Food analysis: integral part of food safety policy in a changing world

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EU FOOD SAFETY LEGISLATION - PRINCIPLES

* Applies to all stages of the production, processing and distribution of food and also of feed produced for, or fed to, food producing animals **-"farm to fork" approach**

* a **high level of protection of animal and human health** has to be pursued

* **free movement** within the European Union of feed and food compliant with EU legislation

* **international standards** to be taken into account in food legislation

*** feed and food placed on the market shall be safe**

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IMPORTANCE – CHALLENGES FOR FOOD ANALYSIS

* **Farm to fork**: a wide range of matrices has to be analysed – from raw materials to composite feed and food → methods of analysis to be **applicable on a wide range of feed and food**

* To provide a high level of protection of animal and human health, strict regulatory levels are established → strict regulatory levels require **methods of analysis which are very sensitive**

* **free movement of goods within the EU** requires **analytical results are comparable across the EU**

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FOOD ANALYSIS – RECOGNITION OF IMPORTANCE IN EU LEGISLATION

* **Specific provisions in EU legislation** (Regulation (EC) 882/2004 – under review) **for methods of analysis** to be used in official feed and food control

* Regulation (EC) No 882/2004 provides also for the establishment of an **European Union Reference Laboratory** (EURL) / National Reference Laboratory (NRL) network in different areas of feed and food safety

* EURL/NRL network should contribute to a **high quality and uniformity of analytical tasks**

* the tasks and duties of the EURL/NRL provided for in the Regulation aim to achieve this objective.

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MANY CHALLENGES AHEAD

* **New EU-legislative** and other developments entailing new challenges for food analysis, e.g.

- engineered nanomaterial in feed and food
- novel food (e.g insects as food)
- food fraud
- improvement of crisis preparedness and management in the food and feed area
- climate change
- globalisation of trade (JRC Foresight study)
- …

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FOOD FRAUD

* Fight against food fraud strengthened in the proposed new Regulation on official controls (replacing Regulation (EC) 882/2004) → **strengthened official controls → specific challenges for methods of analysis.**

* **Appropriate analytical technology** for the detection of feed and food product adulteration **is essential** for an effective fight against fraud.

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CRISIS PREPAREDNESS AND MANAGEMENT IN THE FOOD AND FEED AREA

* **Crisis Management is a key component** of EU food safety policy founded on a robust legislative framework and enforcement tools
* **Reinforcement of crisis preparedness and management** in public health and in food safety – **priority** action of Commissioner Andriukaitis.
* Several actions envisaged e.g. improved traceability , EFSA assistance, improved procedures RASFF, improved risk communication, …

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CRISIS PREPAREDNESS AND MANAGEMENT IN THE FOOD AND FEED AREA

→ **the availability of methods of analysis** providing quick and reliable analytical results at a reasonable cost and sufficient testing/analytical capacity in the EU **is key** for an effective management of contamination event in the feed and food area.

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CLIMATE CHANGE

Climate change – more extreme weather conditions → **new pests and diseases, increased prevalence of certain pests and diseases** – challenges for food analysis pathogen diagnosis e.g.

* **Increased prevalence of mycotoxins** (aflatoxins, deoxynivalenol, zearalenone and fumonisins) in cereals and cereal products : higher frequency of controls to check compliance with EU legislation and to ensure that only safe feed and food is placed on the EU market

* **Large scale outbreaks of new invasive plant pests** like pinewood nematode, red palm weevil and more recently Xylella in olive trees.

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FORESIGHT STUDY (SANTE, JRC)

New challenges and emerging risks could put the currently successful European feed and food system under severe stress.

To ensure the sustainability of the EU feed and food safety system in the face of these emerging challenges → a foresight project has been launched

"Delivering on EU food safety and nutrition in 2050 – Future challenges and policy preparedness"

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FORESIGHT STUDY: DRIVERS

* **Global economy and trade**
* Cooperation and standard setting
* EU governance
* Demography and social cohesion
* Consumer attitudes, **new agri-food chains, new food chain technologies**
* Competition for key resources
* **Climate change**
* **Emerging food chain risks and disasters**

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4 scenario's as a tool for identifying future challenges and today's actions

- Scenario 1: Liberalised trade and global food chain (as expected now)
- Scenario 2: Localisation/regionalisation/ homesteading (slow food world)
- Scenario 3: Transatlantic trade block
- Scenario 4: High tech world – phood : pharma and food converge

Scenario building

Different directions of the drivers have been combined so as to achieve plausible, consistent, challenging and distinct scenarios

