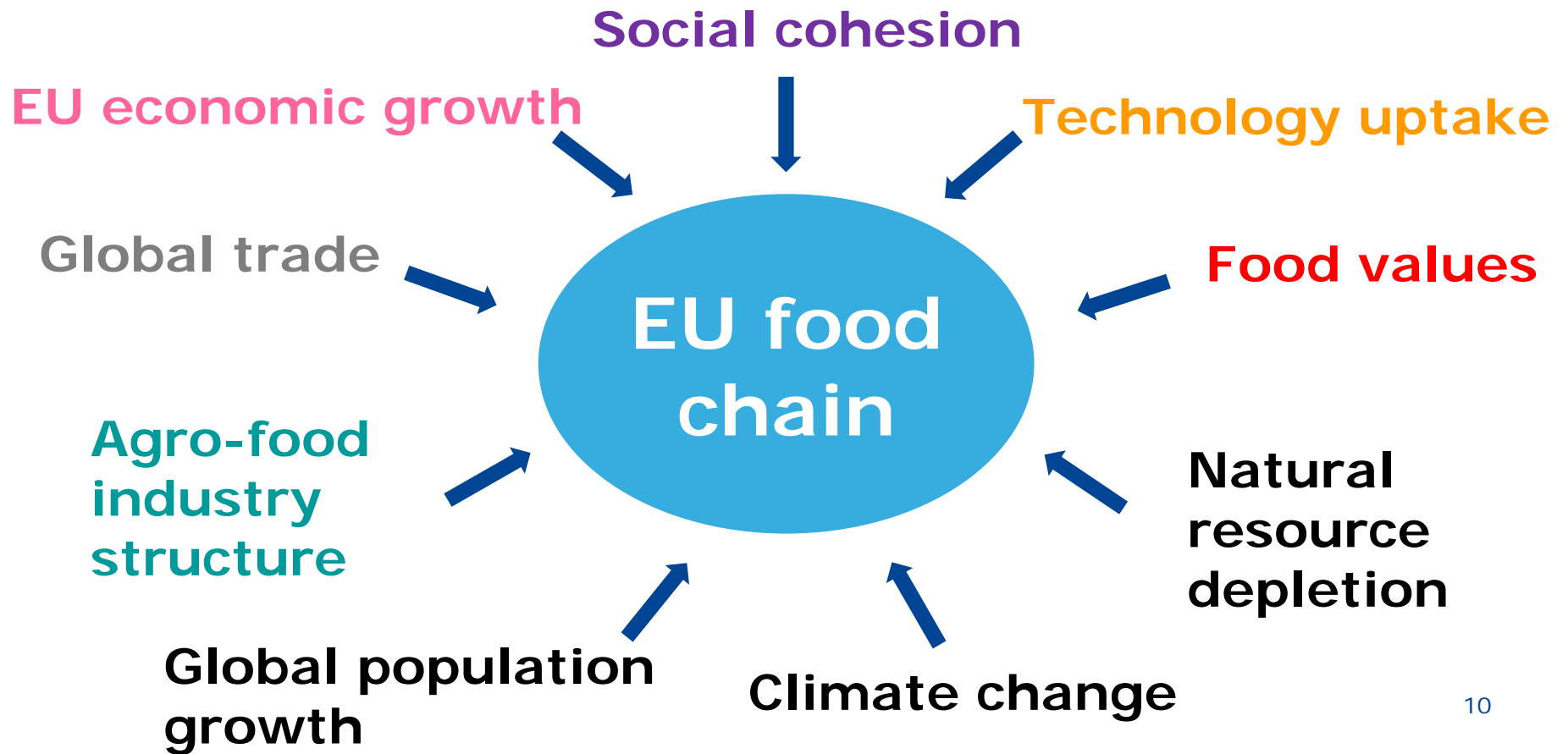
Challenges

- Identification of challenges per scenario (1st workshop)
- Further description and refinement
- Improvement and prioritisation of challenges (2nd workshop)

