'Shift happens': Co-constructing transition pathways towards the regional sustainability of agriculture in Europe

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Abstract: Stakeholder engagement and participatory processes are becoming increasingly established research requirements, enabling the building of trust in, and acceptance of, research outcomes. Contributing to the EU-funded FP7 'FarmPath' project, partners across Europe developed a 'visioning process', in order to involve stakeholder groups in the identification of multiple future transition pathways towards sustainable agriculture at the regional level. The project aims to identify the social and technological innovation needs for attaining these 'ideal' and shared visions, and to assess how possible institutional arrangements, support measures and socio-technical networks amongst actors within the farming community, policy, technology and wider society can lead to the increased regional sustainability of agriculture. Approaches to 'futures thinking' highlight the contribution of visioning to strategic planning and transdisciplinary communication, as well as permitting flexibility in response to uncertainty and the consideration of consequences, leading to potential policy redirection. The paper will focus on the visioning processes undertaken in the two contrasting regions of the North East of Scotland and Alentejo, Southern Portugal, providing a detailed discussion on the key features of the visions identified and analysed by the wide range of participant groups, including active farmers, young farmers and 'new entrants', as well as rural land users and those with 'official interests'. A key theme in the Scottish case is the widely-held desire to 'reconnect' the non-farming rural and urban 'public' with the activities of farmers, in order to build a greater understanding of food production processes, as well as contribute to a general respect and empathy for the natural environment and rural community. In the Portuguese case, most striking was the willingness to engage in this process by the different types of farmers and other actors involved, as well as the shared goal to maintain the Montado, the extensive silvo-pastoral system characteristic of the region, and to operationalise support and regulatory mechanisms that guarantee this maintenance. Finally, lessons learned from the stakeholder engagement process will be discussed, as well as the contribution of this method to collaborative learning, and as a meaningful and robust transdisciplinary process.

Keywords: Transdisciplinarity, stakeholder engagement, transition theory, sustainable agriculture, collaborative learning

Introduction

Transitions to sustainability refer to radical transformations towards a more sustainable society as a response to a number of persistent overarching problems (Grin *et al.*, 2010). In order to find new pathways, Marsden (2013) argues that a more reflexive governance approach at multiple scales is required (see also Marsden *et al.*, 2010). In reflexive governance, both the adaptive and the reflexive capacity of the actors involved are strengthened by social learning, defined by Darnhofer *et al.* (2012) as the systematic learning process among multiple actors who together define a purpose related to the agreed necessity of concerted action at a variety of scales (see also Reed, 2008). Recent trends in transition management have evolved further in co-design, where knowledge is developed in a complex, interactive design process with a range of stakeholders involved through a process of social learning (Grin *et al.*, 2010).

The FarmPath project[63] aimed to identify mechanisms that promote transition processes in the farming sector, and that support the capacity of those involved at multiple scales. FarmPath applied a participatory transdisciplinary approach to the identification of visions for the future of agriculture and land-based activities, as well as the required pathways to achieve these visions, in seven European regions[64]. Transdisciplinarity is a demanding form of scientific and practitioner knowledge integration (Spangenberg, 2011), which can be characterised by three elements: the integration of disciplinary paradigms, the use of participatory methods, and the application to real-life problems (Pohl and Hirsch Hadorn, 2007). Innovation in methodologies for collaborative work is central to transdisciplinarity (Mobjörk, 2010). The reported goals and outcomes of trandisciplinary practice include greater accountability through integration (Mobjörk, 2010), mutual learning and trust building (Klein, 2004). These are the criteria which can best be used for assessing the success of a transdisciplinary process. This paper outlines the methodology and results of this transdisciplinary visioning process, highlighting the main similarities and differences between the Scottish and Portuguese case studies. In particular, it reflects on the role that the transdisciplinary dialogue had on the stakeholders involved in the process (both the practitioners and the researchers), and aims to disentangle the complex role that transdisciplinarity may have in participatory research.

Why 'visioning'?

The intention behind the co-construction of visions and the related pathways was grounded in the conceptualization of system innovation and transition processes. Through a process of reframing, those involved jointly try to find a shared problem perception, and directions for sustainable solutions (Kemp and Loorbach, 2006). Imagining the future may be used as a way to make it easier for those involved to conceptualise the radical changes which may result from a process of transition towards greater sustainability. Whilst the relevant literature considers the term 'scenarios', this process adopted the goal of 'visioning' in order to encourage creative and unrestricted discussion, and enabled the creation of 'desirable futures' by the participants, which did not involve predictions or forecasting.