Driver	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Global Trade	Full liberalisation	Fragmented	Transatlantic trade	Full liberalisation
Technology uptake	High	Focus on sustainability	High	High with health focus
Agro-food industry	Concentration	SMEs, alternative food chains	Concentration	Concentration
Food values	Low	High	Low	High
Economic growth	Medium	Decoupled	Low	High
Social cohesion	Low	High	Medium (local)	High
Climate change, nat. resources	Severe climate change and resource shortages			
Population growth	World population 9 billion by 2050			

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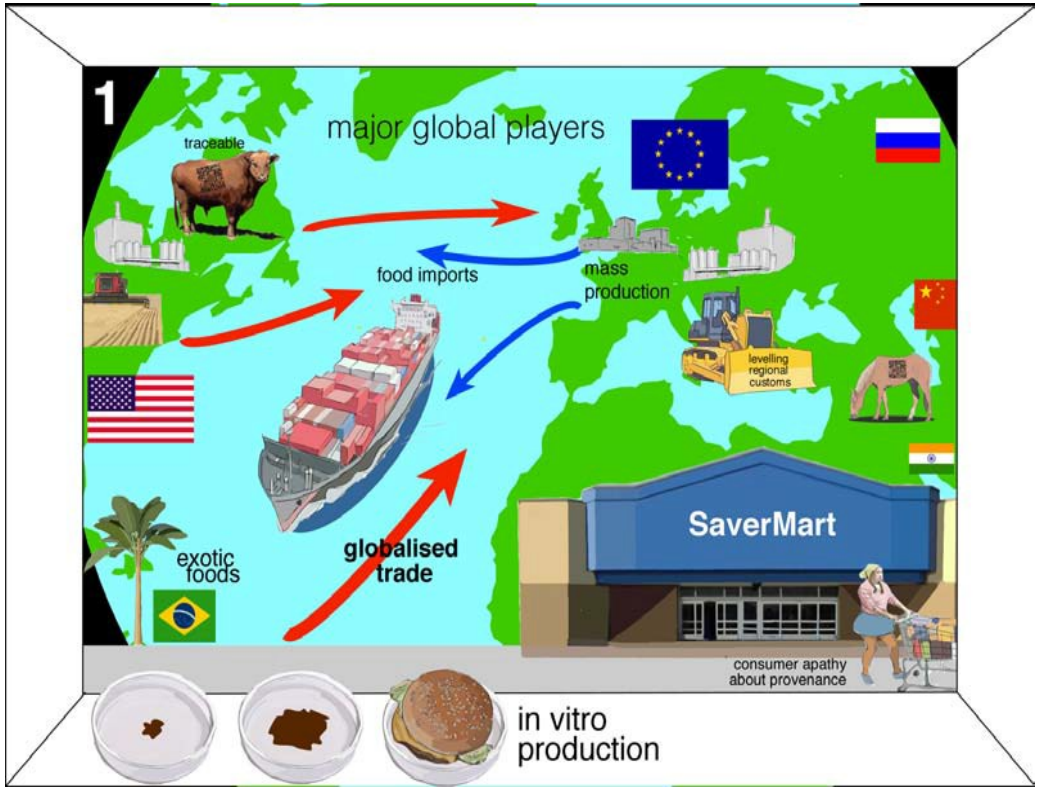
Scenario 1: Liberalised trade and global food chain (as expected now)

- Liberalised trade and global food chain
- EU one of many players
- Raw materials sourced globally– long complex food chains
- **Broad technology acceptance**
- **Concentration of agro-food industry; mass production of processed, affordable foods**
- **Diets driven by price, taste, convenience**
- **Health and Social Inequalities**
- **CC, natural resources depletion, global population growth**



