

EU food system assessment, metrics and visualization

And integrated approach

Dr Monika Zurek
Environmental Change Institute, University of Oxford



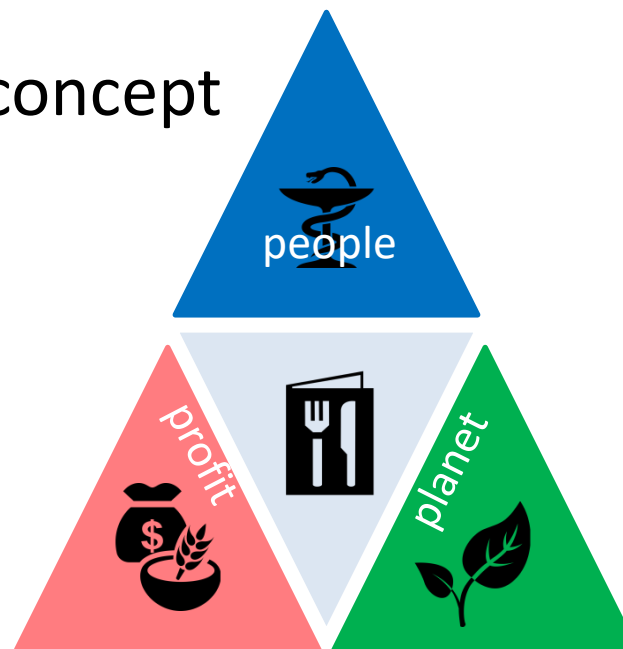
European *sustainable* food and nutrition security

Food and nutrition security in EU

World Food Summit, 1996

+

Sustainability concept











An approach for enabling a new debate on and monitoring food system change – WP1

1. The creation of a **participatory environment**;
2. The development of a **conceptual framework** mapping out the driving forces, actors, outcomes and goals for the EU food system (Zurek et al. 2016);
3. An approach to devising a set of **performance metrics** for assessing the food system's status and **innovation options** across four key policy goals formulated by food system actors (Zurek et al. 2017);
4. A **modelling strategy** for quantifying the sustainability status of FNS in the EU/performance metrics (Kuiper et al. 2017);
5. A **visualization tool** that allows food system actors to assess the outcomes and associated trade-offs of possible innovation options in an integrated manner across the policy goals (the SFNS visualizer) (Zurek et al. 2018).



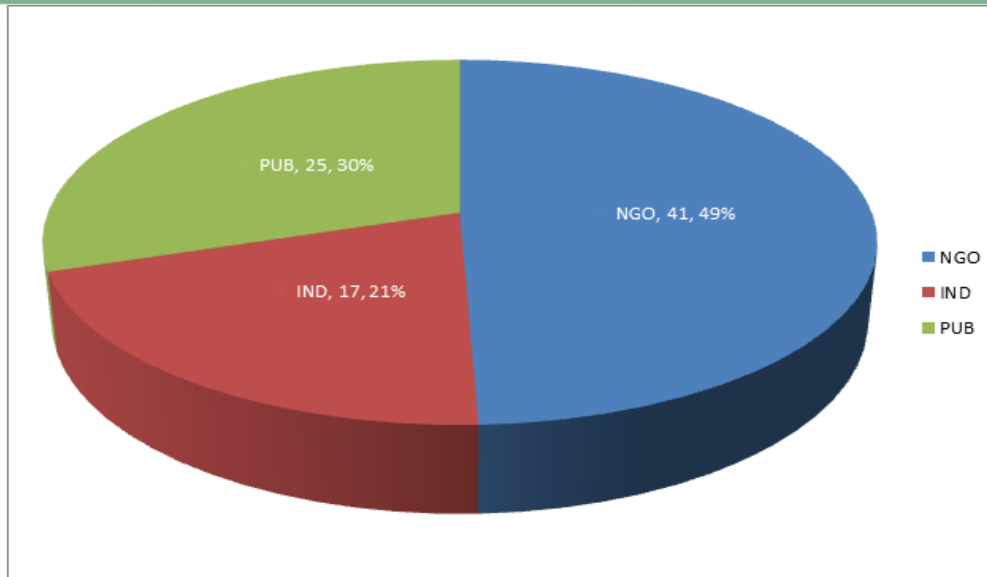
Article

Assessing Sustainable Food and Nutrition Security of the EU Food System—An Integrated Approach

