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# SUSFANS

## Metrics, models and foresight for sustainable food and nutrition security in Europe

SUSFANS user toolbox, Denmark

WAGENINGEN
UNIVERSITY & RESEARCH

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Grant no.
633692

# SUSFANS
# A framework for impact

## Mission

Deliver high-quality research to support evidence-based policies and innovation strategies that will fruitfully underpin a more sustainable consumption and production of food in the EU

SUSFANS aims to better inform navigation on sustainable food in the public and private arena

# SUSFANS
# User Toolbox

**User Toolbox**

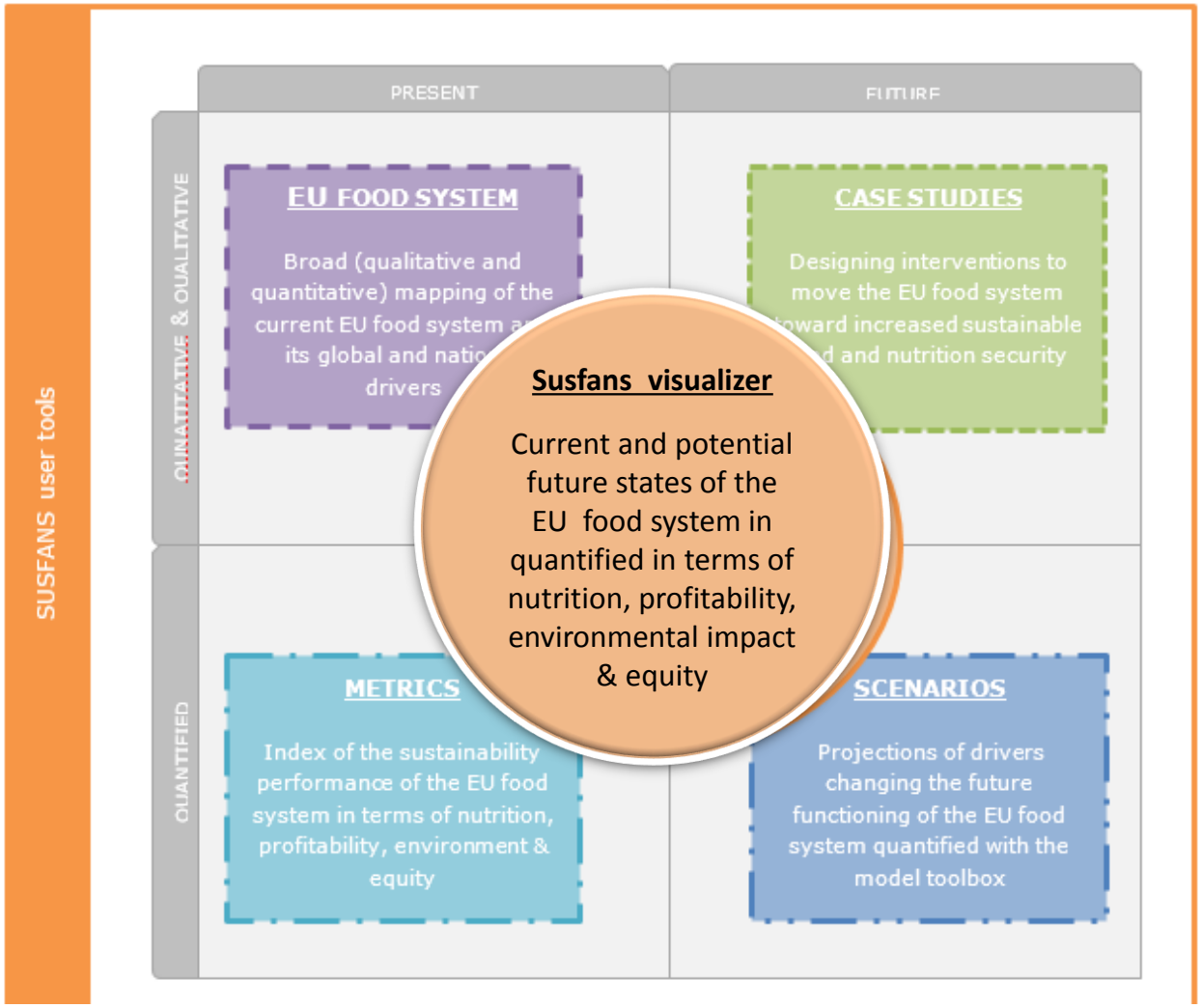
a visualisation tool consisting of ***five core elements*** which can be used by stakeholders/users to benefit from the evidence-based SUSFANS research and get insight in scientific standards for assessing EU sustainable food and nutrition security to identify challenges ahead, as well as options for interventions and their trade-offs.

