D1.1
Policy and practice vision maps for sustainable livestock-based food production

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Pathways
FOR SUSTAINABLE FOOD

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[1] Document, report (R), Demonstrator, pilot, prototype (DEM), Websites, patent filings, videos, etc., OTHER, Ethics requirement (ETHICS), Open Research Data Pilot (ORDP), Data sets, microdata, etc. (DATA)
[2] Public (PU), Restricted to other programme participants including EC (PP), Restricted to a group specified by the consortium including the EC (RE), Confidential, only for members of the consortium including EC (CO)

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MA   Multi-Actor

Introduction

The PATHWAYS project

With the aim of reducing environmental impacts while addressing societal demands for safe, nutritious, and affordable meat and dairy products, the Horizon 2020 project PATHWAYS is about identifying and increasing sustainable practices along the supply and production chains of the European livestock sector. Worldwide demand for animal products is predicted to double over the next decades due to population growth and increasing economic prosperity (Godfray et al., 2018). This may lead to further intensification of production which in turn can put increasing pressure on available resources like land and water, and lead to higher greenhouse gas emissions and other environmental impacts (Van Zanten et al., 2018; Willett et al., 2019). Furthermore, there is an increasing concern about the negative impacts of intensive production on animal welfare (Godfray et al., 2018). At the same time, livestock farming currently plays a vital role in food and nutrition supply by providing nutrient-rich, safe food, whilst contributing to the vitality of rural territories (Mehrabi et al., 2020). Also, livestock systems can recycle biomass and help to close nutrient cycles at farm and territorial levels. However, the lack of a holistic sustainability assessment approach makes it difficult to measure livestock's contribution to society, hampering evidence-based debates about trade-offs and leading policymakers to focus on 'highly tangible, but essentially weak, leverage points' (Scown et al., 2019; Abson et al., 2017). PATHWAYS addresses these currently policy challenges of the livestock sector through the development of a multi-dimensional assessment and a holistic scenario evaluation to improve the overall understanding of sustainability of terrestrial livestock production systems in Europe.

At the heart of PATHWAYS is a participatory reflective learning approach through stakeholder involvement at multiple levels, ensuring actors within livestock value chains buy into the project outcomes through ownership of the process and the results. PATHWAYS delivers this by facilitating a Multi-Actor (MA) approach via interaction with and between: a European MA Platform (international group of supply chain actors), national Practice Hubs (national groups of farmers) and a community of practice (forum involving several hundred international and national stakeholders from different value chains). The project outcomes will be used to identify development pathways that meet multifaceted societal demands, both currently and in the future (Figure 1). PATHWAYS will thus bring together researchers and industry to develop visions and holistic scenario evaluations based on new indicators and methods. This will inform the selection of pathways for sustainable development of livestock systems and foster the development of future innovations in policy, business, on farm and research through engagement with a wider community of practice.
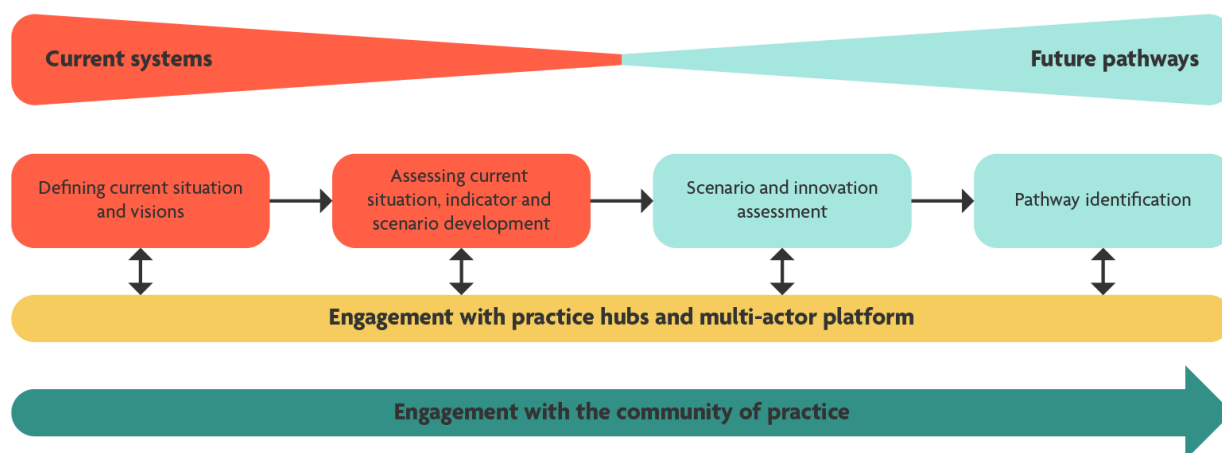
Figure 1. Overview of the project PATHWAYS