Scenarios can be considered as tools for ordering perceptions about alternative futures (Ramos, 2010). Typically they are best utilised through comparisons of different possible futures. Scenarios have shown to be relevant tools for improving communication amongst stakeholders, planners and decision-makers to encourage stakeholders to reflect on the future and, in this way, contribute to rural planning and sustainable governance (Tress and Tress, 2003; Carvalho-Ribeiro *et al.*,

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[63] 'FarmPath' (Farming Transitions: Pathways towards regional sustainability of agriculture in Europe) is a three year collaborative research project funded through the European Commission's Seventh Framework Programme, running from March 2011 to May 2014. Further information can be found at: (http://www.farmpath.eu/)

[64] The regions studied were: Aberdeenshire (North East Scotland), Plzensky region (Czech Republic), Baden-Württemberg (Germany), Montermor-o-Novo (Portugal), Pays de Rennes (France), Prazardjik and Plovid (Bulgaria) and Imathia (Greece).

2010; Southern *et al.*, 2011). When large scale questions exist on how driving forces may play out in the longer-term future, scenarios help to explore the implications of a range of different futures. They make it possible to reduce complexity, either by looking only at certain parts of a system or by focusing on a concrete, focal question during the scenario process.

In this research, we identify visions as the simplest form of scenarios: stories about the future, which can be told either qualitatively (in words or pictures), quantitatively (as numerical estimates) or by combining both (Zurek and Henrichs, 2007). To address the way a complex system may develop, scenarios combine these elements to develop images of the future. Through well-structured participatory processes, a joint construction of such 'visions', enriched by the perspectives of the different participants, is made possible, leading to higher awareness of the drivers in place, but also of the possible roles of different actors and institutions (Wiek *et al.*, 2013).

Methods

A step-by-step approach (Fig. 1) was developed, which included the individual evaluation of each step by the participants. Similarly, the project's National Stakeholder Partnership Group (NSPG[65]), comprising key representatives of the farming and agricultural research community in each partner country, recruited at the beginning of the FarmPath project, were consulted and participated at each step to ensure a consistent stakeholder dialogue. The visioning process was conducted between January and May 2013.

Figure 1: The step-by-step visioning process
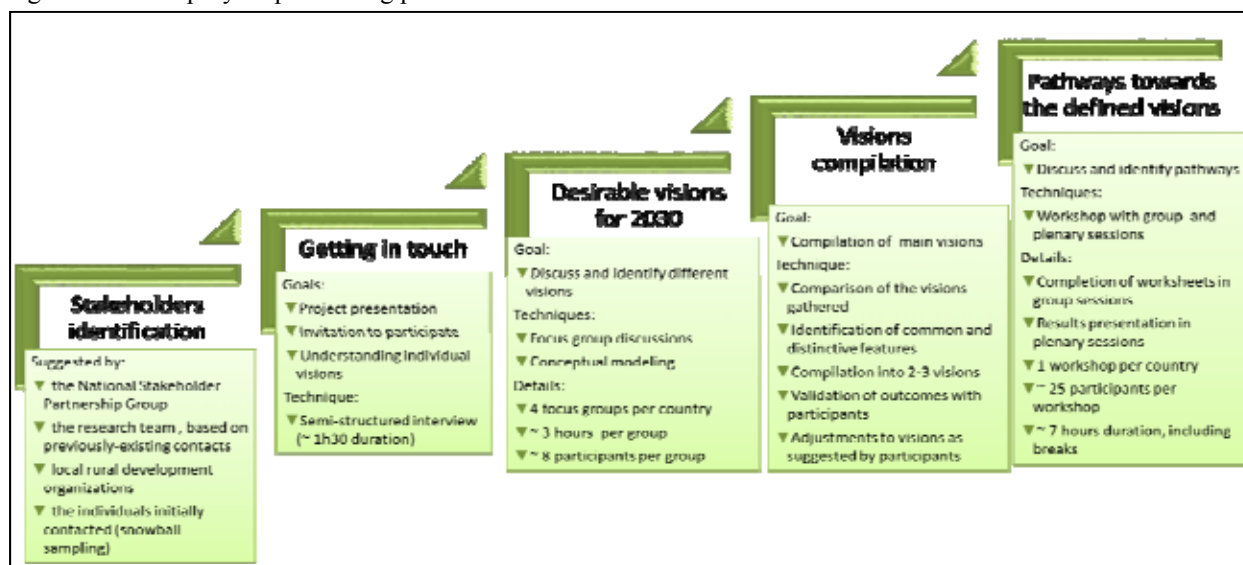
There is no pre-defined 'recipe' for the implementation of transdisciplinary research (Brandt *et al.*, 2013). In this case, the approach was constructed for this project in particular and adapted whilst it was evolving, aiming for the highest possible integration of participants and their concerns, but also in order to achieve the pre-defined project goals. The overall aim was to convene a representative group of rural interests, including researchers, to answer two central and sequential questions:

1) What is desirable for agriculture and other land-based activities for the region in 2030?

2) What needs to be done to achieve this desirable future by 2030?

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[65] A National Stakeholder Partnership Group was formed in the begining of FarmPath project in each partner country, with the goal to ensure a permanent dialogue between researchers and stakeholders, in order that key issues of the project were defined together.

These two questions were formulated with different concerns: a) to make it possible to create a distance from present conditions and construct visions detached from present constraints, and that could result from radical changes (i.e. transitions); b) to think about a future which is of an appropriate timescale to make a transition possible, and close enough to be relevant for those involved; c) to consider agriculture, but also the other activities that currently shape the use of the rural land and the functioning of rural communities; d) to identify ideal visions, but also the pathways required for the visions to be achieved, and e) to identify the actions required for these pathways to be achieved at different governance levels. The research team defined ideal and relevant participant groups, according to the aims of FarmPath (see Footnote 1 above) and the focal questions. The participants were therefore grouped as follows:

• 'Official Interests': Individuals dedicated to governmental and non-governmental activities related with rural issues, environmental organizations, farmer's organizations, established NGOs, business associations, unions, local authorities, national policy makers, etc.

• 'Run the Land': People acting upon the policies, though managing the land, therefore including farmers and land owners, hobby farmers, businesses associated with agricultural production, those responsible for protected areas, etc.

• 'Young Farmers': Farmers under 40 years of age, who possess adequate occupational skills to set up an agricultural holding for the first time and are the head of the holding. This definition relates to that found in the EU Rural Development Regulations. 'Young Farmers' could have been aggregated in the 'Run the Land' group, but this separation was intentional for assessing if age and accumulated experience in farming would generate different perspectives. Furthermore, 'Young Farmers' were an identified sub-focus of the FarmPath project, due to their role in long term social sustainability.

• 'Those Who Benefit from the Management of the Land': Including end users, recreationists, health-related charities, community well-being and educational practitioners, social care, residential associations, consumer organizations, etc.

Participants were recruited personally according to the typology above. The selection of stakeholders was undertaken by a variety of means (see Fig. 1 for detail), and their role in the project was explained during the first contact. Participants were invited to participate as volunteers, where the project was of interest to them. The only demand was a time commitment, thus requesting that they participated in all steps of the process (see Fig. 1).The process organisation, preparation and outcome delivery was undertaken by the research team. The focus group discussions involved individuals from the same participant group, whose concerns were expected to be similar. The aim was to produce visions for agriculture and other land-based activities, for each region, in 2030. As such, the exercise was based primarily on a normative approach to the future, questioning 'what should happen', and providing a perspective on scenario building appropriate to strategic assessments (Ramos, 2010). The exercise was based on systems thinking and conceptual modeling (Guimarães *et al.*, 2013), to allow a structured discussion, and ensure that all dimensions of the question were covered.

The step-by-step approach culminated in a final workshop, attended by many of the participants from the four participant groups, representatives of the NSPG, and researchers. It aimed for the joint co-construction of pathways to achieve the previously defined visions. After the workshop, the pathways obtained were analysed qualitatively by the research team and involving further discussion with the NSPG.

Results: the visions and pathways

The visions: Similarities and differences between Portugal and Scotland

In the Scottish and Portuguese regional case studies, more than 18 visions concerning the wishes for agriculture and other land-based activities in 2030 were gathered from the focus group stage; these were compiled, resulting in three visions in the Scottish case study and two in the Portuguese.