Core component: SUSFANS visualizer

**Susfans visualizer**

Current and potential future states of the EU food system in quantified in terms of nutrition, profitability, environmental impact & equity

# SUSFANS
# The User Toolbox
# Five core elements



# SUSFANS
# User Toolbox Element 1
# Food system

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| Message | Impact | Benefits |
| --- | --- | --- |
| Different levels in food system embedded in general systems | Innovation: Schematic overview of SFNS complexity<br><br>Insight in the interrelation and borders of the SFNS topic and policy | Discussion and understanding<br><br>Feedback<br><br>Translation towards national context |

# Consumers' trade-offs : role of prices and information

- Consumer perceptions of sustainability and drivers of change were explored in experimental settings.
  - "Sustainability": environmental, equity. Not healthy.
  - Sustainable consumption: seasons; portion size, labelled food, etc

- **Consumer information including labelling can be seen as supportive policies** for a shift in consumer behaviour but evidence varies on the targeting of health and sustainability information to consumers:
  - the sustainability information provided little benefit over health information in an experiment on a soy-based meat substitute (Marette, 2017);
  - consumers preferred combined health and sustainability information in a choice experiment on fruit and vegetables products (Bouwman et al., 2018).

- Both experiments suggest **the importance of price drivers** in steering towards healthier dietary choices

# Firms' strategies in food innovation and reformulation and their responses to nutritional policies

- Food reformulation (decrease in salt, fat, sugar… contents in foods) **may have significant effects on public health**
- Food industry has **initiated the reformulation of food products**, but the effects on **consumers' intakes are still modest**.
- Some blocking points. **Main difficulty is related to consumer acceptance** ('healthy=not tasty intuition').
- **Debate about the need of public intervention** to improve the average nutritional quality. Comparison of the effects of voluntary commitments, minimum quality standards, tax policies.

# Equity among producers

- Extensive debate on the position of farmers in the food chain (Falkovski et al. 2017).
- **Market concentration and technological advances** are claimed to have shifted the balance of power in the food system to global retailers and other concentrated sectors.
- An **extensive empirical study** was done into the functioning of selected EU supply chains in France and Italy over the period 2006-2014 (Garrone and Swinnen, 2018).

# Improving the economic sustainability of food value chains

- We estimate firm-level mark-ups over time and analyze the **mark-up volatility** along the agri-food chain, using an **innovative estimation procedure** developed by De Loecker and Warzynski (2012)

- The results show that **farmers have a significantly higher volatility of mark-ups** compared to other agents in food value chains, such as food processors, wholesalers and retailers (Garrone and Swinnen, 2018).

***Mark-up volatility along the agri-food value chain***

| Sector | France | | Italy | |
|---|---|---|---|---|
| | Volatility | p-value | Volatility | p-value |
| Agriculture | 0.27 | | 0.28 | |
| Food Processing | 0.08 | 0.00 | 0.11 | 0.00 |
| Drink | 0.15 | 0.00 | 0.12 | 0.00 |
| Food Wholesale | 0.07 | 0.00 | 0.08 | 0.00 |
| Food Retail | 0.05 | 0.00 | 0.04 | 0.00 |

Note: The reported p-values are the result of the t-test comparing agricultural sector against the other sectors.