Monika Zurek ^{1,*} , Aniek Hebinck ^{1,2} , Adrian Leip ³ , Joost Vervoort ^{1,4}, Marijke Kuiper ⁵, Maria Garrone ⁶ , Petr Havlík ⁷, Thomas Heckeley ⁸, Sara Hornborg ⁹, John Ingram ¹ , Anneleen Kuijsten ¹⁰ , Lindsay Shutes ⁵, Johanna M. Geleijnse ¹⁰ , Ida Terluin ⁵, Pieter van 't Veer ¹⁰, Jo Wijnands ^{5,†}, Andrea Zimmermann ^{8,11}  and Thom Achterbosch ⁵

- ¹ Environmental change Institute, University of Oxford, Oxford OX1 3QY, UK; aniek.hebinck@su.se (A.H.); j.m.vervoort@uu.nl (J.V.); john.ingram@eci.ox.ac.uk (J.I.)
- ² Stockholm Resilience Centre, Stockholm University, 10405 Stockholm, Sweden
- ³ European Commission, Joint Research Centre, I-21027 Ispra (VA), Italy; adrian.leip@ec.europa.eu
- ⁴ Copernicus Institute of Sustainable Development, University of Utrecht, 3584 CB Utrecht, The Netherlands
- ⁵ Wageningen Economic Research, 2595 BM The Hague, The Netherlands; marijke.kuiper@wur.nl (M.K.); lindsayshutes@gmail.com (L.S.); ida.terluin@wur.nl (I.T.); thom.achterbosch@wur.nl (T.A.)
- ⁶ LICOS—Centre for Institutions and Economic Performance, KU Leuven University, 3000 Leuven, Belgium; maria.garrone@kuleuven.be
- ⁷ Ecosystems Services and Management Program, International Institute for Applied Systems Analysis, 2361 Laxenburg, Austria; havlikpt@iiasa.ac.at
- ⁸ Institute for Food and Resource Economics, University of Bonn, 53115 Bonn, Germany; thomas.heckelei@ilr.uni-bonn.de (T.H.); andrea.zimmermann@fao.org (A.Z.)
- ⁹ Agrifood and Bioscience, RISE Research Institutes of Sweden, 40229 Gothenburg, Sweden; sara.hornborg@ri.se
- ¹⁰ Division of Human Nutrition and Health, Wageningen University, 6700 AA Wageningen, The Netherlands; anneleen.kuijsten@wur.nl (A.K.); marianne.geleijnse@wur.nl (J.M.G.); pieter.vantveer@wur.nl (P.v.V.)
- ¹¹ Trade and Markets Division, Food and Agriculture Organization of the United Nations, 00153 Rome, Italy
- * Correspondence: monika.zurek@eci.ox.ac.uk; Tel.: +44-(0)1865-285531
- † Jo Wijnands passed away.

