FoSSNet
CONFERENCE 2025

Food Systems Science: Establishing a Common Framework and Network
First European Food Systems Science Conference

FoSSNet Food Systems Conceptual Framework and Food Systems Science definition

25th March / 14:40 GMT

John Ingram
University of Oxford

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Session 1

Defining Food Systems and Food Systems Science

Moderator: Monika Zurek

Goals of session 1

1. Present a **conceptual food system framework** and a definition of **food system science definition** develop by the FoSSNet project
2. **Discuss** and **modify** the framework and science definitions
3. Reach **consensus**, if possible, on conceptual framework and definition for project an external use

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Developing the FoSSNet Conceptual Framework & Initial drafting of a 'Food System Science' definition

John Ingram & Monika Zurek
ECI Food System Transformation Group, University of Oxford

25 March 2025

Why do we need a food systems conceptual framework (CF) for the project?

1. To help guide the project and the wider community of both academics and food system decision makers in describing the main elements of a food system together with its boundaries.
2. As a description and boundary setting object to give a common point of departure by all Work Packages.
3. To help communicate food system concepts and terminology to project external academics and food system stakeholders.
4. For supporting research as well as teaching and learning about food systems in Europe (and globally).
5. To help identify potential intervention points for food system transformation

What did we consider when developing it?

1. **Purpose**: What should be the purpose(s) of the CF (internally and externally)?

2. **Framing**: What worldviews (social/natural/other science) should be included in the development of the CF? Who will be the users of the CF?

3. **Boundary**: What elements should be included in the CF, which ones not?

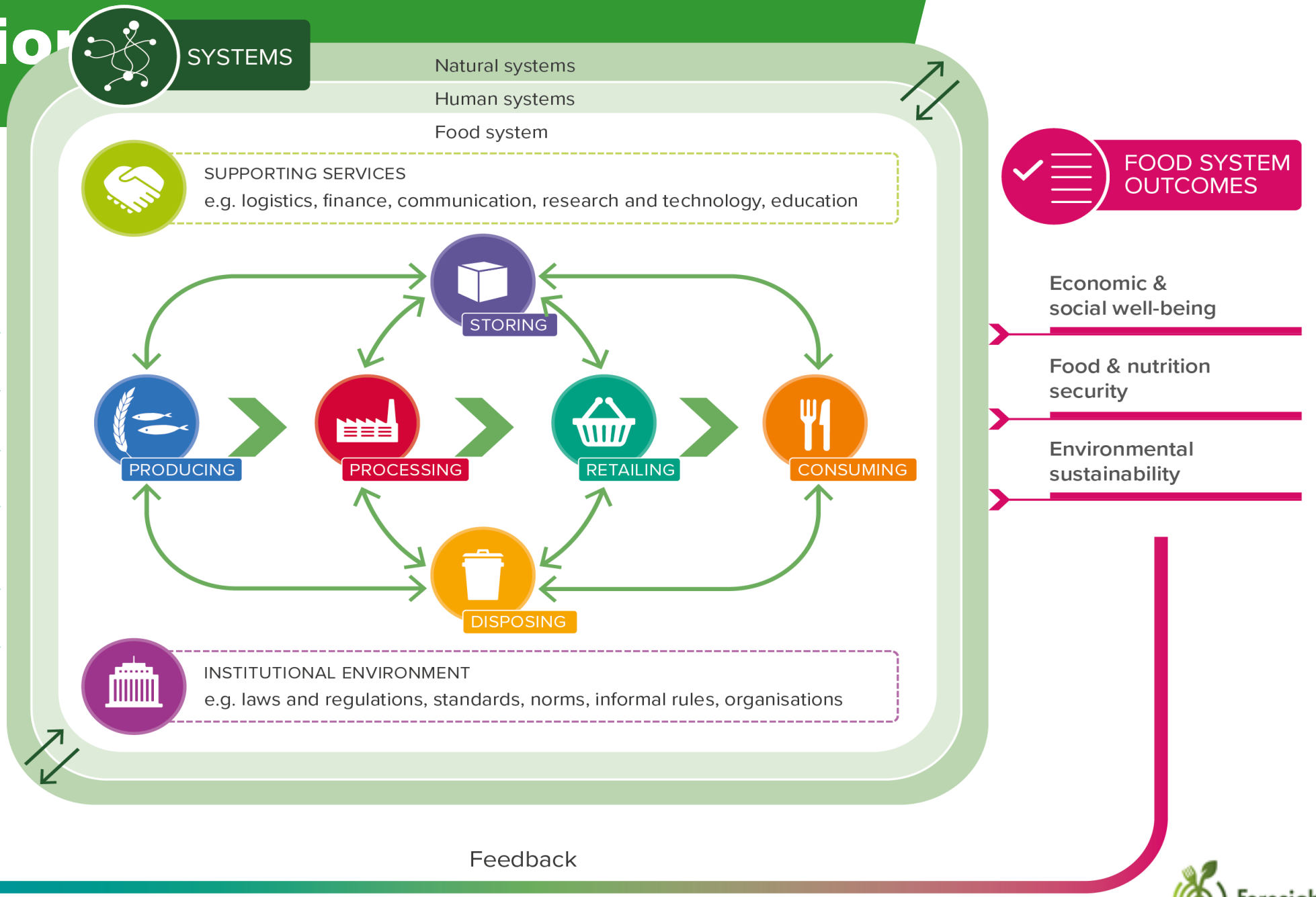
How did we then develop it?