# SUSFANS
# User Toolbox Element 2
# Metrics definition

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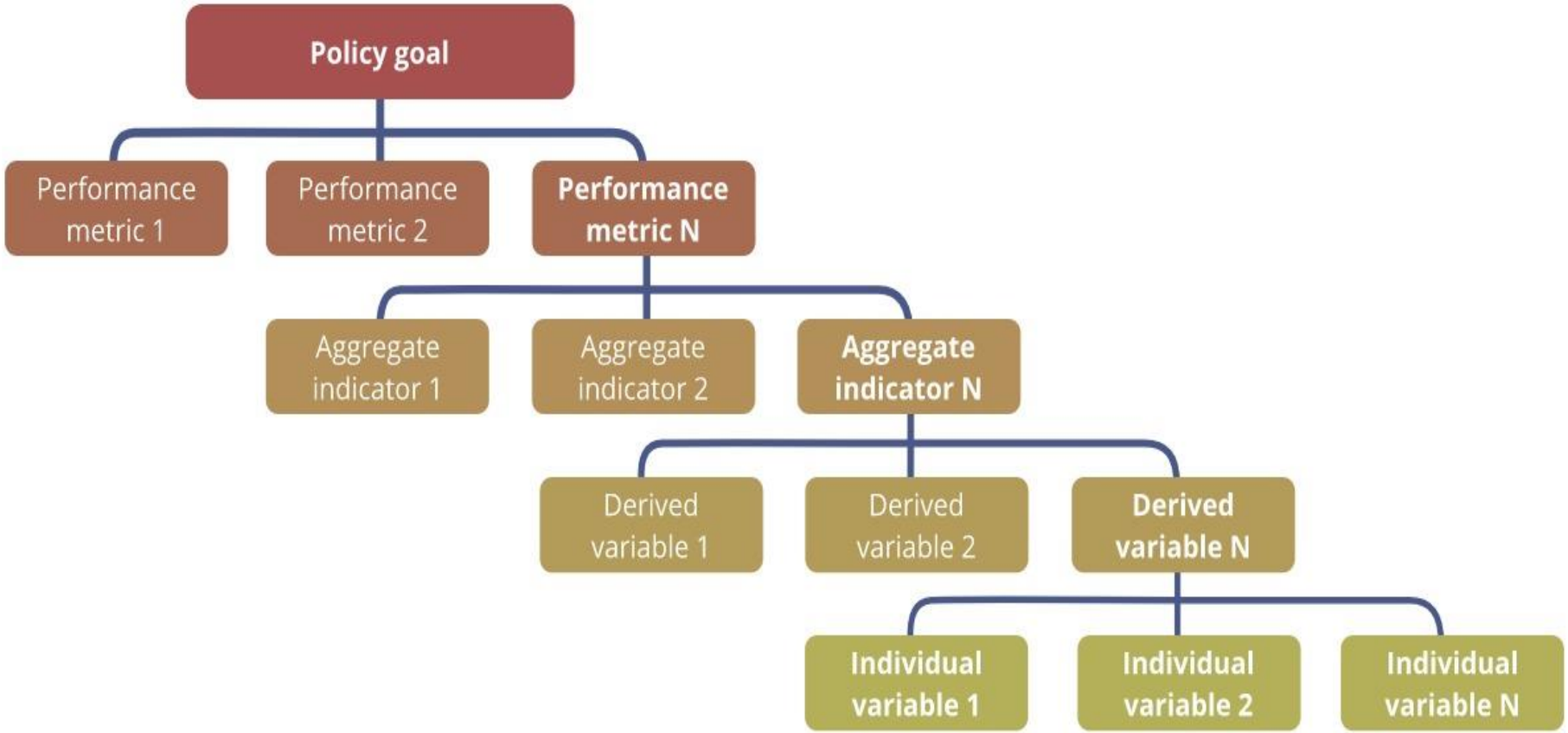
| Message | Impact | Benefits |
|---|---|---|
| Indicators suitable to measure EU SFNS in relation to policy targets (NB focusses on definition & hierarchy not numbers) | Innovation: visualising the balance<br>Insight in the logical framework behind<br><br>Acceptance of innovative approach linking 4 dimensions in interrelated way | Interactive approach providing insight in tool by using few options /data sets<br><br>Insight in and feedback on Metrics table (logical framework)<br><br>Discussion and feedback user needs |