1. The participatory environment: Stakeholder core group (SCG)

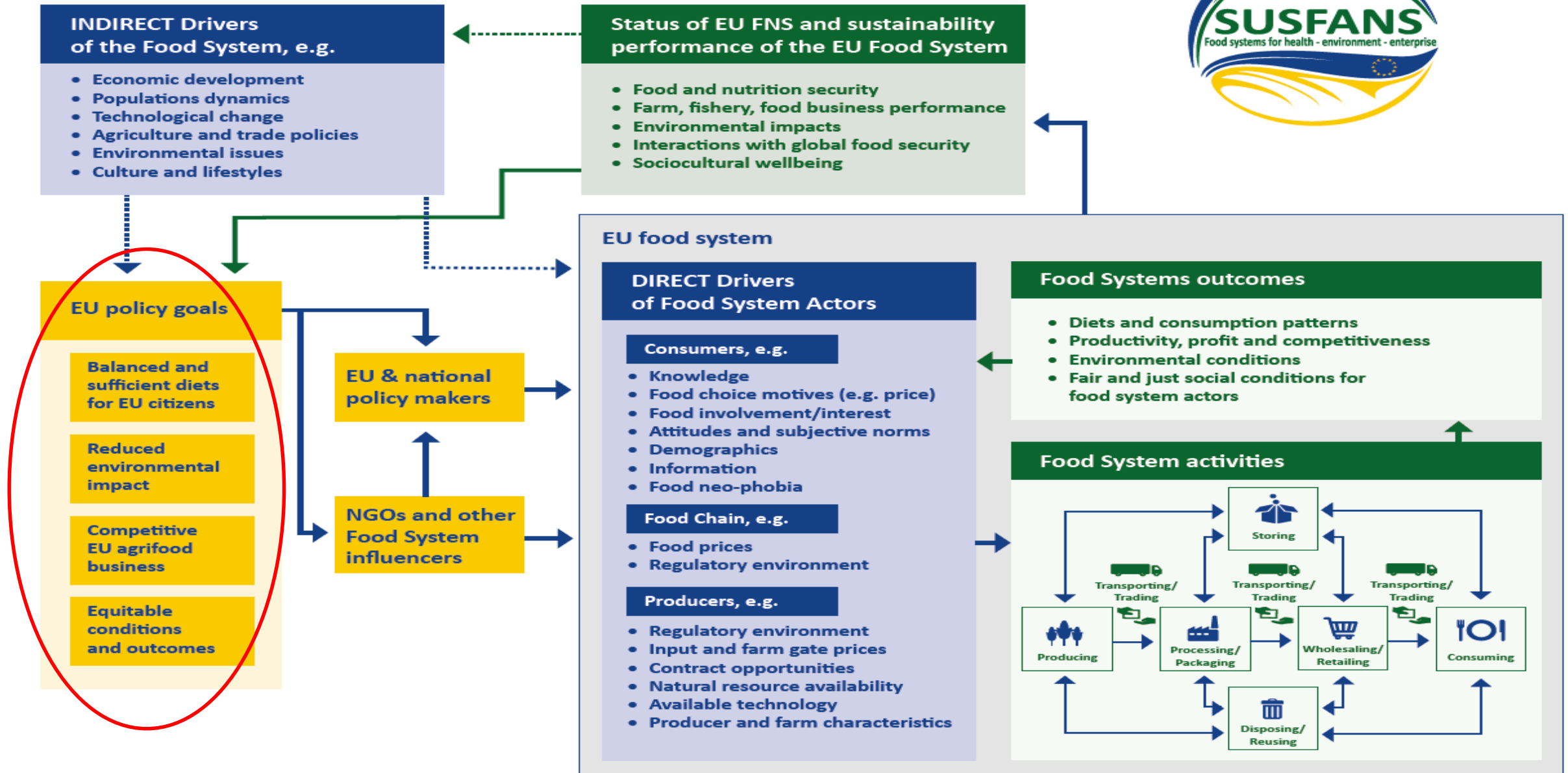


35 members in the Stakeholder Core Group from the public sector, food industry and NGOs

