



AGRICULTURAL KNOWLEDGE: LINKING FARMERS,  
ADVISORS AND RESEARCHERS TO BOOST INNOVATION

# AGRILINK'S MULTI-LEVEL CONCEPTUAL FRAMEWORK

THEORY PRIMER: 15) KNOWLEDGE BROKERING,  
NETWORK LEARNING, TRANSITION FROM 'ADVISOR' TO  
'FACILITATOR'

Coordinated by **The James Hutton Institute**  
Authors: **Sandra Šūmane, Talis Tisenkopfs**



This project has received funding from the European Union's  
Horizon 2020 research and innovation programme under  
grant agreement No. 727577.

# AgriLink

**Agricultural Knowledge: Linking farmers, advisors and researchers to boost innovation.**

***AgriLink’s multi-level conceptual framework***  
 Theory primer: 15) Knowledge brokering, network learning, transition from ‘advisor’ to ‘facilitator’

The elaboration of this Conceptual Framework has been coordinated by **The James Hutton Institute**, leader of AgriLink’s WP2.

List of contributors:

- **Lee-Ann Sutherland** (WP lead), **Pierre Labarthe**, **Boelie Elzen**, **Anda Adamsone-Fiskovica**,
- with the support and contributions of Chris Blackmore, Marianne Cerf, Danielle Galliano, Alberto Lafarga, Andy Lane, Catherine Laurent, Livia Madureira, Carla Marques, Cristina Micheloni, Geneviève Nguyen, Katrin Prager, Jaroslav Prazan, Herman Schoorlemmer, Egil Straete, Sandra Sumane, Talis Tisenkopfs, Freddy van Hulst



This document presents the multi-level conceptual framework of the research and innovation project AgriLink. It is a living document.

- A first version was submitted as deliverable D1.1 of AgriLink, Month 6 of the project (November 2017).
- **This updated version has been issued on 01/05/2018.**

It has gone through a transdisciplinary process, with implication of both practitioners and researchers in writing, editing or reviewing the manuscript. This participation has been organised within AgriLink’s consortium and beyond, with the involvement of members of the International Advisory Board of the project, including members of the Working Group on Agricultural Knowledge and Innovation System of the Standing Committee on Agricultural Research of the European Commission.





## Theory Primers

The purpose of the primers is to provide AgriLink consortium members with an introduction to each topic, which outlines the key points and identifies options for further reading. The primers have also served to demonstrate the wide range of expertise in the consortium, and to highlight the specific research interests of consortium members. Primers are intended to act as a **foundation for academic journal articles, and an early opportunity for collaboration between consortium members.**

### 15) Knowledge brokering, network learning, transition from ‘advisor’ to ‘facilitator’

Authors: Sandra Šūmane and Talis Tisenkopfs,

---

#### 1.0 General Overview of the Theory or Approach

##### 1.1 Summary of the Theory, Approach or Topic

Agricultural innovations, particularly those innovations leading towards more sustainable agriculture, are increasingly seen as emerging in and best advanced by multi-actor learning networks where different stakeholders with their various kinds of knowledge meet, and negotiate and institutionalise new meanings and new farming practices (Šūmane et al., 2017; Moschitz et al., 2015; Wood et al., 2014; Oreszczyn et al., 2010, Knickel et al., 2009). Knowledge or learning networks make explicit the interactive and participatory character of knowledge generation and innovation, with all the stakeholders, including the farmers, being active partners and knowledge co-producers. In order to reach different stakeholders’ mutual understanding and learning, and enhance the generation of innovation, the interactions between and within these groups of actors need to be facilitated. Knowledge brokerage or intermediary activities to reduce knowledge gap is key in enabling multi-actor learning networks and in integrating various knowledge cultures (Tisenkopfs et al., 2015; Kramer et al., 2011). While all actors potentially can become knowledge brokers, it is expected that agricultural advisory take a central mediator role and facilitate connections and knowledge exchange among various stakeholders for joint learning.

