AGRILINK

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

AGRILINK'S MULTI-LEVEL CONCEPTUAL FRAMEWORK

THEORY PRIMER: 18) LEARNING AND INNOVATION NETWORKS FOR SUSTAINABLE AGRICULTURE - LINSA

Coordinated by **The James Hutton Institute**
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AgriLink

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AgriLink's multi-level conceptual framework

Theory primer: 18) Learning and Innovation Networks for Sustainable Agriculture - LINSA

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

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

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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**.

18) Learning and Innovation Networks for Sustainable Agriculture - LINSA

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1.0 General Overview of the Theory or Approach

1.1 Summary of the Theory, Approach or Topic

The idea of LINSA (Learning and Innovation Networks for Sustainable Agriculture) was proposed in the context of searching for organisational sources of transition from the long-dominant productivist agriculture regime towards a sustainability-oriented one. Since it was argued that formal AKIS institutions were not always best suited to initiate that change, a possible alternative driver was suggested: networks of mutually engaged actors with diverse roles in relation to agriculture yet joined by at least a partial focus on rural/agricultural sustainability. The key processes in such networks are joint (social) learning, innovation and negotiating what sustainability means in the specific practice of the involved actors. While LINSA can manifest fairly divergent kinds of structuring, actor relationships, knowledge and communication system traits, learning processes and relationships to AKIS, they can indeed generate and sustain changes towards more sustainable agriculture.

1.2 Major authors and their disciplines

The broader framework for developing the concept of LINSA was provided by several related sources: socio-technical transition theory, actor-network theory, innovation systems, and social learning theory (and the closely associated concept of Community of Practice). All of the source theories are well developed, with a broad range of authors, disciplines and applications.

The concept of LINSA, drawing from these sources, was developed by the core team of the 7th FP SOLINSA[1] (2011 – 2014), who were from the disciplines of agricultural economics, rural sociology and innovation studies. Some of the key papers based on the study were authored by (in alphabet order) G. Brunori, F. Hermans, R. Home, J. Ingram, H. Moschitz, T. Tisenkopfs; the concepts further used by the participants of the original team, e.g. J. Ingram 2016; Šūmane et al, 2017.

The LINSA concept (after the project result dissemination) has been referenced in articles on climate change adaptation networks in Germany (Schmid J., A. Knierim and Knuth U., 2016), organic agriculture cooperative in Spain (I. de los Rios, M. Riveira, Garcia C., 2016), co-innovation networks in animal welfare (L. van Dijk et al, 2017), and more.

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

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[1] "Agricultural Knowledge Systems in Transition: Towards a more effective and efficient support of Learning and Innovation Networks for Sustainable Agriculture" , nr. 266306, FP7 – KBBE – 2010 - 4

- G. Brunori et al (2013) CAP Reform and Innovation: The Role of Learning and Innovation Networks. Eurochoices, 12 (2): 27–33
- Moschitz et al (2014) Final report of the SOLINSA project, available at http://orgprints.org/25520/1/D%208.2%20SOLINSA%20Final%20Report.pdf
- H. Moschitz , D. Roep , G. Brunori and T. Tisenkopfs (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):1–11

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

The development of LINSA concept started within the broader issue of EU agricultural policy and AKIS capability to address the need of transition to more sustainable agriculture. Conceptualisations of ongoing processes in European agriculture used transition theory (e.g. F. Geels, J. Schot), theories of innovation networks and systems approaches (e.g. L. Klerkx, C. Leeuwis, N. Aarts), as well as more general sources – network theory, and social learning. Increasingly, the heterogeneity of actors participating in producing and disseminating innovation was coming to a fore, with observed examples of sustainability-oriented innovation often originating on the fringes of formal AKIS.

The concept of LINSA was introduced to analyse the alternative pathways in transition towards sustainable agriculture, LINSA being possible candidates for drivers of transition, be it gradual and incremental or more radical, linked to AKIS in varying degrees, but always concerned with joint learning and innovation, and joint definition of sustainability as related to the innovation at hand.

To determine if and how such networks can represent a new organisational pattern of fostering transition to more sustainable agriculture, a 7th FP funded study was carried out, developing the concept of LINSA through a grounded-theory approach, building the theoretical models from sustained joint reflection and interaction with LINSA.

17 cases representing diverse variations of LINSA as to scope, homogeneity, type of innovation, learning processes etc. were explored. The study concluded that LINSA are a special type of network, having potential to act as drivers for a series of adaptive changes towards more sustainable agriculture.

Relationships between LINSA and AKIS formed a substantial strand in exploring the LINSA trajectories, concluding that these relationships may exist in a continuum between almost no linkages to very close integration.

1.5 Basic concepts

LINSA – learning and innovation networks for sustainable agriculture, defined as hybrid multi-actor networks mutually engaged with common goals for sustainable agriculture and rural development, and co-producing new knowledge, simultaneously developing as a network. LINSA manifest a dynamic balance of diversity and commonality, a certain level of governance, innovation practiced and disseminated, and reflexivity with regard to network activities and the meaning of sustainability. Relationships with AKIS may range from almost none to close integration (Moschitz et al. 2014).

