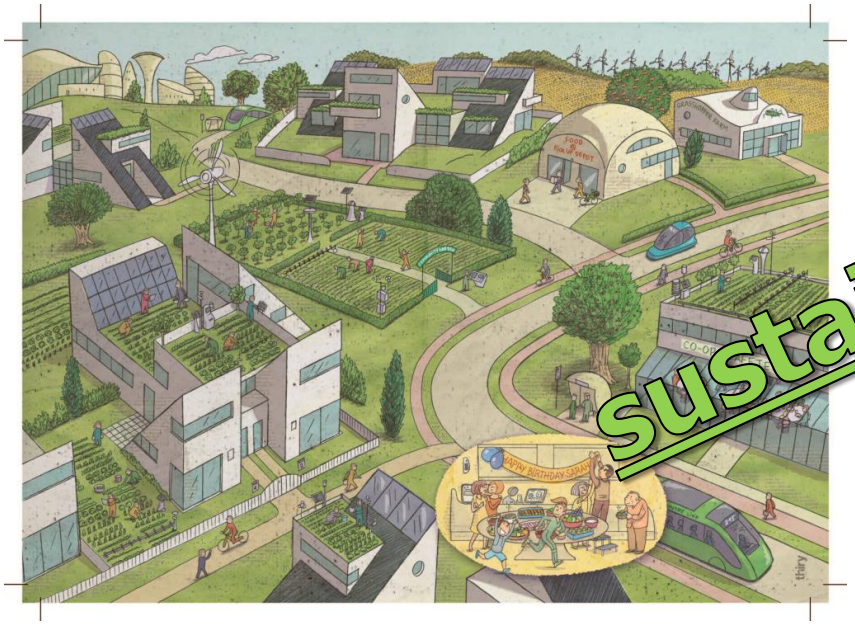
Tomorrow's food system –

Opportunities and Challenges ahead



sustainable

9th European Public Health Conference

12 November 2016, Vienna

European Commission
DG Joint Research Centre, Directorate F
Health, Consumers & Reference Materials