##### 1.2 Major authors and their disciplines

The concept of knowledge brokerage has developed in the context of linking research, policy and practice. The processes of knowledge brokerage, learning networks have been studied in many sectors - health, education, environmental science, management sector etc. There is a solid research base and theoretical considerations developed on these concepts and related processes in agriculture. Here, the major authors are Cees Leeuwis, Laurens Klerkx. Knowledge brokerage and learning networks are studied from various perspectives such as innovation, knowledge management, sociology; at different levels from individual to inter-organizational level.

##### 1.3 Key references (3 to 5 maximum, ideally overview papers if these exist)

Klerkx, L., Schut, M., Leeuwis, C., and Kilelu, C. (2012) Advances in Knowledge Brokering in the Agricultural Sector: Towards Innovation System Facilitation. *Institute of Development Studies Bulletin*, 43 (5). DOI 10.1111/j.1759-5436.2012.00363.x

Klerkx, L., and Leeuwis C. (2009) Establishment and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting and Social Change*, 76 (6), pp. 849-860. DOI 10.1016/j.techfore.2008.10.001



Klerkx, L., Hall, A., and Leeuwis C. (2009) Strengthening agricultural innovation capacity: are innovation brokers the answer? *International Journal of Agricultural Resources, Governance and Ecology*, 8 (5-6), DOI 10.1504/IJARGE.2009.032643

#### 1.4 Brief history of how the theory has developed and been applied

The process of knowledge brokering in the agricultural sector - generally called agricultural extension - has been studied since the 1950s (Klerkx et al., 2012). Since then, the notion of knowledge brokerage has evolved following the shifts in theoretical perspectives on agricultural development and innovation. Klerkx et al. (2012) distinguish three phases in the evolution of knowledge brokerage concept and practices.

The linear approach to innovation, dominating between 1950s and 1990s, considered research as a source of knowledge and innovations, and producers as their end-users / adaptors. In line with this, knowledge brokerage was interpreted primarily as knowledge / technology transfer, assumed by agricultural extension, from researchers to farmers.

In 1990s, a more systemic perspective to agricultural innovation emerged, which aims to better address heterogeneity and complexity of farming realities which influence innovations. Participatory research approach emerges in order to “enhance research uptake and impact, by adapting research to specific contexts and creating ownership of the research”. The concept of AKIS (agricultural knowledge and information systems) becomes central in order to mark the recognition of broader knowledge systems in which farmers were embedded. Innovation is still considered as research output, but its implementation being more interactive between researchers and farmers, considering the latter as active collaborators and co-owners of innovation. Knowledge brokerage, accordingly, is more about “enhancing dialogue and direct collaboration between research producers and research users, considering the many factors that influence change and innovation”.

In 2000s, the systemic, interactive perspective of innovation was consolidating. Innovation is increasingly perceived as emerging in multi-actor interactions in networks. These multi-actor networks are considered to involve not only ‘conventional’ participants of AKIS – research, extension, education and farmers, but all the diverse actors who contribute to innovation. In such multi-actor environment or networks, all the actors are co-creators of innovation. The notion of knowledge brokerage has changed. Knowledge brokering involves facilitating interactions, learning and co-creating of innovation among various stakeholders. Actually brokering refers not only to overcoming knowledge gap, but a range of social, ideological, cognitive and other kind of gaps. Therefore the concept of innovation broker and systemic facilitator appears. Innovation broker is not anymore associated with extensionist, it can be whatever actor performing these functions of innovation facilitation.

#### 1.5 Basic concepts

Knowledge and learning networks are networks within which actors share information and create new knowledge, and therefore strengthen their individual and collective capacity to act and innovate.

Knowledge brokerage contains a set of activities and processes aimed at exchanging and translating of individual knowledge stocks into collectively shared knowledge and innovations.

Knowledge brokers are actors who facilitate connections, enable coordination and create opportunities for learning and thereby enable knowledge flows and synergies between different actors and communities (Wenger, 1998)

Knowledge brokerage is organised around boundary objects - entities “shared by several different communities but viewed or used differently by each of them, being both plastic enough to adapt to local needs and the constraints of the several parties employing them, yet



robust enough to maintain a common identity across sites” (Star and Griesemer 1989: 393). Boundary objects are tangible or intangible - a trademark, a publication, a code of practice, a website, a strategic paper, an idea etc. – and are of shared interest for participants and therefore create interfaces for their communication, interaction and coherence (ibid). Boundary work and objects can be viewed in three domains: learning, innovation, and sustainability. The dynamic and outcomes of boundary work in innovation networks develop a shared knowledge base, coproduce innovation and help to negotiate sustainability (Tisenkopfs et al 2015).