Policy options

- Development of policy options per scenario (2nd workshop)
- Identification of related research needs (2nd workshop)
- Development of scenario specific indicators (2nd workshop)
- Further refinement

Drivers

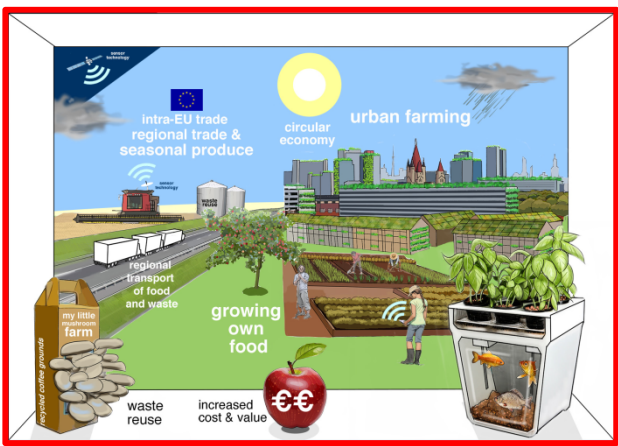


Driver characteristics per scenario

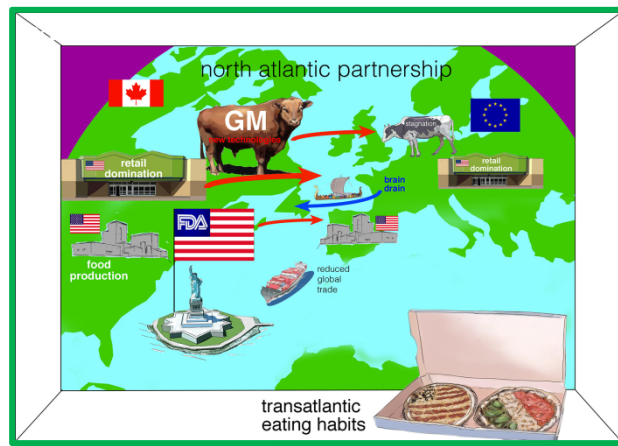
Driver	"Global Food"	"EU Food"	"Transatlantic Food"	"Pharma Food"
Global trade	Full liberalisation	Disrupted and fragmented	EU trade focus on the US & Canada	Full liberalisation
EU economic growth	Medium	Decoupled, GDP no longer used as indicator	Stagnation	High
Agro-food chain structure	Concentration	Diversification, alternative food chains	Concentration	Concentration
Technology uptake	High	High with focus on environmental sustainability	High	High with focus on nutrition & health
Social cohesion	Low	High	Limited to local community	High
Food values	Low	High with focus on local production & quality	Low	High with focus on nutrition & health
Climate change	2°C threshold of temperature increase will be reached by 2050			
Depletion of natural resources	Progressive natural resource depletion towards 2050			
World population growth	World population will increase to about 9 billion by 2050			