1. We reviewed 28 food systems CFs identified by Cuhls *et al.* (2024), using the following horizon scanning criteria: “Food Systems Depictions”, “Food Systems Explanations”, “Food Systems Definitions”.

2. We conducted a further review of other published CFs and identified an additional 6 CFs relevant for this study.

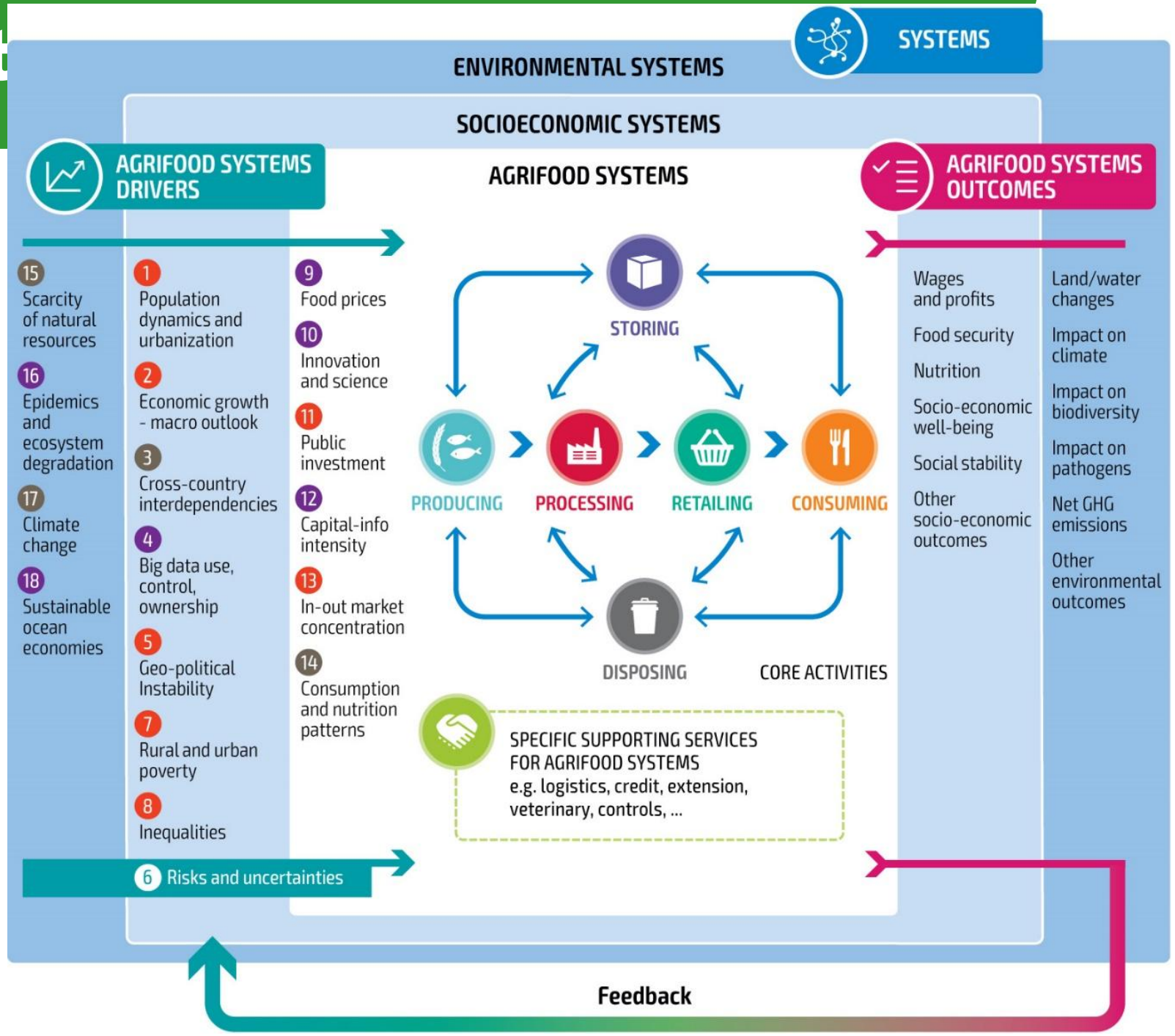
3. Considering these 34, we based the CF on two well-recognised CFs developed by (i) Foresight4Food and (ii) FAO.

