D 2.7

How to build a Sustainable Food Systems Partnership?

A comprehensive manual

Deliverable 2.7 'Manual & Presentation of the Prototype 2.0 Partnership on Sustainable Food Systems'

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Executive summary: Footpaths' Narrative

The partnership, presented as a bird (Figure 1), needs to guide us towards sustainable food systems (SFS). The bird is confronted with challenges like climate change, hunger, wars, ..., but also with the co-benefits or trade-offs that it creates itself in its environment – like improved health of both soils and living species. It realizes that flying in the sky is not without dangers. Consequently, the bird scans the environment, thanks to its observatory which represents its eyes, to anticipate obstacles and adapt its trajectories when necessary.

Figure 1 The bird representing a partnership towards SFS in Europe (Design EUFIC; original source: Modified image from H. Schepers and H. de Vries, https://hal.inrae.fr/hal-02934667/document)

In its head, it should be able to reflect on the courses to follow. This implies being capable of painting potentially sustainable FS futures in the form of scenarios, defining a vision, mission, and prioritized pathways in which, inclusively, interacting actors - that shape the Partnership - mirror the actions and finally agree upon them. It also formulates the power balances between actors and the (in)formal rules within which it can fly. These are the key elements of its 'governance'.

The body of the bird hosts all operations that allow the bird to fly. This includes its *modus operandi* serving as its backbone, its systemic approaches that guarantee its capacity to adapt its courses via feedback loops and leverages, and its co-funding mechanisms that fuel the bird.

The two wings of the bird continuously provide (i) knowledge from research, innovations, policies and education, and (ii) the experiences obtained in co-creation cases. This allows the bird to keep 'flying in a balanced manner' in the sky. If it enters turbulent zones, it absorbs knew knowledge and exploits best practices to safely continue its flight.

The tail of the bird represents the building blocks that allow steering its courses. In particular, it consists of toolkits and blueprints of networks of networks, like the Knowledge Hub of Food System Labs or of university-driven SFS campuses.

The nerve system of the bird consists of the communication, dissemination and exploitation 'channels' that allow internal as well as external exchanges. Internally, the diversity in an inclusive group of partners makes the bird ask for transparent communication and sharing of insights. Externally, exchanges with other birds – in a flock – are imperative to overcome challenges encountered and reach sustainable outcomes.

Somebody who is involved in an inclusive partnership, or wants to join or setup a partnership, can use this image of a bird. Each of its elements is elaborated and reported in this deliverable as follows:

i. 'Introduction': a few lines to describe what the 'element' is and why it is relevant;
ii. 'Followed process and main insights per step': FOODPathS has followed a series of activities (methods, events, ...) to give valuable content to the element;
iii. 'Concluding remarks': this section presents which conclusions FOODPathS has reached for each element;
iv. 'Critical factors and points to explore further': in the section, the main critical issues which have been overcome are listed; also, topics that need further elaboration are suggested.

For each element, a single highlight is presented[1].

All results together describe an ideal prototype partnership, which will be part of a flock of partnerships contributing to sustainability as described in the final chapter of this deliverable.

[1] Further information from all referenced deliverables are available via: https://zenodo.org/communities/foodpaths/records?q=&l=list&p=1&s=10&sort=newest

Definitions of key concepts

- **Co-creation:** the design process of a 'product' or 'service' in which input from an inclusive group of different actors – which may or may not include consumers – plays a central role from beginning to end (Ramaswamy and Ozcan (2018: 200)).

- **Collective Intelligence**: Intelligence emerging from collective efforts and appearing in consensus decision-making[2]

- **Food Systems Approach:** A systems approach acknowledges the interactions between natural resources/ecosystem services, primary food production (farming, aquaculture and fishery), food processing, packaging, logistics, marketing, retail, food services, food consumption and waste management /recycling and the many feedback loops between them, which together define the degree of complexity between them (Sustainable Food Systems Partnership for People, Planet and Climate' (SRIA; Halberg & Westhoek, 2019).

- **Governance of Food Systems for sustainability:** The continuous process of orchestration of policies and (multiple) food systems consisting of diverse interacting actors, respecting (in)formal rules and striving to provide food for all, in equitable and environmental-friendly ways, at any time and in any context (Donner at al., 2024).

- **Knowledge Hub of Food System labs:** Referred to in this deliverable as 'Hub', it is presented as a virtual Platform developed in FOODPathS to present food system cases via seven dominant orientations: research, innovation, policy, education (the 4 RIPE pillars), observatory, networking, and entrepreneurship (de Vries et al., 2024).

- **Mirror Groups:** Mirror Group participants learn about and reflect on the work happening in the project/partnership to provide useful input and recommendations to ensure that activities and decision making are ***as inclusive and impactful*** as possible (D7.1[3]).

- ***Modus Operandi*:** One of the elements of a partnership, and the way in which all other elements (e.g. governance, observatory) are orchestrated using guiding principles (e.g. co-creation, systemic approach) and practical features (e.g. secretariat, internal communication processes and tools). It is the basis for the overall functioning of a partnership (D2.5[2]).

- **Observatory:** The idea of a Food Systems Observatory (FS Obs. or Observatory) is "to gather, analyse, and utilise data on Food Systems from multiple sources to allow for the monitoring of their performance and to guide FS transformation efforts" (D2.4[2]).

- **Prototype**: A detailed, original form / model serving as template for a partnership.

- **Partnership:** Voluntary and collaborative relationships between various parties, both public and non-public, in which participants inclusively agree to work together to achieve a common purpose or undertake a specific task and, as mutually agreed, to share risks and responsibilities, resources and benefits (UN, 2013).

- **Sustainable Food Systems:** food systems that deliver food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised (HLPE FAO reference).

[2] https://en.wikipedia.org/wiki/Collective_intelligence#
[3] https://zenodo.org/communities/foodpaths/records?q=&l=list&p=1&s=10&sort=newest

Main abbreviations

CDE: Communication, Dissemination, Exploitation

CSA: Coordinated Support Action

EEA: European Environment Agency

EHEA: European Higher Education Area

EIT (Food): European Institute of Technology (for Food)

ENoLL: European Network of Living Labs

ETP: European Technology Platform

FS: Food Systems

HE: Horizon Europe (program)

HEI: Higher Education Institutions

HERI: Higher Education and Research Institutions

HLEG (European High Level Expert Group

JRC: Joint Research Centre (of the EC)

KPI: Key Performance Indicator

LL: Living Lab

MO: Modus Operandi

NFTP: National Food Technology Platform

NGO: Non-Governmental Organization

PPP: Public Private Partnerships

P-SFS: Partnership on Sustainable Food Systems

R&D: Research & Development

R&I: Research & Innovation

RIPE: Research Innovation Policy Education

SCAR FS SWG: Standing Committee on Agricultural Research Food System Strategic Working Group

SFS: Sustainable Food Systems

SME: Small-Medium Enterprise

SPI: Science-to-Policy Interface

SRIA: Strategic Research & Innovation Agenda

SSH: Social Sciences and Humanities

1. Introduction

The FOODPathS project aims to establish a Prototype Partnership for Sustainable Food Systems. Therefore, it focuses on all essential elements of a partnership, including its governance model, modus operandi, co-funding mechanisms, strategic research and innovation agenda with connections to policy and education, best practices of co-creation cases, essential networks and infrastructures, communication strategies, etc. In other words, FOODPathS tends to design an ideal, inclusive partnership, thanks to the collective intelligence input of public, private, philanthropic, academic, civil society stakeholders, active at local to global scales.

1.1. Why FOODPathS?

Current planetary and societal challenges substantially impact local, regional, national, European and global food systems (see chapter 2). Even more, the availability of food as our primary need may be at stake in the short-term, as well as the long-term. It is often stated that our food systems aren't sustainable anymore, hence potentially compromising future generations.

This requires immediate actions, not only from impacted individuals (for which challenges are far too overwhelming), but particularly from collective initiatives like partnerships of diverse actors jointly operating in intelligent ways and in an inclusive manner. The Food System's Strategic Working Group of the Standing Committee on Agricultural Research (SCAR SWG FS) therefore took the initiative, together with the Directorate-General for Research and Innovation (DG RTD) of the European Commission to ask a group of experts to prepare a narrative, template and strategic research and innovation agenda (SRIA) for a future, EU-wide and Member States-supported Partnership on sustainable food systems (P-SFS). Such a Partnership didn't exist. In addition, they proposed to launch a call for a coordinated support action (CSA) project, financed via the Horizon Europe Programme, to prepare a prototype partnership. One of the imperative needs was that a consortium, responding to the CSA call, would be as inclusive as possible in order to provide recommendations and needs from a broad perspective. Additionally, such a consortium should serve as mini-partnership to verify if a multi- and diverse actor network could function.

1.2. The structure of this Manual

The executive summary narrates the story of FOODPathS with the image of a bird to illustrate the key elements of a partnership. Expanding the metaphor to a bird, that is a part of a flock, includes also communication exchanges with other partnerships. Consequently, the structure of this manual follows the representation of a bird, observing planetary and societal challenges, confronting these by adapting its course. This is possible thanks to the elements of a partnership: collective intelligence governance model in its head, efficient operational activities in its body, knowledge and experience via its wings, structural elements for experimenting in its tail, and communication, dissemination and exploitation of findings via its nervous system (see Figure 1).

For all these elements, a short introduction, followed by major findings from FOODPathS tasks, and recommended actions are described for any kind of sustainable food systems partnership. This could be an existing or forthcoming partnership, or large initiatives with a diversity of food system actors. Also, several critical factors and future actions points for each element are given at the end of each chapter.

2. Scanning environments via an Observatory; facing planetary & societal challenges, co-benefits & trade-offs

The partnership, presented as a bird, needs to guide us towards sustainable food systems (SFS). The bird is confronted with hurdles like climate change, hunger and malnutrition, wars, ..., but also with the co-benefits and trade-offs that it creates itself in its environment. It realizes that flying in the sky is not without danger. Consequently, the bird scans the environment, thanks to its ***Observatory*** *which represents its eyes, to anticipate obstacles and adapt its courses when necessary.*

Figure 2: The bird scanning the environment

2.1. Planetary and societal challenges

For more detailed information on this part, please consult the following deliverables: SRIA2.0 & Guidelines for science-policy interfaces *(D6.1; only the introductory part on planetary and societal challenges) and* RIPE concept (SRIA3.0, S-to-P, Education) with Food2030 co-benefits, including Social Sciences and Humanities (SSH) & Digitalization *(D6.2)*.

Introduction:

On its flight towards sustainable food systems, the partnership is confronted with planetary and societal challenges. A **sustainable food system** is defined as "*a food system that delivers food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition for future generations are not compromised*" (FAO, 2018). This definition is based on the sustainability definition of the Brundtland report (WCED, 1987). Economic sustainability covers profitability and affordability throughout the system. Social sustainability means wide-scale benefits including health, cultural drivers, along with just and fair outcomes (SAPEA, 2020). Environmental sustainability implies food systems, which have at a minimum neutral climate impact and positive environmental and biodiversity impact. (EC, 2022a). If planetary limits are to be respected (Meadows et al., 1972; Rockström et al., 2009, current societal challenges – such as accelerated climate change, biodiversity loss, unsafe drinking water, uncertainty about the availability of resources, food losses and waste (including packaging), unhealthy consumption patterns leading to the triple burden of malnutrition – combined with power imbalances and declining trust in current food systems, demand urgent and radical measures in the way we eat, process, connect and govern food systems (e.g. EC, 2020; UN, 2021; FAO, 2022; SCAR, 2023),). These challenges and their responses need to

be observed as early as possible and translated into prioritized thematic focus areas and transversal activity areas that are jointly formulated and shared by all actors participating in a partnership.

Followed process and main findings:

Our partners in FOODPathS and their networks first verified the list of planetary and societal challenges that a P-SFS faces. Next, the evolution of these challenges was discussed in a workshop, resulting in a consensus about the need for a transition towards SFS, because major trends reveal that we are heading towards an unviable planet (chaos). This is depicted in Figure 3.

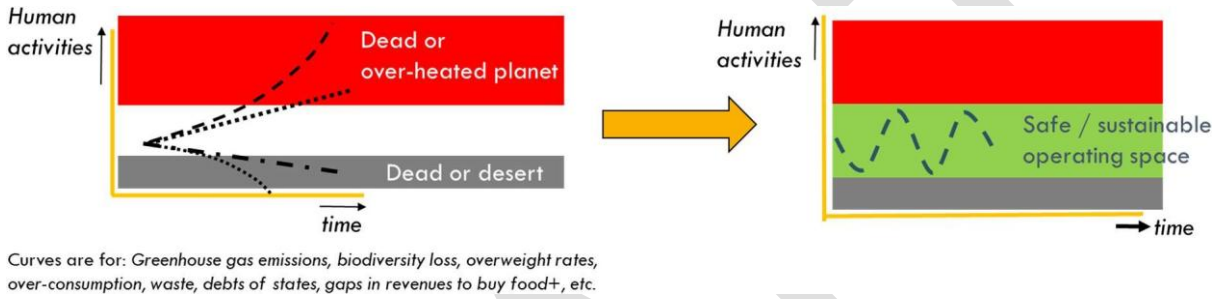

Figure 3: From unsustainably evolving food systems (left) towards sustainable ones (right)

The challenges helped formulate thematic focus and transversal activity areas which are most relevant (see chapter 6.1). These areas are addressed from a food system's lens, meaning that a holistic view on a food system is followed. This not only focuses on the individual parts of a food system but also on the interconnections between them, even in the case of externally changing conditions. Furthermore, FS actors and the EC stressed the importance of linking R&I areas to Policy and Education programs; this has been elaborated in the FOODPathS proposed RIPE scheme (see Figure 18).

Concluding remarks:

Numerous actions are already defined in the SRIA (SCAR, 2023 and D6.2 and chapter 6.1). The four prioritized thematic areas are: change the way (i) we eat, (ii) we process and supply, (iii) we connect to food systems, and (iv) we govern food systems. They are all addressed from a food system lens, meaning integrating multiple parts of food systems and connections between them, in particular in post farming and fishing (requirement of the EC). They are fuelled by four transversal action areas, namely (a) Funding, (b) Observatory, (c) Knowledge Hub of Food System Labs, and (d) Knowledge Sharing. All 8 thematic and action areas have been revisited by the diversity of FOODPathS actors and networks, to verify their relevance for their members and their capacity to constructively contribute to new R&I activities.

Critical factors and points to explore further:

- The most critical factor is the way a SRIA and action plan are formulated; the contribution and verification by the divers FS actors is considered imperative.

- In the implementation phase of a partnership, the involvement of the various actors deserves continuous attention because their contribution is essential to accelerate the transition towards SFS and all their voices are important. It is worthwhile to discuss if a co-programmed or institutionalized Partnership – in strong cooperation with the co-funded Partnership FutureFoodS - should be setup. Herein, private and philanthropic actor groups, and public organizations operating at urban, regional or global scales may find a meaningful role.
- The translation of scientific findings on sustainable food systems into recommendations for policy initiatives at national/regional and EU/international levels is strongly recommended, again for accelerating the transition to SFS.
- In the future, there is a need to further develop science-based advice at national and regional levels in the EU, grounded in a Food Systems Approach.
- Another strong recommendation is to further elaborate the RIPE concept via practical case studies and alignment with new Education & skills programs like e.g., proposed in the Pact4Skills.

2.2. Trade off and co-benefits

For more detailed information on this part, please consult the following deliverables: Report on Trade-Offs and Co-Benefits (D7.1) *and* Modus operandi protocol *D2.5)*

Introduction:

The bird may – next to planetary and societal challenges – face potential co-benefits and trade-offs from its own activities. As far as possible these elements - co-benefits and trade-offs- need to be identified as early as possible.

Followed process and main findings:

First, a **mapping of 26 networks, platforms and partnerships** was completed, which resulted in 3 kinds of cases: (i) food policy-oriented cooperation, (ii) (circular) food supply chains facilitated by a third actor and (iii) platforms with a single leading agency (public or private).

Second, the content was further enriched by **interviews** with actors in some selected in-depth case studies. In the selection of cases, attention was paid to having a balanced representation of (i) "the scales at which action took place" (at which scale the cases primarily operate, like local, regional, national, global), (ii) "area of focus" (which topic the cases mainly target) and (iii) the geographical scale at which the case operates.

This has led to the following co-benefits and trade-offs (see D7.1 for detailed case studies):

Activities	Potential co-benefit	Potential trade-off
Joining forces	Fruitful co-operation	Exclusion of specific actors depending on the objective of the case
Formulating (in)formal rules	Voluntary agreements and policies	Operating with exclusive language not easily understandable by all
Developing strategies	Joint SFS vision thanks to a coordinating force, risks, power and responsibilities.	Unidentified power imbalances and unmatched representation of a stakeholder group – conducting work and providing services in a case - in the case-specific policy processes.
Targeting integrally sustainability	Environmental, social, economic but also health and climate impacts are equally accounted for.	Focus on one dimension of sustainability while being overlooking other dimensions; and lack of consensus on the sustainability definition.
Developing funding strategies	Funding and support schemes would have to distribute according to the level of change a sector is facing	Lack of acknowledgement of marginal and investment costs that smaller supply chain enterprises face through a system change.
Focusing on critical success and failure factors	Minor successes due to punctually highlighting issues which have importance for a certain timeframe, situation or locality, due to individual indicators.	Encountering (too) many barriers while tracking and measuring the impact on and relationship between human, nature, and health, due to lack of multiple, holistic, indicators.

Governing partnerships	'Listen to different 'voices' and 'give legitimacy to 'divergent voices' via practical legislative measures, based on real-life knowledge, that are coherent and streamlined at national, regional and local levels.	Inequitably shared distribution of burdens and lack of emphasis on creating shared co-benefits moving forward, while focusing on single benefits for only one stakeholder group.
Designing new methodologies	Use experiential research, storytelling, and engaging in conversations based on a common, clear, strong, and bold vision for what a changed system looks like.	A focus on quantitative data and metrics.
Overseeing needs and gaps	A fair sharing of funds between all food system actors.	Understanding of different situations policies, information flows, behaviour of actors ...) due to lack of funds for actors of some EU countries

Table 1: Activities, potential co-benefits and trade-offs

Concluding Remarks:

In order to deal with co-benefits and trade-offs that the partnership may create – and listed in the table above – while developing activities as a partnership, one has to understand the different mechanisms and characteristics of inclusive SFS deals. This concerns a range of activities from public-private partnerships to global civil engagement programs to bottom-up stakeholder initiatives. More precisely, we need to figure out the critical issues related to the partnership's vision and collect examples of successful best practices and policies that support food system transformation. This is elaborated in the next chapters.

Critical factors and points to explore further:

- Results of interviewing and mapping cases - at different scales and including diverse actors – provide insights into the Mirror Group activities.
- The broad range of activities all reveal both co-benefits as well as trade-offs; in future partnership actions, all these activities have to be considered and discussed within Mirror Groups.
- Attention for and investing in new case studies remains fundamental to better understand co-benefits and trade-offs for the different kind of FS actors, and (local-global) citizens.

2.3. Food System Observatory, the bird's eyes

For more detailed information on this part, please consult the following deliverables: FS approaches and Observatory (D2.2 and D2.4).

Introduction:

The bird scans the environment, thanks to its Observatory which represents its eyes, to anticipate obstacles and adapt its courses when necessary. Hence, the Observatory is a crucial element of a partnership that seeks to contribute to sustainable food systems. It addresses a variety of relevant points like the kind of information that is required, and the way it should be measured, collected, stored, analysed and shared in a way that a partnership can use it.

