



# Understanding and accompanying rural transformations

Research approaches for uncertain times

Marianne Penker



**“The truth is that many things on which your future health and prosperity depend are in dire jeopardy: climate stability, the resilience and productivity of natural systems, ... and biological diversity.**

**It is worth noting that this is not the work of ignorant people. It is, rather, largely the result of work by people with BAs, BSs, LLBs, MBAs, and PhDs.”**

Orr (2004, p. 7)

## Science in crisis

1. Knowledge demand for solving crises:  
“contribute to the ... welfare of society and environment” (UG 2002)

*How can science provide orientation when knowledge is complete, disputed and there is time pressure?*

2. Trust in science has eroded - post-truth, post-factual populism

*How can we rebuild trust in science?*



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# Outline

- Types of innovation models and modes of knowledge production
- Transdisciplinary research – examples
- Need for reflection – knowledge gaps
- Conclusions



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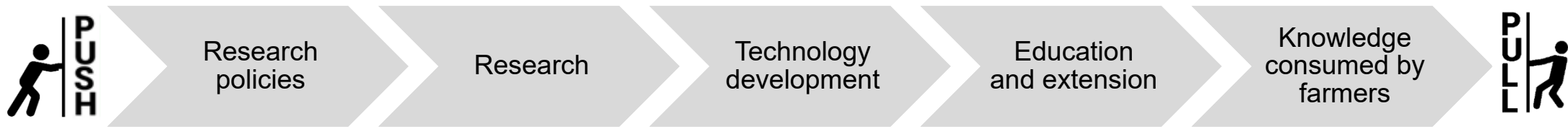


# **3 models of innovation**

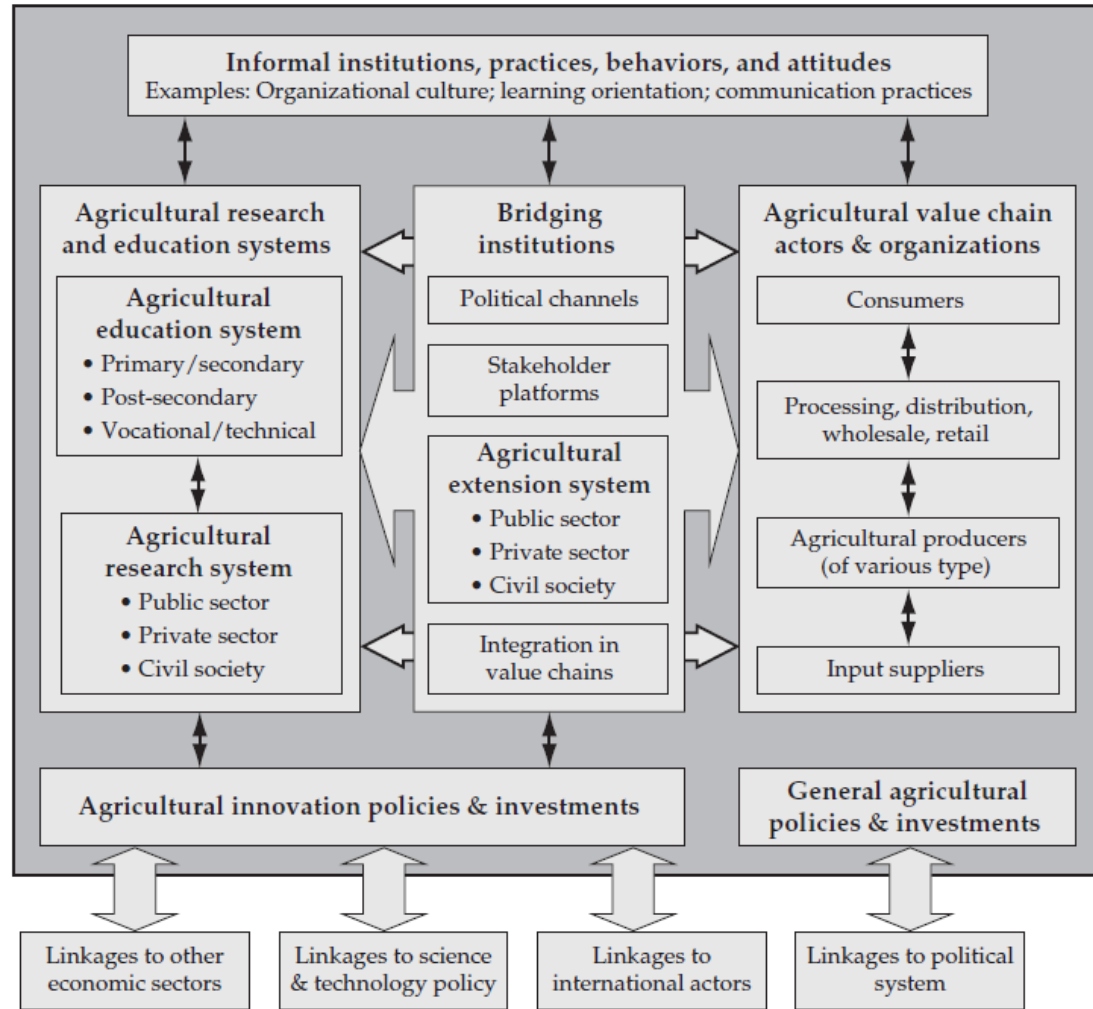
## **Linear, systemic and mission oriented**