Inspiration



Foresight4Food

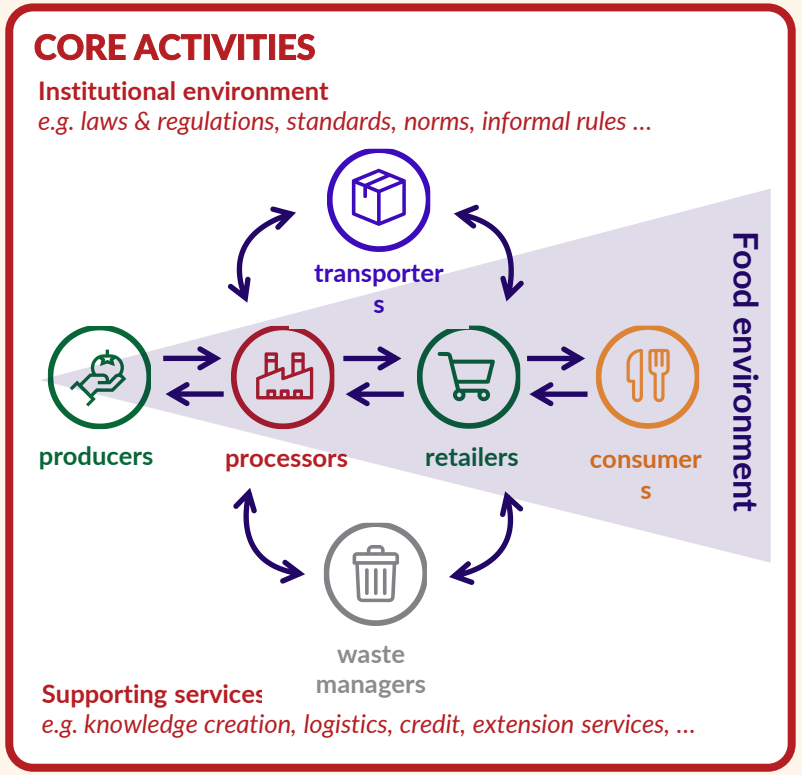
Inspirat


SYSTEMS
ENVIRONMENTAL SYSTEMS
SOCIOECONOMIC SYSTEMS
AGRIFOOD SYSTEMS
AGRIFOOD SYSTEMS DRIVERS
AGRIFOOD SYSTEMS OUTCOMES
15 Scarcity of natural resources
16 Epidemics and ecosystem degradation
17 Climate change
18 Sustainable ocean economies
1 Population dynamics and urbanization
2 Economic growth - macro outlook
3 Cross-country interdependencies
4 Big data use, control, ownership
5 Geo-political Instability
7 Rural and urban poverty
8 Inequalities
9 Food prices
10 Innovation and science
11 Public investment
12 Capital-info intensity
13 In-out market concentration
14 Consumption and nutrition patterns
STORING
PRODUCING
PROCESSING
RETAILING
CONSUMING
DISPOSING
CORE ACTIVITIES
SPECIFIC SUPPORTING SERVICES FOR AGRIFOOD SYSTEMS
e.g. logistics, credit, extension, veterinary, controls, ...
Wages and profits
Food security
Nutrition
Socio-economic well-being
Social stability
Other socio-economic outcomes
Land/water changes
Impact on climate
Impact on biodiversity
Impact on pathogens
Net GHG emissions
Other environmental outcomes
6 Risks and uncertainties
Feedback

FoSSNet Conceptual Framework (CF)

Section subtitle goes here

1. Detail the food system activities and the nature of the 'food environment'



FEEDBACKS

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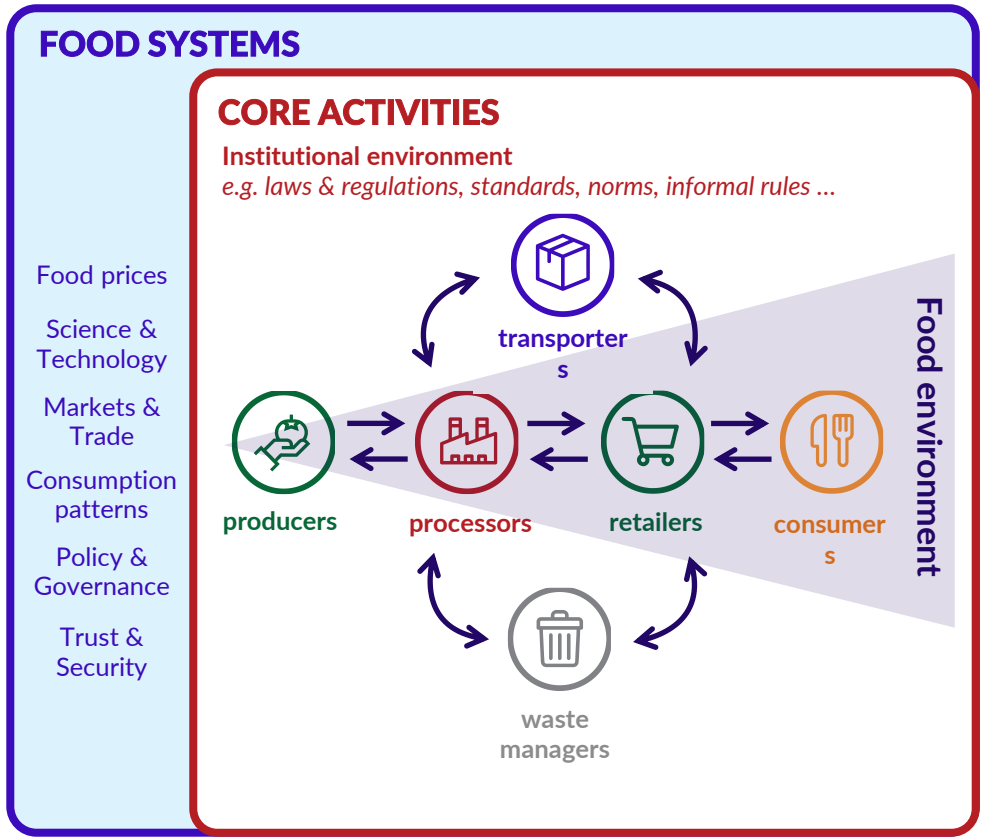
2. Add the proximal drivers