Petros A. Maragkoudakis, PhD
Scientific Project Officer

DG Joint Research Centre

Established in
1957

Around
3000
Staff

10
Directorates

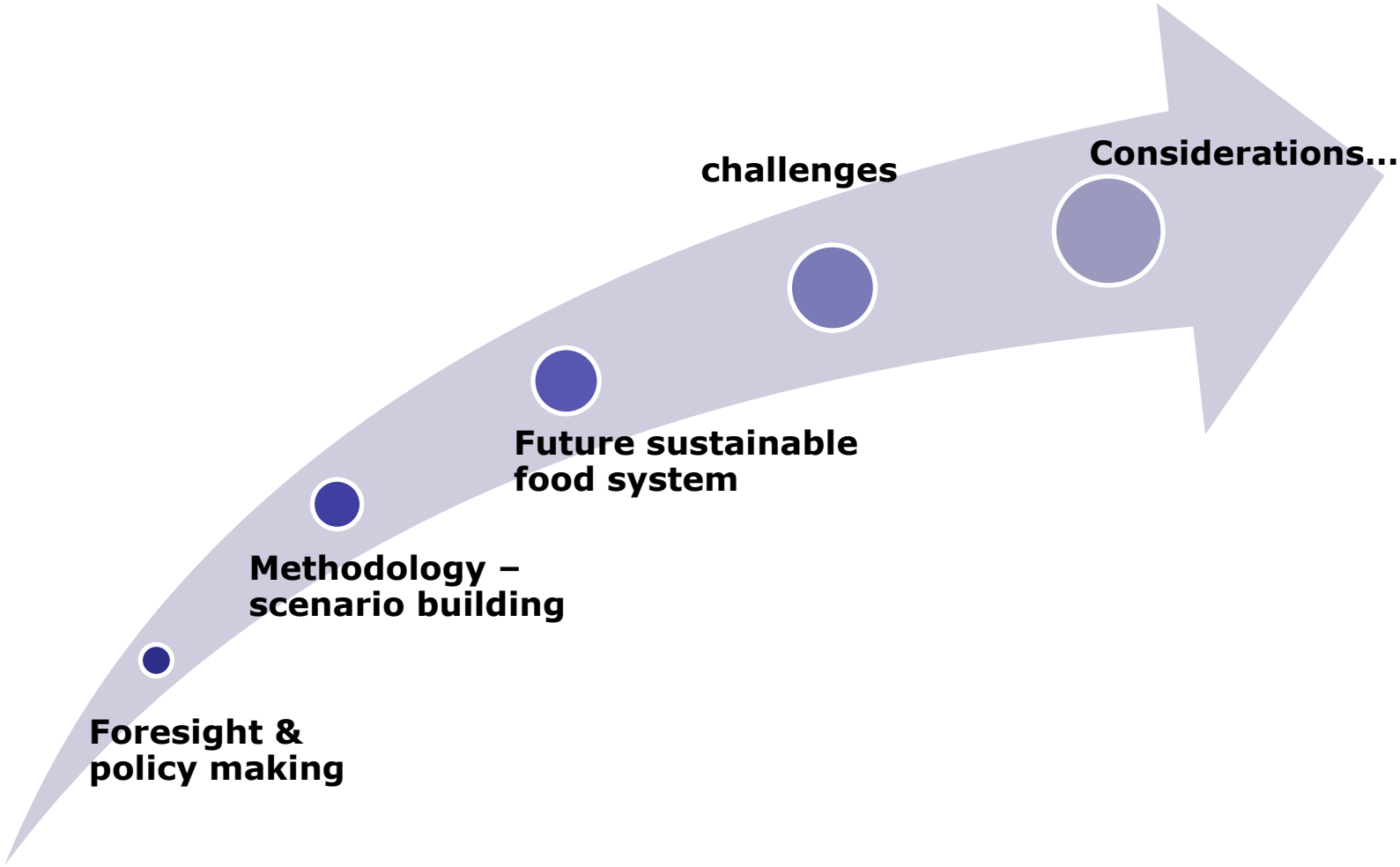
>1000
Publications per year

6
Locations in 5 Member States

- 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."*

Joint Research Centre

Content


Considerations…
challenges
Future sustainable food system
Methodology – scenario building
Foresight & policy making