Even considering the large differentiation of the regions, there are many similarities in the content of these visions mainly in terms of their central foci. In both case studies one vision focusses on farming competitiveness and profitability. Within these visions environmental constraints are expressed, but farming production and productivism is promoted as a key strategy. In both cases the need to balance the natural system with the productive system is evident; nevertheless the means to achieve this balance are distinct. In Scotland, stakeholders discussed the possibility of farmers obtaining economic returns from the non-market ecosystem services maintained when farming is undertaken through less intensive means. Farm profits are derived from the market rather than from production subsidies, agriculture is a more powerful partner in the food supply chain, and there are more young people staying on farms. In Portugal, the payment for non-market ecosystem services was referred to, but no in-depth discussion occurred. In both regions, technology (i.e. energy production, innovative forms of cultivation, etc.) is considered a key element towards a profitable farming system that respects environmental constraints.

A second group of visions relates to farming, but is centered on the environmental or conservation agenda, with the quality of the landscape and of the environment or natural resources as an expression of the wished outcomes. In the Portuguese region the fact that there is a high nature value system (i.e. the Montado) ensured that this vision was one of the most prominent. The maintenance of this system was also a requirement in the 'farming productivity' vision, therefore, it is clear that stakeholders share the desire to maintain this system. The Montado is the extensive silvo-pastoral land use system characteristic of Southern Portugal, the maintenance of which is not straightforward where farming intensification is similarly desired. In Scotland, despite the fact that there is no land use system that defines regional identity, stakeholders demonstrated their preference for a diverse landscape consisting of patchwork of land use (i.e. crops, livestock, forestry, semi-natural and amenity woodland areas).

Finally, a third group of visions focuses on rural communities, a lively countryside, networks and close connections between the urban and the rural, which strongly emphasises the reinforcement of rural values and lifestyles. In the Scottish case study this topic was fully explored in a third vision with the emphasis on sustainable community development, including the wish for affordable housing provision and community 'growing' space, as well as paths and trails for access between communities. In the Portuguese case the maintenance of rural values and lifestyles is an underlying theme in the second vision where the maintenance of the Montado system is emphasized. This is explained by the fact that the Montado is a man-made landscape, therefore implying a strong sense of community, where farming cannot be intensive, and where complementary activities need to exist so that the region can be an attractive place to live and work.

Despite this difference, both cases show that 'the community' is viewed as a source of strength and identity in the countryside, and the social dimension appears to be the driver for at least one vision; it is therefore the most commonly shared ideal for the future. In addition, there is a shared desire to change how society understands farming and farmers from a negative, productivist view to a positive perspective, where farmers are not solely providing quality food, but also protecting the natural assets of the region. In addition, in both regions, stakeholders expressed the desire to increase the living and working conditions of farmers, allowing farming to be considered not only

a lifestyle, but a profession, and where farmers have time to undertake other activities (i.e. professional or recreational).

Broadly, the different characteristics of the regions do not seem to be reflected in clear differences in the type of visions formulated. Therefore, despite the differentiation of regions, not least their variation of dominance of intensive or extensive agricultural systems, common visions emerge, although with multiple potential outcomes due to regional specificities.

The pathways and policy recommendations
The pathways required in order to achieve these visions reveal a much larger diversity of concerns. The discussions in the final workshops resulted in extensive and multiple lists of pathways, which can be summarised as: (1) Maintenance or re-emergence of farming activities; (2) Innovation in farming; (3) New concepts of farming, farmers and rural areas; and (4) Overall policy and institutional change.

The maintenance or re-emergence of farming activities means that regardless of the farming system there are certain current features considered as essential to maintain, or to re-activate the social and economic role of agriculture. It is believed that this can be achieved through the development and maintenance of farming infrastructure and services, the economic viability of farming activities, well-planned land and farming succession, and closer interconnections between farming, policy and research. Furthermore, innovation in farming was considered achievable through innovative mindsets and practices, and the use of new techniques and technologies, practices and network connections; all of which are considered necessary for the future sustainability of agriculture, and for other land-based activities.

The 'new concepts of farming' refer to the need to acknowledge the shift away from production as the sole driver of land use and rural dynamics, towards a complex interplay of other drivers, such as countryside consumption, or landscape and nature conservation. This pathway focuses on the multifunctional nature of the ideal transition and the need for multifunctionality to be acknowledged by public policies, as well as by the range of actors involved in decision-making and management. The conditions required for the diffusion of these new concepts are 'reshaped relations' between the farming community and the wider public, based on the attractiveness of rural areas and the trend for 'going local' (i.e. for buying locally produced goods, and the reintegration of farming into the local community). Multifunctionality is also a central concept for farming and rural areas, with integrated actors and strategies.