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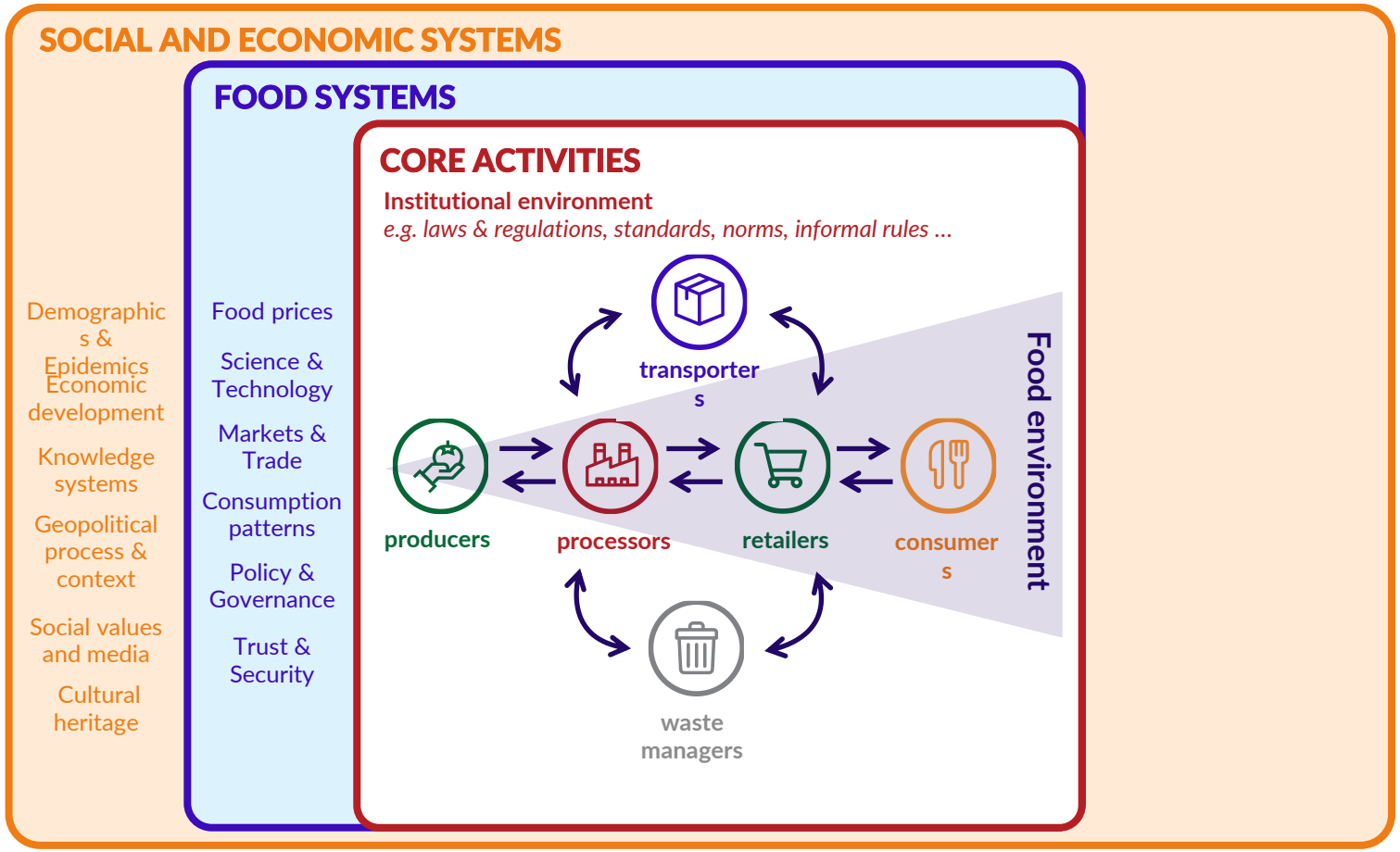
3. Add the social and economic drivers



