

# Food and Nutrition Security and Agriculture – the European perspective from EASAC

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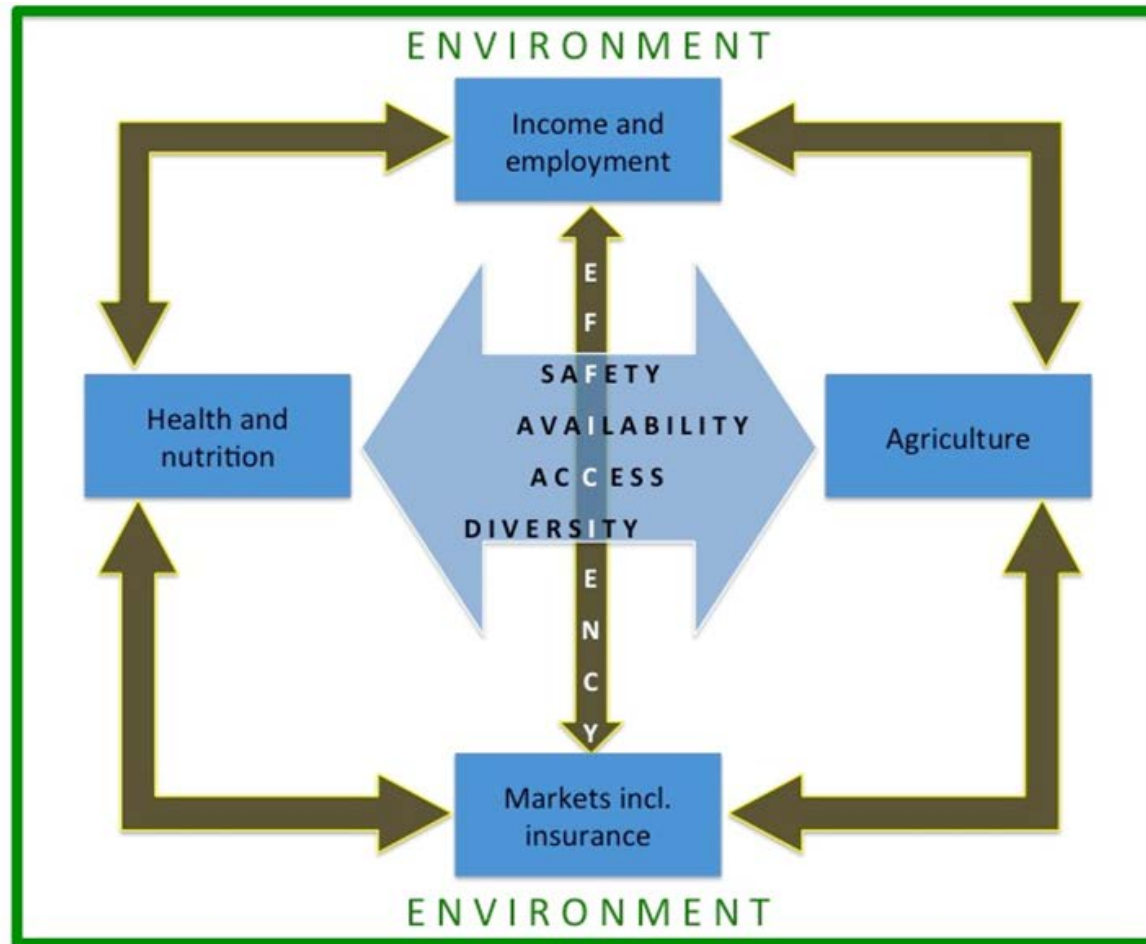
# EASAC and FNSA project in Europe

- In this IAP project, as the regional academy network partner, EASAC has **wider European remit**, beyond EU
- **EASAC** history of interest: e.g. crop genomics and breeding techniques, ecosystem services and environmental sustainability, human and animal health, emerging technologies
- Starting point used IAP template: **food systems approach**
- Incorporating demand- and supply-side issues, covering nutrition dimensions
- Attention to **emerging opportunities and challenges for sciences**, e.g. digitization, biology, human behaviour, environmental and climate change, big data