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…

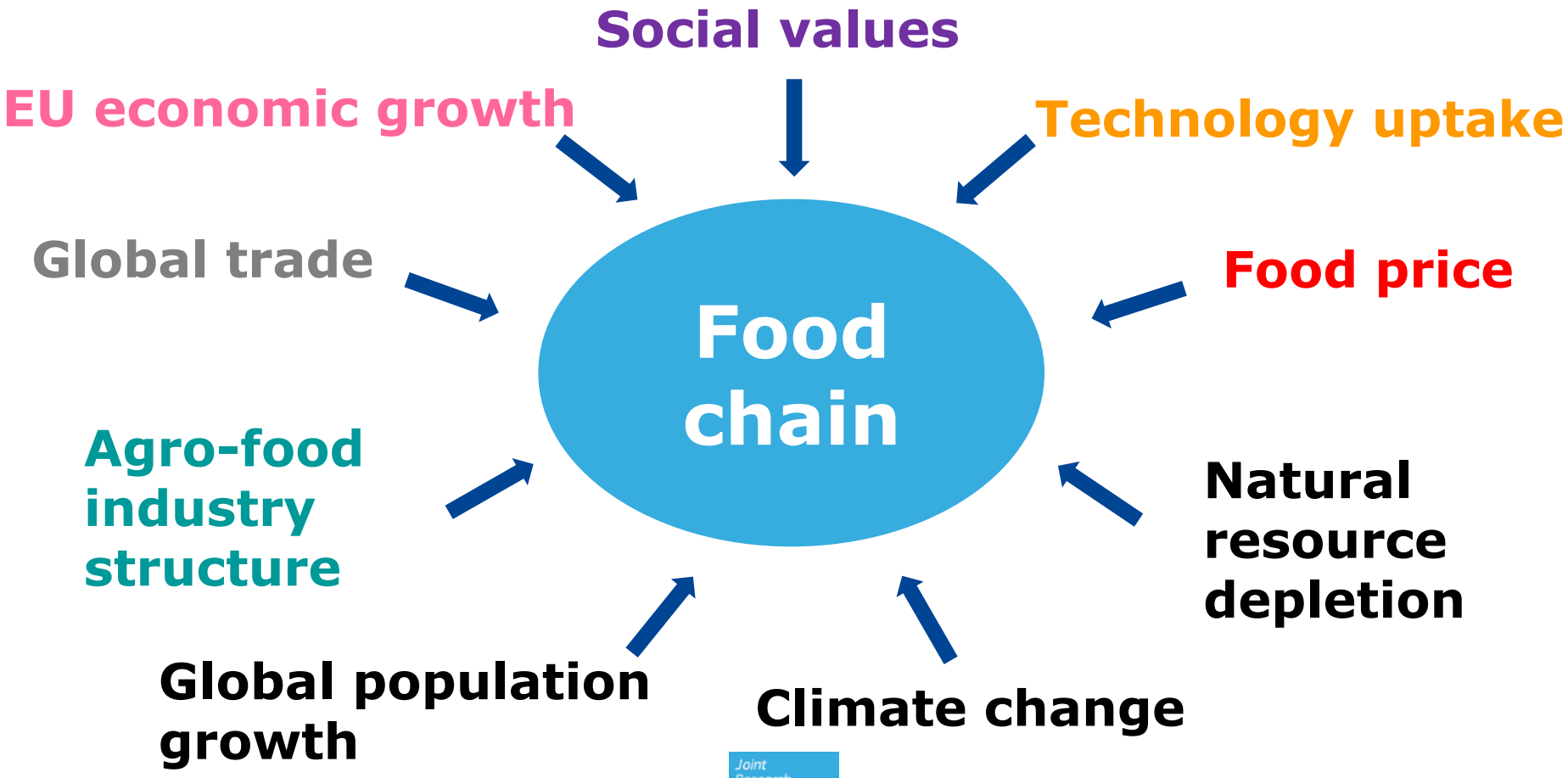
- **Plausible:**
  must fall within the limits of what might conceivably happen

- **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



The process...


Drivers
Scenarios
Future challenges
Analysis and results
Participatory workshops

Kalliopi Mylona, Petros Maragkoudakis, Anne-Katrin Bock, Jan Wollgast, Sandra Caldeira, Franz Ulberth

European Commission

"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)