Policy and institutional arrangements are the conditions that must be established at the macro level, framing the activities to be developed in rural areas. These arrangements correspond to the different sectors and strategies, transferred into activities and legislation, at different scales. For example, in Scotland there is a need for targeted rural investment and to change farmer mindsets regarding involving local communities to gain Scottish Rural Development Programme (SRDP) funding. It is considered that these arrangements are best achieved through coherent policy-making, regulation, funding, and integrating understanding, and prioritizing, of global policy issues. In Portugal, policies targeted at the Montado system are needed, as well as a better understanding by policy makers about the specificities of this land use. Although the desirable futures showed remarkable similarities across the study regions, the wide range of actions suggested indicates the importance of contextualised intervention and action, adapted to the characteristics and needs of each region.

Reflections and lessons learned

The utilization of the step-by-step methodology consistent across the two regions makes it possible to assess the key points of success and failures of the approach overall.

Careful structuring of the process and ensuring that the participants feel valued, and get something meaningful out of the process, appeared crucial for securing their continued engagement. Despite participant agreement at the outset of the project to be present during all steps, the participation rate decreased during the process nonetheless. However, in the Portuguese region where most participants already knew the research team, participation was more consistent. This indicates that social capital can be accumulated between projects, and can exceed the timeframe of a project. Therefore, a research group engaging in such an approach is developing a bond with the stakeholder community, which can be reinforced during each project, where results are enriching for all parties involved. Conversely, this bond can be 'broken' if partners are disappointed.

The reasons behind the participant's interests in the project varied between tangible (i.e. to facilitate changes in policies, management actions, etc.) to intangible aspects (i.e. to meet other people, work with scientists, etc.). Even participants with experience in participatory projects valued the networking potential of this project. On the other hand, several participants, including the researchers, expressed worries about achieving tangible results from the project, i.e. a lack of practical outcomes, such as actual policy development. This leads to a relevant question regarding the motivations of transdisciplinary work, as well as the perspective of those who promote it. Despite the fact that the ultimate goals of transdisciplinary work should be tangible, this does not depend solely on those who initiate the process. This misunderstanding can hinder the transdisciplinary process and contribute to well-known problems in stakeholder participation literature, such as discredit and fatigue (Reed, 2008). As shown by different authors, a transdisciplinary process requires the commitment of all participants, and hence it must be coupled with shared responsibilities and the empowerment of all participants (Brandt *et al.*, 2013).

Within the focus group discussions (Fig. 1; step 3) the visioning exercise was achieved most easily in the 'Official Interests' participant group. These individuals engage in strategic planning exercises within their professional lives and were familiar with thinking in terms of visioning. In other words their discourse was already well-structured. The remaining focus groups commented positively on the novelty of the approach, but had more difficulty identifying clear visions. The group who represented 'Those Who Benefit from the Management of the Land' expressed the greatest difficulties in creating regionally-based visions, or to acknowledge the role of farming in the construction of the physical landscape, possibly due to their weak connection with the sector. During the process some questions were clarified and the individual discourses of some participants altered. These results reveal the suitability of a step-by-step approach in a transdisciplinary exercise, to allow participants to become familiar with the process. Aiming for a co-construction process involving actors from different spheres of society does not only imply difference in knowledge types, but also in the maturity of discourses. Hence opportunities to better structure individual and group discourses are necessary to promote subsequently balanced dialogues. The construction of the visions, i.e., the design of desirable futures, not rooted in present situational constraints, was viewed as the most challenging task by participants. It demonstrated that innovative thinking is not easily achieved and the support of different specific strategic methods is highly important if the visioning exercises are to be successful.

The final workshop was designed to specifically facilitate a participatory, transdisciplinary exercise, since it included interaction between members of all groups, NSPG members and researchers. Several researchers expressed difficulty in joining the discussion as participants, and the remaining participants indicated their difficulty in considering the researchers as participants, especially when they were in disagreement. Researchers were seen as those 'who know', or 'who have the knowledge', and therefore were hard to challenge. Since most formal transdisciplinary

projects are promoted by science partners this suggests the need for better preparation on the part of researchers so that the power of academic knowledge is in balance with others and also that the role of the scientist in the process is understood. In addition, it is important to engage professional facilitators in participatory methods, so that researchers can fully engage in the process.