# EASAC project procedures to produce consensus report

- Discussion with other regional academy networks (NASAC, AASSA, IANAS) to agree common objectives and template of issues to guide analysis
- Scope agreed by EASAC Biosciences Steering Panel and Council
- **EASAC Working Group** experts nominated by academies
- Main expert discussions April 2016 - April 2017
- Independent **peer review** of draft by academy-nominated experts
- Final draft **endorsed by EASAC member academies**, October 2017, published December 2017
- EASAC conclusions and recommendations discussed with other regional academy networks February 2018

# Conceptual framework for research within the **food systems** context



# How to increase efficiency of food systems?

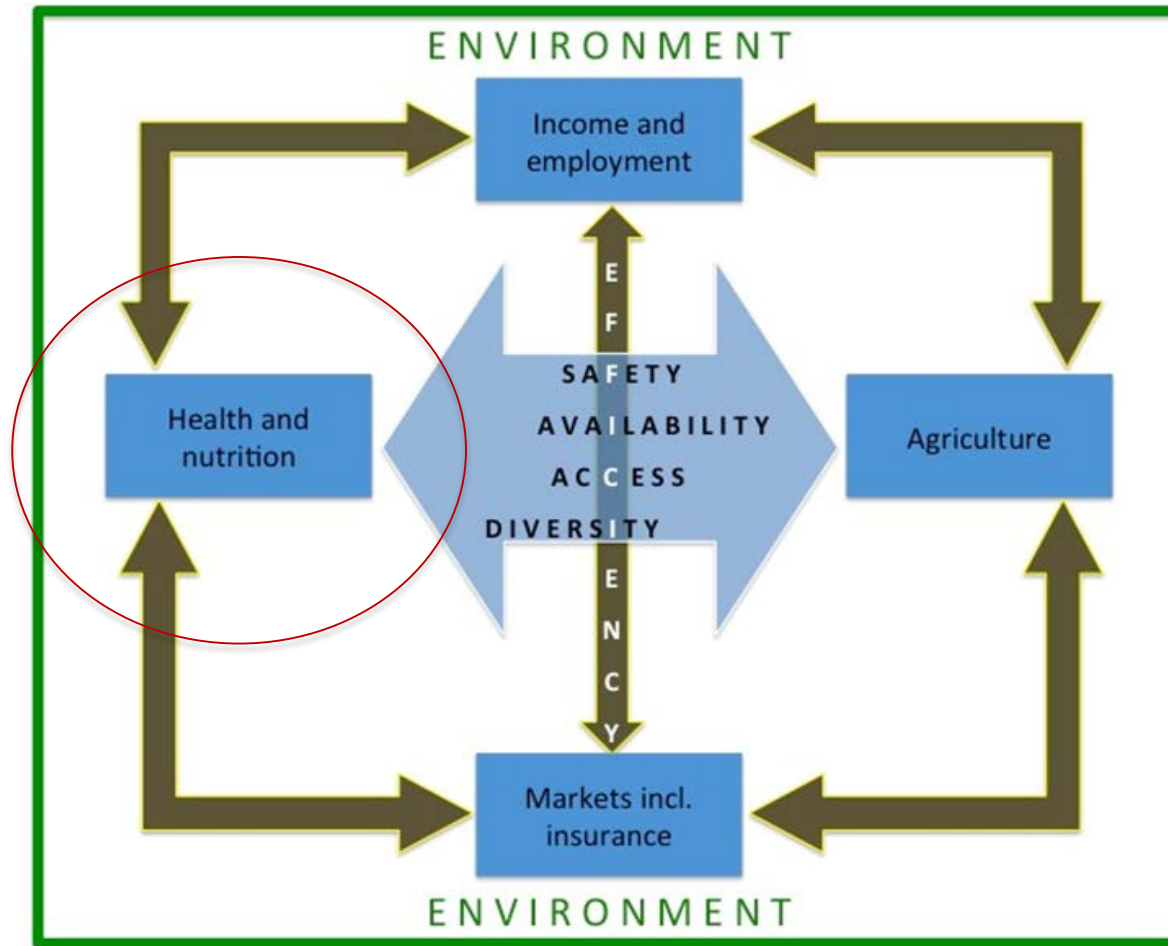
## Recommendations from EASAC analysis

- **Agricultural productivity** – issues for sustainable intensification and minimising pressures on natural resources
- Collecting more robust data on tackling **food loss and waste** (including over-consumption)
- **Transformation toward Circular Economy and Bioeconomy**
- Characterising sources of **food contamination** and applying advances in food science and technology – and addressing issues for **food safety** in processing, distribution and storage; new analytical tests to authenticate **food origin and quality**
- Taking account of **cross-cutting issues**, e.g. **digitalisation** and using big data, impacts of **climate change** (adaptation and mitigation)