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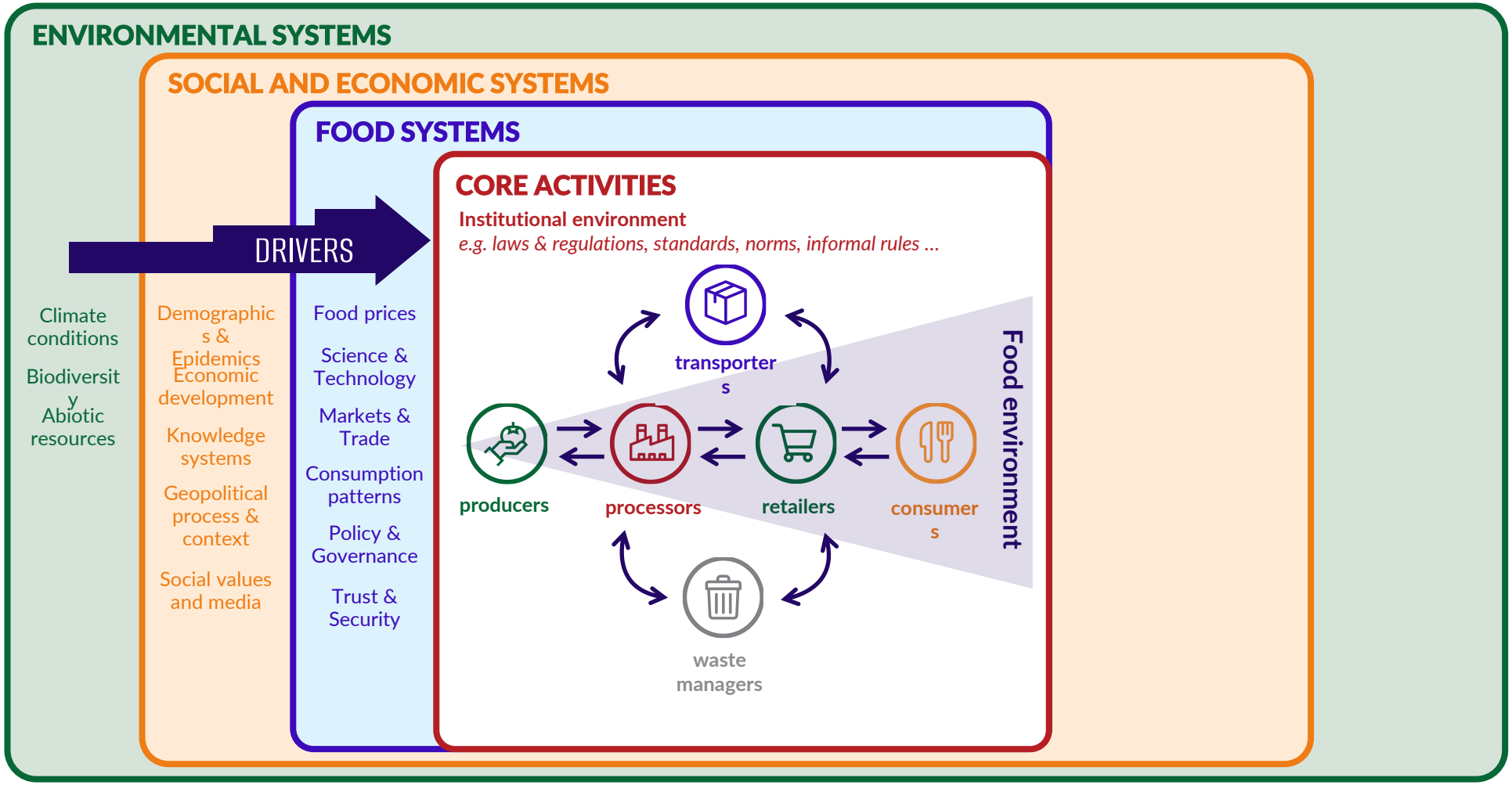
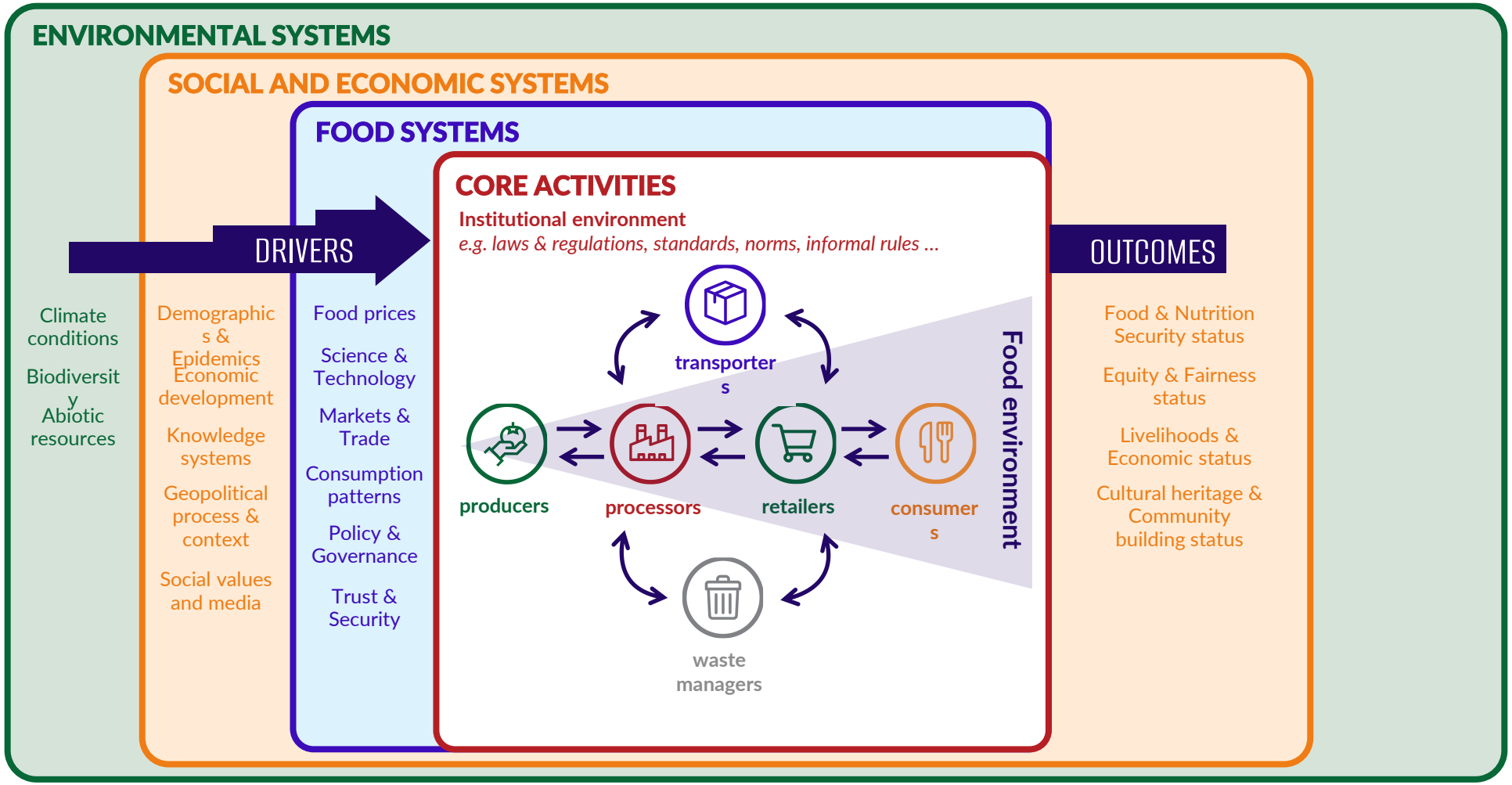