There were underlying limitations with the transdisciplinary approach in this process as the questions addressed and the methods selected did not emerge directly from practice, but were decided within the context of a pre-defined research project. Nevertheless, the research questions framing the project were defined in accordance with both a) the experience of dialogue with practitioners and problem-solving research undertaken by the researchers involved, and b) concerns expressed by stakeholders at different scales in Europe and gathered by the European Commission, which was the basis for the project call.

From the evaluation made by participants in all the regions, it can be asserted that the transdisciplinary process for the identification of the transition pathways has created engagement and in-depth discussions in the participatory process. However, participants began the process with highly variable levels of experience of transdisciplinarity. Where there was prior experience of involvement, particularly in European projects, participants showed some fatigue in relation to this kind of project. In others, the novelty of the process, and in particular the European dimension, has raised great interest. As previously described in the literature (cf. Brandt *et al.*, 2013), and emerging from this analysis, the willingness to participate and the consistency of participation relies on a common agenda defined with the involvement of all the concerned. However, such common agendas require the novel design of research projects, with the use of different strategies, and methods, established together from the start, which may not be possible in existing research frameworks.

How can transdisciplinarity support transitions to agricultural sustainability?
The transdisciplinary process developed within FarmPath has been conducted over a relatively short timescale (five months within project duration of three years; see Footnote 1) therefore it was not possible to undertake an overarching assessment of its impacts at the time of writing. However, it has enabled the local participants to consider future aims and identify strategies to attain these, leading to a higher awareness of their possible role in a potential transition. In addition, it has led to the acknowledgment by practitioners that links to science can be useful and inspiring, and are easily established. Even with only a cursory assessment of its value directly to the transition, it is possible to say that the transdisciplinary process has enhanced the science-society dialogue and thus contributed to transcending the science-society divide (Darnhofer, 2011; Neef and Neubert, 2011).

In the Portuguese region participants at the final workshop expressed their desire to continue their involvement in discussing pathways for the future sustainability of agriculture in their region, emphasising the need to maintain an open dialogue and for pathway co-construction coordinated by the researchers. The role of researchers is viewed not only as positive, but also as a condition for the process to continue. This reveals an expectation concerning the active role of researchers, and indicates that outcomes from a transdisciplinary dialogue can go much further than the achievement of the goals within a single project or the collection of information for scientific purposes.

Furthermore, there was evidence that existing and long-term professional relationships between the research team and many participants contributed to the participants' ability to agree to participate in the dialogue, as well as their ease in understanding the questions addressed, and the project discourse overall. Long-term trust capital 'build–up' should be acknowledged, and the effects of each single transdisciplinary participatory process, like the one developed in FarmPath or others, need to be understood in the context of long term interaction between science and practice.

Conclusions

This participatory, transdisciplinary process has aimed, not only to identify visions and pathways for the sustainability of agriculture at the regional scale, but also to support more reflexive and adaptive governance in the regions concerned. The approach has not, however, resulted from the joint understanding of a problem, where together researchers and practitioners have defined the need for the process to be organized, as is the ideal of co-construction (Darnhofer *et al.*, 2012). Nonetheless, it can be concluded from the findings of the implemented process that social learning has occurred in each case study region, involving multiple actors, from different spheres. Transformative social learning has been achieved in part through the willingness of participants to engage with and gain knowledge of alternative viewpoints. Results have also shown that this process has led to a change in perspective amongst stakeholders, including the researchers, through joint efforts to find a shared problem perception, and directions for sustainable solutions (Kemp and Loorbach, 2006). Furthermore, this has only been possible due to the use of suitable and tailor-made participatory tools. As demonstrated and as also stated in the literature (Brandt *et al.*, 2013), a well-structured and facilitated process is critical in the progression of the shared construction of knowledge. This critical factor also encompasses the attitude and behaviour of the research team. This learning is identified more clearly in some regions than in others, but the co-construction of visions and of pathways, resulting from the whole process, inherently contributes to social learning (Grin *et al.*, 2010). Consequently in some regions the transdisciplinary process may have supported a transition pathway towards the sustainability of agriculture, not least through the commissioning of further research by stakeholders in Portugal on local food autonomy and production. Future assessments will be conducted to confirm this key goal.

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