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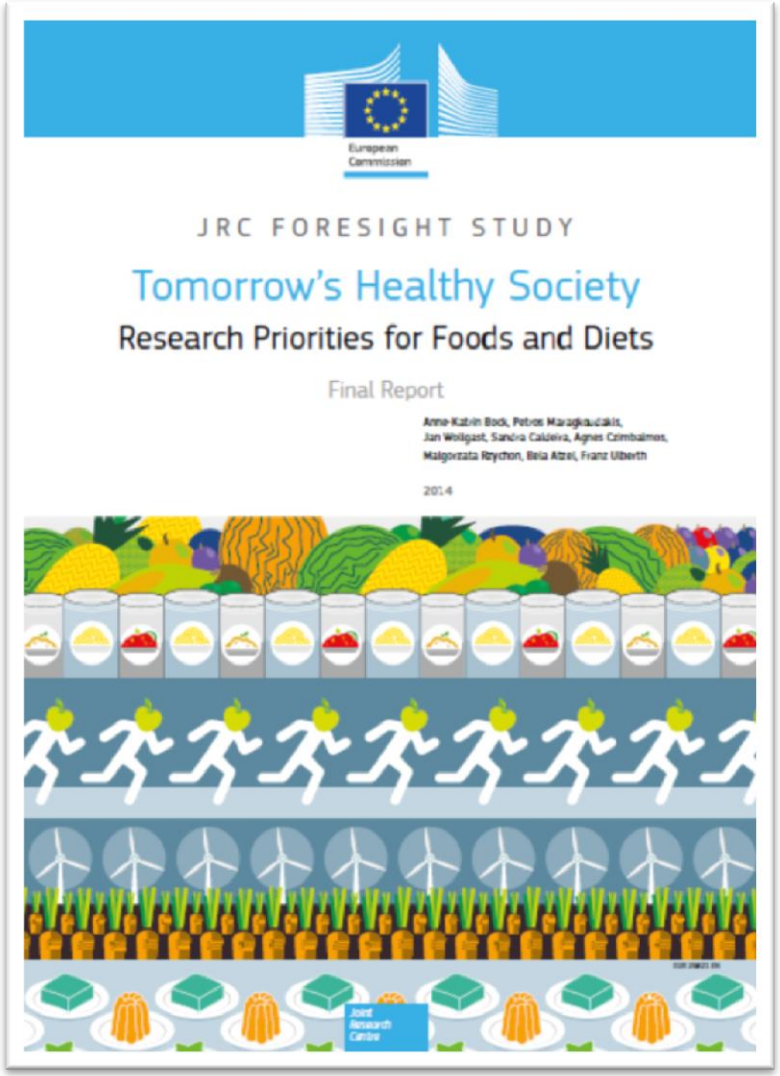

Anne-Katrin Bock, Petros Maragkoudakis, Jan Wollgast, Sandra Caldeira, Agnes Czimbalmos, Malgorzata Rzychon, Bela Atzel, Franz Ulberth

European Commission

"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 support the provision and consumption of healthy diets in 2050
- DG Research & Innovation, support implementation of Horizon 2020

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European Commission

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

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Little climate change mitigation

2030

Climate change impacts rural areas, agri-food chain

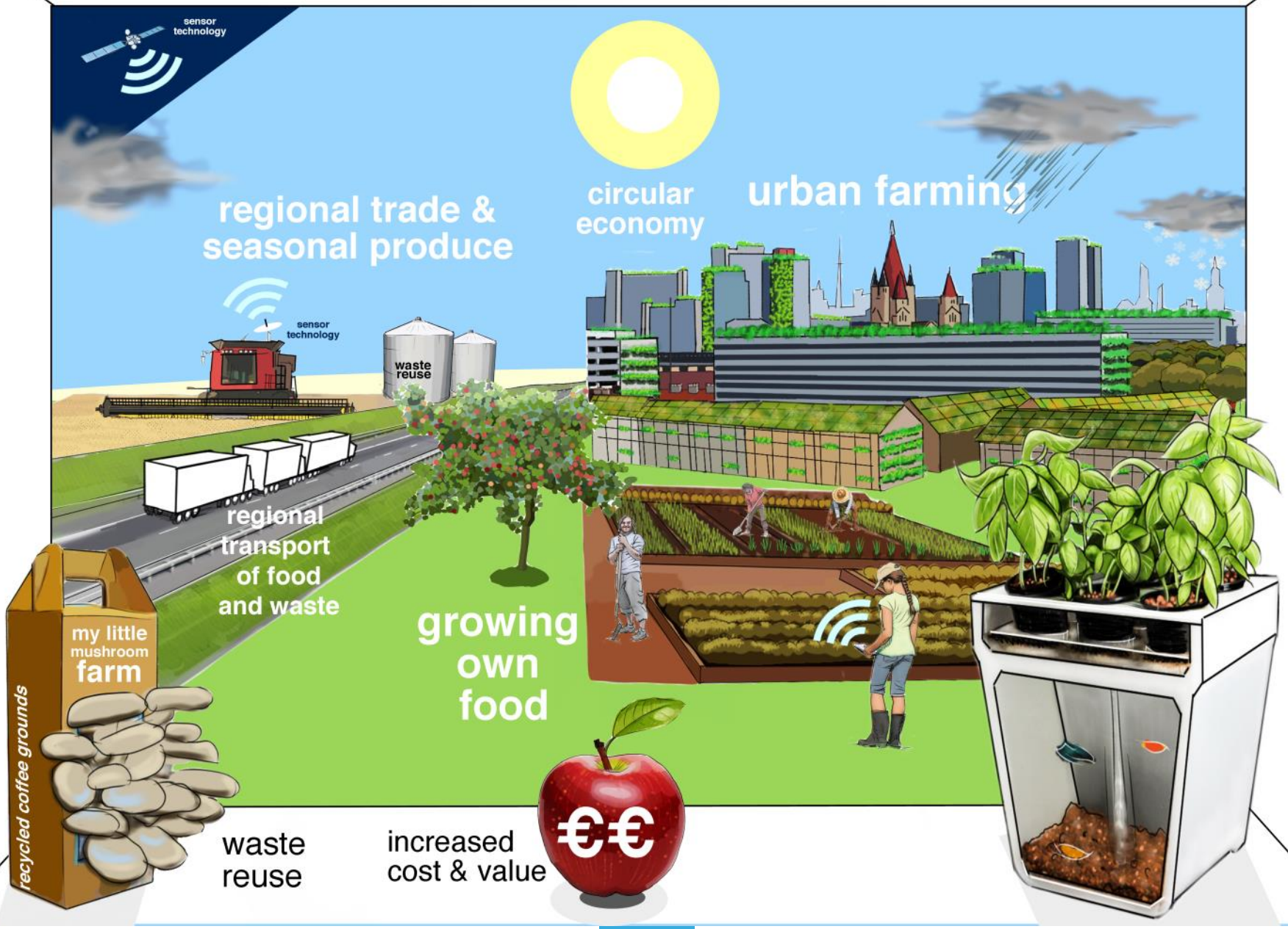
EU society reacts – environmental sustainability