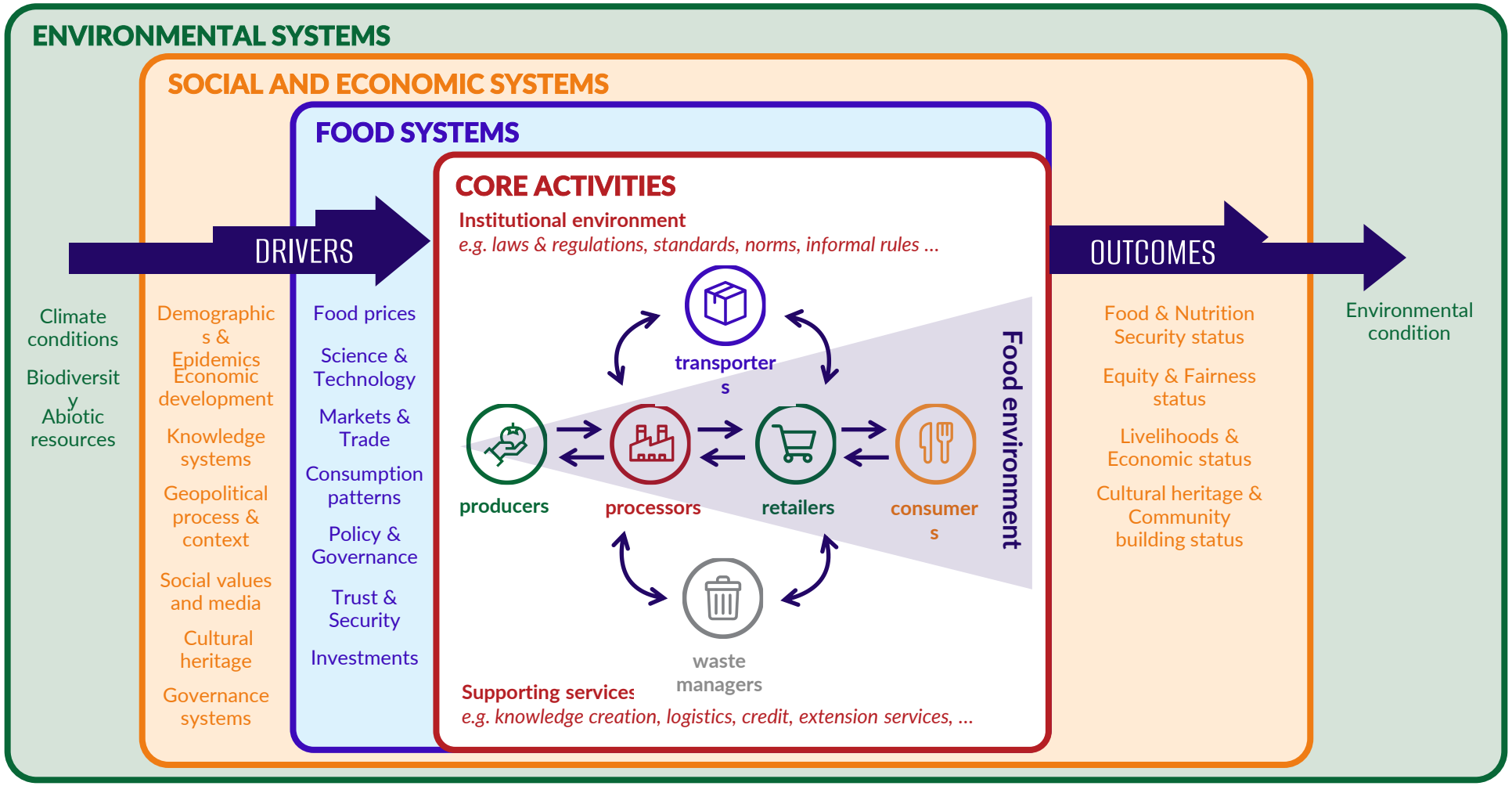
4. Add the environmental drivers, noting that all the drivers are interacting