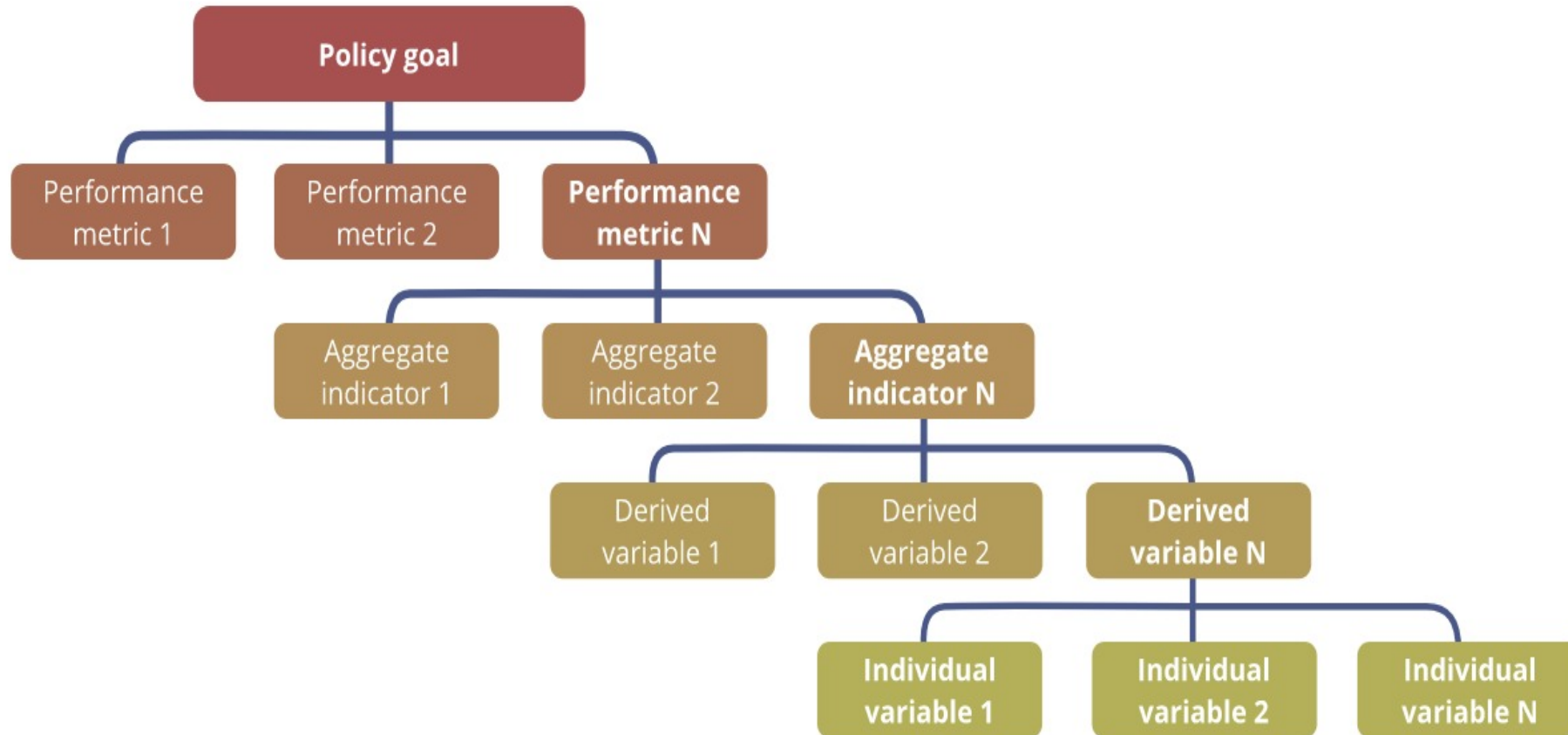
- 4 meetings:
- 1) conceptual framework, driving forces, approach to metrics
 - 2) performance metrics, scenarios for the EU food system
 - 3) innovations in the livestock and fish sector
 - 4) consumer research and innovations in the fruit and vegetable sector, overall findings and messages emerging from the project and how to relay them

Feedback/questions in-between meetings

SUSFANS Conceptual Framework for Assessing EU Sustainable FNS



Metrics hierarchy for assessing sustainability performance of food system across societal goals and outcomes



SUSFANS performance metrics for EU food systems

Note: hypothetical assessment

Equitable
outcomes &
conditions

Balanced &
sufficient
diets



Zurek et al. (work in progress).