Scenarios

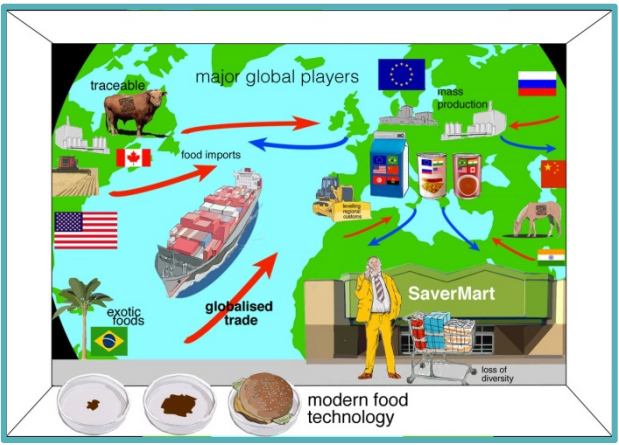
EU Food



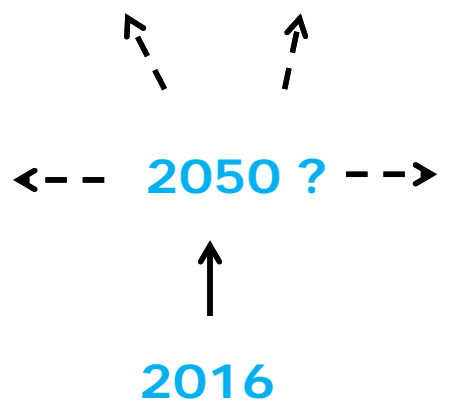
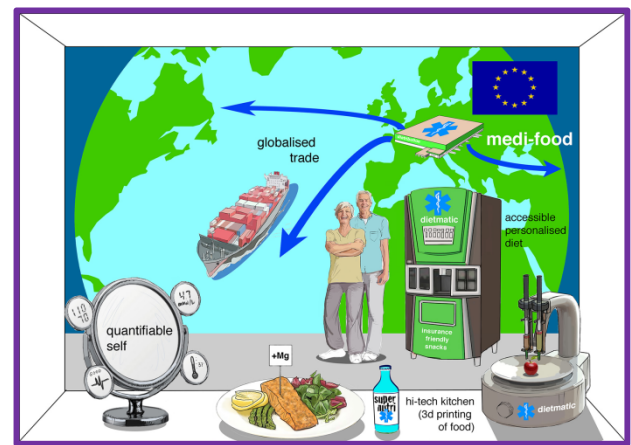
Transatlantic Food



Global Food



Pharma Food



Food safety and nutrition challenges

Challenge Title	"Global Food"	"EU Food"	"Transatlantic Food"	"Pharma Food"
Emerging biological risks:	■	■	■	■
a) The introduction of known pathogens causing (bio)chemical safety hazards in geographical areas where they were not previously known				
b) Differences in the virulence of microorganisms and parasites and the appearance of new strains				
Unavailability of quality water	■	■	■	■
The development of new alternative food sources i.e. insect proteins, in-vitro meat, 3D printed food and related technologies	■	■	■	■
Ability to perform official controls in different future food systems	■	■	■	■
Increased dependence on ICT technologies for ensuring traceability in the food chain and the possibility of temporary failure or fraud and terrorism	■	■	■	■
Failure to provide appropriate food safety information to the consumer	■	■	■	■
Provision of complex quality labelling information to the consumer and opportunity for fraud	■	■	■	■
Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (including suitability of exposure data and maximum residue levels)	■	■	■	■
Increased sedentary behavior and snacking due to changed lifestyle	■		■	■
Inadequate food safety and nutrition literacy, loss of food traditions and increased exposure to unreliable sources of information	■		■	■
Increased use of chemical substances in the food chain	■		■	
Increased exposure to chemicals and nano-materials from food contact materials migrating in food and from the environment via packaging waste	■		■	
Diets based predominantly on highly processed foods and decreased availability of fresh produce	■		■	
Intensive animal and plant production systems: Disease transmission and nutritional quality	■		■	
Safety challenges of processed and pre-packaged food: appearance of new processing contaminants and food-borne disease outbreaks			■	■
Food of different safety and quality classes	■			
Different handling of food in different establishments due to different food safety standards	■			
Re-introduction of food-waste and organic side-stream products in the food chain		■		
Introduction of environmental contaminants in the food chain from primary production in the urban environment		■		
Food safety responsibility in the hands of individual producers		■		
Decreased availability of fresh produce and food poverty in a self-sufficient food system		■		
Diets based exclusively on plant based products		■		
Imbalanced diets due to over-reliance on (perceived) "healthy foods" or specific dietary regimes		■		
The loss of technological knowhow in Europe			■	
Food chain impacts due to over-reliance on one or few trade partners			■	
Overconsumption of nutrients or other food ingredients				■
Increased consumer dependency on digital services for dietary choices				■
Potential drawbacks of personalised nutrition as a predominant dietary practice				■
Shift of responsibility for diets from consumer to counsellor/coaches				■