## Recommendations for understanding markets and their instability in the globalised food system

- Increasing commitment to data collection on trade flows and prices with **modelling and analysis of databases**
- Examining linkages between **extreme events** and price volatility, evaluating the effects of **regulatory policy instruments and subsidies** in agricultural commodity markets and price transmission between global markets and local food systems.
- Ascertaining the science agenda for understanding the characteristics of fair rule based **trade systems**, for example the non-tariff conditions associated with variation in regulatory policy, labelling or food safety requirements

# Conceptual framework for research within the food systems context



# Issues for food and nutrition security are vitally important for tackling SDGs

- The SDGs provide important framework for understanding and meeting the challenges but require fresh engagement by science to **resolve the complexities** of evidence-based policies and programmes.
- The IAP principal themes for food and nutrition security and agriculture map onto **multiple SDGs** (not only SDG 2 - end hunger, improve nutrition, sustainable agriculture).
- Science based **innovations** needed to achieve SDGs



# Agricultural innovation



# Food system efficiency



# Nutrition, public health



# Competition for land



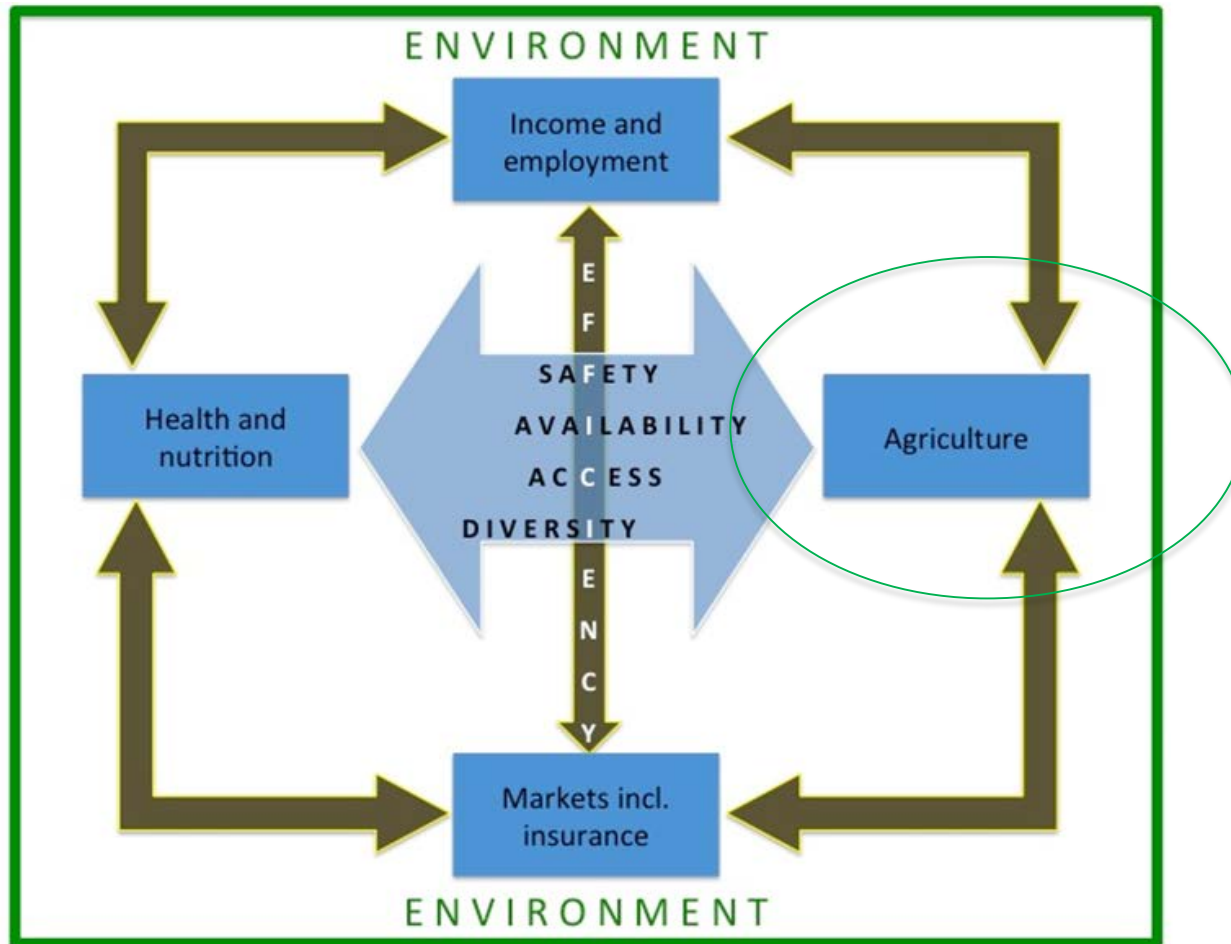
# FNSEA & the environment



# Nutrition, food choices and public health: Recommendations from EASAC analysis

- Better **data systems**, e.g. on food consumption patterns and links with health
- Understanding how to inform and change **consumer behaviour**
- Better integration of **agriculture and health** agendas and targets
- Rapidly advancing science across multiple disciplines, e.g. **personalised nutrition, human gut microbiomics**: implications for policy and practice
- Developing innovative foods and diets – but how to define and measure what is a **sustainable healthy diet?** (e.g. climate change and European meat consumption...implications for a healthy diet)

# Conceptual framework for research within the food systems context



# Agricultural innovation and aquatics: Recommendations from EASAC analysis

- Requirements for taking **comprehensive ecological approach** to improving agronomic practice: broad opportunities for social and technological innovation (biosciences and precision agriculture)
- **Livestock** production and improved crop **plant breeding**: new opportunities, e.g. **genomics**, and need proportionate, evidence-based regulation to enable future innovation
- Also multiple opportunities for food and biomass from **oceans**, e.g. improving knowledge base for sustainable culturing of lower trophic level **marine resources**; exploring potential for biomass provision to diminish pressures on land, freshwater and fertilisers