Transition partners – a concept used to elucidate a range of new roles of AKIS actors as supporters of social learning and the related dynamic in innovation networks. The core of the new roles and functions is about facilitation, innovation brokering, boundary-crossing (Moschitz et al, 2014).

Boundary work – social learning activities to advance and consolidate learning, innovation and the understanding of sustainability (across diverse groups of actors in the network and to mobilise actors outside of the network) through ever-evolving communication, co-production

and negotiation of meaning, framing and reframing, and readjustment of network goals (Tisenkopfs et al 2015).

Reflexive learning – a process by which network participants constantly reassess their innovation objectives and evaluate sustainability performance; can be assisted by researchers provided they have particular skills (Moschitz et al 2014).

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

2.1 Relevance to AgriLink Objectives

[tick relevant]	AgriLink Objectives
**	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) **[WP1]**;
**	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 **[WP2]**;
*	Develop and utilise cutting edge research methods to assess new advisory service models and their innovation potential **[WP2]**;
**	Identify thoroughly the roles of the R-FAS (regional FAS) in innovation development, evaluation, adoption and dissemination in various EU rural and agricultural contexts **[WP2]**;
**	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 **[WP4]**;
*	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. **[WP4]**.
	At the applied level, the objectives of AgriLink are to:
**	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 **[WP5]**;
**	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]**;
**	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

The LINSA concept sharpens researcher awareness of the heterogeneity of multi-actor networks and the range of their relationships with AKIS, and allows building on the lessons learned: on the new roles of AKIS, on the experience of developing the practical tools to facilitate reflexion and co-development of knowledge, evaluation of researcher skills and tools needed/used for an interactive, iterative research process.

Awareness of the dynamic, hybrid nature of the actual links between various agent groups involved in developing an innovation allows asking more nuanced research questions uncovering the underlying dynamics, roles and links, communication patterns and infrastructures, boundary interactions.

2.3 Research questions relevant to AgriLink [see the draft conceptual framework for further options]

In developing the typology of farmers' micro-AKIS: *How are the distinct types of micro-AKIS related to the type and degree of innovation pursued by farmers?*

In mapping R- FAS: *How the business models applied and back-office activities take into account the existing informal knowledge and information networks around the particular innovation, how do they engender trust and mutuality? What is the power dynamics: what groups of farmers might remain marginalised and why?*

Roles of farming advisors: *To what extent and how advisors are capable of facilitating joint reflexion which is needed for co-production of knowledge? What are the framings used by farmers with regard to specific practices and how these can be made more inclusive? How do stakeholders frame the goals of their interaction, are the frames adjusted (by advisors) to accommodate the various knowledges?*

Assemblage of different types of knowledge: *How the farmers' choices to give preference to specific sources of knowledge are made? What creates/maintains the validity of these sources? What causes tensions (if any) between different sources of knowledge? Are conflicting goals present in pursuing specific practices (by farmers and advisors)?*

Opportunities presented in the Digital Revolution: *What are the usual, trusted ways that farmers gather, exchange and validate knowledge needed for their practices? Are benefits of the Digital Revolution distributed evenly between stakeholders; what are the gaps?*

2.4 Methodological implications

For getting the basic understanding of network functioning, LINSA research uses the usual network analysis tools, which combine qualitative and quantitative data, and may be supplemented by network visualisations. However to obtain in-depth understanding of learning processes and find the tools to help LINSA develop its innovation and its

interactions, it is best to adopt an action research approach, using a range of reflexion tools, co-developing the research agenda, acting as facilitators of network learning.

2.5 Strengths and weaknesses/Sensitivities regarding use

Developing a trustful relationship with LINSA participants, and finding a relevant, meaningful role for researchers which contributes to network development requires time and sensitivity to network relationship and communication dynamics.

2.6 Potential operational problems

LINSA may take several forms and sometimes be actually a network of networks, which does put a strain on operationalisation – determining the boundaries of the phenomenon.

For analytical purposes, it may also be a certain challenge to untangle the formal and informal overlapping layers of the network exchanges if LINSA is closely integrated with AKIS.

For large networks, data collection on knowledge processes may be a certain challenge (of scope).

Optional Section 4: Recommended further reading

Please identify and other references or original sources which would be particularly useful for AgriLink consortium members interested in learning more.

To get an idea of the tools and approaches to use in interaction with various stakeholders, the following might be useful:

N. Rump Training course concept for transition partners supporting LINSA, available at http://www.solinsa.org/fileadmin/Files/deliverables/D6.7_Training_Course_Concept.pdf

References (to documents referenced in this template only)

J. Ingram (2016) Framing niche-regime linkage as adaptation: An analysis of learning and innovation networks for sustainable agriculture across Europe. Journal of Rural Studies, Vol.40, pp. 59 – 75, https://doi.org/10.1016/j.jrurstud.2015.06.003

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.

Šūmane, S., Kunda, 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*, https://doi.org/10.1016/j.jrurstud.2017.01.020

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.