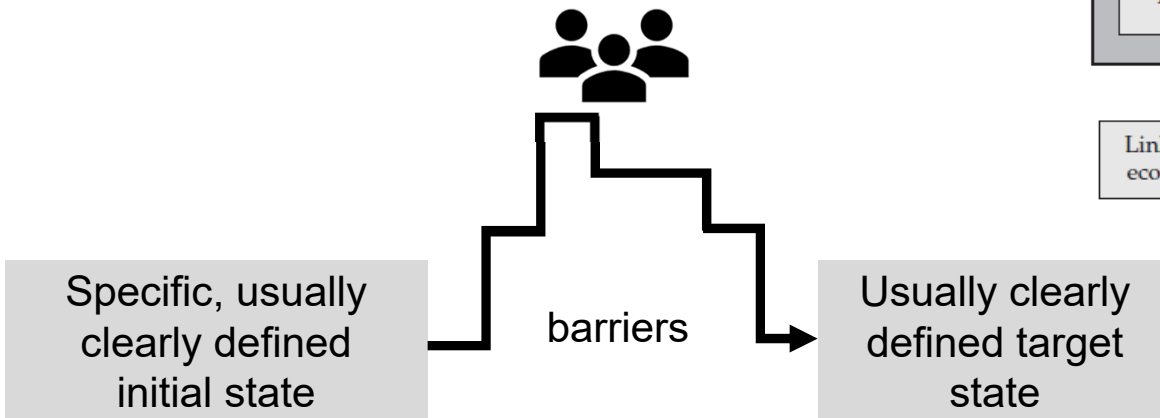
# Dominant linear innovation model



# Agricultural Innovation System (AIS)

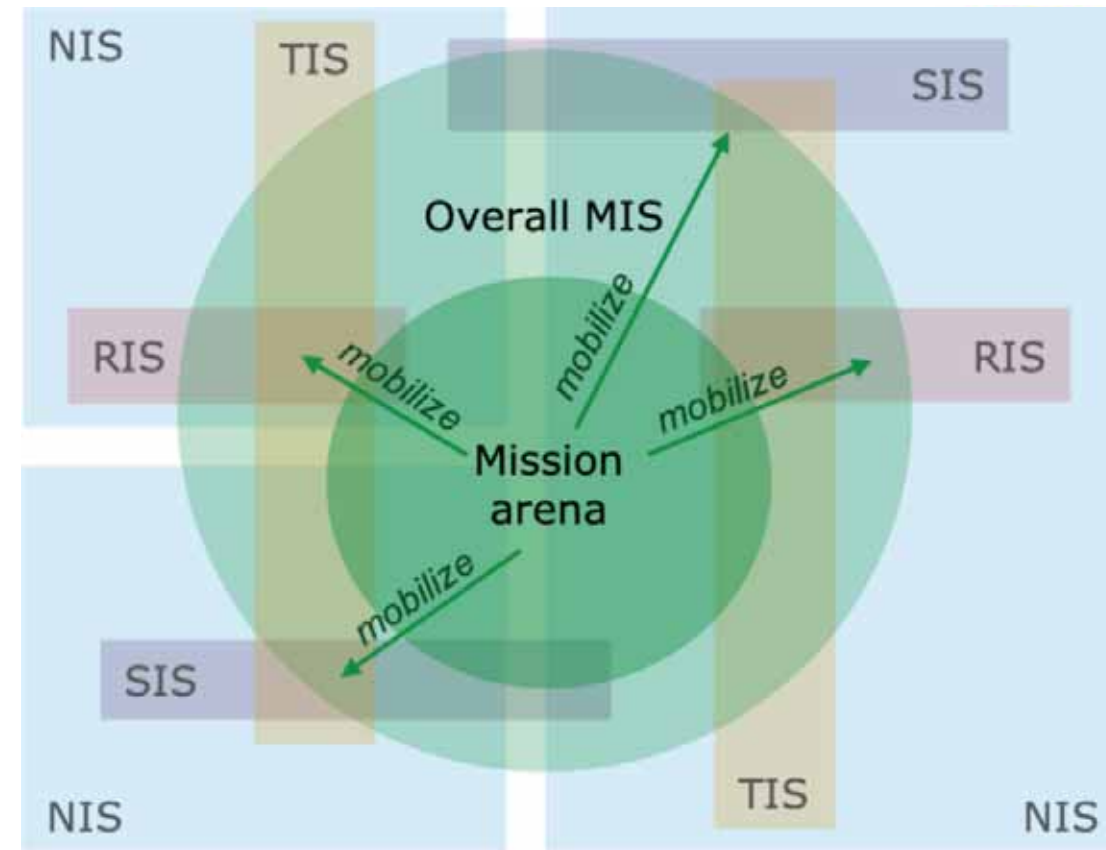


Spielmann and Birner 2012, p. 6

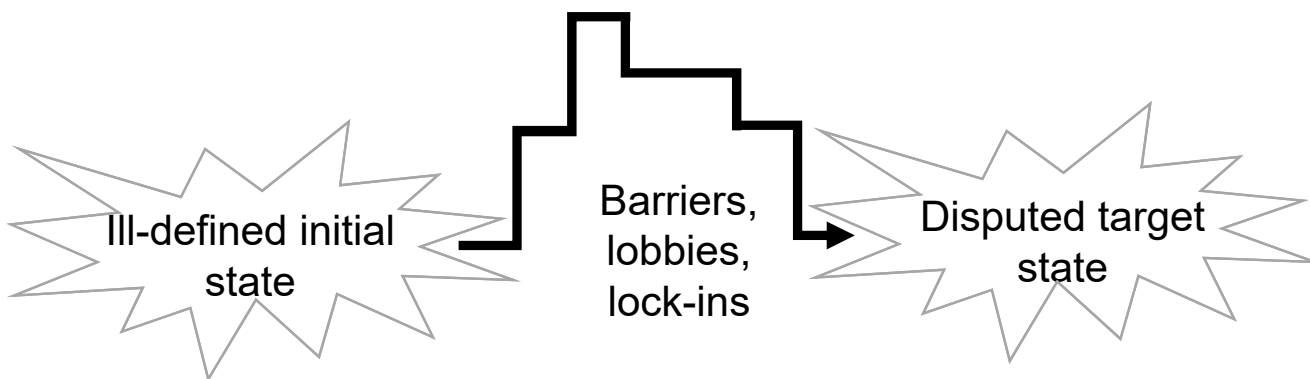


# Mission-oriented Agricultural Innovation System (MAIS)

(Klerkx et al. 2022)