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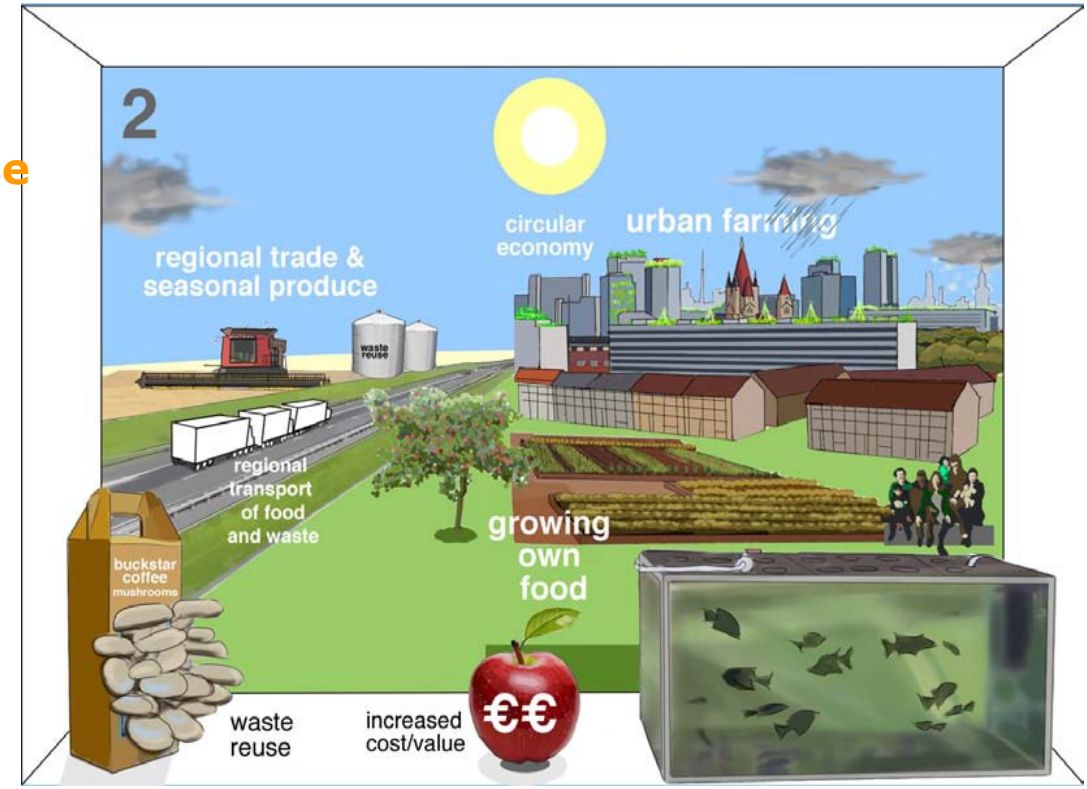
Scenario 2: slow food world

- Localisation/regionalisation/ homesteading
- Technology for sustainable use of resources
- Mix of large entities and localised food production
- High social value of food; diets low in animal protein
- Strong sense of communal values and community responsibility
- CC, natural resources depletion global population growth



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Scenario 3: Transatlantic trade block

- Economic stagnation in EU
- Transatlantic trade block
- Novel technologies are imported, and accepted
- Big corporations dominate food chain (efficient mass production)
- Price and convenience drive food choice, trans-atlantic food culture
- Inequalities
- CC, natural resources depletion, global population growth

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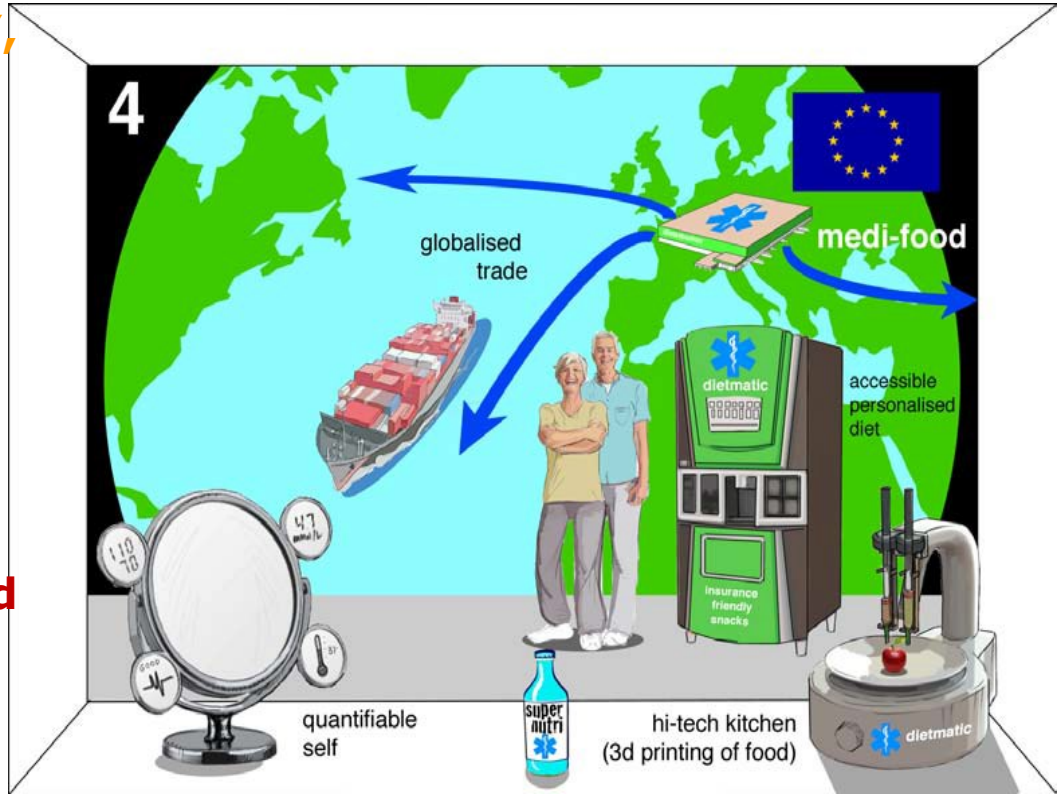
Scenario 4: High tech world – phood : pharma and food converge