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



| Policy goal | Specific goal | 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 among consumers (outcomes) | Concerning malnutrition in all its forms. Indicators: availability and accessibility of food and the stability of this. |
| | Equity conditions: ethics and justice | 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 |
| | Equity in 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 |

# SUSFANS
# User Toolbox Element 3
# Scenarios

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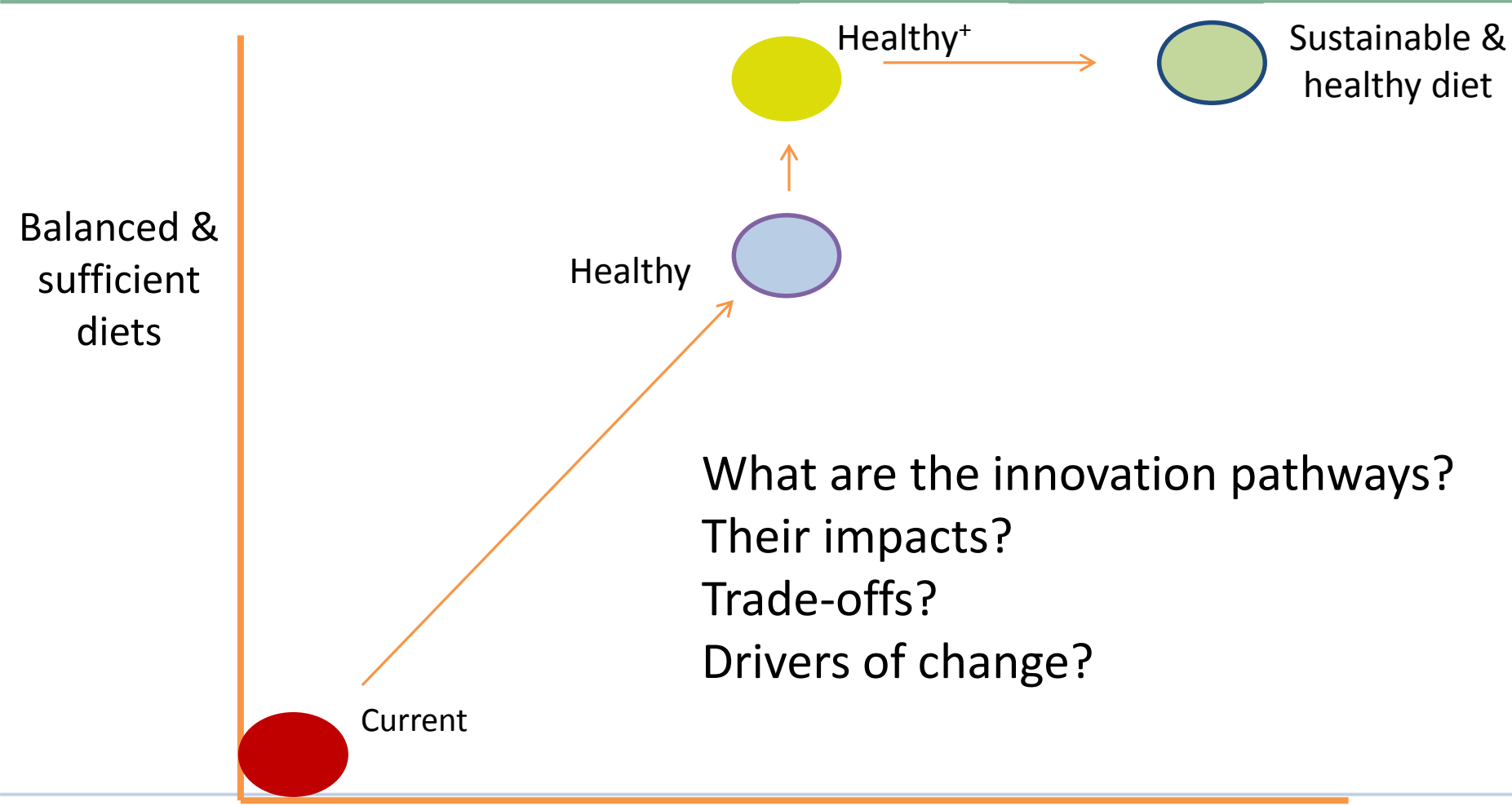
| Message | Impact | Benefits |
|---|---|---|
| Future interrelated developments in SFNS identifying challenges & opportunities | Innovation: including nutrition in interrelated assessment<br><br>Quantitative approach to interrelates SFNS policy gaols based on the concept of system dynamics; scenarios give insight in potential directions and trade-offs | Insight in scenarios and effect on the 4 quadrants<br>Discussion and feedback<br>Acceptance and impact on insights in SFNS problem, research agenda and policy decisions |