Followed process and main findings:

- **Formulating a first Observatory in a SRIA**

FOODPathS has contributed to the SRIA (see chapter 6.1), in which one of the eight focus areas describes a first concept of an Observatory. This was the result of a discussion between 6 Food System experts, a literature review, and exchanges with the SRIA coordination team to verify its embeddedness in the full set of activity areas. The SRIA, including the chapter on the Observatory, was verified by the different FOODPathS partners representing diverse FS stakeholder groups; they confirmed that the first description is clear and focused. Such a preparatory phase is imperative for further elaborating the Observatory.

- **Reviewing Observatories**

Next, a review of different observatories was carried out (D2.4). In total nine observatories were identified as having a comprehensive, holistic view and coverage of food systems. In addition, 13 observatories have been considered with a narrower thematic focus however still covering at least several elements of a food system. One of the prominent and holistic observatories has a global scope, namely the Food Systems Countdown Initiative (FSCI; https://www.foodsystemsdashboard.org/); however, this observatory lacks information about food systems in several EU countries. A second observatory has a European origin and is developed and recently launched by the Joint Research Centres of the European Commission (EC-JRC, 2025). Both observatories incorporate a dashboard in which key indicators reveal the current state of food system's sustainability; a list of relevant indicators is presented in Deliverable 2.4. In most observatories, data are presented as quantified figures originating from a variety of data bases. Some of the indicators are not directly measured but indirectly calculated by exploiting FS models. Although graphs such as temporal trends and geographical maps of the key indicators are highly useful for 'direct orientation of the bird', the explored observatories do not focus on mutual inter-dependencies and interrelationships among those indicators - they lack this food systems approach. Most of the FS data and knowledge currently made available in observatories are centred on economic aspects of farms and food trade practices. Also, extensive data are available on nutrition and public health. Fewer data on consumer behaviour are available, with and the exception of and references to the EIT Consumer Observatory. Further, there is a noticeable lack of information and data on mid-stream producers, wholesalers, and retailers. Also, data are notoriously lacking on food providers in hotels, restaurants, or cafes (HoReCa), despite being a significant contributor to countries Growth Domestic Product (GDP) (Horeca,

2025). Consumers' use of take-away food and other convenience products, is notably on the rise (Market Research, 2025).

- **Identifying quantitative and qualitative food system data needs**

Workshops and discussions with experts were organised to determine what is specifically needed for a P-SFS, given than an Observatory should go beyond simply presenting data on food system activities and outcomes, as highlighted by various stakeholders and supported by the literature. Relying solely on quantitative data may not sufficiently capture broader aspects- such as food sovereignty and access, power structures and dynamics, and environmental components – which are often emphasised by civil society, NGOs, and some policy makers. To support this, the Knowledge Hub of Food system Labs could be utilised (see section 6.3) along with other examples involving a wide range of actors (see also Repository of examples on Cleverfood (2025) and Food2030, as well as the development of conceptual and methodological tools.

- **Setting-up process indicators in (co-funded) Partnerships following a Food Systems Approach**

During focus groups and workshops, participants discussed the question: 'What does a Food Systems Approach imply for the co-funding of projects?' This is a key area of interest for co-funded Partnerships, like FutureFoodS. The main finding was to concentrate the Partnerships' Observatory on what needs to be monitored (using process indicators), how should this monitored, and in which way can findings be critically assessed and analysed to help in adapting and optimizing new calls for proposals and Partnership activities. The final choice of call topics cannot claim neutrality but should be based on stakeholder dialogues and transparency. With regard to the processes and the framings chosen, this requires utmost transparency and scientific integrity. Also, the input from these assessments for policy making and new education programs (RIPE concept) are strongly recommended.

Concluding remarks:

The EU Dashboard Observatory has recently been launched and coupled to EuroStat with a food systems model. Therefore, FOODPathS suggests there is no need for replication of similar Observatories by FutureFoodS. Rather the project suggests to establish a connection with the *JRC-EU (Joint Research Centre) Food Systems Dashboard* via an 'Interface', and to put more focus on the complex interactions between actors in Food Systems (see also next section: critical factors and points to explore further). Such interactions evolve between actors within the Partnership and beyond, and entail interdependencies between outcomes, reinforcement of feed-back loops, leverage points or hindering factors: lock-ins, blockings, pathway dependency. Further, we suggest the Partnerships' Observatory should focus on dedicated expert analyses in the form of consolidated assessments on Food Systems. Such analyses may also involve use of conceptual models, DPSIR ('Driving Forces, Pressures, States, Impacts, Responses') approach and/or semi-quantitative models demonstrating outcomes and consequences across a FS. This was also suggested by the EU HLEG on food systems: '*focus on producing rigorous science-based assessments at different scales with interpretations and recommendations for policy pathways* (EC-HLEG, 2022)'. Excellent references are found among the consolidated European Economic Area reports representing environmental outlooks (e.g. EEA, 2017).

Critical factors and points to explore further:

- In order to benefit from being a part of a 'flock of birds' /flock of partnerships (see Chapter 8) and to not 're-invent the wheel', it is important to connect with the JRC's Dashboard, EEA, and observatories of other partnerships rather than establish a new dashboard. The FutureFoodS Partnership's contribution could be the focus on assessments of data, relevant for the Partnership's prioritization of activities (e.g. internal and external project co-funded via calls).
- Since the EU Dashboard is coupled to EuroStat and robust data models, FOODPathS may raise the question whether there is a need for the development of a similar Observatory by FutureFoodS; one consideration hereby is the involvement of Member States in FutureFoodS, with own data bases. In all cases, an Observatory should be used for collaboration and to share knowledge, ideas and then create additional data.
- A distinction should be made between relevant food system data for the transition towards sustainable food systems and internal process indicator data for appropriately managing a partnership (like for defining appropriate calls for funding (see last paragraph in the section 'followed process').
- Further steps are recommended how assessments should be carried out, by whom and with which actors.

3. 'Governance', the bird's head

For more detailed information on this part, please consult the following deliverables: Innovative governance model (D2.6), Report of mapping results (D2.1), publication on co-creation (de Vries et al., 2024), and publication 'Towards sustainable food systems: a review of governance models and an innovative conceptual framework' (Donner et al., 2024).

In its head, it should be able to reflect on the courses to follow. This implies being capable of painting potentially sustainable FS futures in the form of scenarios, defining a vision, mission, and prioritized pathways in which all interacting actors – that shape the partnership – mirror the actions and finally agree upon them. It also formulates the power balances between actors and the (in)formal rules within which it can fly. These are the key elements of its 'governance'.

Figure 4: The bird's head hosting governance

Introduction:

Governance is challenging to implement within a group, primarily due to its political and inter-relational implications. Decision-making processes, communication, and respecting rules are among the key issues of a governance model or framework. They have an impact on the level of involvement of the partners throughout a partnership's lifecycle. Therefore, it is crucial to ensure that the governance model is well-described, clear to all participants, attractive and based on a co-creation process. Only then, can it foster the commitment of all the partnership' members.

Followed process and main findings:

To achieve this in FOODPathS, a governance conceptual framework and architecture was developed through a series of steps. This began with general workshops aimed at gathering needs and visions of involved actors, a literature review, a definition and conceptual framework for food system governance for sustainability, and an analysis of governance architectures of existing partnerships. Finally, the insights guided the co-creation of the governance architecture by all partners of FOODPathS. These steps are recommended for any future partnership to follow.

- **Exploring scenarios to increase collective awareness of food system governance**

Inclusiveness was identified as the most critical issue when discussing governance of partnerships. The first question addressed was: *How can we develop a governance model that incorporates*

inclusiveness while respecting the varying scales of operations among actors (from local to global)? This question was posed at a FOODPathS consortium workshop in 2023. Participants were asked to envision four different scenarios for food systems based on scale and degree of connectivity, and then to verify which scenarios correspond well or not with their organisation strategies. This exercise resulted in the following scheme (see Figure 5).

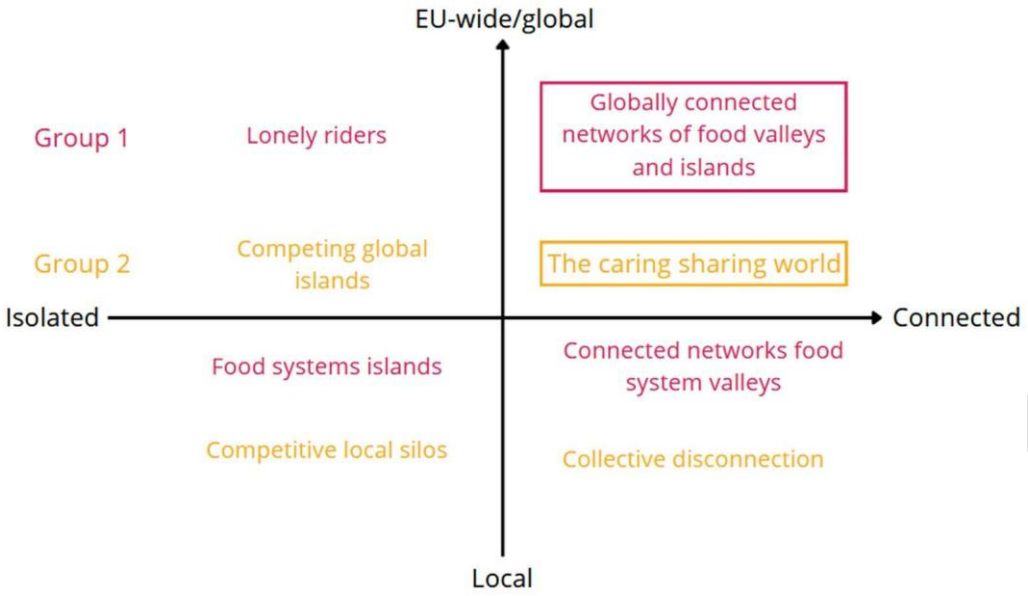

Figure 5: Scenarios results within the two workshop groups (red and yellow). Framed titles are the ones that have mostly been preferred by the participants.

This workshop increased the partnership consortium's awareness of the importance of connecting scales through an inclusive governance model. It also underlined the need for a shared vision and common objectives.

- **Defining a conceptual framework for food system governance for sustainability**

Following this collective reflection on positioning the partnership within local to global food systems, a comprehensive literature review was conducted, examining 34 publications on sustainable food systems governance in scientific journals (Donner et al., 2024). After analysing various factors - such as existing barriers and proposed solutions, the following definition of **food systems governance** for sustainability was developed:

> '**Governance of Food Systems for sustainability** *is the continuous process of orchestration of policies and (multiple) food systems consisting of diverse interacting actors, respecting (in)formal rules and striving to provide food for all, in equitable and environmentally-friendly ways, at any time and in any context.*

This definition provides partners clarity on a concept that often is challenging to grasp. Building on this, the literature review generated the necessary insights to design a new governance framework (see Figure 6), centred around four key issues: (1) the interactions between actors, (2) the control, power balance and decision-making processes, (3) the (in)formal rules, norms and practices, and (4) the orchestration of policies and activities of multiple food and other systems.

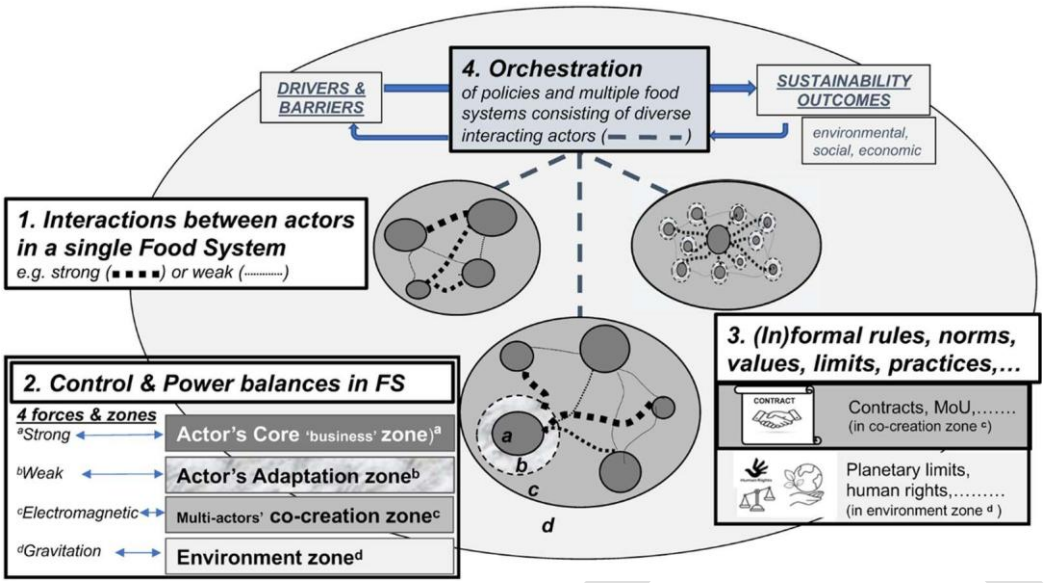

Figure 6: Innovative conceptual framework for food system governance for sustainability, consisting of four key issues (source: Donner et al., 2024)

This framework helps to build the governance architecture of a partnership for sustainable food systems, taking into account its four issues.

- **Learning from collaborative cases showing Governance in practice**

Case studies proved highly effective for examining how collaborative initiatives address governance. An interview guide for governance was developed, incorporating all the governance issues outlined in the previous sections. The in-depth case study methodology is detailed in this report (see Part 5.2: Collective Initiatives in Practice). With the support of the four theoretical issues (see Figure 6), the main findings of the case studies could be discussed and translated into effective and practical recommendations. Some of them are presented in Figure 7; for more details, please consult D2.6. These should be considered when developing the P-SFS governance architecture.

Figure 7: Some results from in-depth case studies on governance (further details in D2.6)

- **Co-creating an ideal governance architecture**

The co-funded Partnerships, including FutureFoodS, already have an established governance architecture. This has mainly been defined by the funding bodies and academic partners. Therefore, as a follow-up step, private sector members of the FOODPathS consortium were asked to envision their ideal governance architecture for a partnership, because they are mostly absent in co-funded Partnerships. The starting assumption was that they would propose significantly different structures. Their proposed model included the following bodies: a General Assembly, a Board of Directors, a Technical-Scientific Committee, an Executive Director, and a Conciliation and Arbitration Board (to resolve conflicts between members).

Next, all FOODPathS partners, representing public, private, philanthropic, academic at different scales, participated in a collaborative exercise. This was done with the goal of enhancing the principle of inclusivity within FOODPathS governance architecture via a co-creation process. After a brief recap of the governance issues and of other partnership architectures, a 'do-it-yourself' governance exercise was conducted in three sub-groups consisting of all FOODPathS members. Special attention was given to a value network map methodology that in particular helps to identify the nature of major connections between governance structural groups; these can be knowledge, finance, cooperation, etc. An image of the Klaxoon board, used for this activity, is presented in Figure 8.

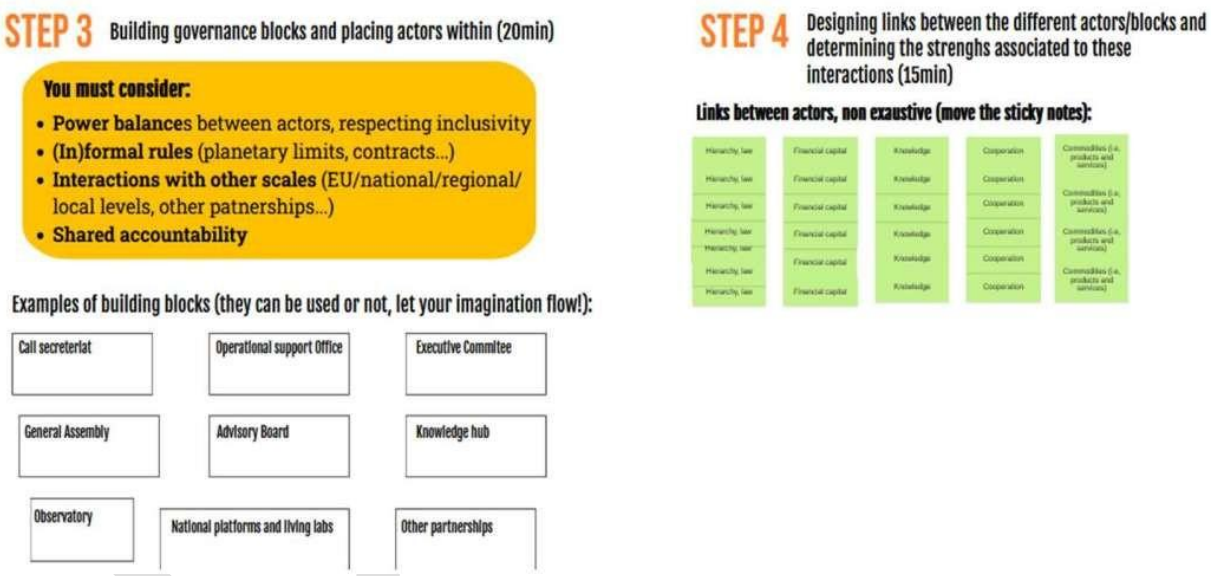

Figure 8: A snapshot of the Klaxoon board of the co-creation governance architecture exercise

The goal of the co-creation exercise was to jointly develop a governance architecture that aligns with the key issues presented in Figure 6 and with the perceptions of all food system actors. By consolidating the results from the sub-groups, a synthesised architecture was created (see Figure 9).

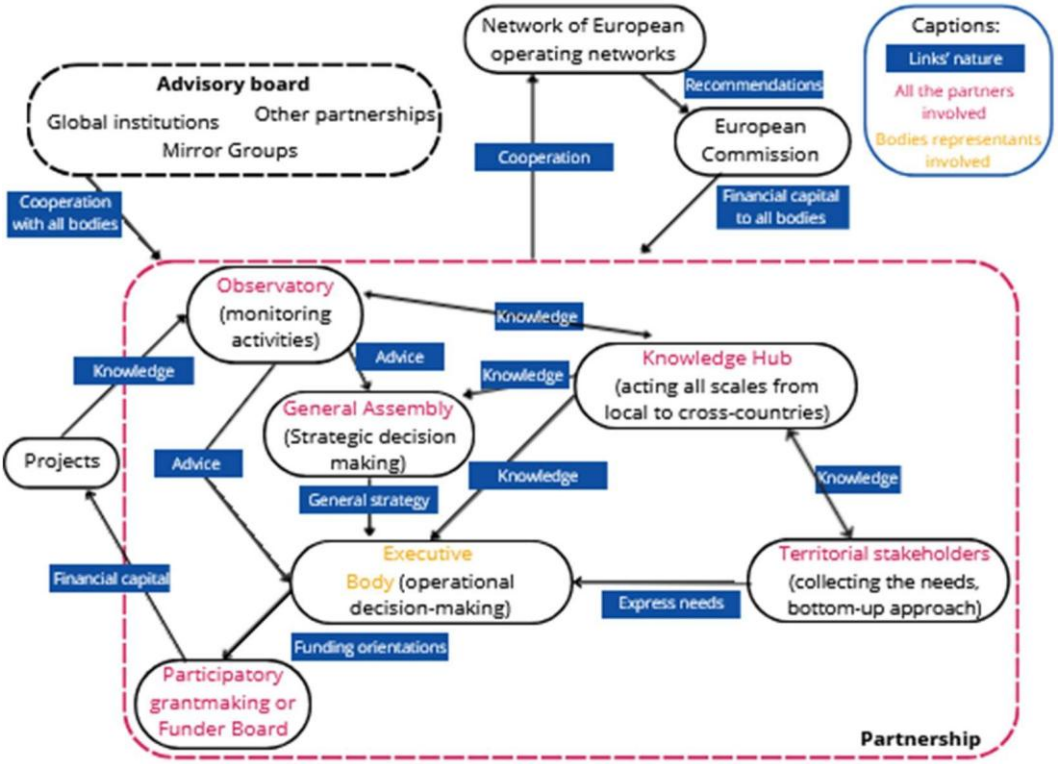

Figure 9: Governance architecture co-created with the FOODPathS consortium

While it cannot be claimed that this architecture is the most suited for all partnerships, it was co-created and validated by all FOODPathS partners, reflecting their diverse perspectives and ensuring greater legitimacy. Moreover, this architecture is designed to be flexible, allowing for evolution throughout the partnership's lifecycle.