Interaction with Practice Hubs and European MA Platform

Within PATHWAYS, the interaction with Practice Hubs and the European MA Platform will have two major phases; the first focuses on the co-production of visions, scenarios, and assessment frameworks to represent and measure current and future production systems. The second focuses on making use of a suite of models to assess the impact of scenarios across sustainability dimensions and scales to inform the development of pathways for sustainable livestock systems. Stakeholder engagement processes take place at both levels. The interaction between Practice Hubs and the European MA Platform is fostered through alternating focus groups (5 times over the whole project, Figure 2) and will allow for the identification of problems and solutions, through a co-design of effective and relevant approaches for a transition to sustainable practices (Abson et al., 2017; Bourgeois and Sette, 2017). Learning theme meetings will allow the consortium to present progress and enable a co-design of scenarios and pathways with Practice Hubs, the MA Platform and Community of Practice.

Through this integrative approach, we will develop a food systems-based understanding of individual, social, political, and contextual factors influencing sustainability, food choice, nutritional status, and factors determining successful intervention, implementation and delivery of development pathways.
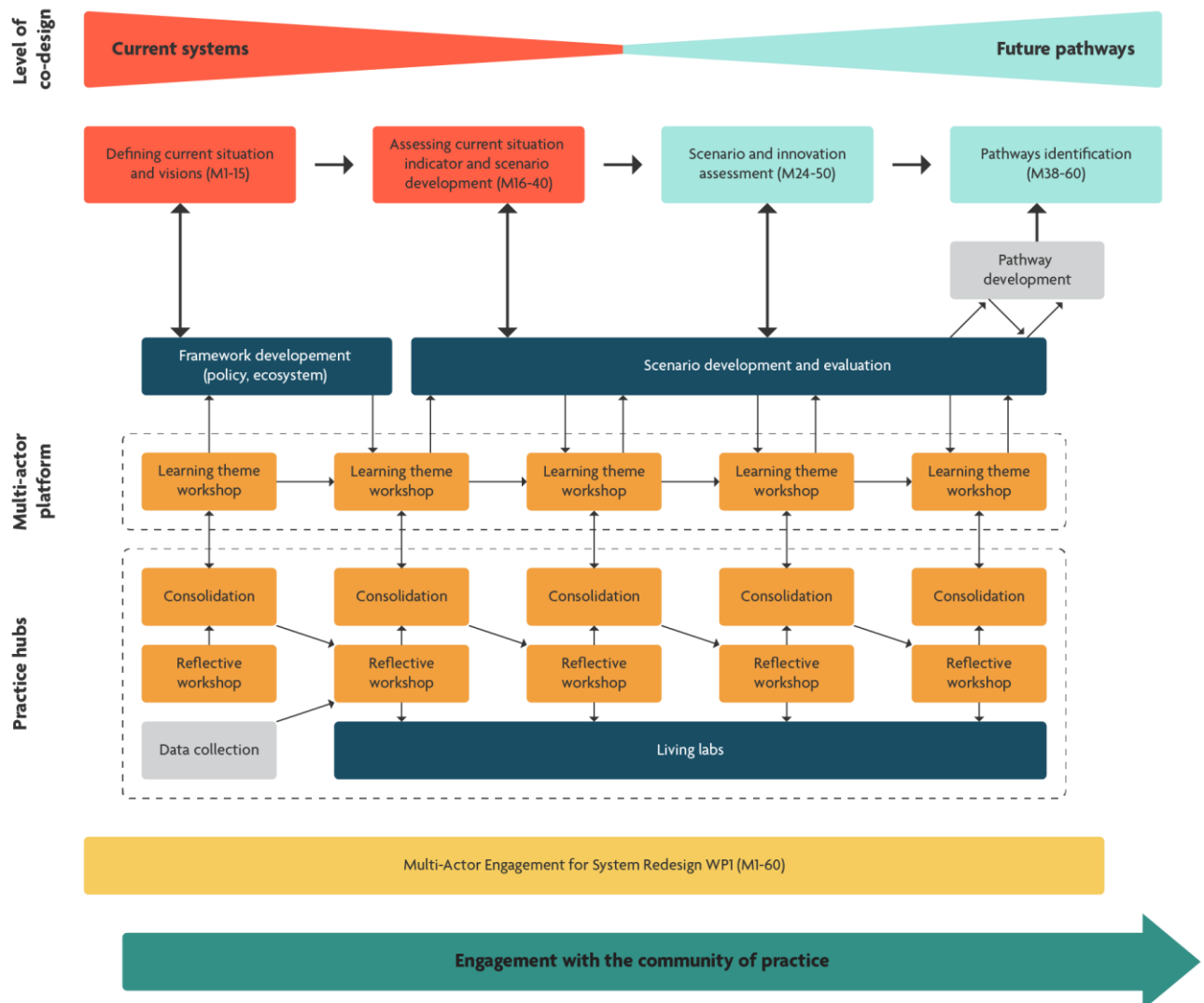
Figure 2. Interaction between Practice Hubs and the MA Platform in PATHWAYS