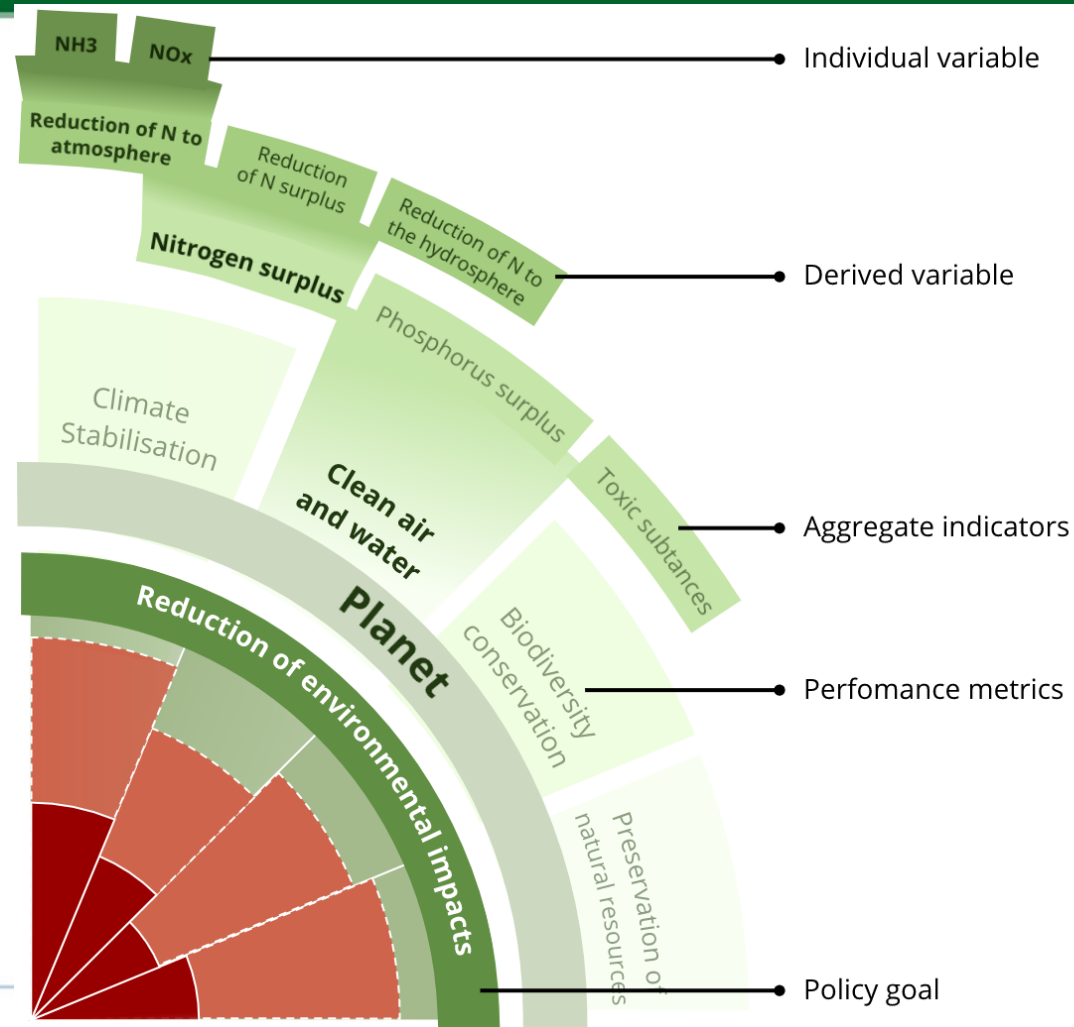
Reduced
environmental
impacts

Competitive
agri-food business

3. Assessing the food system: Metrics for goals and sub-goals of EU sustainable FNS

Hierarchical approach to building performance metrics out of individual indicators, depicted in the SUSFANS SFNS-impact visualizer

Zurek et al. (2018)



Policy goal	Specific goal = performance metrics	Explanation (draft version, will be updated)
Balanced and sufficient diets for EU citizens	Energy balance	Indicator: % of the population that is overweight and obese
	Adequate Nutrient intake	Indicator: Nutrient based summary score
	Adequate Food intake	Indicator: Food based summary score
	Reduced prevalence of diet-related NCDs	Indicator: to be developed
Equitable outcomes and conditions	Equity in food consumption	Concerning malnutrition in all its forms. Indicators: availability and accessibility of food and the stability of this.
	Equity in access to food	Concerning ethical issues (animal welfare, technology acceptance, global food security) and social justice (e.g consumer & citizen empowerment; gender/age/race differentials)
	Equity among producers and chain actors	Access to resources, finance & technology, position of primary producers in the value chain
	Footprint of food	Resources embedded in and emissions related to food consumption and production, representing equity across the generations
Reduction of environmental impacts	Climate stabilisation	GHG emission reductions, contribution to stable earth and maritime systems
	Clean air and water	Nitrogen and phosphorus surplus, toxic substances
	Biodiversity conservation	Agricultural land use diversity, reductions of the contribution of the agrifood chain to loss of mean species abundance (MSA)
	Preservation of natural resources	Sustainable water use, exploitation of wild-caught seafood resources, and maintenance of soil fertility
Competitiveness of the EU agri-food business	Value added	Food sector growth; in relation to world food sector
	Productivity & innovation	Total and labour factor productivity growth in food sector; relative to economy
	Job creation	Job & wage growth in the food sector; relative to economy
	True-price structure	True-price of food; Social (GHG) costs included in the market prices