# Innovating towards healthy & sustainable diets




What are the innovation pathways?
Their impacts?
Trade-offs?
Drivers of change?

SUSFANS Reports D5.2 (van Zanten et al., 2018), D5.3 (Sijtsema et al. 2018), D10.3 (Latka et al. 2018)

# Closing the gap: Mapping evidence of consumer interventions to model instruments

| | Intervention | Max diet change (%) | Model instrument |
|---|---|---|---|
| **1** | Provide information | 16 | **National average consumer taste shifters** |
| **3** | Compulsory information on products | 7 | |
| **4** | Nudge through changing default policy | variable | |
| **5** | Ban marketing aimed at agents with limited decision-making capacity (e.g. children) | 5 | |
| **6** | Ensure healthy choices are available | 13 | |
| **7** | Enable choice by behavioural change programs | 7 | |
| **8** | Guide choices - incentives | 25 | **Taxes & subsidies** |
| **9** | Guide choices - disincentives | 23 | |
| **10** | Restrict choice through regulation | No data | **Production / trade quota** |
| **11** | Eliminate choice | No data | |

- Loss of detail in mapping to model instrument
- Need complementary analysis and empirical basis (+ costs) of taste shifts
- Cherry-picked maximum results suggest taste shifters alone cannot achieve national level change at targeted rate
- Direct regulation of food product availability appears implausible
- More detail: D10.3

Latka, C. et al. Deliverable 10.3, 2018. http://library.wur.nl/WebQuery/wurpubs/543318

# SUSFANS
# User Toolbox Element 4
# Case studies

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| Message | Impact | Benefits |
|---|---|---|
| Examples of approaches to facilitate discussion about innovative pathway for SFNS policy goals from different angles. | Innovation: variable approach from different chain/system perspectives<br><br>Insights in focused process and research to distillate (national) innovative pathways towards SFNS policy goals | Discussion and understanding<br><br>Feedback<br><br>Effect on actual policy issues and discuss translation towards possible national innovative pathways |