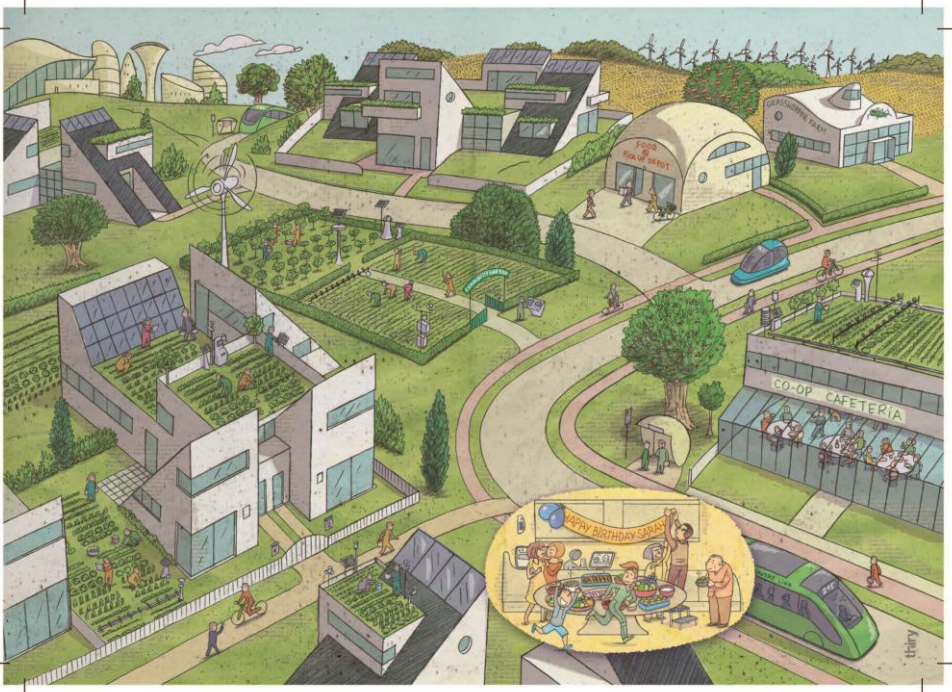
Uphill struggle for the EU

Profound resource scarcity

Trade disruptions – food safety scares

EU abandons international trade agreements


sensor technology
regional trade & seasonal produce
circular economy
urban farming
sensor technology
waste reuse
regional transport of food and waste
growing own food
my little mushroom farm
recycled coffee grounds
waste reuse
increased cost & value
€€