- **Confronting our thoughts and results with external actors via Mirror Groups**

Having an outside opinion on the results can be of great help to continuously improve governance models, but also other processes described in this manual. FOODPathS *Mirror Groups* brought together organizations and initiatives that are not directly involved in the project, but may be impacted by it and/or have valuable related experiences to contribute. These *Mirror Group participants* learned about and reflected on the work happening in the project/partnership in order to provide useful input and recommendations to ensure that activities and decision making were (and continue to be) as inclusive and impactful as possible.

Participants in the Mirror Groups include local, regional, and national representatives from the public sector, civil society, farmer organizations and other private sector parties.

Working with Mirror Groups provides FOODPathS – and any partnership – with an opportunity to learn about best governance and implementation practices and elevate the participants' voices and stories, including their priorities, reflections, and feedback, to ensure an inclusive, transparent partnership.

FOODPathS partners organised three Mirror Groups, 1) with individuals and organizations based in Europe, 2) with organizations and individuals based outside of Europe, and 3) with organizations and individuals based in either Europe or outside of Europe (some who previously attended a Mirror Group and some who had not). Participants shared their own experiences

about participation in a variety of partnerships including those that are overly 'top-down,' hierarchical and obtuse in their administration and decision-making processes. This type of partnership was described as resulting in activities that benefit 'few' rather than 'many,' and create spaces that are exclusive to individuals and organisations that are already embedded in the EU food systems work.

Concluding remarks:

The collection of governance insights from the literature review, in-depth case studies, other partnerships, and Mirror Group activities reveals key structural issues across various partnerships, though it does not always clarify their operational dynamics. Direct engagement with other partnerships – in particular through Mirror Groups and in-depth case studies - provided valuable insight into these functional aspects. At every stage of this process, inclusivity, as an important pillar of sustainability, remains a central objective when implementing a governance architecture (Figure 9), following governance issues and principles from the conceptual framework (Figure 6).

Critical factors and points to explore further:

- A solid theoretical background for a governance architecture has to be established in order to deliver on high functioning operational aspects of a (future) partnership.
- Robust mapping of collaborative initiatives, using a single template to compare insights, is imperative to establish which governance issues are most relevant for divers' actors and contexts.
- A series of Mirror Group activities allow verifying trade-offs and co-benefits within the partnership and external, yet impacting, the partnership.
- Enhancement of trust among partners, particularly in decision-making processes, is a common request from divers' actors (e.g. via a Code of Conduct, chapter 5).
- Involving an independent and impartial facilitator in the decision-making process is strongly recommended to avoid conflicts of interest and seek consensus.
- Next to classical central roles of a governance board and executive committee, core bodies have been revisited resulting in the suggestion for an Observatory, Knowledge Hub, and Grouped Territorial Stakeholders (for broad FS actor involvement and a Funders Body.
- A Funders Body is crucial in co-funded partnerships and has to be well positioned in the governance architecture (possibly including the notion of Participatory Grantmaking; https://www.participatorygrantmaking.org/resources).

4. 'Operational activities', the bird's body

The body of the bird hosts all operations that allow the bird to fly. This includes its modus operandi serving as its backbone (including its blood system to carry out activities), its systemic approaches that guarantee its capacity to adapt its courses via feedback loops and leverages, and its co-funding mechanisms that fuel the bird to fly.

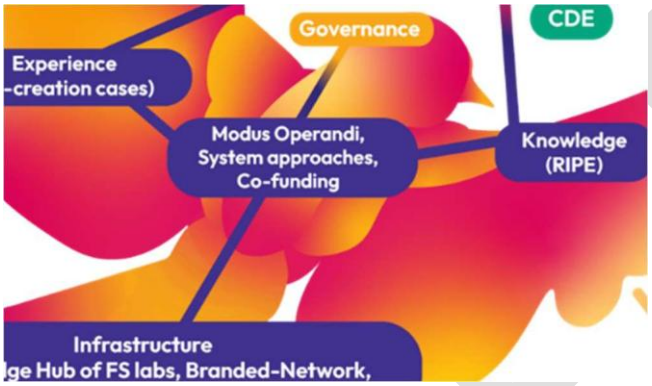

Figure 10: The bird's body hosting its operational activities

4.1. Modus Operandi

For more detailed information on this part, please consult the following deliverables: Modus operandi protocol (D2.5)

Introduction:

The '*Modus operandi*' (MO) is considered as the central mechanism activating the wings and allowing it to change trajectories when necessary. It is the operational taskforce (e.g. executive board or management team) of a partnership dealing with operational activities such as management, finance and human resources. In FOODPathS, MO is defined as follows:

> The *Modus Operandi* (MO) is one of the elements of the partnership, and the way in which all other elements (e.g. governance, observatory) are orchestrated using guiding principles (e.g. co-creation, systemic approach) and practical features (e.g. secretariat, internal communication processes and tools). As such, it is the basis for the overall functioning of the partnership.

A clear strategy has been carried beginning with envisioning the MO of an ideal partnership, then learning from *in-vivo* MO experiences and finally analysing results to setup a roadmap with coherent set of MO activities.

Followed process and main findings:

To guide the designing of a MO for an ideal partnership, a timeline composed of six steps was set-up, from an envision exercise to implementation and testing (see figure 11).

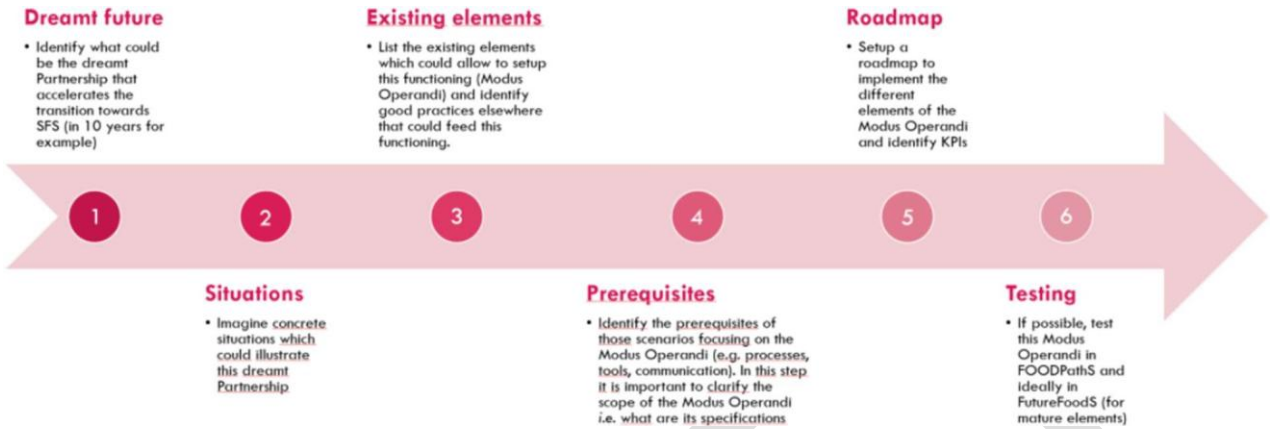

Figure 11: Process defined to shape the prototype partnership's MO.

Relevant tools and methods have been chosen to fulfil each step's objective via a pragmatic approach in the following way.

- **Steps 1&2: Envisioning the *Modus Operandi* of an ideal partnership**

To collect the vision of FOODPathS partners and the Advisory Board on the MO, a workshop was held in December 2023 in Brussels and included 3 phases: 1) brainstorming to identify 'Success pillars', i.e. key successes and features of an ideal partnership; 2) scriptwriting, testing and updating of four complementary situations reflecting successive phases (launch, engagement, expansion, collaboration) of a new partnership; 3) pitching the scenarios and then voting for critical actions.

Analysing the outcomes of the workshop resulted in identifying 9 Success Pillars of a partnership's MO, as shown in the figure.

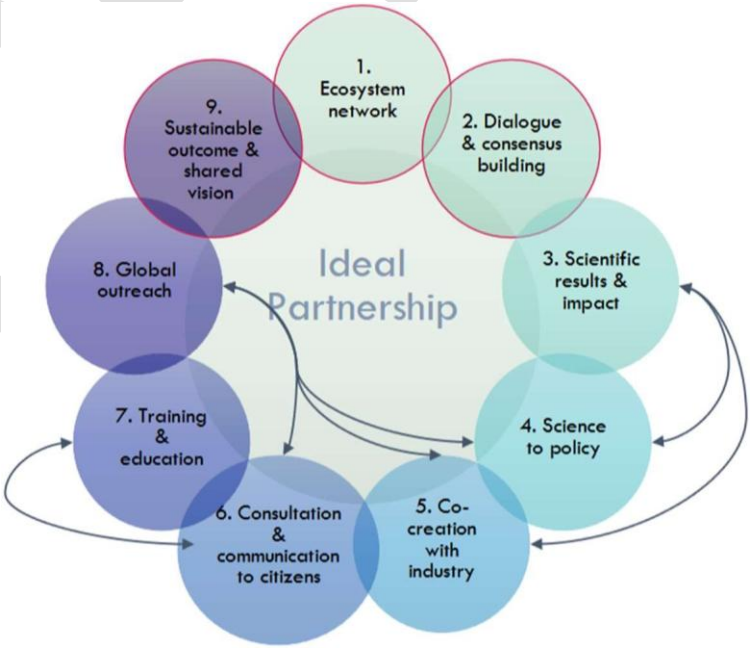

Figure 12: Success Pillars identified during the first MO workshop

In small group exercises, participants provided examples in answering the following questions:

- ✓ How to favour engagement and good communication among partnership actors?
- ✓ How to favour the robust foundation and update of the SRIA?
- ✓ How to enlarge the consortium?
- ✓ How to favour the partnership cooperation with other initiatives?

- **Steps 3&4: Learning from *in-vivo* Modus Operandi**

Operational activities are fundamental to any partnership, and relevant examples can be drawn from external experiences. To ensure practical relevance, feedback from divers' actors can inform which tasks the MO should encompass.
A broad range of cases- some derived from previous FOODPathS' research work - was reviewed in order to identify best practices and operational frameworks. This process included:

- ✓ **Practical insights from the Platform Technologica Food for Life Spain (PTF4LS)** information were collected during a dedicated workshop, that included presentations from and a discussion with PTF4LS partners. Main results outline the mechanisms of collaboration among diverse actors, processes to ensure the stakeholders' inclusion, adherence to network-wide administrative and financial rules, and methods to foster a sense of belonging and equitable participation.
- ✓ **Practical insights from three in-depth case studies** related to MO including interviews with a diversity of actors (see D2.5 for details). Insights have been categorized under: 1) dissemination & communication; 2) engagement and collaboration; 3) strategy and planning; 4) review and feedback.
- ✓ **Good practices in projects managed by INRAE Transfert**, a dedicated workshop resulted in the identification of 5 main categories of success criteria: 1) coordination/management team functioning; 2) relationships between the coordination team and the consortium, and among the consortium; 3) projects events; 4) project monitoring and reporting; 5) projects results exploitation and impact.

- **Steps 5&6: Analysing previous results to setup a roadmap**

Based on the insights provided during the 4 previous steps, a MO roadmap was synthesized in the form of a table, including for each MO activity: practical features, processes and tools to put in place, as well as recommendations for implementation and KPIs (Key Performance Indicators) to measure their efficiency. A short version of this table is presented below (table 2, D2.5 for more details).

MO activities	Practical features
Project coordination and management	**Regular communication** between the overall coordinator and the operational project manager to ensure alignment and address issues promptly. **Clear roles and tasks distribution** between the coordinator and the project manager, as well as partners. **Clear and accessible management tools and procedures** for the coordination team and the consortium.
Internal communication	**Efficient internal communication tools** adapted to partners' needs. **Regular communications to inform about the partnership progress**, including results obtained and visibility of various activities implemented by partners, both internal and external. **Regular consortium meetings** each with a specific aim, modality (in-person or virtual), and frequency.
Monitoring and evaluation	**Management tools and procedures** to monitor the partnership progress and perform the reporting to the funding agency. **Regular communication** between the coordination team and the governing bodies/ partners in charge of the partnership monitoring. **Advisory board** composed of external experts.
Quality of management and communication measures	**Management tools and procedures** centralized in a management guideline. **Review system** to control the quality of results/ deliverables. **Feedback mechanism** to continuously improve the tools and procedures.
Risk management	**Risk management plan** for risk identification and efficient mitigation measures.
Compliance with legal rules	**European rules compliance** by the consortium. Transparent and flexible **internal rules,** including for new partner assessment process.
Financial management	**Regular internal financial review** for optimal financial management. **Tools for financial reporting** to the EC (link to the Monitoring and evaluation activity). **Strategy for financial viability** of the partnership.
External communication, dissemination and consultation	**Outreach plan** with clear objectives and roadmap. **Efficient external communication tools** adapted to target audiences to communicate, disseminate and consult them. **Mapping of the existing** initiatives, projects, partnerships to link with, and setup a **database of key actors.** Definition of quantitative KPIs to assess and revise the plan. Feedback rounds to re-discuss the plan (including its objectives) and improve the strategy.

Table 2: MO roadmap (short version)

The MO activities are linked directly to guiding principles of the partnership, as shown in figure 13. The guiding principles emerged from the workshops and the in-depth case studies.

Figure 13: MO activities of the Roadmap follow guiding principles and provide practical advice for an inclusive partnership of diverse actors

Concluding remarks:

To address management needs of a partnership, FOODPathS is introducing the *Modus Operandi* as an innovative building block of an ideal P-SFS. A partnership's MO is an operational taskforce body that oversees and steers day-to-day activities. Developing the MO concept required blending idealistic visions with practical inspiration from existing models. The Modus Operandi, as defined in this manual, embodies key contributions of the FOODPathS consortium, reflecting its commitment to an inclusive and sustainable partnership framework.

Critical factors and points to explore further:

- Clear definition of the MO concept that is strongly linked to a partnership on Sustainable Food Systems activities e.g., by considering its funding constrains.
- The impact in cultural dimensions in management should be taken into account; e.g., how cultural differences influence decision-making, communication, and collaboration.
- The integration of digital tools and innovations needs to be revisited and taken into account. E.g., AI-driven analytics and virtual collaboration tools could significantly enhance the operational efficiency and inclusivity of partnerships.
- Conditions of scaling and adaptability have to be considered and further explored as well as cross-partnership collaboration (see chapter 8) to develop a community of practices for mutual learning.

4.2. A Food Systems Approach

For more detailed information on this part, please consult the following deliverables: Functioning FS Approaches & Observatory (D2.4)

Introduction:

A Food Systems (FS) Approach suitable for research, innovation, policy and education needs to cover various practical aspects of governance and operational initiatives within a partnership. Specifically, portfolio management, call mechanisms and call text, science to policy activities, and observatory activities. However, no single definition of Food Systems exists, as Food Systems operate at different scales from the global to local levels and vice versa, and they are often embedded in specific locations and environments (Braun et al. 2021). Moreover, from a constructivist epistemology viewpoint, food systems do not exist in nature or society per se (Le Moigne, 1977). According to constructivism philosophy of science, systems models are constructs aiming at representing complex phenomena, which cannot be reduced to simple causality or deterministic processes, because they are in continuous development and characterized by non-linearities (constructivism - Wikipedia). Therefore, it is not surprising that the Food System concept alludes to a wide variety of views on the interactions between the different aspects of a system, and that different definitions have diverging views on which components, dynamics and emerging properties are characteristic for food systems (Brouwer et al. 2020, de Vries et al., 2022). It should be noted that also political and educational dimensions of constructivism deserve attention in future work; however, this is beyond the scope of the FOODPathS project.

Followed process and main findings:

First, in the SRIA, which is considered the first, most relevant, guiding document for a partnership (see chapter 6.1), food systems and a Food Systems Approach have been defined (see Figure XX),

Second, the Food Systems Approach has been presented in a comprehensible way at a workshop with a widest variety of food system actors. Their feedback was imperative to verify the value of the Approach.

Third, the comprehensiveness of the Food Systems Approach has also been tested via a survey among FOODPathS partners (D6.1). This allows for an even broader consultation for input.

"(...) a system that embraces all elements (environment, people, inputs, processes, infrastructure, institutions, and power relations, markets and trade) and activities that relate to production, processing, distribution and marketing, preparation and consumption of food. A systems approach acknowledges the interactions between natural resources/ecosystems services, primary food production (farming, aquaculture and fishery), food processing, packaging, logistics, marketing, retail, food services, food consumption and waste management/recycling and the many feedback loops between them, which together defines the degree of complexity" (Sustainable Food Systems Partnership for People, Planet and Climate's SRIA, p. 14).

Figure 14: The definition of food systems and a Food Systems Approach (see Halberg and Westhoek, 2019, for further reading and detailed FS information)

Fourth, to ensure that a Food Systems Approach is practical for use in R&I partnerships, and can bring about positive change, two main criteria from von Braun et al. (2021) were followed:

1) the definition should be suitable for the purpose at hand, and
2) it should be sufficiently precise to define domains for policy and programmatic priorities, without excluding any aspects of social, economic, or environmental sustainability.

This has been discussed and explored with the teams involved in developing the Observatory, and with the groups working on Co-funding mechanisms within the FOODPathS project. The processes that they followed to include a Food Systems Approach in their work is further is described in chapters 2.3 and 4.3, respectively, including reviews, workshops, surveys and focus group meetings.

Concluding remarks:

Within the future partnerships, a Food Systems Approach is needed to guide the work done within several key activities and to keep a holistic view on food systems. Especially for the FutureFoodS Partnership, a Food Systems Approach may be considered relevant for 1) R&I agenda, 2) R&I policy advice, 3) education programs, 4) transnational funding via joint calls and strategic programming as well as portfolio management, 5) the Observatory, and 6) the Knowledge Hub of Food System Labs. To ensure that a Food Systems Approach is both fit for purpose and specific enough to guide activities and work within the four Thematic Areas of the SRIA of the P-SFS (chapter 6.1), opportunities and needs expressed by stakeholders are described in sections 2.3 (Observatory) and 4.3 (Co-funding) (see also D6.1)[4].

Critical factors and points to explore further:

- In a food systems-oriented partnership, a Food Systems Approach is considered imperative in all its elements, activities and funded projects.
- Co-funded external projects guidance is recommended for partners which may not be familiar with FS approaches.
- In internal activities of an exemplary P-SFS, FS approaches need to be consequently followed and demonstrated since these serve as inspiration for both partners and external actors.
- A wide range of concepts is needed to give best possible descriptions of context-dependent food systems.
- The latter point also implies that the complexity of food systems representations should be further exploited in future projects, targeting a wide range of complex system science theories.