4. Models in the SUSFANS box

Macro-economy

MAGNET
Complete economy
Income effects
Long run
Global, countries

Diet & health

SHARP
Product detail
Specific diet needs
Short run

EU4

DIET
Consumers preferences
Health & environment
Short run

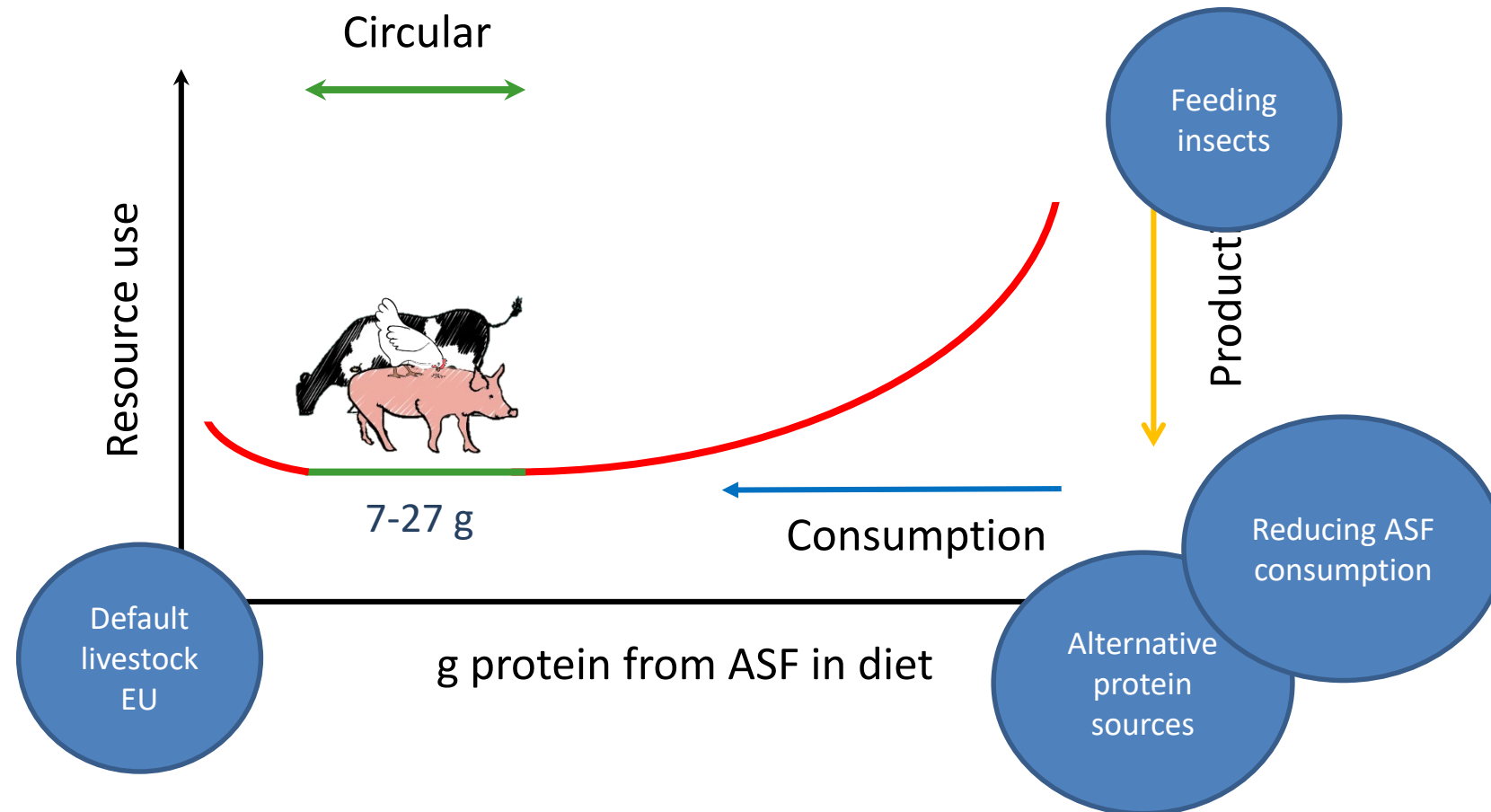
EU3

Agricultural production

GLOBIOM
Spatial detail
Environmental impacts
Long run
Global, grid

CAPRI
EU detail
Production detail
Long run
Global, EU, NUTS2