- High social cohesion, food valued
- Food choices driven by environmental considerations, health
- Strong governance, fiscal food policies (incentives/disincentives)

- 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 scal food production low industry concentrations, SMEs dominant
- Limited global trade

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

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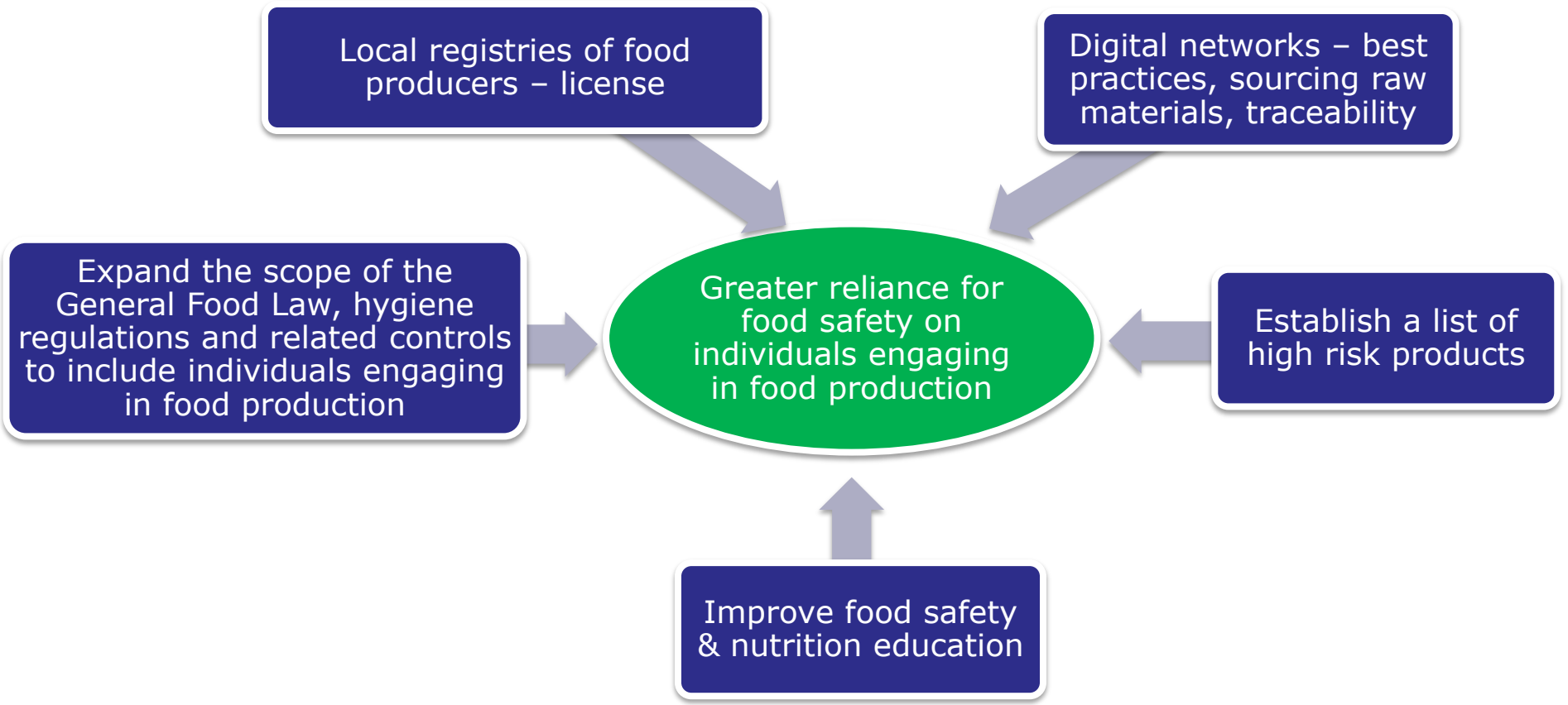
Policy responses