Purpose and Scope

This deliverable is part of the first phase of PATHWAYS, i.e. the co-production of visions, scenarios and assessment frameworks to represent and measure current and future production systems.

Materials and methods

A participatory exercise using the backcasting method was developed and piloted in collaboration with Practice Hub and platform facilitators. The aim of this exercise was to define visions for the development of the livestock sector for 2050, and potential leverage points throughout value chains. A backcasting approach was proposed by task leaders (Task 1.1), to give participants of the Practice Hubs and MA platform an opportunity to look backwards from the future to the present to identify strategies to achieve that future, including the identification of barriers and enablers. Backcasting is a method for determining the steps that need to be taken to deliver a preferred future; i.e. "*look backwards from the future to the present in order to strategise how that future could be achieved*." As opposed to forecasting, using a backcasting participatory approach helps to facilitate participants thinking beyond the current state of play within livestock systems. A content analysis was carried out using MAXQDA 2022 (www.maxqda.com) to study visions and corresponding enablers and barriers.

Results and discussion

In total 16 Practice Hubs were established, consisting of either an existing group or a newly established group. The establishment of new Practice Hubs was more challenging, and the associated process took more time than anticipated. External factors, such the availability of resources and increase in feed prices due to war in Ukraine and avian flu in several parts of Europe, complicated the establishment of new Practice Hubs. Consequently, in total 14 Practice Hub workshops were organised in the period February to May 2022. The visioning exercise, that was conducted as part of these first Practice Hub meetings, was facilitated in the local language. The facilitators reported in the local languages and the reports were translated into English only after approval of the content by the Practice Hubs. An overview of the visioning exercise in the different Practice Hubs is given in Table 1.

The visioning exercise with the MA platform was conducted in English during two online meetings in May 2022. MA platform members attended one of these two meetings. During the first meeting, the group was divided in 3 subgroups and in the second meeting, the group was divided in 2 subgroups.

In total, 14 reports from Practice Hub workshops and 5 reports from the European MA Platform were available for qualitative data analysis, i.e. the process of examining and interpreting qualitative data to understand their meaning. Based on experiences in earlier multi-stakeholder projects, this is a good result, especially in the view of the particular external challenges in Europe at the moment.

Table 1. Overview of visioning exercises carried out in the different Practice Hubs

Practice Hubs supporting holistic evaluation		Country	Facilitator/ reporter	Visioning exercise	
				Date workshop	Vision map
DAIRY					
1	100% pasture-fed cow-calf dairy systems	DE	FiBL	2 April 2022	Yes
2	Management for maximisation of C sequestration in pasture	FR	ACTA	29 April 2022	Yes
3	Dairy with agroforestry aiming for self-sufficiency in protein-based feed	RO	USAMVCN		No
4	More-from-less dairy systems utilising on-farm advice and carbon footprinting tool	SE	SLU	20 May 2022	Yes
PORK					
5	Conventional production utilising manure for biogas	FR	ACTA	19 May 2022	Yes
6	Organic farmers utilising "green-protein" from grass/clover working with feed company and refinery	DK	AU	20 February 2022	Yes
7	Indoor more-from-less production system with optimised diets and housing with ammonia capture	DK	L&F		No
8	Conventional pig production with innovative flooring (solid floor with a layer of material for rooting for all ages) and focus on biodiversity	NL	WR	30 March 2022	Yes
BEEF					
9	100% pasture-fed beef systems utilising mob grazing, herbal leys and mobile slaughterhouses and Community Supported Agriculture	UK	UREAD	25 February 2022	Yes
10	New breeding methodology for "mountain pasture" with own certification/label development	IT	UNIPI	12 April 2022	Yes
11	Quality assured (IP SIGILL) production system for beef and sheep on HNV semi-natural pastures together with label development.	SE	NATUR	27 April 2022	Yes
POULTRY – MEAT					
12	Agri-tech innovation for improved welfare	PL	IUNG	30 May 2022	Yes
13	Farmer co-operative producing and sharing compost from plant-based litter	FR	ACTA	17 May 2022	Yes
POULTRY – EGGS					
14	Closed-loop egg production feeding food processing waste and recycling manure	NL	AERES	31 March	Yes
SHEEP AND GOATS					
15	Dehesa Mediterranean system of sheep rearing in silvopasture with different input levels	ES	CSIC	6 April 2022	Yes
16	Individual animal data processing tool to increase the efficiency of resource management in dairy goats	ES	CSIC	20 June 2022	Yes