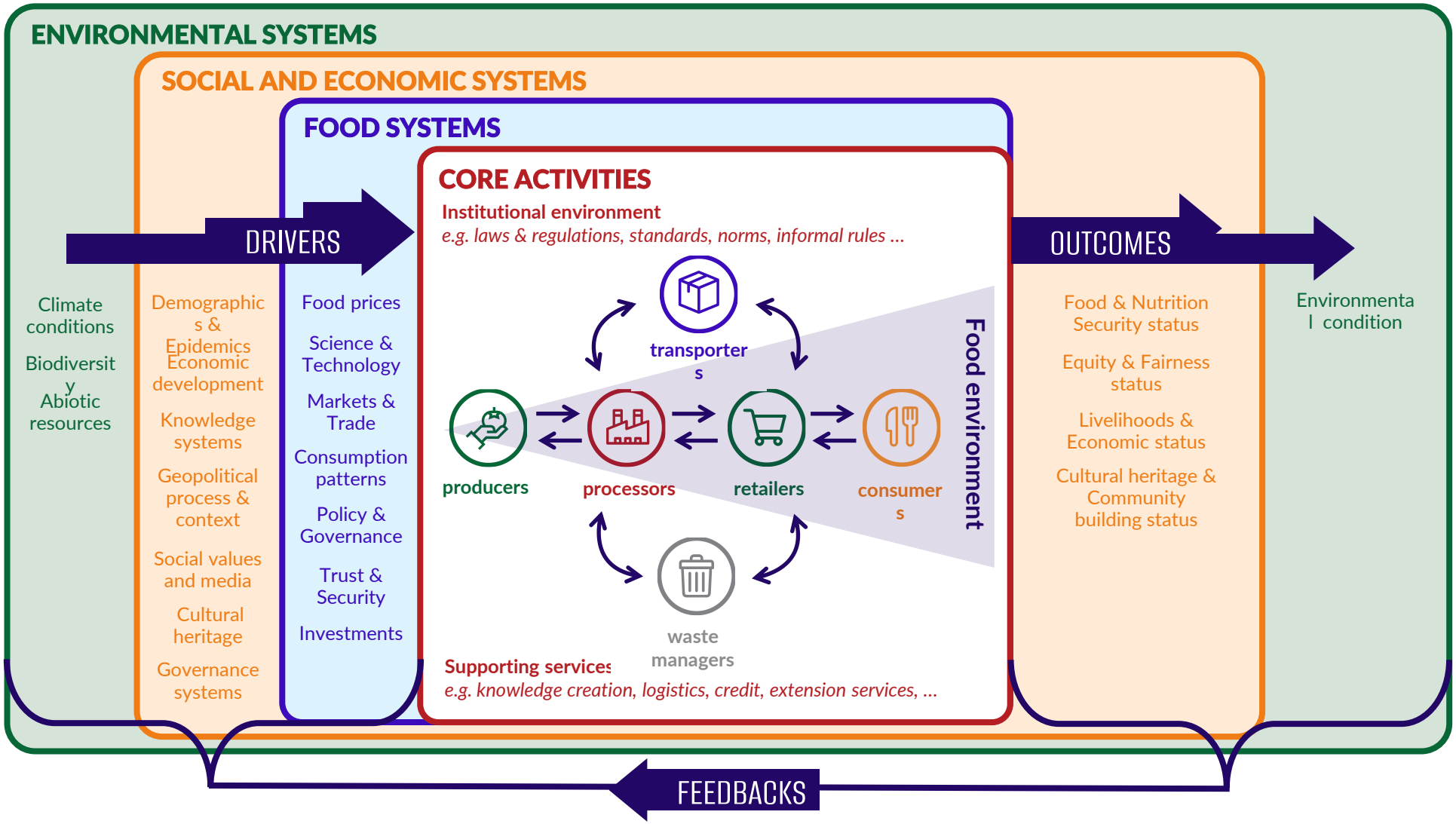
5. Add the social and economic outcomes

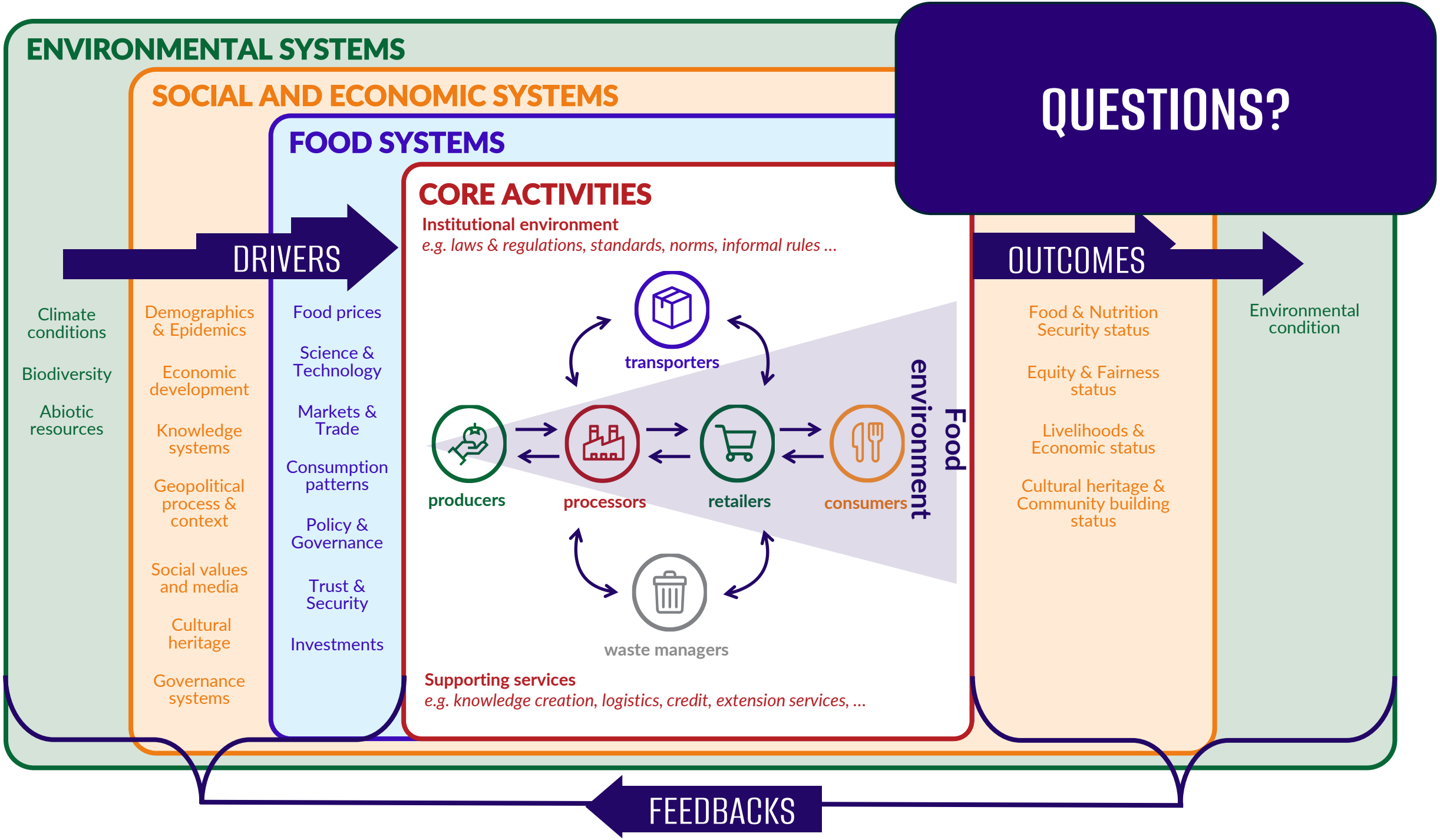


6. Add the environmental outcomes



7. Add the feedbacks to complete it




ENVIRONMENTAL SYSTEMS
SOCIAL AND ECONOMIC SYSTEMS
FOOD SYSTEMS
CORE ACTIVITIES
QUESTIONS?
DRIVERS
OUTCOMES
Institutional environment
e.g. laws & regulations, standards, norms, informal rules ...
Climate conditions
Biodiversity
Abiotic resources
Demographics & Epidemics
Economic development
Knowledge systems
Geopolitical process & context
Social values and media
Cultural heritage
Governance systems
Food prices
Science & Technology
Markets & Trade
Consumption patterns
Policy & Governance
Trust & Security
Investments
transporters
producers
processors
retailers
consumers
waste managers
Food environment
Supporting services
e.g. knowledge creation, logistics, credit, extension services, ...
Food & Nutrition Security status
Equity & Fairness status
Livelihoods & Economic status
Cultural heritage & Community building status
Environmental condition
FEEDBACKS

A Food System Conceptual Framework for the FoSSNet Project

Deliverable D1.1

John Ingram, Monika Zurek, Anna Obernoster

Date: 31 October 2024

Food System Science: Preliminary Definition

From the proposal:

‘Food systems science’ (FSS) is the integrative field of academic knowledge on the relations between drivers, components and outcome food systems, including the process of innovation, conservation and restoration in human systems and nature systems for transition toward sustainable food systems.

WP1 & WP2 re-draft, late 2024:

Food system science weaves together knowledges on the dynamic relationships including feedbacks between food system drivers, core activities and outcomes, to study and foster transformative action on innovation, conservation, restoration and exnovation in interconnected social, economic and biophysical systems, for transitioning towards sustainable food systems.

Food System Science: Preliminary Definition

QUESTIONS?

Food system science weaves together knowledges on the dynamic relationships including feedbacks between food system drivers, core activities and outcomes, to study and foster transformative action on innovation, conservation, restoration and exnovation in interconnected social, economic and biophysical systems, for transitioning towards sustainable food systems.