Prioritised challenges

Challenge Title	"Global Food"	"EU Food"	"Transatlantic Food"	"Pharma Food"
Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies including suitability of exposure data and maximum residue levels	■	■	■	■
Increased sedentary behaviour and snacking due to changed life-style	■		■	
Provision of complex quality labelling information to the consumer and opportunity for fraud	■			■
Ability to perform official controls in different future food systems	■			■
Food of different safety and quality classes	■			
Different handling of food in third countries due to diverging food safety standards	■			
Intensive animal and plant production systems: disease transmission and nutritional quality	■			
Failure to provide appropriate food safety information to the consumer		■		
Decreased availability of fresh produce and food poverty in a self-sufficient food system		■		
Re-introduction of food waste and organic side-stream products in the food chain		■		
Diets based exclusively on plant-based products		■		
Food safety responsibility in the hands of individual producers		■		
Inadequate food safety and nutrition literacy, loss of food traditions and increased exposure to unreliable sources of information			■	
The loss of scientific and technological knowhow in Europe			■	
Diets based predominantly on highly processed foods and decreased availability of fresh products			■	
Increased exposure to chemicals and nano-materials from food contact materials migrating in food and from the environment via packaging waste			■	
Safety challenges of processed and pre-packaged food: appearance of new processing contaminants and food-borne disease outbreaks				■
Potential drawbacks of personalised nutrition as a predominant dietary practice				■
Emerging biological risks: (b) Differences in the virulence of microorganisms and parasites and the appearance of new strains				■

Global Food: prioritised challenges

Main Prioritised Challenges

Differences in the handling of food in third countries due to diverging food safety standards

Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (including suitability of exposure data and current maximum residue levels)

Ability to perform official food-related controls

Increased sedentary behaviour and snacking due to changed lifestyles

&

Diets based predominantly on highly processed foods and decreased availability of fresh produce

Provision of complex quality labelling information to the consumer and opportunity for fraud

Global Food: Policy options

Main Prioritised Challenges	Potential policy options
<i>Differences in the handling of food in third countries due to diverging food safety standards)</i>	<ul style="list-style-type: none"> Building efficient food safety standards that also include implementation details Co-regulation or enforced self-regulation by food business operators
<i>Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (including suitability of exposure data and current maximum residue levels)</i>	<ul style="list-style-type: none"> Enhance collaboration between risk assessment bodies Horizon scanning to identify vulnerabilities in the supply chain
<i>Ability to perform official food-related controls</i>	<ul style="list-style-type: none"> Long-term funding mechanisms Expand third country controls Enhancing surveillance to ensure food safety during transportation Improving traceability using related technologies
<i>Increased sedentary behaviour and snacking due to changed lifestyles</i>	<ul style="list-style-type: none"> Fiscal measures Food reformulation and other incentives Zoning and other limitations Standards and guidelines for public procurement Funding of national and European food and diet related actions
<i>&</i>	
<i>Diets based predominantly on highly processed foods and decreased availability of fresh produce</i>	<ul style="list-style-type: none"> Improve nutrition education Improve the provision of nutrition information
<i>Provision of complex quality labelling information to the consumer and opportunity for fraud</i>	<ul style="list-style-type: none"> Harmonisation at international level

EU Food: prioritised challenges

Main Prioritised Challenges

Food safety responsibility in the hands of individual producers

Failure to provide appropriate food safety information to the consumer

Re-introduction of food waste and organic side-stream products in the food chain

Temporary shortages of fresh produce and food poverty in a self-sufficient food system