Example: Exploring innovations for livestock production

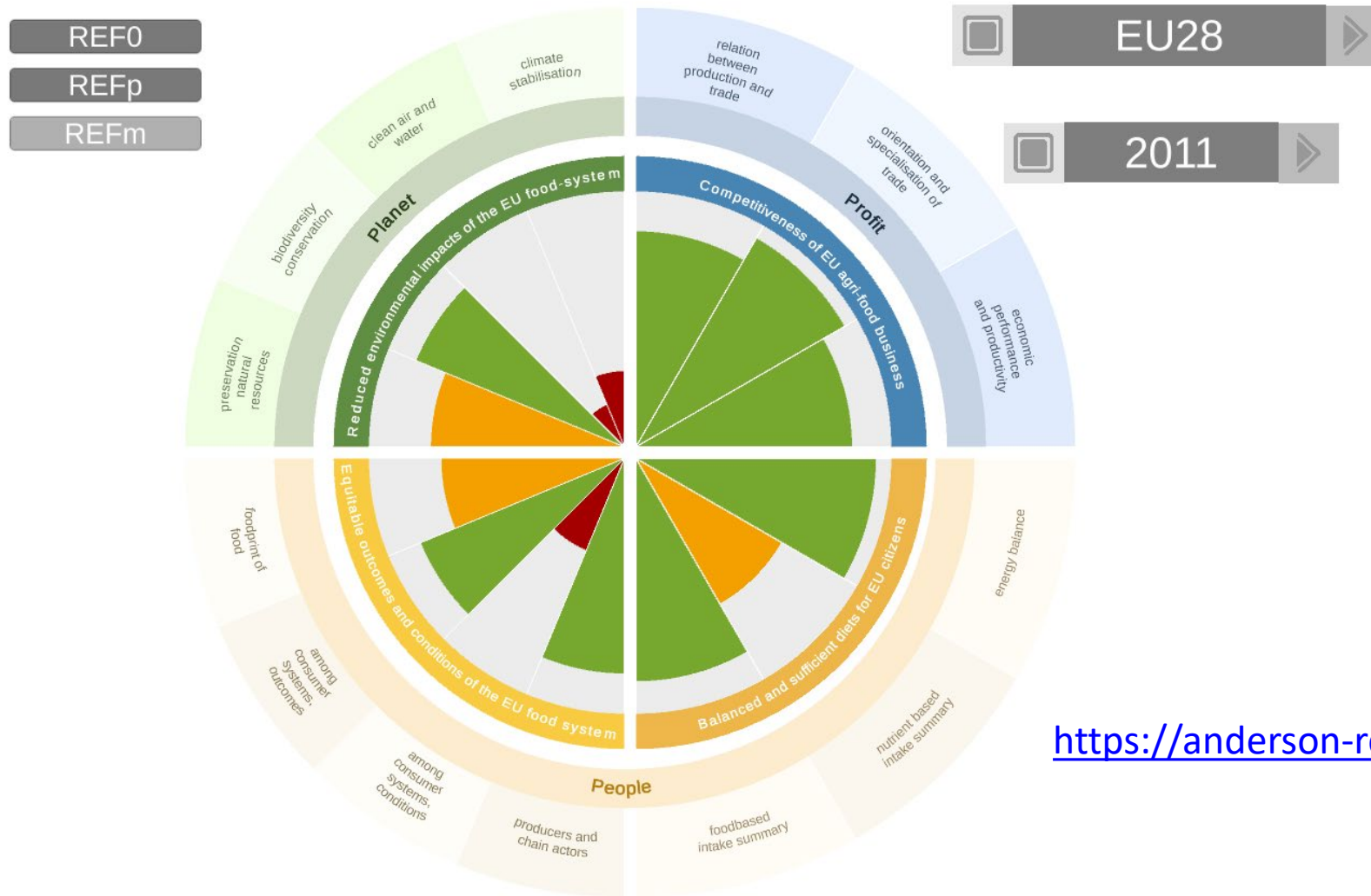


SUSFANS performance metrics for EU food systems

Note: hypothetical assessment

Equitable
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Balanced &
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diets



<https://anderson-rc.github.io/spidervis2/>

Reduced
environmental
impacts

Competitive
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Zurek et al. (work in progress).