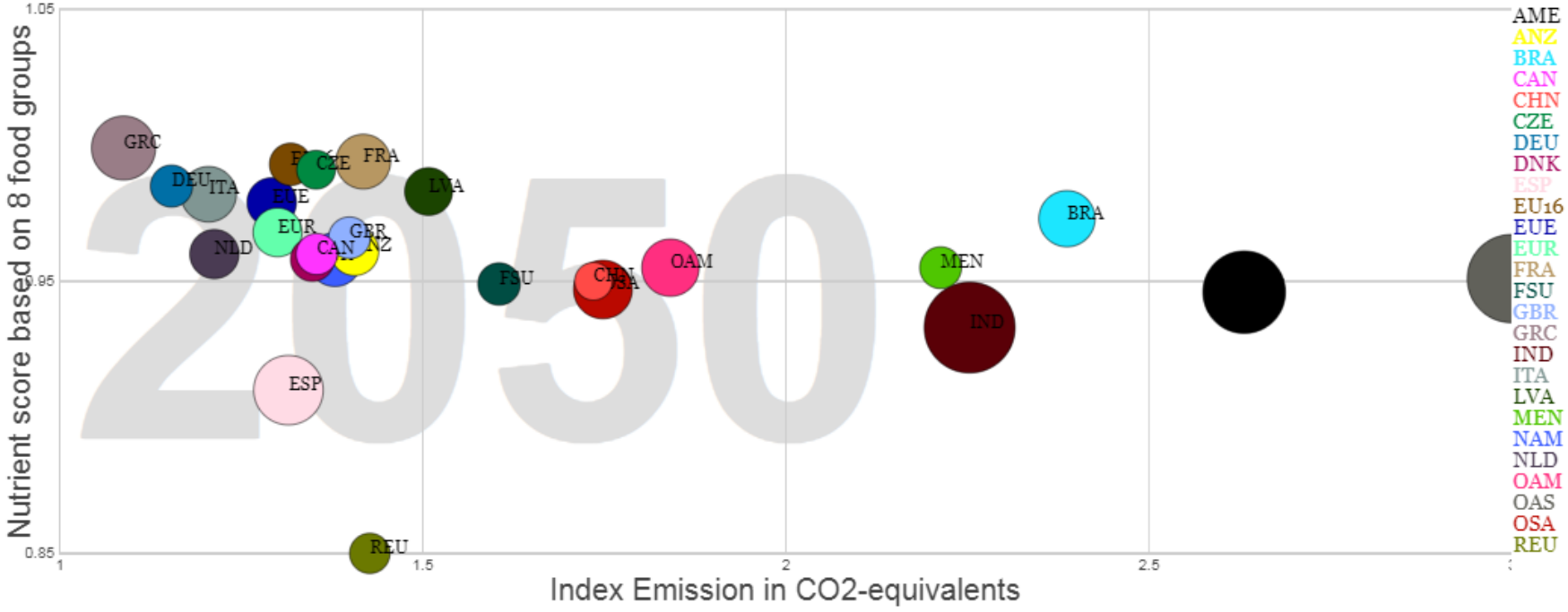
# SUSFANS
# User Toolbox Element 5
# Visualizer

| Message | Impact | Benefits |
|---|---|---|
| Present and future state of EU food system visualized in spider diagrams | Innovation: visualising the balance<br><br>Insight in the logical framework behind<br><br>Acceptance of innovative approach linking four dimensions in interrelated way | Interactive approach providing insight in tool by using few options /data sets<br><br>Insight in and feedback on metrics and models (logical framework & quantification)<br><br>Discussion and feedback user needs |