MIS Framework (Wesseling and Meijerhof 2021)







# Different modes of knowledge production

# Different modes of knowledge production

## Mode 1

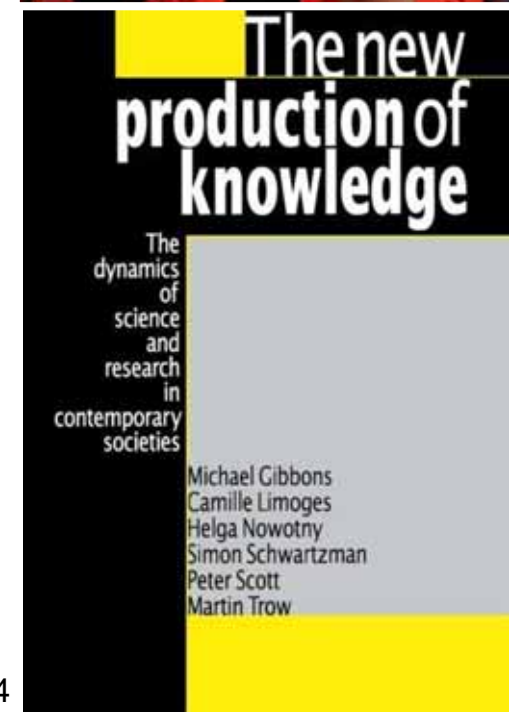
- Highly specialised, discipline-based
- Aiming at generalisability and context-free theory
- Researcher driven
- Knowledge is validated within scientific community