## 2.0 Application to the analysing the role of farm advisory services in innovation

### 2.1 Relevance to AgriLink Objectives

[tick relevant]	AgriLink Objectives
X	Develop a theoretical framework utilising a multi-level perspective to integrate sociological and economic theories with inputs from psychology and learning studies; and assess the functions played by advisory organisations in innovation dynamics at multiple levels (micro-, meso-, macro-levels) <b>[WP1]</b> ;
X	Assess the diversity of farmers’ use of knowledge and services from both formal and informal sources (micro-AKIS), and how they translate this into changes on their own farms <b>[WP2]</b> ;
	Develop and utilise cutting edge research methods to assess new advisory service models and their innovation potential <b>[WP2]</b> ;
X	Identify thoroughly the roles of the R-FAS (regional FAS) in innovation development, evaluation, adoption and dissemination in various EU rural and agricultural contexts <b>[WP2]</b> ;
	Test how various forms of (national and regional) governance and funding schemes of farm advice i) support (or not) farmers’ micro-AKIS, ii) sustain the relation between research, advice, farmers and facilitate knowledge assemblage iii) enable evaluation of the (positive and negative) effects of innovation for sustainable development of agriculture <b>[WP4]</b> ;
	Assess the effectiveness of formal support to agricultural advisory organisations forming the R-FAS by combining quantitative and qualitative methods, with a focus on the EU-FAS policy instrument (the first and second version of the regulation) and by relating them to other findings of AgriLink. <b>[WP4]</b> .
	At the applied level, the objectives of AgriLink are to:
X	Develop recommendations to enhance farm advisory systems from a multi-level perspective, from the viewpoint of farmers’ access to knowledge and services (micro-AKIS) up to the question of governance, also recommending supports to encourage advisors to utilise specific tools, methods to better link science and practice, encourage life-long learning and interactivity between advisors <b>[WP5]</b> ;
	Build socio-technical transition scenarios for improving the performance of advisory systems and achieving more sustainable systems - through interactive sessions with policy makers and advisory organisations; explore



	the practical relevance of AgriLink’s recommendations in this process [WP5];
	Test and validate innovative advisory tools and services to better connect research and practice [WP3];
X	Develop new learning and interaction methods for fruitful exchanges between farmers, researchers and advisors, with a focus on advisors’ needs for new skills and new roles [WP3];
	Guarantee the quality of practitioners’ involvement throughout the project to support the identification of best fit practices for various types of farm advisory services (use of new technologies, methods, tools) in different European contexts, and for the governance of their public supports [WP6].

## 2.2 How this can be applied/developed in AgriLink (2-5 paragraphs)

Learning network approach allows us to capture the complex farmers’ multi-actor learning environment and position agricultural advisory within it.

## 2.3 Research questions relevant to AgriLink

What knowledge sources, formal and informal, do farmers use and why those (access, reliability, relevance, adaptability...)?

What are relations between these different knowledge sources/knowledge actors and their knowledge contents (are they complementary, conflicting, dominating-subordinated...)?

How knowledge coming from various sources is integrated (by farmer him/herself, are there some collective or multi-actor knowledge platforms, the presence of knowledge brokers, use of boundary objects)?

Who are knowledge brokers? What is their social-demographic portrait, professional backgrounds, skill basis?

If and how advisory help to facilitate knowledge exchange, learning, generation of new knowledge between different knowledge actors?

## 2.4 Methodological implications

Multi-stakeholder and participatory approach is typically associated as a general methodological framework for knowledge brokerage. Various knowledge brokerage methods have been developed to facilitate interactions and learning in multi-actor setting (see Karner et al., 2011).