# GHG and diet projections

## SUSFANS 'Moving Balls' example (data MAGNET model) [2010:index=100

### Size of ball represents calories uptake

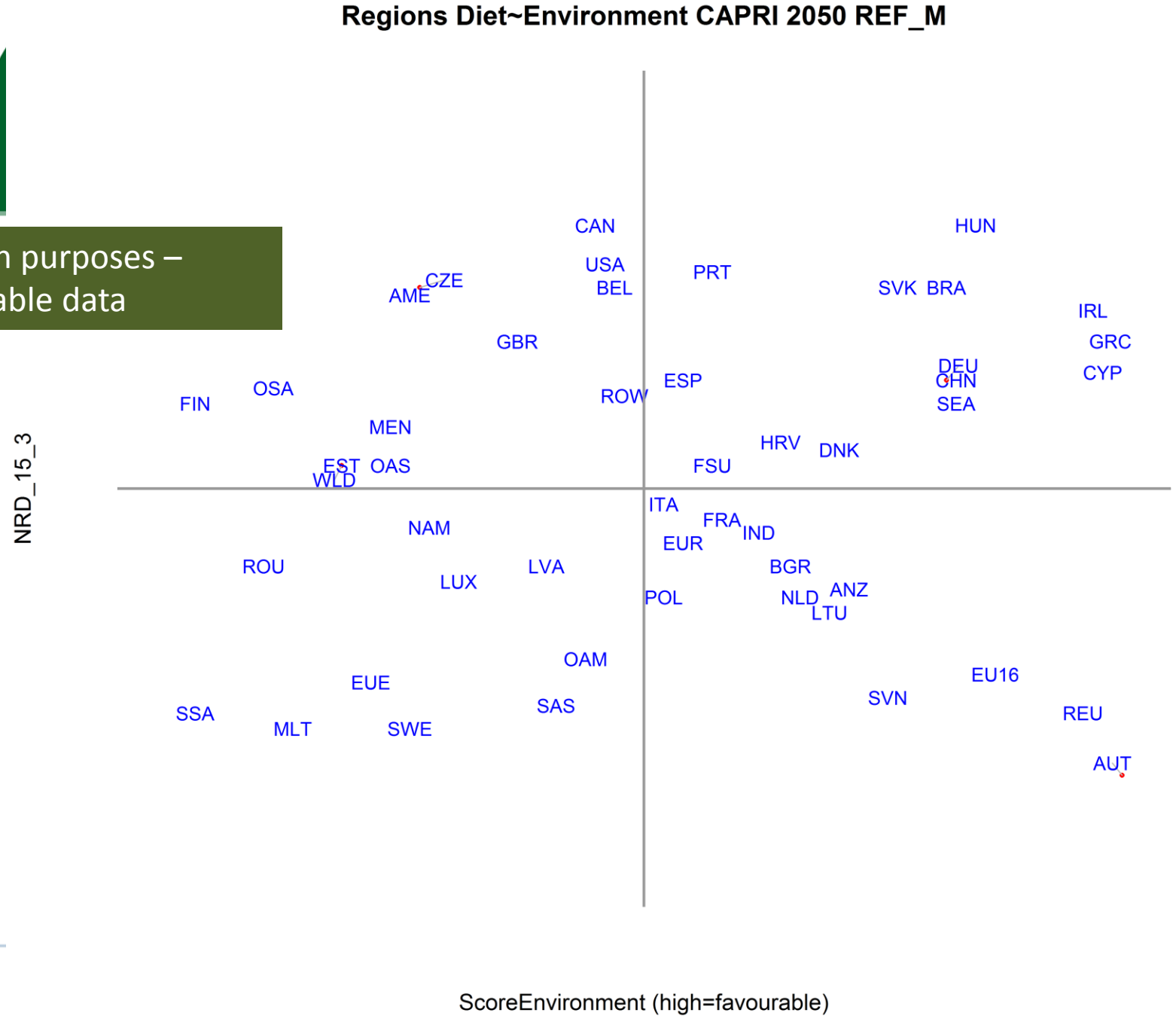



http://www.wecr.wur.nl/gisdata/MyHighCharts/SusFansRef0/SusFansRef0.html

**Move slider to animate through years:**

*Source: SUSFANS model output ; Realization: wil.hennen@wur.nl*

For demonstration purposes –
Not based on reliable data



# Policy recommendations (preliminary)

- Need for greater coordination of national consumption patterns at EU level
- Manage trade-offs across sustainability dimensions – aligned multi-level and multi-dimensional food policy framework in EU
- Mix of consumer, producer, system interventions
  - Common Agriculture and Fisheries Policies contribute to sustainability of EU diet; redirect towards nutrition.
  - Consumer choice, environment

# Taking it forward

- How to move towards more integrated food systems approach for EU28, EU region, member states, sub-national?

- How to make SUSFANS tools usable for:
  - National food-based dietary guidelines
  - Innovation strategies/policy, private & public
  - Consumer decisions

# QUESTIONS, COMMENTS, IDEAS?


More on SUSFANS at https://www.susfans.eu/ or contact Thom Achterbosch (coordinator) at thom.achterbosch@wur.nl