The visioning exercises carried out within individual Practice Hubs and subgroups of the MA Platform led to a range of visions for future sustainable livestock husbandry, and the associated key changes to achieve these visions. As expected, many, sometimes contrasting key changes were highlighted. In general, participants provided possible solutions for barriers that had been identified, and identifying barriers stimulated the identification of enablers. For the majority of groups, it was difficult to put the key changes in a timeline.

PATHWAYS works with three overarching cross-cutting learning themes:

1. *Trade-offs and synergies in sustainability and circularity*

This first learning theme focuses on the complex interaction of the environmental with the economic, social and governance domains focusing on the multifaceted role of livestock in terms of ecosystem service provision and circularity.

2. *One welfare*

This second learning theme uses welfare as an entry point based on the 'one welfare' concept that recognises the interconnections between animal welfare, human well-being and the environment.

3. *Enabling transition*

This theme reflects the potential of innovations to effect change in livestock systems.

The three learning themes were discussed in the majority of the groups, either spontaneously or initiated by the facilitator. Trade-offs were more interesting for the groups than synergies. The concept 'one welfare' was usually not explicitly cited, but the different components of 'one welfare' were mentioned. The discussion on enabling transition was mainly linked to the discussion on enablers and barriers.

A full description of results is given in the following scientific paper:

Van den Pol-van Dasselaar, A., van Dijk, L., Yngvesson, J., and Stokes, J.E. (2023) *PATHWAYS for sustainable livestock-based food production: Policy and practice vision maps for livestock system redesign*.

Conclusion and next steps

Practice Hubs generated practice visions and the European MA Platform generated policy visions for the future of sustainable livestock systems in a range of regional/national contexts. All groups saw sustainable livestock-based food-production in the future as a viable option. These qualitative visions for 2050 identified in Task 1.3 and Task 1.4 will be used in Task 2.2. of PATHWAYS (scenario development and evaluation). Further analysis of the visions will be conducted in Task 2.2. In Task 2.2. the visions will be converted into 6-12 "outline scenarios" for sustainable livestock production, consumption, and trade in Europe in 2050, providing headline narratives to base scenario development on.

Currently the way to reach these visions is quite unclear and further inspiration and development work is needed taking a participatory multi-actor approach. PATHWAYS therefore aims to add the detail required to this complexity and link up the required steps on farm and across the supply chain with incentives by policy and the market.

References

- Abson D.J., Fischer J., Leventon J., Newig J., Schomerus T., Vilsmaier U., von Wehrden H., Abernethy P., Ives C.D., Jager N.W. and Lang D.J. (2017) Leverage points for sustainability transformation. *Ambio* 46, 30-39.
- Bourgeois R. and Sette C. (2017) The state of foresight in food and agriculture: challenges for impact and participation. *Futures* 9, 115-131.
- Godfray H.C.J., Aveyard P., Garnett T., Hall J.W., Key T.J., Lorimer J., Pierrehumbert R.T., Scarborough P., Springmann M. and Jebb S.A. (2018) Meat consumption, health, and the environment. *Science* 361(6399).
- Mehrabi Z., Gill M., van Wijk M., Herrero M. and Ramankutty N. (2020) Livestock policy for sustainable development. *Nature Food* 1, 160-165.
- Scown M.W., Winkler K.J. and Nicholas K.A. (2019) Aligning research with policy and practice for sustainable agricultural land systems in Europe. *Proceedings of the National Academy of Sciences* 116(11), 4911-4916.
- Van Zanten H.H.E., Herrero M., Van Hal O., Röös E., Muller A., Garnett T., Gerber P.J., Schader C. and De Boer I.J.M. (2018) Defining a land boundary for sustainable livestock consumption. *Global Change Biology* 24(9), 4185-4194.
- Willett W., Rockström J., Loken B., Springmann M., Lang T., Vermeulen S., Garnett T., Tilman D., DeClerck, and Murray C.J.L. (2019) Food in the Anthropocene: the EAT Lancet Commission on healthy diets from sustainable food systems. *The Lancet* 393(10170), 447-492.