(Social) network analysis – qualitative and quantitative – is used to capture and analyse various aspects of knowledge, learning and innovation networks: identify participants, their roles; explore and measure their relations and relational structures; estimate the performance of different actors etc. Knowledge brokers can be identified through different lenses in participatory way as key promoters, nodal personalities, gate keepers, facilitators, ‘window openers’ in innovation networks.

## 2.5 Strengths and weaknesses/Sensitivities regarding use

Participatory methods – representativeness of all the actors; some actors are more keen and skilled to participate. Good facilitation is needed.



## 2.6 Potential operational problems

Network analysis – networks in real life settings are very broad, it can be challenging to identify all the relevant actors; some boundaries may need to be set to the networks to be studied.

Sometimes knowledge brokering function is implemented by actors outside the classical advisory or agricultural systems. This can cause also strife within the established authority of knowledge in the existing AKIS.

### References (to documents referenced in this template only)

- Karner, S., Hoekstra, F., and Moschitz, H. 2011. Pool of tools and methods. A compilation of tools and methods for Knowledge Brokerage. Foodlinks project. [http://www.foodlinkscommunity.net/fileadmin/documents/Common-contents/publications/D2.3 Pool of Tools and methods DRAFT upload HP March2012.pdf](http://www.foodlinkscommunity.net/fileadmin/documents/Common-contents/publications/D2.3_Pool_of_Tools_and_methods_DRAFT_upload_HP_March2012.pdf)
- Klerkx, L., Schut, M., Leeuwis, C., and Kilelu, C. 2012. Advances in Knowledge Brokering in the Agricultural Sector: Towards Innovation System Facilitation. *Institute of Development Studies Bulletin*, 43 (5). DOI 10.1111/j.1759-5436.2012.00363.x
- Klerkx, L., and Leeuwis C. (2009) Establishment and embedding of innovation brokers at different innovation system levels: Insights from the Dutch agricultural sector. *Technological Forecasting and Social Change*, 76 (6), pp. 849-860. DOI 10.1016/j.techfore.2008.10.001
- Klerkx, L., Hall, A., and Leeuwis C. (2009) Strengthening agricultural innovation capacity: are innovation brokers the answer? *International Journal of Agricultural Resources, Governance and Ecology*, 8 (5-6), DOI 10.1504/IJARGE.2009.032643
- Knickel, K., Brunori, G., Rand, S., and Proost, J. 2009. Towards a better conceptual framework for innovation processes in agriculture and rural development: From linear models to systemic approaches. *Journal of Agricultural Education and Extension* 15 (2), pp. 131-146.
- Oreszczyn, S., Lane, A., and Carr, S. 2010. The role of networks of practice and web of influencers on farmers' engagement with and learning about agricultural innovations. *Journal of Rural Studies* 26, pp. 404-417.
- Moschitz, H., Roep, D., Brunori, G., and Tisenkopfs, T. 2015. Learning and innovation networks for sustainable agriculture: Processes of co-evolution, joint reflection and facilitation. *The Journal of Agricultural Education and Extension* 21 (1), pp. 1-11.
- Star, S.L., and Griesemer, J. R. 1989. Institutional Ecology, 'Translations' and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology. *Social Studies of Science* 19 (3): 387-420.
- Šūmane, S., Kund, I., Knickel, K., Strauss, A., Tisenkopfs, T., de los Rios. I., Rivera, M., Chebach, T., and Ashkenazy, A. (2017) Local and farmers' knowledge matters! How integrating informal and formal knowledge enhances sustainable and resilient agriculture. *Journal of Rural Studies*.
- Tisenkopfs, T., Kunda, I., Šūmane, S., Brunori, G., Klerkx, L., and Moschitz, H. 2015. Learning and innovation in agriculture and rural development: The use of the concepts of boundary work and boundary objects. *The Journal of Agricultural Education and Extension* 21 (1), pp. 13-33.
- Wenger, E. 2000. "Communities of Practice and Social Learning Systems." *Organization* 7 (2): 225-246.



Wood, B. A., H. T. Blair, D. I., Kemp, P. D., Kenyon, P. R., Morris, S. T., and Sewell, A. M. 2014. Agricultural science in the wild: A social network analysis of farmer knowledge exchange. *PLoS ONE* 9 (8), doi: 10.1371/journal.pone.0105203.