## Managing competition for land use and other natural resources: Recommendations from EASAC analysis

- Efforts to increase food systems efficiency should not depend on agricultural productivity achieved by ignoring **environmental costs**
- Opportunities to co-design research across disciplines for **nexus food-water-other ecosystem services** and provide scientific basis to coordinate relevant EU policy instruments, e.g. **CAP future**, Water Framework Directive, Habitats Directive
- **Soils** – scientific opportunities to characterise functions of soil microbiome, and support cost-effective soil monitoring and management, including for carbon sequestration
- Issues for **bioeconomy** are relevant to many sectors, e.g. potential competition between food and bioenergy production

# Some emerging **strategic dimensions** from EASAC analysis of FNSA

- Critical interface between research on **nutrition-sensitivity of food systems and on environmental sustainability**
- Focus on food and nutrition security cannot only be on populations but also **vulnerable groups**, e.g. mothers, children, elderly, patients, migrants
- **Large data sets** are a vital tool throughout food system
- **CAP reform** toward rebalanced priorities – from income subsidies to innovation and sustainability
- **Research and innovation agendas** need to recognise importance of:
  - Long-term commitments to basic research and multidisciplinary research
  - Evidence-based, proportionate and flexible regulatory frameworks

# Impacts of Europe on other regions – Europe's responsibilities

- **Academies** will continue to emphasise the importance of being more ambitious in generating, using , and sharing scientific information - at national, regional and global levels
- Present work by EASAC identifies relevant issues for **inter-regional collaboration** and spill over of impacts. For example:
  - Building inter-regional **R&D partnerships** on FNSA of global importance
  - Understanding **spill over of European choices** on agriculture and resources outside of Europe and impact on other regions of EU policy decisions

# Selected EASAC report highlights

1. ***Diet and health*** – options for changing eating habits; healthy production and processing
2. ***Agriculture and climate*** - sensitive approaches; land use
3. ***Marine resources/aquaculture*** –fisheries; cultivation of algae
4. ***Food safety*** – including antibiotics issues
5. ***Reform of Common Agricultural Policy*** – to focus on innovation, sustainability, public goods
6. ***Bioeconomy / Circular Economy*** - FNA being part of transformations
7. ***Importance of basic research*** –driving innovation
8. ***Connecting scientific evidence base to policy*** – with science in society - strengthening trust, participation, understanding