EU Food: policy options

Main Prioritised Challenges	Potential policy option
<i>Food safety responsibility in the hands of individual producers</i>	Expansion of the scope of the General Food Law and hygiene regulations and the related control implications to individual food producers
	Establishment of a list of "risk" products
	Food safety education
<i>Failure to provide appropriate food safety information to the consumer</i>	Social networks and ICTs
<i>Re-introduction of food waste and organic side-stream products in the food chain</i>	Expansion of the scope of General Food Law and feed hygiene regulations to individual producers
	Communal food waste handling or recycling centres
	Proactive education initiatives
<i>Temporary shortages of fresh produce and food poverty in a self-sufficient food system</i>	Emergency mechanisms for food re-distribution
	Quotas
	Proactive nutrition education

Transatlantic Food: prioritised challenges

Main Prioritised Challenges

Inadequate food safety and nutrition literacy, loss of food traditions and increased exposure to unreliable sources of information

Diets based predominantly on highly processed foods and decreased availability of fresh produce

The loss of scientific and technological know-how in Europe

Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (incl. suitability of exposure data and maximum residue levels)

Transatlantic Food: policy options

Main Prioritised Challenges	Potential policy option
<i>Inadequate food safety and nutrition literacy, loss of food traditions and increased exposure to unreliable sources of information</i>	Mandatory food safety and nutrition education
	Increase Trans-Atlantic Consumer Dialogue
<i>Diets based predominantly on highly processed foods and decreased availability of fresh produce</i>	Fiscal measures
	Food reformulation and other incentives
	Zoning and other limitations
	Standards and guidelines for public procurement
	Funding of national and European food and diet related actions
	Improve nutrition education
<i>The loss of scientific and technological know-how in Europe</i>	Improve the provision of nutrition information
	Addressing food governance barriers
	Reduce cost of regulatory compliance
	Improving consumer perception of innovation
<i>Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (incl. suitability of exposure data and maximum residue levels)</i>	Increased co-operation with food business operators
	Risk-benefit assessment and management
	Streamlining risk assessment by increasing the collaboration between all actors

Pharma Food: prioritised challenges

Main Prioritised Challenges

Potential drawbacks of personalised nutrition and "phoods"

Ability to perform official food-related controls

Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (incl. suitability of exposure data and maximum residue levels)

Pharma Food: policy options

Main Prioritised Challenges	Potential policy option
<i>Potential drawbacks of personalised nutrition and "phoods"</i>	Adapting or creating an effective regulatory framework
	Redefining health and nutrition claims
<i>Ability to perform official food-related controls</i>	Regulating "phood" manufacture: "Phood licence"
	Post-market monitoring and "nutrivigilance" controls
	Expand third country controls
<i>Suitability of the current EU risk assessment procedures for new food ingredients, food products and food-related technologies (incl. suitability of exposure data and maximum residue levels)</i>	Dealing with cumulative effects and long term exposure

Conclusions

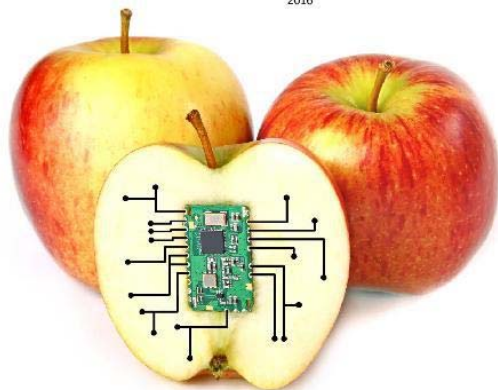
- The legislative framework governing food safety in the EU is robust, effective and efficient
- Action needed for improving the effectiveness of EU nutrition policies
- Harmonisation of risk assessment approaches to allow for the inclusion of other legitimate factors such as health benefits and socio-economic consequences
- A suitable and harmonised metric for benchmarking and monitoring food safety performance in the EU needs to be established
- An effective early warning system for emerging hazards at EU level is missing
- Adaptation of official control and inspection services to future needs
- Investment in providing food safety and nutrition education to the public

JRC SCIENCE FOR POLICY REPORT

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Jan Wollgast, Sandra Caldeira, Franz Ulberth

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<https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/delivering-eu-food-safety-and-nutrition-2050-future-challenges-and-policy-preparedness>



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