[4]The FS approach for science-advice has been addressed in FOODPathS D6.1. (SRIA 2.0 and Science-Policy Interface). A first conceptual scheme for RIPE, linking R&I, Policies and Education, has been presented in FOODPathS D6.2; this may need further reflections in FutureFoodS partnership.

4.3. Co-funding

For more detailed information on this part, please consult the following deliverables: Report on funders engagement and Funders Forum agenda (D3.1), and Aligned network and strategies for co-funding (D3.2)

Introduction:

The support of impactful R&I projects by a partnership (if they concern co-funded calls) is only possible when appropriate funding is committed. This requires a transparent process that avoids conflicts of interests, while fostering the involvement of different kind of funders who agree on sharing and aligning strategies, objectives and practices for joint action.

Followed process and main findings:

- **Funder's map**

The first step was the creation of the FOODPathS' funders map that elucidates who acts and is registered as a potential funder in a partnership. The argumentation '*why to join the funder's map?*' is given in the text box below (D3.1). The registered funders look at and discuss the opportunities and limitations, best practices and mechanisms that help to align funding strategies, and practices to create innovative funding approaches, as well as devise recommendations and guidelines. When deciding what organisations should qualify as a funder in an inclusive partnership, it was considered important by the FOODPathS consortium to involve government, science and academia, non-governmental and private sector stakeholders (the four groups in the quadrupole helix) in the discussions about the funding process. However, in practice it became apparent that involvement of other actors than the funding bodies in designing

Why join the funder's network?

Whether you are active in a research center, an NGO, a public authority, or an industry, there is something for you to gain from a partnership. All partners are committed and steer the direction of a partnership, shape its strategy and form a dynamic force advancing the transition towards SFS.

1. CONNECT

Joining a partnership means connecting to a great variety of active stakeholders, from local to global scale, and a diverse community of European networks and partners. As a member of the Funders´ network, you will be invited to attend events for active exchange, including the Funders Forum, a place for dialogue and sharing information on practices, needs, visions and concerns among funding organisations.

2. BE INVOLVED

Members of the Funders´ network have the opportunity to provide continuous input to the future funding framework for partnerships while influencing key SRIA areas. Together with others, you work on aligning funding strategies and practices that enable dedicated systems- and multi-actor approaches that are inclusive and impact-driven.

3. GET ACCESS TO RESOURCES

You will receive info on the latest developments of the Partnership FutureFoodS and on best practices to support sustainability goals in food systems. Together with the network, we consider legal frameworks, ideas for food systems research with added value, capacity-building mechanisms and best practices from programs on national and regional levels!

4. FEATURE YOUR ORGANISATION'S COMMITMENT TO SFS

The network actively engages in conferences, workshops, webinars, etc. Being a funder will not only mean being featured on the website's map but also receiving and providing indirect promotion through its communication channels, including conferences and other professional settings. Thus, your organisation´s commitment to improve food systems will be featured.

5. BE ON THE FOREFRONT OF Sustainable Food Systems

Participating funders have access to the latest information, ideas and fora for discussing governance models for shaping the future landscape of sustainable food systems. You have the possibility to make your voice heard and contribute in the definition of the environment in which the P-SFS ill operate.

funding programs and calls – such as NGOs and academia – was difficult in co-funded partnerships. The reason is that these organisations are interested in participating in the funded research projects, but they would become in-eligible for funding if they contributed to formulating calls.

- **Funder's forum**

Secondly, a series of funders forum meetings were organised with a large and diverse group of funders, including representatives of nearly all food system actor groups. A series of questions were posed to them. The question '*What changes are necessary – with regard to funding of research – to support this transformation through transdisciplinary research',* provided the following insights:

- There seems to be a discrepancy between a transdisciplinary, systemic approach in research and the way funders and ministries provide research funding, which is still too much along sectoral silos. For this partnership, not only agri-food or R&D oriented ministries should be involved but also health and education. Overall, synergies between European and national funds need to be created, being adapted to the context in which they are used, and exploiting existing infrastructures.
- Stakeholders, including consumers, citizens (especially young people) and private sector stakeholders such as SMEs (not only large corporations) and farmers, need to be involved more in food systems research along the entire research chain.
- Researchers from different sectors and focusing on different parts of the food value chain need to work together in a transdisciplinary way (i.e., social sciences, humanities, from production to consumption and nutrition). They need to be creative and draft impact pathways that allow follow up or even continuation of projects with broader dissemination. This also positively impacts evaluation processes, asking for experts with a broad view and understanding of system approaches.

The question '*what impact and interesting examples/good practices can be shown?*', was answered in different ways:

- According to participants, impact means different things: coordinating the action well, impacting the global world as well as responding to local challenges, moving towards sustainable food systems.
- Impact is about influencing the food chain and reaching a more coherent public policy around food, with a science/evidence base, and should be beneficial to citizens.
- Impact measurement is important, but the Partnership should not lose itself in KPIs but dare to pursue long-term, ambitious goals, where researchers step out of their comfort zone.
- A measurement of success is whether funders stay in a partnership after 10 years and whether synergies have been created between member states to increase impact at supra-national level.

A series of events was also organised around the question: '*Why is it necessary to work on funding strategies, including R&I programming and funding cycles?'* The concept of a systems approach is gaining attention and its importance is increasingly understood since a systems approach offers a holistic view on complex problems and acknowledges interdependencies within the system; however, which criteria are to be considered - when assessing and selecting project proposals for funding - and how (which weighting criteria, what scales, what thresholds) remains an open question. Although the recognition of a Food Systems Approach in R&I is evolving, the programming and funding is lagging behind. Hence, particular attention from a partnership is requested. This implies thinking and working towards a transformation from established funding schemes and designs towards more co-creation-based funding approaches respecting the needs of public authorities and researchers as well as providing the necessary

room needed for stakeholder engagement and participation in funded projects following the idea of a systems approach (see D3.2).

- **Identifying key priorities**

The third step was about identifying co-funding priorities needed in the largest European sector, namely the food sector. Three areas were identified via meetings and surveys with experts in programming, funding and project management:

A) Programming and alignment of actors, priorities and objectives. Ongoing collaboration between funding bodies, researchers, and stakeholders highlights the need to adjust funding priorities for real-world implementation, focusing on high-impact areas. However, resistance must be considered when implementing changes to the R&I funding cycle. Mutual learning at the European level can help reshape funding strategies, and Horizon Europe's 10-year Partnership instrument offers a valuable opportunity to ensure long-term impact through coherent and flexible portfolio management, focusing on sustainable outcomes (economic, environmental and social) and inclusiveness.

B) Funding (including a systematic analysis of calls, funding instruments and evaluation). By systematically analysing various calls in Europe, the following targeted recommendations for a P-SFS were formulated:

1) Provide a definition of a systems approach or a clear explanation of what is meant;
2) Be mindful and consistent with terminology, e.g. when using typical phrases in a systems approach such as multi-/inter-/trans-disciplinarity;
3) Think about where and how to ask for cross-disciplinarity, stakeholder engagement, and multi-actor approach aspects and consider the differences between the concepts;
4) When applying a system approach it is important to consider both co-benefits and trade-offs;
5) Consider how a Food Systems Approach contributes to impact and provides guidance for project participants which are not familiar with such an approach;
6) Ask how proposals take into account a Food Systems Approach, e.g. do they contain a stakeholder engagement plan or a considerations about how the approach might be adjusted over time?
7) Challenges are overwhelming, thus networking facilitated at the partnerships' program level is needed;
8) Be open to new funding instruments beyond classical projects (e.g. Knowledge Hub of Food System Labs) to create mechanisms for fostering connectivity, co-creation and inclusiveness.

C) Funded projects. The main goal of funding activities is to generate knowledge through R&I projects, which brings strategic priorities and objectives to life. It is recommended to focus on understanding how project leaders experience systems approaches and cross-disciplinarity, as well as investigate how projects should ideally be supported. A 4-step recommendation for a Food Systems Approach-based R&I project was established during a co-creation process with project leaders of different food-oriented projects in Europe:

1) Depicting a Food System from an overall perspective.
2) Defining the relevant sub-systems, which the project will address in its activities.
3) Defining the scientific disciplines required to cover R&I aspects of a sub-system and ensuring inter-disciplinary collaboration across its nodes - according to call topic needs.
4) Identifying stakeholder types relevant for a sub-system being involved in the consortium.

A survey of researchers and research managers also identified needed support measures for capacity and community building with a focus on systems approaches. The top 3 skills that need to be strengthened are: (a) *Co-design, co-creation, implementation*, (b) *multi-actor approach* and

(c) *Multi-, Inter-, Trans-disciplinarity*. A catalogue of support measures is available in the form of a leaflet (https://www.foodpaths.eu/resource/informative-leaflet-for-potential-funders/).

- **Practical implementation**

The fourth and final step, was about addressing practical implementation. Regarding funding strategies, particularly within the context of a Food Systems Approach, it is essential to facilitate the sharing of information, ideas, concepts. Beyond this, promoting active exchange and collaboration among all actors involved in the funding cycle is critical, as this has proven fundamental to effectively addressing related challenges. Looking at good examples and practices helps to develop understanding about what needs to be changed and the steps needed to transform the funding R&I based on a Food Systems Approach. However, changing to a real Food Systems Approach in research is easier said than done. There were several key points raised, which necessitate a change in mindset and current way of working:

- Different types of Funders and funders from different sectors need to work together and align (e.g. health and agri-food oriented funders in one call, or regional and national funders in another call).
- Longer funding horizons and longer post-project monitoring and follow-up are needed compared to today's shorter-term practices.
- Multi-stakeholder and participatory approaches need to be integrated along the whole funding cycle and research chain, from start to finish and beyond.
- Funders need to translate a Theory of Change approach, based on a Food Systems Approach, into practice.
- It is 'mission critical' to build on local realities and use what is already there rather than reinvent the wheel.

An implementation strategy has been designed and is shown in figure 15.

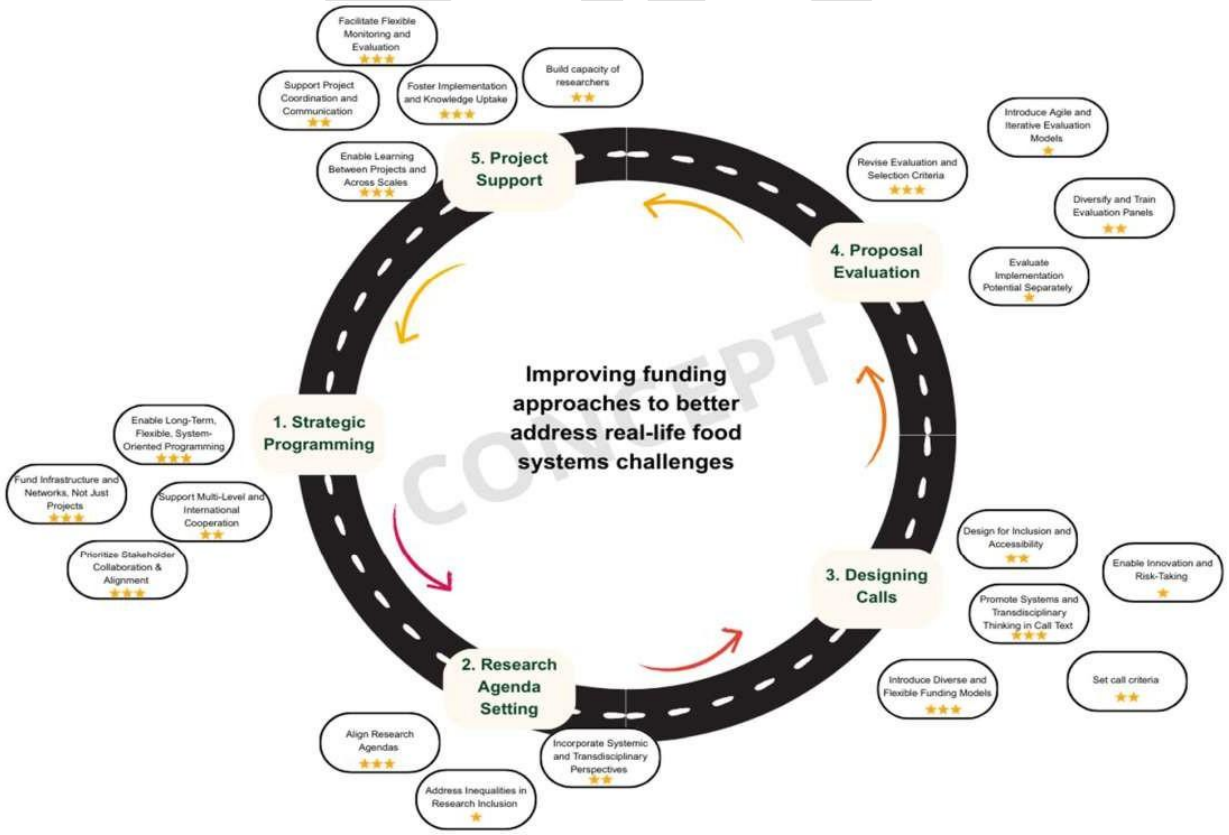

Figure 15: Improving funding approaches to better address real-life food systems challenges

Concluding remarks:

Evaluation of proposals is a critical step in a funding scheme as many discussions revealed. Essentially, the evaluation, both in the constitution of the expert panel as well as in the criteria setting, needs to be aligned with the objectives that are specific for a systems approach. Thereby, inter-and transdisciplinary research will need to be evaluated by inter-and transdisciplinary expert panels. Combining scientific excellence of experts, understanding of systems thinking and transformation, and at the same time having a diversity of actors, from academia, industry and other relevant stakeholder groups involved, is an extensive and challenging exercise. Clearly, the evaluators need to be guided and trained to reach an adequate knowledge level.

In addition, since it appeared to be difficult to get participants from private and philanthropic sectors in co-funded partnerships, a new or adapted partnership model may be considered for the domain of sustainable food systems. This could help to reduce the risk of conflicts of interest. In any case, a strong and transparent cooperation between the different programmes and instruments is a pre-requisite not just a goal.

Critical factors and points to explore further:

- To avoid failures in aligning priorities or finding agreement on common procedures, it is important to early co-design and reach clarification of added value for all and potentially relevant leverages effects.
- High investments of the stakeholders should be targeted via dialogues and inclusion in the different steps.
- Building capacities is highly valuable to reach common understanding about frameworks for implementing systems approaches in calls and projects.
- Co-funding risk management should be more thoroughly evaluated, in particular regarding inclusivity of various actors. This includes identifying who bears the risks, how to overcome them and who should be in charge of dealing with them.

5. Knowledge & Experience, the bird's wings

The two wings of the bird continuously provide (i) the insights or knowledge thanks to research, innovations, policies and education, and (ii) the experiences obtained in co-creation cases. This allows the bird to keep 'floating in a balanced manner' in the sky. If it enters turbulent zones, it absorbs knew knowledge and exploits best practices to safely continues its flight.

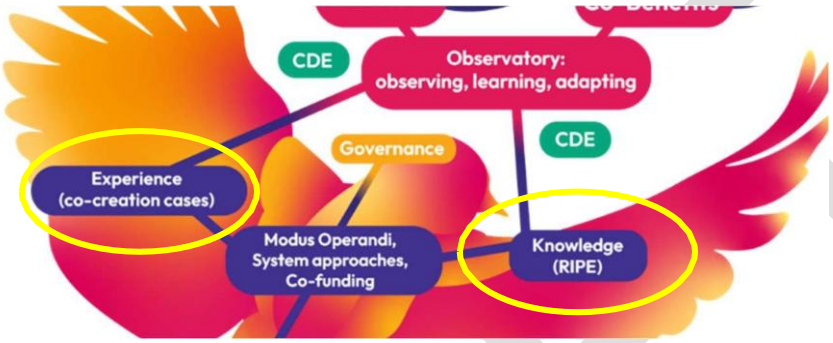

Figure 16: The bird's wings representing experience and knowledge

5.1. Knowledge

For more detailed information on this part, please consult the following deliverables: SRIA2.0 & Guidelines for science-policy interface (D6.1), Modus operandi protocol (D2.5), RIPE concept (SRIA3.0, S-to-P, Education) with Food2030 co-benefits, including SSH & digitalization (D6.2), Report on assessed skills and knowledge gaps (D5.1), Branded Network of exemplary university-driven ecosystems, sustainability charter & code of conduct (D5.2).

Introduction:

Knowledge generation remains crucial in all food system activities that contribute to sustainability. Therefore, a detailed strategic research and innovation agenda (SRIA; SCAR, 2023; see chapter 5.1 and 6.1) was delivered, fuelled and verified by a large diversity of food system actors. In addition, a Ghent Group was consulted by FOODPathS since one of its consortium members is actively involved in the Ghent Group. This Group has recently started to discuss science-to-policy interfaces (Ghent Group, 2022). Regarding education related to a Food Systems Approach, workshops and interviews were held to identify needs, barriers and potential pathways for future education that serves the needs for the transition towards sustainable food systems. The European Pact4Skills, led by DG GROW, and supporting Agrifoodskills ERASMUS project is further developing a program for future SFS education programs and skill development.

Followed process and main findings:

- **Research and innovation (R&I)**

As previously mentioned, R&I priorities were defined and broadly commented in the SRIA of the P-SFS, under the supervision of the SCAR FS SWG and DG RTD; FOODPathS consortium were actively involved in its development and verification of major priorities (for more details, see

chapter 6.1 and SCAR, 2023). To reach sustainable outcomes, it is considered imperative that a P-SFS focused primarily on post production join forces in R&I with partnerships active in production (land/marine), water, bioeconomy, etc. to cover the entire food system domain (see chapter 8).

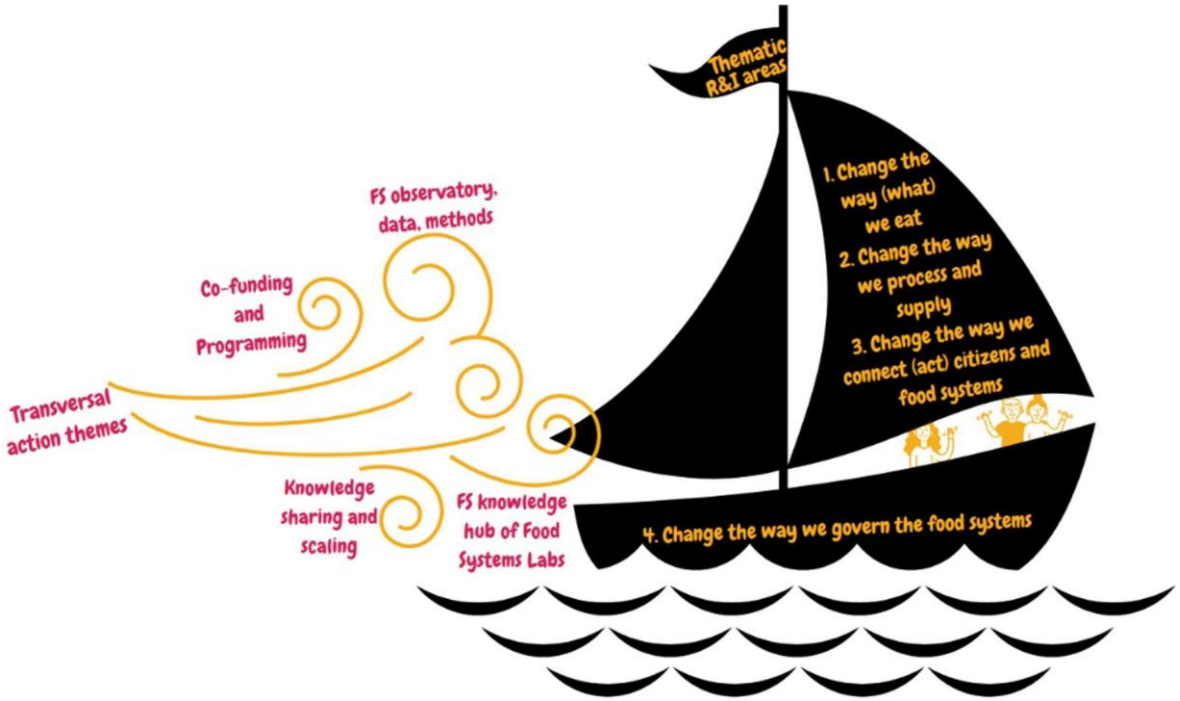

Figure 17: The four thematic R&I areas, all considered from a food system lens, and four transversal action themes pushing the boat (SRIA of the P-SFS; source: SCAR, 2023)

Additional FOODPathS workshops clarified the importance of more regularly integrating relevant expertise into R&I policy development and further strengthening FS capabilities. Sustainability should remain the key objective of all transformative R&I trajectories.