- **High-tech world – maximise HLY, CC adaptation, diversity**
- **"Phood": Pharma & food sectors converge + ICT; concentration**
- **EU is a strong player worldwide**
- **Global trade and global food chains**
- **Health is the main driver for food choices, personalised nutrition**
- **Social well-being?**
- **CC, natural resources depletion, global population growth**



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POTENTIAL CHALLENGES INCLUDING ALSO FOR FOOD ANALYSIS (1)

Intensive primary food production systems

- Increased use of agro-chemicals and veterinary drugs to control disease transmission:

- Increase of antimicrobial resistance and more residues in primary produce (Scen. 1,3,4)

- Recycling of organic waste (Scen. 2)

New/alternative food sources

- Safety of novel protein sources such as insects, microorganisms, plants etc. (all Scen.)
- Allergenicity of pure food components used in new food production processes such as 3D printing (Scen. 4)

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POTENTIAL CHALLENGES INCLUDING ALSO FOR FOOD ANALYSIS (2)

Food retail

- ***Complex food labels*** (all scen.)

- New processes, novel materials, voluntary and obligatory schemes, additional requirements (e.g. ethical, environmental footprint)
- New forms of retail affect labelling
- Increasingly complex food labels; impact on consumer understanding

Nutrition and diet

- ***Misuse of functional or "phoods"*** (Scen. 4):

- Misconception of eating "healthily" – overconsumption of nutrients, calories;
- Health risks - unforeseen interactions of combinations of active components in body (cocktail effect);
- Consumer segregation - cheaper alternatives potentially of lower safety/quality

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POTENTIAL CHALLENGES INCLUDING ALSO FOR FOOD ANALYSIS (3)

Consumers

- ***Unregulated food chains*** (Scen. 1 & 3):

- Not all consumers may accept extensive use of novel technologies
- Part of population, looking for alternatives, may turn to unregulated, parallel food chains
- Lack of knowledge for food production, lack monitoring systems
- Food safety and nutrition quality risks
- Loss of cooking skills (Scen. 1, 3 & 4)

- ***Loss of social value of food***

- Over-reliance/dependence on technology,
- Weakening of ability to make healthy food choice- low-quality diet risk
- Loss of knowledge for hygienic preparation of food – food safety risks

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Globalisation of trade – specific challenges for food analysis

Increased globalisation of trade → challenges for analysis

* **comparability of analytical results** obtained in country of origin and at import
* imports from new suppliers, sometimes with limited knowledge on production conditions, might entail unknown risks: **need for reliable, untargeted analysis to identify and to detect unknown risks.**
* need for quick and reliable analysis at import necessary (see next slide)

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Globalisation of trade – specific challenges for food analysis

* need for quick and reliable analysis at import necessary

- in case **lot is not detained pending analysis** :

→ late analysis in case of non-compliance can have large consequences as regards the safety of consumer (in case food already consumed) and can result in huge economic costs/damage in case large recalls of non compliant food is required.

- in case the **lot is detained pending analysis**

→ late analysis can have large consequences as regards the deterioration of the quality and safety of the sampled lot pending analysis and result economic cost/damage of blocking the goods for a longer time pending analysis: time is money! Seasonal products / delivery just in time**.**

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Final remarks

* Importance of food analysis in EU food safety policy
* A snapshot of the challenges ahead for food analysis
* This international Symposium on recent advances in food analysis provides a very useful contribution to meet the current and future challenges of food analysis !

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THANK YOU FOR YOUR ATTENTION !

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