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)

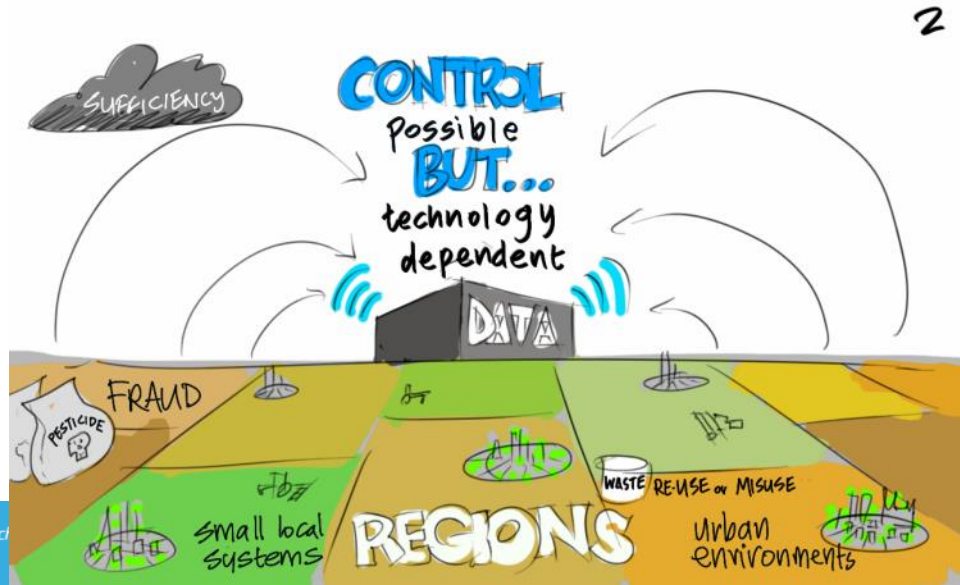
Developing of effective approaches for communication of novel technologies or food sources

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!

Petros A. Maragkoudakis, PhD
Scientific Project Officer

Joint
Research
Centre

Regional Food

- Climate change, natural resources depletion global population growth
- Fragmented global trade; intra EU – trade and bilateral agreemends – 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

Regional Food

Main Challenges	Policy Options
Greater reliance for food safety on individuals engaging in food production	Expand the scope of the General Food Law, hygiene regulations and related controls to include individuals engaging in food production
	Implement the registration and vaccination of all livestock
	Establish a list of "high-risk" products
	Improve food safety education
Failure to provide appropriate food safety information to the consumer	Promote the use of social networks and ICTs by individuals engaging in food production to provide food information to their peers
Re-introduction of food waste and organic side-stream products in the food chain	Expand the scope of the General Food Law and feed hygiene regulations to individuals engaging in food production
	Establish communal food waste handling or recycling centres
	Educate individuals engaging in food production on the re-use of food waste
Temporary shortages of fresh produce and food poverty in a self-sufficient food system	Establish emergency mechanisms for food re-distribution
	Introduce production quotas to ensure balanced diets during temporary shortages
	Educate consumers to ensure adequate nutrition during temporary disruption of fresh produce

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

Driver	"Global Food"	"EU Food"	"Partnership 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			

Table 10 – Driver developments in "EU Food" scenario	
Driver	**Main characteristics**
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
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: ○ Optimisation of existing technologies ○ Local and sustainable food production ○ Mitigation of resource scarcity and climate change ○ Renewable energy sources ○ Overcoming vulnerabilities of circular economy ○ 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