- **Science-to-Policy Interface (SPI)**

The SPI was discussed in the Ghent Group (Ghent Group, 2022) as a key point which on the one hand facilitates improved dialogues and co-creation and, on the other hand, ensures research integrity and independence in the advice provided. A main finding is that there is a potential to develop new SPI forms in trans-European collaboration. This could also facilitate the future collaboration between researchers across Europe in developing state-of-art science-based policy advice to address common knowledge needs. A workshop at the FOODPathS Festival emphasized the importance of scientific integrity - in communication, in framing, defining problems and effectively addressing these at policy levels.

- **Education**

Education was widely discussed in a series of workshops with target groups ranging from children to young professionals. The aims of these workshops were to identify (i) gaps in skills and competences, (ii) existing SFS education along all education levels, (iii) best practices, along all education levels, (iv) barriers and solutions for SFS education programs, and (v) exemplary universities. Major findings suggest that most education about SFS is taking place at the University level in Europe but there may, be a lack of specialization possibilities as only a few Postgrad programs exist. Both the desk analysis of current SFS programs and the ranking analysis of universities showed three European countries which appear to stand out in SFS education - Spain, Italy, and the United Kingdom. Here, a closer look at best practices,

particularly relating to student motivation, is considered useful. Additionally, the role of these Higher Education Institutions (HEI) in driving sustainability practices in their university-ecosystems may be applicable throughout Europe via a common Sustainability Charter that binds universities in their commitments. Finally, current Life-Long-Learning practices via unified online offerings may support developing a branded European network of universities.

Regarding best practices of universities, the need to foster more intensive collaboration between universities in SFS, business and administration, with a standardised approach to curricula formulation. This should be in line with the principles of food systems sustainability and responding to private (and also public) sector needs. Flexibility and speed of responses to emerging labour market challenges dictate that collaboration with accrediting bodies should be rapidly undertaken to support universities (see also chapter 6.4).

- **RIPE concept: connecting R&I, Policy and Education**

Several discussions and workshops were organised that relate R&I with Policy and Education. This is schematically presented in figure 18.

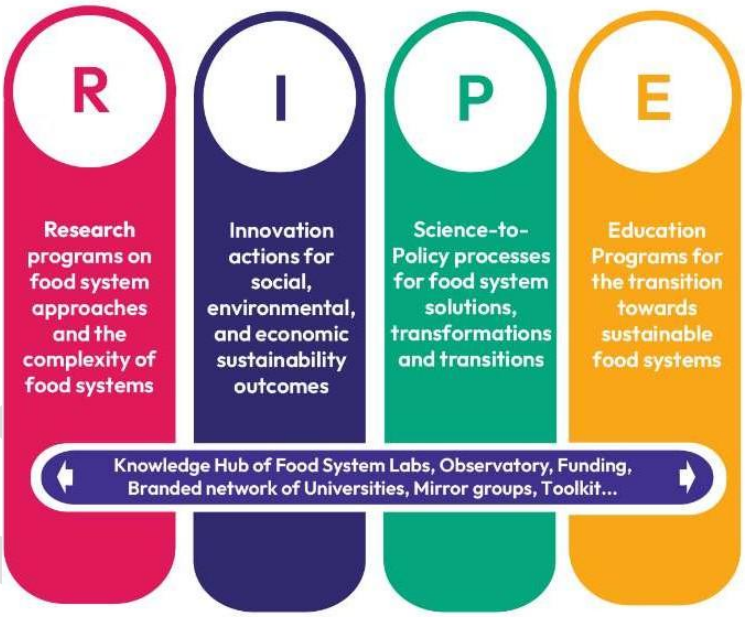

Figure 18: The RIPE concept connecting R&I, Policy and Education

Through these discussions, it became apparent that the connection between R&I and Policy and Education can be presented and understood, using the concept of sustainable food systems - balancing between planetary and societal limits (Figure 19). In this representation, Education trains all actors, at all ages, how to act sustainably. Their (exemplary) behaviour will allow (or not) performing R&I activities that lead to sustainable outcomes over time. Policies, the barriers of our 'food system playing fields' are set that allow actors to move within limits. While RIPE remains largely conceptual, once translated into concrete actions, it will become a true strategic guiding framework; a newly setup 'Food Systems Thinkers' team may support the exploration of such a framework. The effectiveness of RIPE will depend on its capacity to integrate scientific expertise, elucidate interdependencies within the food system and support the consistent synthesis & translation across all governance levels.

Another workshop highlighted the EIT Food model for fostering synergies between education and innovations through different concrete actions such as: a master in food systems supervised

by both industry and academia, a global venture programme designed for PhD students to transfer research knowledge to industry markets and an EIT Food Academy bringing together training providers, HEIs, and policymakers to co-create training programs with industry input in different fields (EIT, 2025). There is, for all these actors, a real necessity to be trained as a team to enhance trans-disciplinary collaboration.

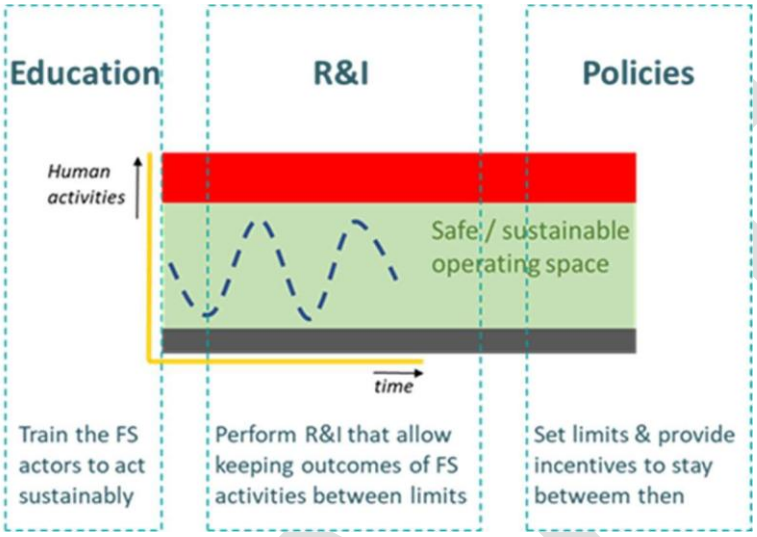

Figure 19: A simplified conceptual RIPE concept: aligning Education, R&I, and policies to keep food systems evolving in the sustainable (green) operating space thanks to appropriate policy guidance and new education programs for all human beings.

Concluding remarks:

It appears that Academia and policymakers should jointly strive to make progress in developing knowledge and policies that support the transformation process in complex food systems striving for sustainable outcomes. They may form a group called 'Food Systems Thinkers' to ensure continuous monitoring of food system changes and provide new knowledge for transformation processes. They can contribute to the definition of R&I topics and calls, guarantee that a Food Systems Lens is used, multi-actor interactions will be established in projects, relevant leverage points are selected, etc. The latter also implies cooperation with other partnerships in the wider bioeconomy domain. They may also be involved in Science-to-Policy interfaces; since food systems are highly complex the SPI should allow multiple exchanges of principles, insights and feedbacks; also training of researchers and civil servants in science advice are then suggested, which should provide input to the new RIPE concept. Finally, education is primordial for all FS actors, to jointly behave and respect the planetary and societal limits, by providing insights in the consequences of our actions in divers food systems. Whenever possible, activities within one RIPE pillar should immediately be considered in the other pillars in terms of consequences and potential measures to be taken.

Critical factors and points to explore further:

- Systemic data collection is critical for all RIPE initiatives and should be standardized for all new members in a partnership to ensure consistency and comparability.
- A RIPE protocol needs to be developed for translating needs and knowledge into operational actions. This should be done in collaboration with the Knowledge Hub of Food System Labs (Section 6.3), which involves on-the-ground actors.
- "Learning by doing" represents valuable knowledge for understanding the complexity of different food systems; hence, continuous experimenting and learning from a divers set of cases enables further exploration of various food systems in future projects.

5.2. Experience (co-creation cases)

For more detailed information on this part, please consult the following deliverables: Report of mapping results (D2.1), Innovative governance model (D2.6), Examples of private-public collaborations for a P-SFS (D4.1), Report with assessed skills and knowledge gaps (D5.1).

Introduction:

Learning from real-life cases is crucial for developing new activities in sustainable food systems. Grounding the development of new approaches in real-life examples helps to avoid reinventing the wheel, because some solutions and activities have already been explored by others in the world, and may simply need further exploration or formal study and presentation on a larger stage. In addition to interacting with 'on the ground' approaches, having an eye on other initiatives fuels the partnership "with lessons learnt that can help food systems actors to adopt solutions that are already working in other contexts or to prevent making mistakes that have already been addressed and wasting resources". What is more, these other experiences can serve as a source of inspiration and enrich the partnership, as well as generating a snowball effect. For these reasons, diverse mapping exercises and case studies were performed. Each of the case studies targeted one or more specific elements of the partnership (e.g., governance, co-creation experiences, funding strategies,…) while striving to collectively contribute to the sustainability of food systems.

Followed process and main findings:

- **Mapping cases**[5]

Since there were many best (and worst) practices studied, the first challenge was to collect practices in a way that allowed different people to describe them in a way that enabled still different people (FOODPathS consortium members) to analyse them with similar processes. Therefore, FOODPathS partners designed a template, based on the structure of a game. This was chosen because everyone is familiar with playing games. Additionally, all users of best practices were then able to read, analyse and verify the cases described. The structure of this game template consists of 7 building blocks: food context (playing field), food actors (players), products (pieces), food/handling activities (moves), boundary conditions (rules & incentives), results (outcomes regarding sustainability) and timing of actions (duration).
The building blocks were translated into a standardised template (see figure 20). Using this template, FOODPathS partners studied over 70 cases. 52 of them were discussed in more detail and served as the basis for a scientific paper.

[5] The mapping of funders, funding strategies and calls is described in the chapter on funding, and the mapping of education needs are included in the chapter 'RIPE'.

Name of the food systems co-creation case / Country: Mediterranean Cluster
Key feature: Innovation platform
Status: Running

DESCRIPTION

History of co-creation between actors: Launched in 2000 to stimulate collaboration between small and big firms, research actors around a well-defined theme. The Mediterranean Cluster also interacts with related platforms in the Atlantic Coastal Areas about common strategies.
Which ambitions and objectives: The main objective is to sustainably develop blue economy, including fisheries, through innovation. It was first created to stimulate competitiveness but sustainability is on top of the agenda.
Evolution of their governance model and organisation: Implemented together with research centres and regional firms. Public actors have been integrated in the partnership after being labelled as competitive clusters.
What external input and output: services for strengthening firms.

The seven Food System building blocks (like in a *GAME*):

Food context (playing field)	**Food Actors** (players)	**Products** (pieces)	**Food handling actions** (moves)	**Boundary conditions** (rules & incentives)	**Results** (outcomes regarding sustainability)	**Timing of actions** (duration)
Mediterranean Region	Small firms, groups	Regional economic development projects	Calling for projects	Market laws, Support research and development projects	New research projects	2000 : creation of first localized cluster
Blue Economy sector	Research centres	Services for enhancing businesses' growth	Supporting regional blue economy actions		New business development of small regional firms	2005 : labelled as competitive cluster.
	Ecosystem (professional associations, banks, consultants..)				Financial sustainability of the region via innovation and competitiveness	2013 : Extension and renaming of cluster because of new international ambitions

FOOD ACTORS: what are their roles, how do they interact, and what are then their common objectives (max 3)

Actor's strength (what specific skills, or competences, or assets or are provided?)	**Flexibility of actors** (is an actor adapting to others in this case and how?)	**Interactions between diverse actors** (do actors form a cluster, network?)	**Common focus as 'cluster' of actors** (do actors jointly define a goal(s)?)	**Joint objectives with other 'clusters / FS'** (do clusters work with others?)
The Mediterranean cluster is very close to blue economy actors and is present in many regional projects	Complementary actions to get the results	Cluster driven by the Mediterranean cluster	Enhance sustainable blue economy of a Mediterranean region	Enhance sustainable blue economy around the Mediterranean and at the international scale
Key actors in marine innovation trajectories gathered		The Mediterranean cluster organizes a lot of workshops where actors can meet and exchange		

Some words about the sustainability behaviour of actors:

The Mediterranean cluster is present in some key sustainability regional projects, even if there are no direct economic benefits for the actors included. The Mediterranean cluster has globally a technological vision of sustainability. They want to be a vitrine for the sustainable blue economy at the international levels and becoming included in various European projects.

Main sources: INRAE; HorizonEurope CSA FOODPathS, www.foodpaths.eu

foodpaths

Funded by the European Union

Figure 20. Example of the game structure used on a concrete case

Thanks to the game structure, the analysis helped reveal that all of the cases studied have a dominant orientation (see figure 21 below), namely 'networking', 'innovation', 'observatory', 'policy', 'entrepreneurship', 'research' and 'education'. This analysis step shows a general trend among the cases in terms of practices, and is relevant in any partnership.

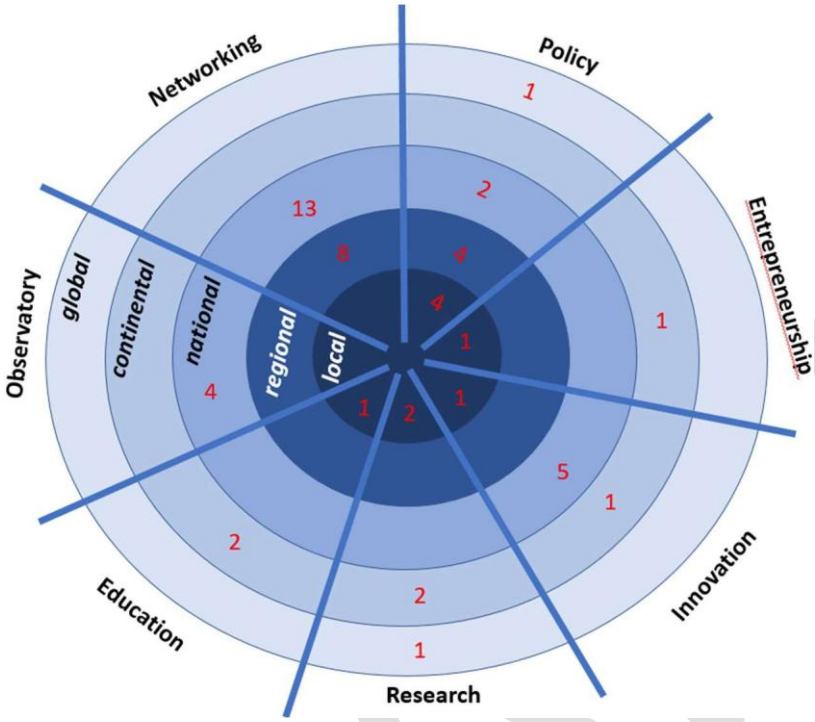

Figure 21: Categorizing cases according to their scales of operation and dominant orientations that fuel the bird; red numbers refer to the number of cases per category (extracted and adapted from de Vries et al., 2024)

- **Understanding co-creation in partnership cases**

The mapping exercise and cases also highlight the importance of co-creation which is at the core of partnerships and may contribute directly to sustainability in food systems, as presented in the figure 22.

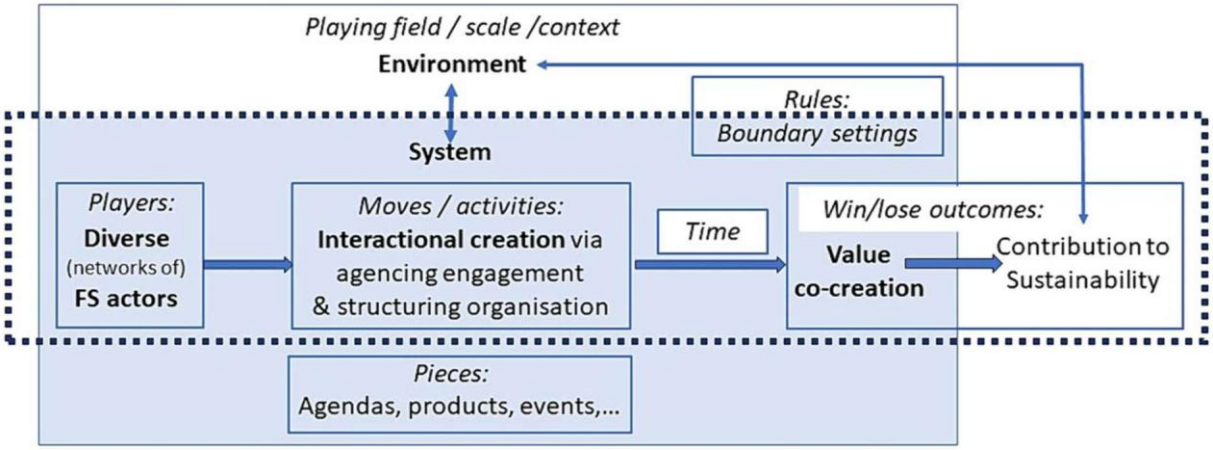

Figure 22: Co-creation contribution to sustainability in food systems (extracted from de Vries et al., 2024)

The mapping exercise and cases studied according to the game structure provided a generic framework – potentially applicable in any partnership – for understanding sustainable co-creation and trends across cases in a given context. Insights highlighted the significant diversity

in configurations of collaborating actors. The insights also revealed the variety of interactions between actors within food systems. The analysis also underscored the importance of co-creation in achieving sustainability goals even when all cases did not fully embrace the three dimensions of sustainability (social, environmental, economic) and inclusiveness as partnership. As a result, the game-based methodology successfully enabled the categorization of different cases, the development of generic insights and some first conclusions on partnerships' added value co-creation practices. Cases are available in the FOODPathS virtual Knowledge Hub of FS labs platform (https://www.foodpaths.eu/in-action/living-labs/).

After collecting, analysing, and understanding these case studies, the next step was to deepen our understanding of co-creation in partnerships by addressing the following question '*how do FS actors work together to co-create value, next to selecting a case-specific dominant direction?*'. This level of detail was reached by conducting further in-depth analysis of specific cases thanks to a dedicated survey.

- **Performing in-depth case studies**

A review of the mapping of 52 cases led to the conclusion that in-depth case studies are necessary at different scales (local, regional, national and cross-countries). Four in-depth case studies were performed. Ten interviews were conducted per case, using an interview guide developed for this purpose, which addressed governance, sustainability vision, intermediaries acting inside the partnership and co-creation mechanisms (D2.6). Main results for a sustainability vision, roles of intermediaries and co-creation are presented in Figure 23 below. The governance results of were shown in the governance part of this manual (chapter 3).

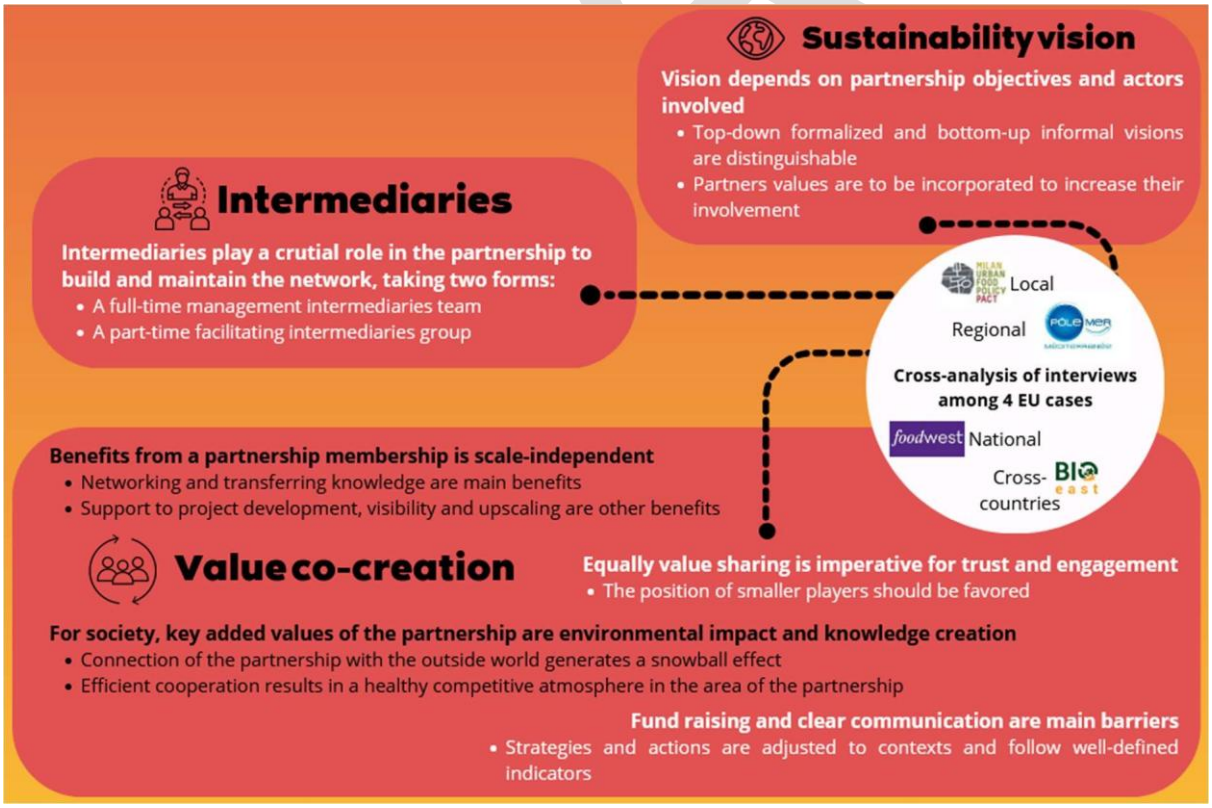

Figure 23: Main outcomes of in-depth case studies regarding intermediaries, value co-creation and sustainability vision

These in-depth case studies advanced a better understanding of the complexity of the cases studies. The analysis generated a rich collection of inspiring examples. Such a study enabled a deeper exploration of best practices to adopt or avoid within partnerships. By conducting a cross-analysis, it was possible to also derive generic insights, regardless of the unique context of each partnership. This nuanced understanding allowed FOODPathS to connect partnerships, foster collaboration and organise knowledge exchanges to encourage other initiatives to contribute to sustainable food systems either by generating relevant knowledge on collective actions.

The insights from these in-depth case studies were transformed into clear and actionable recommendations to guide any partnership. Additionally, this approach developed a solid foundation for establishing evaluation criteria to monitor progress and outcomes of a future P-SFS.

Concluding remarks:

Partnerships should avoid reinventing the wheel: on the contrary, they should use a clear methodology and a template to map existing exemplary cases, in order to learn about how to replicate successful solutions and avoid mistakes. Additionally, in-depth case studies are needed to understand context-specific issues and co-creation approaches, enabling or hindering their adoption and replication. It should be underlined that there is no single "best" or "worse" approach in a case. There are multiple pathways to achieve a common goal. Co-creation of joint value is inherently influenced by human and cultural behaviour in dynamic food systems that may evolves and is unpredictable. Understanding adaptation and resilience is then crucial.

Critical factors and points to explore further:

- Validation of practices via a sustainability impact study is needed in all cases.
- A standardized method and a template (in FOODPathS case based on a game structure) enable to compare different cases in a comprehensive manner for all actors involved in the partnership to understand.
- The need for continuous innovation – to accelerate the transition towards SFS – is apparent; in certain contexts, this may require a start-from-scratch approach, or radical changes in practices.
- The importance of using (or developing) a common language and broadly understandable template has repeatedly been emphasized due to the very divers FS actors.
- Further work with this concept on operational cases is needed due to the enormous diversity in food systems

6. The tail of the bird: infrastructure, the essential building blocks of a partnership

The tail of the bird represents the infrastructure or essential building blocks of partnerships that allow steering its courses, also thanks to numerous crucial spare parts. In particular, it consists of toolkits, strategic documents (like the SRIA, narrative or template), and blueprints of networks of networks, like the Knowledge Hub of FS labs and university-driven SFS ecosystems.

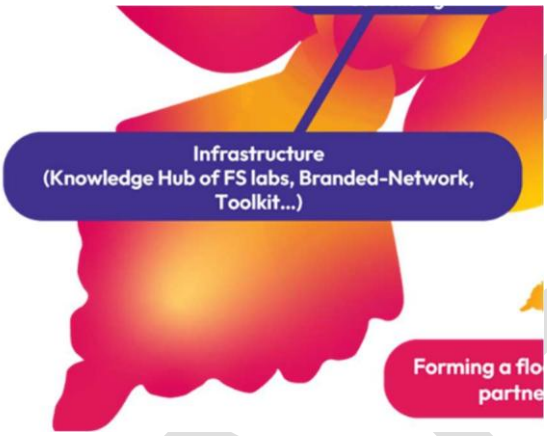

Figure 24: The bird's tail providing the essential building blocks or infrastructural elements

6.1. The SRIA

For more detailed information on this part, please consult the following deliverables: SRIA2.0 & Guidelines for science-policy interface (D6.1)

Introduction:

The strategic research and innovation agenda (SRIA) is an essential guiding document for all future, prioritized R&I programs and large projects. It presents the key thematic areas and transversal supporting areas that allow elaborating R&I in thematic areas (see Figure 17 and chapter 5.1).

Followed process and main findings:

First, the preparation of the SRIA required quite some time due to the complexity of the broad scope of partnership's needs and the required involvement of different experts. The process of preparing the SRIA started in 2020, before the start of the FOODPathS project.; its coordination was in the hands of the FOODPathS coordinator, deputy coordinator, and chair of the FOODPathS Advisory Board. They continued their work after the start of FOODPathS and finalized a SRIA that was assessed by experts (thanks to surveys) and published (SRIA, 2023); this process took place in the first six months of the FOODPathS project. The results were made public in January 2023. In total, over 200 experts from

different stakeholder groups contributed to its content, and also to its preceding narrative and template.

Secondly, the SRIA was handed over to FutureFoodS. They decided to fully take over the content of the SRIA as the basis for their own R&I agenda. In their second year, they foresee an update.

Thirdly, in the FOODPathS project, the partners representing such a wide range of stakeholder groups were asked to give final input to the SRIA, all from their specific sector perspectives.

Fourth and finally, a final analysis by the FOODPathS consortium resulted in the following insights:

- A SRIA serves as an ideal guiding document with prioritized thematic areas, both regarding content as well as transversal activity areas. However, the following considerations should be taken into account:
    - a regular update of the SRIA is needed to include the latest feedbacks from different stakeholders and research;
    - a consideration of themes from a food system lens is imperative as a critical step to transform our food systems way of thinking and acting;
    - an in-depth investment in the comprehension of the complexity of food systems is needed to intelligently intervene, use leverages, understand resilience and capacities to adapt, and (trying to) predict trade-offs (butterfly effects);
    - the current description of themes as 'change the way we …' is chosen to communicate a SRIA that is understandable for all stakeholders; such formulation may be adapted in time to better include a Food Systems Approach and the complexity of FS;
    - a cross-check of the SFS SRIA with other partnerships' SRIAs is imperative to align calls for proposals and effectively exchange information about agri/aqua-food systems.
- A SRIA is preferably preceded by a narrative (for example of the SCAR FS SWG, 2021) that describes, in simple language, what a partnership wants to achieve and do; this narrative should be jointly written with representatives of all stakeholder groups involved.
- In addition to a narrative and SRIA, a third document is essential, namely a business plan that positions a partnership in a wider context. A largely simplified version was published under the name of Template (EC, 2022b). This Template covers nearly all topics in more detail. A financial chapter and SWOT analysis are here not included, but should be part of a partnerships business plan.

Concluding remarks:

Since a need for a Food Systems Approach is now clearly expressed – and considered necessary to tackle planetary and societal challenges - a scientific basis for the complexity of food systems becomes imperative. This indicates the need for mobilisation of experts from complex system sciences. Additionally, operating as inclusive partnership (the core of FOODPathS and this manual) isn't straightforward, it seems necessary to further experiment with inclusive partnership forms, and (scientifically) understand their 'ideal' structures and functioning in relation to its SRIA priorities.

Critical factors and points to explore further:

- The SRIA, and preceding narrative, should be written and updated by representatives of different stakeholder groups in a language that is comprehensive for everyone.
- Without a sound science basis for food systems work, its R&I activities may become disperse and not well-evidenced based.
- A cross analysis of SRIAs of related partnerships is recommended as a future activity.
- A financial and SWOT analysis should be performed to verify the financial model of a Partnership in relation to its obligations (e.g. tasks and commitments).

6.2. A Toolkit with short guiding documents

For more detailed information on this part, please consult the following deliverables: Toolkit for co-benefits & trade-offs with liaised (international/local) actors (D6.2).

Introduction:

A Toolkit with a variety of tools, described in an understandable way for all actors was created to support participants that are involved in (future) partnerships. The tool descriptions were kept short – not to not surpass two pages -and authors were recommended to include clear steps to follow, or provide images for inspiration.

Followed process and main findings:

First, a discussion was organised to establish which kinds of tools - based on FOODPathS work on the different elements of a partnership (the bird, see figure 1) - were worthwhile to develop. Since partners in a partnership all have different ways of communicating and a variety of experiences and needs, FOODPathS decided to develop a toolkit with practical guidelines in maximum two pages and understandable language. The following categories and tools were deemed relevant by FOODPathS partners working on this task:

Category	Description	List of tools
Concept Tools	The main objective of this category is to support public, private and research organizations in the development of inclusive SFS. The list of tools provides a useful concept/roadmap for the development and support of SFS transformation that is both inclusive and sustainable.	Tool 1 - Strategic guidelines for partnership Tool 2 - RIPE concept Tool 3 - Guidelines and Recommendations for calls
Mapping tools	The main objective of this category is to provide structured and practical forms/indications to collect and analyse key cases and best practices that are effectively supporting the transformation towards inclusive, sustainable food systems. Besides that, some tools provide a visual representation of key stakeholders active in Europe.	Tool 4 - Game structure and methodology for performing case studies Tool 5 - Mapping funders Tool 6 - Mapping Research organizations Tool 7 - Case study mapping and analysis
Engagement tools	The main objective of this category is to provide useful support for communication activities to collect feedback as well as to run effective workshops.	Tool 8 - Guidelines for Mirror Groups Tool 9 – Feedback Survey Tool 10 - Communication outcomes Tool 11 - Co-construction and liaison ambition of multiple networks at all scales

Table 3: Categories and their descriptions, and a list of tools

Second, a common format was drafted and discussed that could be used for all tools.

Third, the creators of each tool were asked to prepare a first draft and explanation of the tool. The short summaries of each tool are as follows:

- Tool 1. Strategic guidelines for setting up a partnership is a 2-page version of this manual in which recommendations are given how to define and liaison ambitions of multiple networks across different scales sharing a common aim.

- Tool 2. The RIPE concept reveals how to connect Research & Innovation to science-to-Policy and Education priorities in time and align towards joint objectives (See chapter 5.2).
- Tool 3. Guidelines and Recommendations for Calls concern the process of launching external calls by any kind of partnership, for example co-funded partnerships. They have available budgets that are earmarked for external calls, and follow strict call procedures (See chapter 4.3).
- Tool 4. Game structure and Methodologies: they serve for performing case studies in similar ways, here explaining and using the image of the structure of a game with seven building (chapter 5.2; de Vries et al., 2024);
- Tool 5. Mapping funders in a systematic and visually attractive way using EU maps, helps other funders to join co-funding programs and discuss funding strategies (See chapter 4.3).
- Tool 6. Mapping Research Organizations allows creating a branded network of university-driven ecosystems in which insights from sustainability pathways for food systems are shared. This attracts others with sustainability ambitions to join the network (See chapter 6.4).
- Tool 7. Case study mapping and analysis FOODPathS has developed a PowerPoint template that is based on the structure of a game, which has been used and tested for over 70 food system cases (See chapter 5.2).
- Tool 8. Guidelines for Mirror Groups stimulate the involvement of vulnerable and less-heard group in a pragmatic way, to listen to their needs, perceptions, acceptance (of propositions), their willingness of being involved and how (See chapter 3), with respect to partnership activities.
- Tool 9. Feedback from surveys deal with how to interpret, structure, analyse and extract recommendations out of widely distributed surveys (See chapter 8).
- Tool 10. Communication outcomes supports the process of communication, dissemination and exploitation, hence to make better visible outcomes and impact of partnership's work done.
- Tool 11. Co-construction and liaison ambition of multiple networks at all scales deals with the complexities of topics at different scales, their governance, their actor activities, etc (See chapter 5.2).

Fourth, all tools were reviewed by a team made of up of FOODPathS partners from WPs 2,6, and7, and by all Work Package Leaders, to verify the content and clarify the descriptions, review the coherence/usability of the tools (after they had been elaborated), and identify potential inconsistencies between tool descriptions. This resulted in an open access toolkit report called 'FOODPathS toolkit,' wherein all tools are described.

Fifth and finally, each tool was individually and professionally designed using the FOODPathS visual identity and colour scheme. These tools are presented on the openly accessible FOODPathS website and shared through the network of partners. The tools have been introduced gradually, giving users time to become familiar with each tool.

Concluding remarks:

In order to support users of the tools, each tool has a dedicated expert as contact person and links to further reading. Such an 'expert helpdesk' is considered relevant for each kind of partnership.The listed FOODPathS consortium experts can be contacted by other (existing or forthcoming) partnerships to get advice and support.

Critical factors and points to explore further:

- The process used to create a toolkit: develop practical tools to help any external party that are based on requests from Partners.
- Tools need to be precise, instructive, and coherently presented using a comprehensive toolkit (no fragmentation in provision of tools).
- Design a set of uniform tools helps actors to orient themselves to the objectives of a partnership.
- The practical usage of the tools should be verified via a survey; this could be done in a FOODPathS follow-up (CSA) project.
- FOODPathS has developed 11 tools to-date; however, it is recommended to develop new tools for all elements of the bird (e.g. also for the governance architecture, the *Modus Operandi* Roadmap and the Observatory).

6.3. The Knowledge Hub of Food System Labs

For more detailed information on this part, please consult the following deliverables: Examples of private-public collaborations for a P-SFS (D4.1) and the European Central Hub of FS Labs (D4.2).

Introduction:

The FOODPathS Knowledge Hub aims to foster collaboration, research, innovation, and practical solutions for Europe's food systems, thanks to collective intelligence approaches in which the complementary skills and competences of involved actors were mobilized. The development, objectives, and achievements of the Knowledge Hub are outlined in D4.2. As a key part of the FOODPathS project, the Knowledge Hub sought to connect all kinds of food system actors (e.g. researchers, policymakers, industry leaders, educators, consumers, etc.) to address challenges and drive progress toward inclusive partnerships for sustainable food systems. The way these actors are involved needs to be elaborated; this could be visitors, active participants, members, founding partners, etc. It all depend on the kind of activities that they will jointly perform.

Followed process and main findings:

The development of a Knowledge Hub of Food System Labs is not a straightforward process. In FOODPathS the steps followed are the following.

- **Virtual platform of mapped case studies**

First, to collect practical experiences, more than 70 case studies were carried out and described focusing on main characteristics, using the template presented in chapter 5. Discussions during meetings and workshops highlighted the need for physical or virtual platforms within partnerships that enable experimentation.

Secondly, to document and present these cases, and create a vibrant community, a virtual living-labs platform has been created (see https://www.foodpaths.eu/in-action/living-labs/). Here, the studied food system cases are presented according to their dominant orientation (e.g. innovation- or policy-oriented) and their scales of operation. On the map, each case is connected to a specific Member State in Europe, even if it concerns a local or cross-country case. This platform serves to present and explore available best practices to inspire others, but also shares their own, elaborated food system cases. Different stakeholders valued how the cases were described and presented, partly because they involved a diverse range of active food system actors. Additionally, each case often reflected the priorities of a specific dominant group within the food system.

Thirdly, a few of the 70+ case studies were selected to be analysed in detail. This analysis revealed information which was neither accessible via surveys nor via grey literature, scientific publications or other sources. Four cases were of particular relevance to the development of the virtual platform. Three of these operate at a national level - the National Food Technology Platforms (NFTP) from Spain, Italy and Czech Republic - and one at the EU level - the Bio-based Industry Consortium (BIC) (see Deliverable 4.1).

Learning from three NFTP case studies, the Hub should address diverse regional priorities, build cross-border partnerships, and promote innovative solutions. This approach ensures that the platform is inclusive, adaptable, scalable, and relevant for tackling issues such as climate resilience, digital innovation, and food security. Looking closely at BIC, shows how a diversity of

actors join forces and co-invest in a topic that is of common interest, in this case the bioeconomy. These learnings may be transferrable to the P-SFS.

- **Designing the Knowledge Hub**

Fourth, a survey about the preferred design of a Knowledge Hub of Food System Labs was developed and circulated – solely among private sector actors via social media – since they are often less involved in food-oriented partnerships. Gathering their input was essential to understand their needs and encourage their engagement in the design process. The survey included questions on the core functions of the Hub, stakeholder expectations for the virtual platform, desired visibility of the Hub, and the values it should represent. Key characteristics of the Hub were identified through analysis of the survey results (please see D4.2).

Fifth, in order to validate the Knowledge Hub's conceptual framework, ensuring it addresses key challenges and leverages opportunities within European food systems, a **workshop,** gathering 43 participants active in different parts of the food system value chains, was held.
This workshop underlined the importance of involving the private sector (see table 4).

Major reasons for involving the private sector in a P-SFS	
Importance	✓ Central player in the food system ✓ Major European economic driver ✓ Large-scale influence on food production & distribution ✓ Bridge between research and practical application ✓ Consumer trust & influence ✓ Significant economic & political influence ✓ Communication channels for raising consumer awareness
Benefits	✓ Expertise across the food chain ✓ Proven innovation track record ✓ Direct consumer connection ✓ Infrastructure, logistics experience, and stakeholder mobilization ✓ Data on consumer behavior, production trends, and food system realities ✓ Collaboration benefits

Table 4: The importance and benefits of food industry involvement in a P-SFS: key outputs of the workshop.

In addition, the strategies for participants' continued engagement were discussed, these are articulated in Table 5 below. These strategies were elaborated during a second workshop with FutureFoodS at the FOODPathS Festival.

Category	Strategies
Fostering collaborative innovation	✓ Establish collaborative innovation platforms ✓ Jointly identify R&D priorities ✓ Promote co-creation activities and use collective intelligence approaches ✓ Facilitate collaboration across the food system sectors via matchmaking and co-creation, connecting with EU-level frameworks
Providing incentives and benefits	✓ Showcase success stories from PPPs, supporting peer learning ✓ Offer tangible benefits (funding, R&D participation, information access, policy support tools, learning platforms) ✓ Create obligation for industry involvement in R&D calls

Encouraging shared decision-making	✓ Integrate economic, regulatory and political analysis to aid decision-making ✓ Engage the industry in working groups and decision-making ✓ Co-design sustainability metrics ✓ Ensure inclusivity by addressing power dynamics and amplifying marginalized voices: a multi-actor central coordination with decentralized implementation and organization ✓ Propose a neutral host body (e.g. foundations like ENoLL) for long-term operation ✓ Consider flexible membership models such as free access (start-ups, new LLs…) and tiered fees based on size or service level
Building networks and sharing knowledge	✓ Facilitate networking initiatives and leverage industry clusters ✓ Promote knowledge and communities of practice with academic, private, public, policy and philanthropic actors, and consumers ✓ Enable multilingual content and encourage informal exchanges ✓ Organise roundtables and meetings for discussion and idea generation

Table 5: Strategies for effective industry engagement: key outputs of two workshops

- **Synthesizing findings**

Sixth and finally, all results from the survey and the workshops contributed to a series of insights from the private sector and their expectations of and visions for the Knowledge Hub, as well as, for other elements of a P-SFS. The following figure 25 synthesises these insights, and their relevance in the design process for the Knowledge Hub.

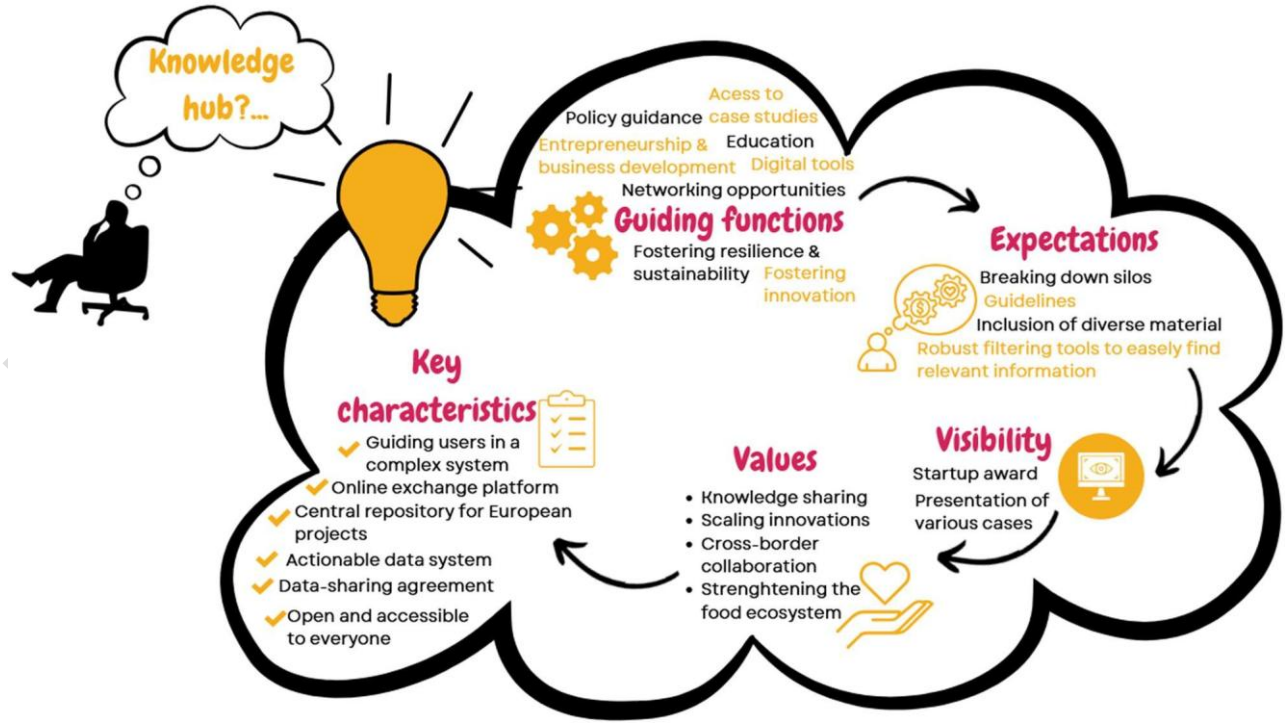

Figure 25: The Knowledge Hub design process and main results

Major values that the Knowledge Hub should represent, according to private sector participants in workshops and surveys, are:

The Knowledge Hub's values, that serve as a catalyst for Europe's food systems transformation, are:

- **Knowledge sharing:** The Hub facilitates the dynamic exchange of information, enabling Living Labs and stakeholders to learn from each other, share best practices, and adapt methodologies to local and regional contexts.
- **Scaling innovations:** By identifying and disseminating successful practices, the Knowledge Hub bridges the gap between localized initiatives and continental strategies, promoting region-specific solutions that can be implemented on a broader scale.
- **Cross-border collaboration:** The Knowledge Hub enriches solutions with diverse perspectives and shared resources by linking national and regional initiatives. This fosters innovation and ensures that approaches benefit from a broader pool of expertise.
- **Strengthening the Food System ecosystem:** The Knowledge Hub builds a resilient ecosystem of stakeholders committed to the sustainability transformation. This collaborative environment ensures long-term adaptability and supports developing a robust food system.

Throughout this entire process, suggestions of answers to two major questions emerged:

1. *How can cooperation between the food industry and other stakeholders be improved*? Key points are:
   (i) promoting the "cluster model" to encourage collaboration and open innovation between industry, academia, and other stakeholders, and
   (ii) fostering open communication and transparency to build trust.

2. *How can participation of the food industry be encouraged at different scales (local, regional, national, EU, and global)*? Suggestions are:

(i) **Local/Regional:** Leverage existing networks and clusters to facilitate collaboration and innovation;
(ii) **National:** Promote participation through industry associations and funding schemes;
(iii) **EU/Global**: Utilize existing structures like ETPs, NFTPs, FDE, Clusters, and EIT Food to facilitate participation and access to EU funding;
(iv) **Communication:** Clearly communicate benefits, address concerns about time/resource constraints, and highlight unique networking opportunities at each scale.

Concluding remarks:

The take away issues from the design process for the Knowledge Hub are numerous. The involvement of the food industry's expertise and resources, providing real-world challenges and opportunities to the Hub network, in order to reach impactful outcomes, is primordial. The design process should include a phase of nuanced understanding of market trends, consumer demands, and emerging opportunities, from the private sector in the SRIA. It requires attention for the development of training programs that equip the workforce with the necessary skills for food system transformation. Also, it should allow to exploit the food industry's comprehensive knowledge spanning of the entire food chain, from production to distribution; this positions the private sector as a key player in advancing sustainable practices. It preferably connects via the private sector directly to consumers for widespread adoption of responsible food choices. It makes use of food industry's significant economic and political influence which lends legitimacy and credibility to SFS initiatives. And, overall, it avoids considering the private sector in isolation, but as an essential player in public-private partnerships where convergence enables the pooling of complementary resources and seek symbiosis and enhanced innovation. The NFTP then may serve as a model.

Critical factors and points to explore further:

Critical success factors for developing a Knowledge Hub of Food System Labs include:

- Creation, public launch and continued visibility of the FOODPathS Living Labs Platform, with 70+ mapped cases across Europe, offering structured access to diverse FS Labs.
- Strong engagement of the National Food Technology Platforms (NFTPs) as key multipliers and ambassadors of the Hub, ensuring cross-country relevance and regional mobilisation; the latter in particular targeting SMEs. This requires giving new impulses to the NFTPs in future HorizonEurope and FP10 projects.
- Development of a user-informed design process, including regular targeted surveys and a series of (future) multi-stakeholder workshops, to repeatedly validate expectations and modify functional priorities.
- Development of the Knowledge Hub concept, structured around RIPE elements. The conceptual framework is ready, but the full prototype is still to be further developed and tested.
- Integration of dynamic features such as matchmaking tools, customizable dashboards, and interactive forums, foreseen in a future prototype but still to be fully developed and tested.
- Stronger involvement of SMEs and innovation ecosystems at local/regional level, especially in relation to start-up support and replication of Living Labs.
- Exploration of synergies with other projects/partnerships/ platforms (e.g. FutureFoodS, CLEVERFOOD) to ensure long-term sustainability and avoid duplication.
- The Start-up Award scheme, launched as a new concept with support from NFTP's, could become a flagship action within the Hub; this needs further attention.

6.4. Branded university-driven ecosystems

For more detailed information on this part, please consult the following deliverables: Branded Network of exemplary university-driven ecosystems, sustainability charter & code of conduct (D5.2).

Introduction:

A major step in achieving the main goal of an inclusive R&I partnership on SFS is establishing cooperation among Higher Education and Research Institutions (HERI) engaged in a food systems transition. This allows linking their collaborative networks to a wide range of actors, in particular in university-driven (local) ecosystems, i.e. the surrounding local community which includes local businesses, entrepreneurship, public policy and community engagement. This requires investing in building awareness about food systems, developing education and competence-building programs across all educational levels (see D5.1), and knowledge transfer between involved actors. Close connections with the Bologna process and European Higher Education Area (EHEA) should be maintained in this process. Internationalization and Quality Assurance are major points of concern in the development of a European P-SFS (see D5.2).

Followed process and main findings:

- **Contours of a branded-network**

First, the structure of a branded-network of university-driven ecosystems was analysed since it involves many different food stakeholder networks. This was considered imperative because many networks already exist and function well. Hence, the crucial question was: '*does a partnership need a new network*?'. To answer this question, several workshops and interviews with university experts were held.

The following topics were analysed and reported (D5.2). Main points are:

- To complement traditional education, **micro-credentials**[6] may help bridge knowledge gaps between academia and industry. This can be further reinforced through mechanisms like life-long and project-based learning and initiatives such as the reverse incubator methodology; these all meet evolving workforce's and societal needs. Policymakers play a critical role in enabling these initiatives.
- **Standardised guidelines** for mandatory sustainability metric reporting in industries would enhance accountability and transparency of all stakeholder groups.
- **Public awareness campaigns** can foster societal support for sustainability practices. A strategic approach, encompassing curricula, campus operations, and community engagement is recommended.
- **Joint university degree programs** should consist of developing an innovative SFS-oriented curriculum and an improved accreditation system. Examples of joint degrees are the EIT Food's Master in Food Systems, and IFSTAL (Interactive Food Systems Teaching and Learning; IFSTAL, 2025). The EC pushes for a Joint European Degree, which can be stimulated via a legal European framework, supported by national legislations; it creates added value thanks to joint degrees, student mobility, mutual recognition, etc.

[6] Micro-credentials are short, targeted qualifications that validate specific skills, knowledge, or competencies acquired through short courses or training programs.

- **Operationalisation of the branded network concept**

Second, FOODPathS partners within the 'Education-dedicated work package 5' discussed how to operationalise the concept of a branded network of exemplary university-driven local food ecosystems, as asked for by the EC. A list of exemplary universities can be found in the Shanghai Ranking - Global Ranking of Academic Subjects (GRAS), the UI GreenMetric World University Rankings, and the QS Sustainability Rankings**. A stakeholder's network analysis was conducted** to identify the key European actors involved in advancing joint SFS-education, understand their roles, and uncover gaps in collaboration and alignment. Examples are ELLS (Euroleague for Life Sciences; Euroleague, 2025), EduXchange (shared courses; EduXchange, 2025) and the European bioeconomy university (EBU, 2025). Here, v**arious models of (trans)national cooperation and alliances between HERIs were registered**. Based on FOODPathS discussions with divers' actors, the binding factor is a European HERI **sustainability charter and a code of conduct** for SFS education. Via a common **brand** this can be widely communicated (e.g., see Figure 26). Because of these existing structures and networks, a (legal-based like an association or federation) **branded university-driven collaboration network** actually could be best discussed in the context of existing networks.

Figure 26: An example of a brand called 'Enfuse'

- **Best Practices**

Thirdly, a study was performed to seek existing best practices. For branded university-driven operational activities in SFS, a source of inspiration is the **Green Office Model**[7]. Originating in Europe, the Green Office Model establishes sustainability offices within universities, often led by students, to promote sustainability practices across campus operations, curriculum, and community engagement. These offices work to integrate sustainability into university life, addressing areas like waste management, sustainable procurement, and fostering partnerships with local stakeholders. Such a Green Office Model could be extended to local eco-systems. Several examples of these eco-systems are recommended to be further elaborated like FICO Eataly, Italy (now new name 'Grand Tour Italia' (GTI, 2025), revealing regional products and offering free education courses for children), World Food Center, Netherlands (WFC, 2025; with the affiliated university WUR), Agropolis, France (Agropolis, 2025; supported by the Montpellier agri-food scientific community) and Agro Food Park, Denmark (AFP, 2025; housing mainly companies).

- **Developing a sustainability charter**

Fourth, from all findings above, it became clear that a **sustainability charter** would help a committed educational institution and the collaborative network to achieve their goals by providing a framework for joint strategic decision making; a first draft is presented in figure 27.

[7] The Green office model: making universities more sustainable, ED/PSD/ESD/2016/PI/7, https://unesdoc.unesco.org/ark:/48223/pf0000245763

Food Systems sustainability charter for a branded network of universities

Vision: To lead and inspire the transformation of food systems toward environmentally-responsible, socially secure and fair, economically viable, healthy and safe food systems in Europe through innovative research, education, and community engagement.

Mission: To foster cutting-edge FS-oriented training, multidisciplinary research, and community engagement to accelerate the transition towards Sustainable Food Systems with a wide range of actors.

The charter adapts the vision and mission of a partnership (SRIA, 2023) for a university-driven network with a primary focus on education, and secondary focus on research and their ecosystem. To this end, the vision and mission statements point to shared principles by undersigned parties:
- Sustainability: all actions are taken to avoid that future generations are compromised in their actions
- Food Systems Approach: all activities are considered jointly from a food system perspective
- Inclusiveness: all actors are actively invited to participate in a meaningful and appropriate way, ensuring fair, balanced, and diverse representation
- Transparency: All communications are easily accessible for everyone, taking into account language & education level.

Strategic Objectives and Actions

1. Change the Way We Learn and Teach About Food Systems
- Integrate FS Concepts: Embed sustainable food systems education into university curricula, emphasizing planetary health, food security, and resilience.
- Develop FS Labs: Establish experiential learning Living Labs to train students in innovations for FS transformation.
- Promote Lifelong Learning: Provide capacity-building programs for professionals and communities, including marginalized groups.

Action Example: Develop a framework for FS educational programs that integrate local cultural and ecological contexts, using place-based and co-creation methodology

2. Change the Way We Connect Education to Research on Food Systems
- Prioritize Systems Thinking: Advance research on the interplay of FS elements, addressing trade-offs and synergies across environmental, social, and economic dimensions.
- Support Transformative Innovations: Focus on new protein sources, circular food systems, and climate-smart agricultural practices.
- Create Knowledge Sharing Platforms: Facilitate the dissemination of best practices through FS knowledge platforms and observatories.

Action Example: Launch multidisciplinary research initiatives targeting FS challenges such as reducing greenhouse gas emissions or advancing food justice at the regional level (network).

3. Change the Way We Teach and Experiment about Governing Food Systems Transformation
- Enhance Stakeholder Engagement in training sessions: Foster collaborations with policymakers, NGOs, and industry to co-design solutions.
- Strengthen the links between R&I, Policy and Education (RIPE) pillars, with particular reference to education: Provide evidence-based policy recommendations and governance models that reflect local FS complexities.
- Promote Equity in Access to Knowledge: Address food systems knowledge inequities by ensuring fair access to resources and innovations for everyone.

Action Example: Organise annual FS RIPE forums where researchers, students, and local governments discuss actionable recommendations for sustainable food systems governance.

4. Change the Way We Involve Communities within University-driven Food Systems
- Citizen Empowerment: Engage communities through public campaigns, participatory workshops, and citizen science initiatives.
- Support Local Food Networks: Strengthen regional food systems by linking local producers, processors, and consumers, give them visibility at the campus.
- Raise Awareness: Promote sustainable diets & food literacy through targeted outreach & education programs.

Action Example: Implement community-driven food initiatives to enhance public understanding of sustainable diets and the environmental impacts of food choices. Become an active part of local, regional, national and global communities.

Commitment to Food Systems Transformation
This charter calls on universities, research centres, and education program coordinators to act as leaders in fostering a SFS transformation. By working collaboratively and committing to the principles outlined here, these institutions will not only transform local and regional food systems but also set global standards for excellence and innovation.

Figure 27: Sample Food Systems sustainability charter

- **Code of conduct**

Fifth, next to a sustainability charter, a **Code of Conduct** was explored and examples were identified. A Code of Conduct could support the process of integration and cooperation of universities in teaching and activities promoting SFS approaches. The Code of Conduct is a set of rules outlining the social norms and rules of, as well as roles and responsibilities for proper practices within an organization (Stuijvenberg and van der Wende, 2005). These codes ensure compliance with laws and regulations that form the basis of the network. Codes of Conduct can serve as a guide and catalyst to help organizations address specific legal and ethical issues they face and which need to be enforced at all organizational levels.

In the case of the P-SFS, it should be noted that several Codes of Conduct, on university level, national level, and program level, for HERI already exist. However, they do not provide a detailed charter or Code of Conduct specifically covering the following four key areas' curriculum development, campus operations, community engagement, research and innovation partnerships. What comes closest to a Code of Conduct, is the European University Association (EUA)'s "A Green Deal roadmap for universities, to face climate change". This provides policy frameworks to integrate sustainability into scientific, educational, and institutional activities. Their documents offer guidance on embedding sustainable practices in various university operations, including curriculum development and research partnerships (EUA, 2023). Their roadmap emphasizes four key domains: (i) Research and Innovation, (ii) Education and Students, (iii) Staff and Operations (e.g. Sustainable Campus Practices,), and (iv) Public Engagement and Societal Impact. This roadmap may be made specific for the food systems domain.

- **Action plan**

Sixth and finally, all findings were translated into an action plan for HEI willing to join a P-SFS (see D5.2 for more details):

- Investigate the **portfolio of courses and joint degrees** with support of **the** Association for European Life Science Universities (ICA), for **accreditation**.
- Target administrative and legislative barriers while promoting the participation of not yet involved universities.
- Elaborate and test further a **Code of Conduct** and **Sustainability Charter** to ensure shared values and goals across participating universities.
- Implement collaborative frameworks like the EC-driven **Joint European Degree** and flexible course portfolios.
- Provide scalable solutions for enhancing educational mobility and innovation; hereby, it is recommended to learn from best practices like the **EIT Food Master** and the EuroLeague for Life Sciences (**ELLS**).
- Focus on **lifelong learning**, **micro-credentials**, and transdisciplinary collaboration; this will ensure that branded networks remain future-focused and aligned with global challenges.
- Dive deeper in **exemplary eco-systems** that allow embedding of Branded university-driven collaborations.

Concluding remarks:

For a P-SFS - and in particular for FutureFoodS - it is suggested based on insights described above to launch a competition (call) for the preparation of a branded university-driven collaboration. Such a call could take into account the creation of a SFS study program and "fast track" accreditation system. This could respond to business and other stakeholder needs, the gradual inclusion of other universities - via the adoption of a common Food Systems

Sustainability Charter and Code of Conduct – as well as new guidelines and organisational solutions for ecosystems. The latter may include a renewed organisation of campuses, scientific life, cooperation with the local community, promotional and educational activities of the Food Systems Sustainability Principles around university life. It may also serve for lasting dialogues with the European Commission and respective bodies to synchronize educational, demonstration and strategic actions for the broad transformation of food systems in Europe. In addition, it may target data handling and experimenting with the evidence-based policy-making process. Such a call may also be of interest for other partnerships in the broader bioeconomy; however, as stated in chapter 2, it would be recommended to form a flock of birds to jointly tackle such a challenging trajectory.

Critical factors and points to explore further:

- A Sustainability Charter and Code of Conduct ensure consistent alignment with the partnership's vision across all activities while preserving the initiative's core purpose.
- Strategic discussions should be continued about the need (or not) to establish a university-branded network in the context of existing networks, taking into account its added value relative to the existing networks.
- Strategic discussions are needed to determine how a university network (or existing networks) can align with the European Commission's goals and vision, as well as with Member States in a P-SFS, in collaboration with other partnerships.
- Strategic discussions are needed about how accreditation and quality assurance can facilitate the development of a branded network.

6.5. Other 'building blocks'

The Observatory and Funders Forum have been discussed in chapters 2 and 4, respectively, and serve as critical building blocks of partnerships. Across Europe, we can observe numerous other - often territorialized - building blocks. For example, the ones that reflect local characteristics within food systems. For instance, Sweden has quite some infrastructures focused on healthy diets. Italy has its famous EATItaly food experience center revealing the rich cultural food heritage of Italian regions. France has its 'territoires d'innovation' (often linked to agroecological principles). Inspirational discussions across territorial spaces could further highlight the richness of the EU's cultural food heritage and identify key building blocks, each with a specific focus. An illustration that serves these discussions is presented in figure 28. If Europe's FS actors mobilize their building blocks in collective intelligence approaches, it may accelerate the transition towards SFS.

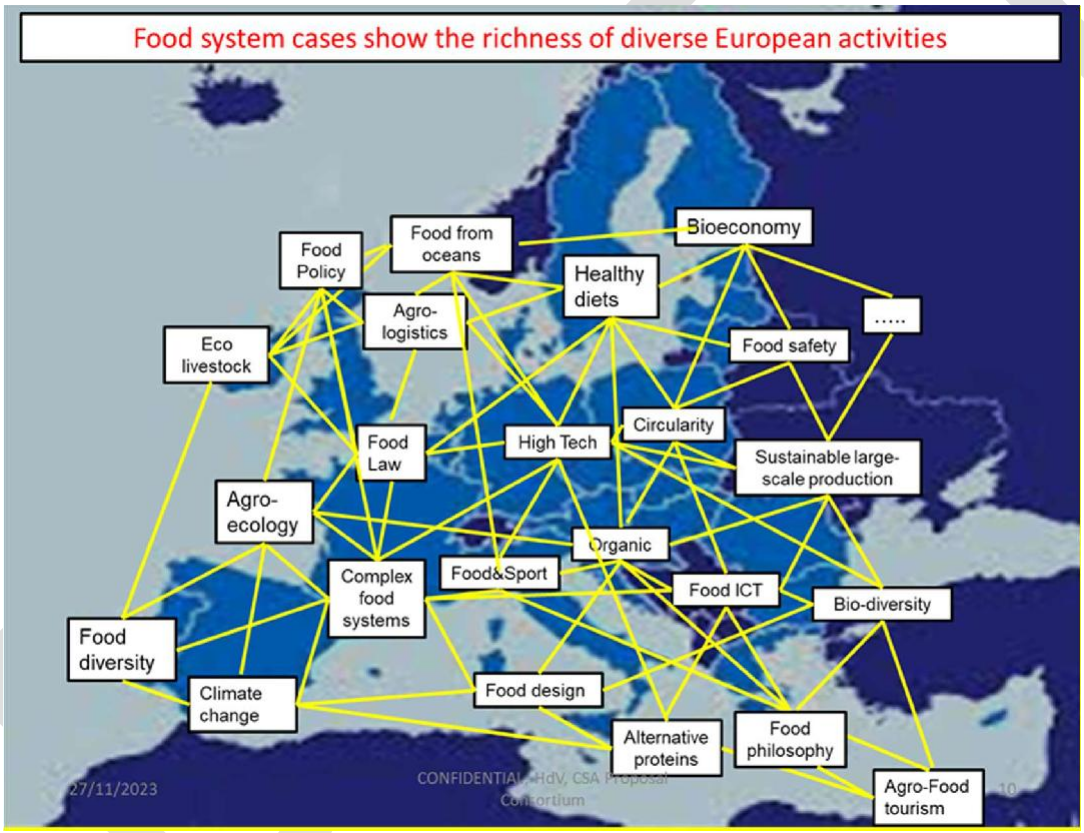

Figure 28: Inspirational cristalization points, serving as recognizable university-driven ecosystems or other large scale initiatives, inter-connected in Europe (Source, modified from: https://hal.inrae.fr/hal-04454434v1/file/presentation%20in%20images%20hdv%20vf.pdf)

7. Communication, Dissemination, Exploitation activities and channels, the bird's nerve system

For more detailed information on this part, please consult the following deliverables: FOODPathS Plan for C&D&E activities (D8.1), Feedback from society (D8.3), and input from: D8.2 and the forthcoming deliverable on the Festival.

The "nervous system" of the bird consists of the communication, dissemination and exploitation (CDE) 'activities and channels' that allow internal and external exchanges. Internally, the diversity of partners making a bird ask for transparent communication and sharing of insights. Externally, exchanges with other birds – in a flock – are imperative to join forces to overcome the challenges and reach sustainable outcomes. In addition to having a wider impact, it also allows to use (financial, human...) resources in a more efficient way.

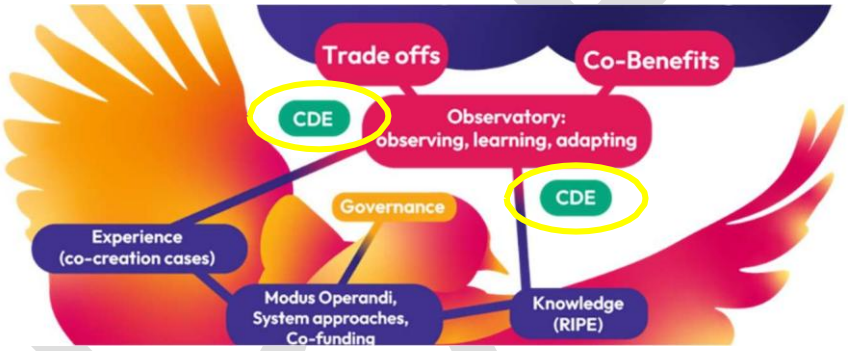

Figure 29: Bird's nerve system symbolizing its Communication, Dissemination and Exploitation actions

Introduction:

A partnership on sustainable food systems covers so many topics and challenges (i.e. governance, operations, funding strategies, experimentations, knowledge domains (RIPE), (virtual) infrastructures, etc.) that it is crucial to have a CDE strategy allowing to make it understandable for a large variety of actors. Even more, the P-SFS needs to work with other partnerships (locally to globally) to radically change the courses of our current FS activities to reach sustainable outcomes. Here we describe which CDE activities have been emerging as most relevant for partnerships.

Followed process and main findings:

- **Communication**

Communication activities are implemented to inform a varied and broad audience about the partnership's existence and its scopes, raising awareness and trying to engage a multitude of actors thanks to the use of a simple and understandable language.

With this in mind, the FOODPathS partners underlined the importance of 'speaking each other's language'. Their argument was that a partnership should actively involve all the different FS actors, and citizens across highly diverse food (heritage) cultures to be

effectively inclusive, leaving them the possibility of expressing themselves. Thanks to this, partners can develop a narrative together. That is the first step to jointly agree on common objective(s) and activities to be implemented. The narrative should be developed in an inclusive way - also through the use of methodologies like the Mirror Groups (see chapter 3 Mirror Groups) – that enable different FS actors to speak up: such approaches ensure that communication adopt a bottom-up approach and is tailored to the different needs of actors to be reached. Another way that can be followed is the delivery of a survey to FS actors to better understand how to interact and communicate with them, as FOODPathS did (see tool 8, part 6.2). Our conclusion is that communication in partnerships is primordial and can never be sufficient, hence requiring a fast 'nerve-information-exchange' system. Here, more is better!

- **Dissemination**

Dissemination activities were implemented to develop connections with actors that have an existing background knowledge on FS topics and that are interested in sharing experiences, adopt and co-develop pilot results, learn more about best practices and replicate them in their geographical, social, economic, and/or research context.

With this in mind, FOODPathS participated and organised events, meetings and conferences based on a two-directional interaction 1) to share and collect feedback, for instance utilising surveys, see tool 9, part 6.2, and 2) aiming at integrating external input to optimise next steps. Consequently, dissemination is viewed through the lens of a systemic approach in which information is diffused and feedback from diverse actors is collected periodically. This should be done by exploiting the networks of a partnership - both the ones that it can establish during its lifetime and the ones that its partners bring with them when creating a partnership. As an example, FOODPathS relied on an extensive network of FS actors in different fields (local governments, philanthropic entities, research organisations, industry, etc.) and on existing communities where FS actors are already interacting (i.e., the Sustainable Food Systems Network - SFSN). This is at the core of the overall strategic operations of a partnership (see tool 11, part 6.2).

- **Exploitation**

In general, communication and dissemination are project activities while exploitation happens outside a project, but based on a project's communicated and disseminated findings. However, because FOODPathS is a project that targets the development of a partnership with the involvement of a diversity of stakeholder groups, exploitation is also discussed in this manual. As elaborated by the CDE FOODPathS team, exploitation of results should follow the same logic, namely the consideration of numerous, highly diverse, food system actors' involvement and audience roles. A lesson learned from FOODPathS experiences is that a partnership consortium should disseminate its results in highly diverse workshops and (local/regional/national/EU-wide/global) platforms in the form of co-creative sessions: this allows receiving direct feedback, and getting a better acceptability and adoption of findings by different actors. It avoids the risk that results remain unused at the moment that public funding stops, hence streamlining communication, dissemination and exploitation is even more imperative in partnership-oriented projects.

Finally, this exchange and reciprocal exploitation of results and knowledge should become a common activity among different partnerships: alone, each partnership can't address all the challenges, but together they can create synergies and reach a greater impact. For instance, the 6 co-funded Partnerships in Horizon Europe Cluster 6 or from other Work Programmes (i.e., ERA4HEALTH from Cluster 1), PRIMA-Med, Circular Bio-Based Europe Joint Undertaking, EIT Food and Food Systems EU-Africa and any other relevant ones should commit themselves to play together, like an orchestra (Donner et al., 2024), to address all the aspects related to the food systems transitions, bringing with them their expertise, stakeholders and results.

Concluding remarks:

Regarding **communication**, the following insights and tools emerged as useful for partnerships:

- Communication activities are essential to define a common narrative among diverse FS actors and to raise awareness on partnership objectives.
- Webinar and Podcasts show the value of interactive presentations and discussions of representatives of FOODPathS diverse stakeholder groups with potential users (i.e. actors within partnerships, large initiatives, or any interested actor in Partnership activities).
- The Feedback Survey realized by FOODPathS helped to better understand what are the most suitable communication channels and activities for the different FS actors.

Regarding **dissemination**, additional tools were shortlisted like:

- Workshops and co-creation activities allowed concluding that communicating in two directions is preferable, i.e. spreading information and receiving feedback, next to becoming more inclusive and improve actions towards sustainability outcomes.
- Communities like the SFSN or networks of stakeholders operating in different fields and at different levels (like ERIAFF, ICLEI, ISEKI, etc.) allow disseminating information far beyond the consortium. Here, the FOODPathS consortium Network has been fundamental;
- From all FOODPathS activities, the wish emerged to maintain the public-, private-, philanthropic and academic, multi-scale network operational for new cross-stakeholder activities.

With respect to **exploitation**, the following emerged:

- The alignment and exchange of FOODPathS with a large initiative (here FutureFoodS, or previously in the case of PRIMA-Med), as well as the involvement of representatives of different partnerships (or large multi-actor initiatives) in the Advisory Board substantially help to exploit findings and results. Moreover, this placed FOODPathS in the position of having privileged discussions with the key partnerships, allowing to have a "facilitator" role for the exchanges among them.
- Even more, keeping a FOODPathS-kind of CSA running in parallel to large partnerships makes sense, because they serve as playing field to test new ways of working in partnerships with a variety of food system actors.

Critical factors and points to explore further:

- Communication in inclusive partnership is essential; more is better.
- Dissemination should be bi-directional to share information and receive feedbacks; these fit very well with a systemic approach.
- Exploitation requires a broad network; the inclusiveness of FOODPathS as a mini-partnership and its neutral role in between different partnerships should be maintained for the long run.
- With respect to the previous point, a potential FOODPathS II project makes sense in which CDE, systemic and collective intelligence approaches are again at the core.

8. Forming a flock with other partnerships

Figure 30: The bird forming a flock with other partnerships

Since the current environmental, economic and social challenges are overwhelming, the Partnership on Sustainable Food Systems called FutureFoodS with a focus on post farming and fishing cannot find solutions without cooperation - or forming flocks - with other partnerships in the agri-food domain and beyond. The most relevant ones are presented in the Figure 31 below. These are the running co-funded partnerships Biodiversa+, Water4All, Agroecology, Sustainable Blue Economy, Animal Health & Welfare, and Agriculture of Data. Additionally, the Partnership on Research and Innovation in the Mediterranean Area (PRIMA), EIT Food (a Knowledge Innovation Community Partnership), the Circular Bio-Based Europe Joint Undertaking (CBE-JU), and e.g. the European Technology Platforms Food for Life, Aquaculture, and Plants for the Future, may like to join forces to tackle the challenges. Even more, European partnerships in related domains like ERA4Health and Healthy Diets for Healthy Lives – the latter possibly even as new partnership – are primordial to effectively address food and health concerns.

Besides existing initiatives there is also a need to consider forming new partnerships focusing on important but marginally covered areas for trans-European R&I coordination. An example is a partnership that fully targets the important need for climate mitigation and adaptation *across* agri-food systems. This requires improved understanding of biomass usage and emissions in these systems. There is urgent need for knowledge and innovations to abate emissions from e.g. fields, stables, processing, trade, etc. as well as improved recycling and upgrading of residues, side-streams and wastes across agri-food systems. Thus, the partnership flock could in the future include initiatives focusing on a specific thematic area, like FACCE-JPI ambitioned (currently under restructuring).

One (or a very limited number) of not yet existing, co-programmed or institutionalised partnerships in the food area may also be considered for engagement. This allows stakeholder groups that are not-yet participating in the existing partnerships to join forces in a new partnership. However, it is strongly recommended that they become part of the flock, meaning, actively interact and cooperate with the running partnerships. Since, the food sector is the largest economic sector in Europe in terms of turnover and employment, the existence of another large-scale operating partnership may be warranted.

Finally, global alignment with for example the OnePlanetNetwork and/or ICLEI's Global CityFood Programme is strongly recommended to seek co-benefits and avoid trade-offs both locally and globally. Their collective intelligence as flocks of birds is imperative to globally fly in the right direction, towards sustainable outcomes.

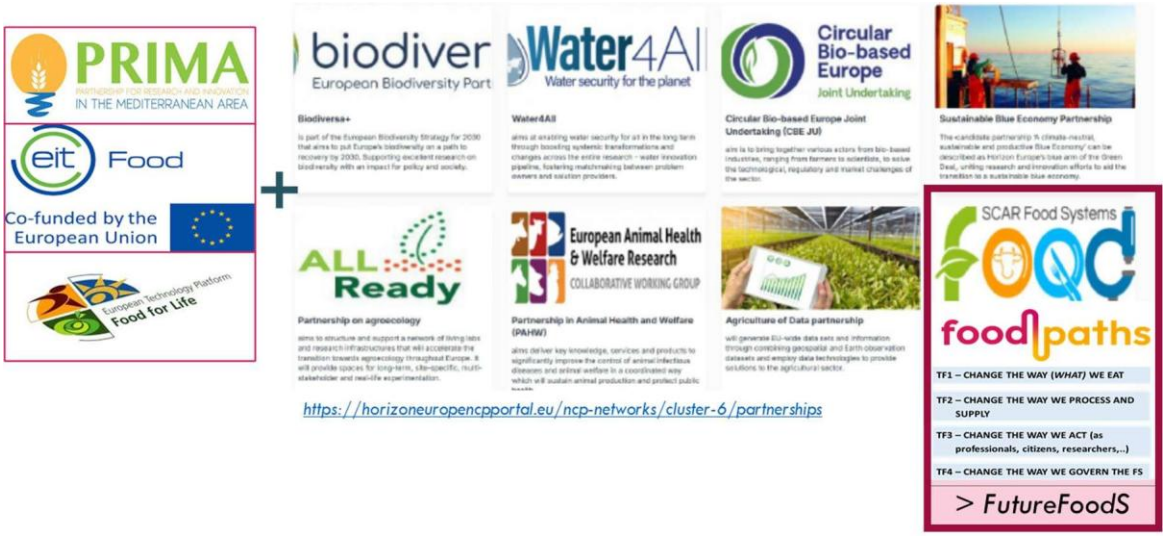

Figure 31: European Partnerships in agrifood systems and the wider bioeconomy (modified from EC-HE, 2025)

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Deliverables

See: https://zenodo.org/communities/foodpaths/records?q=&l=list&p=1&s=10&sort=newest

Deliverable no.	Deliverable name
D1.1	Evaluation of management tools and procedures
D2.1	Report of mapping results
D2.2	Report of FS approaches and Observatory
D2.3	Manual of Prototype Partnership 1.0
D2.4	Functioning FS Approaches & Observatory
D2.5	Modus operandi protocol
D2.6	Innovative governance model
D2.7	Manual & Presentation of the Prototype 2.0 Partnership SSFS
D2.8	Summary of Partnership guidance/mentoring activities presented
D3.1	Report on funders engagement and forum agenda
D3.2	Aligned network and strategies for co-funding
D4.1	Examples of private-public collaborations for a SFS partnership
D4.2	European Central Hub of FS Labs
D5.1	Report with assessed skills and knowledge gaps
D5.2	Branded Network of exemplary university-driven ecosystems, sustainability charter
D6.1	SRIA2.0 & Guidelines for science-policy interface
D6.2	RIPE concept (SRIA3.0, S-to-P, Education) with Food2030 co-benefits, incl SSH & digitalization
D7.1	Report on trade-offs and co-benefits
D7.2	Toolkit for co-benefits & trade-offs with liaised (international/local) actors
D8.1	Plan for C&D&E activities
D8.2	Data Management Plan
D8.3	Feedback from society
D8.4	Prototype 2.0 Partnership SSFS 'launch festival'