## Mode 2

- Several disciplines and stakeholders
- Aiming at solving real-world problems
- Context-driven
- Knowledge is validated by scientific and societal communities

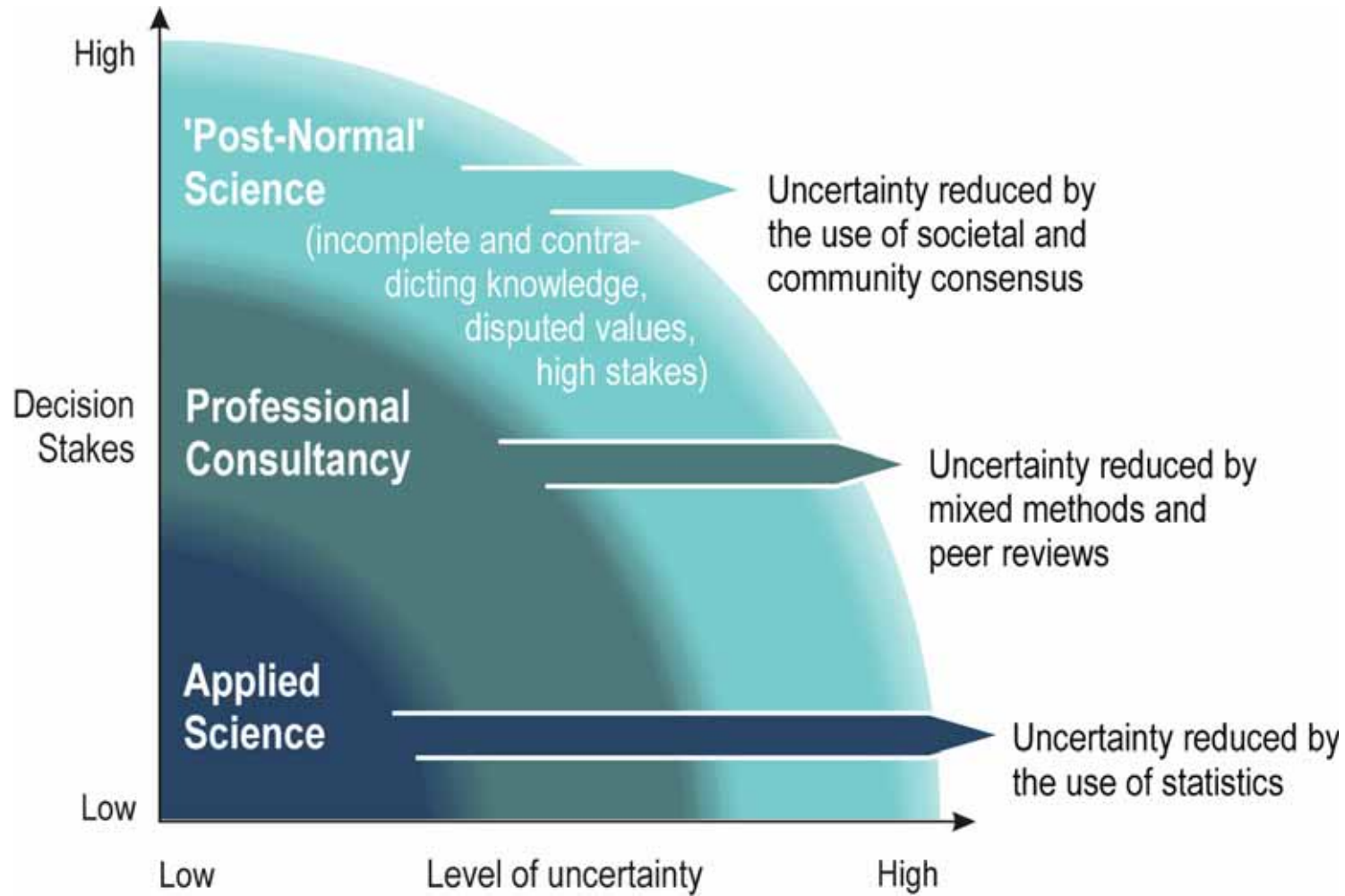


**Helga Nowotny**  
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Gibbons, M., et al. 1994

# Post-normal science

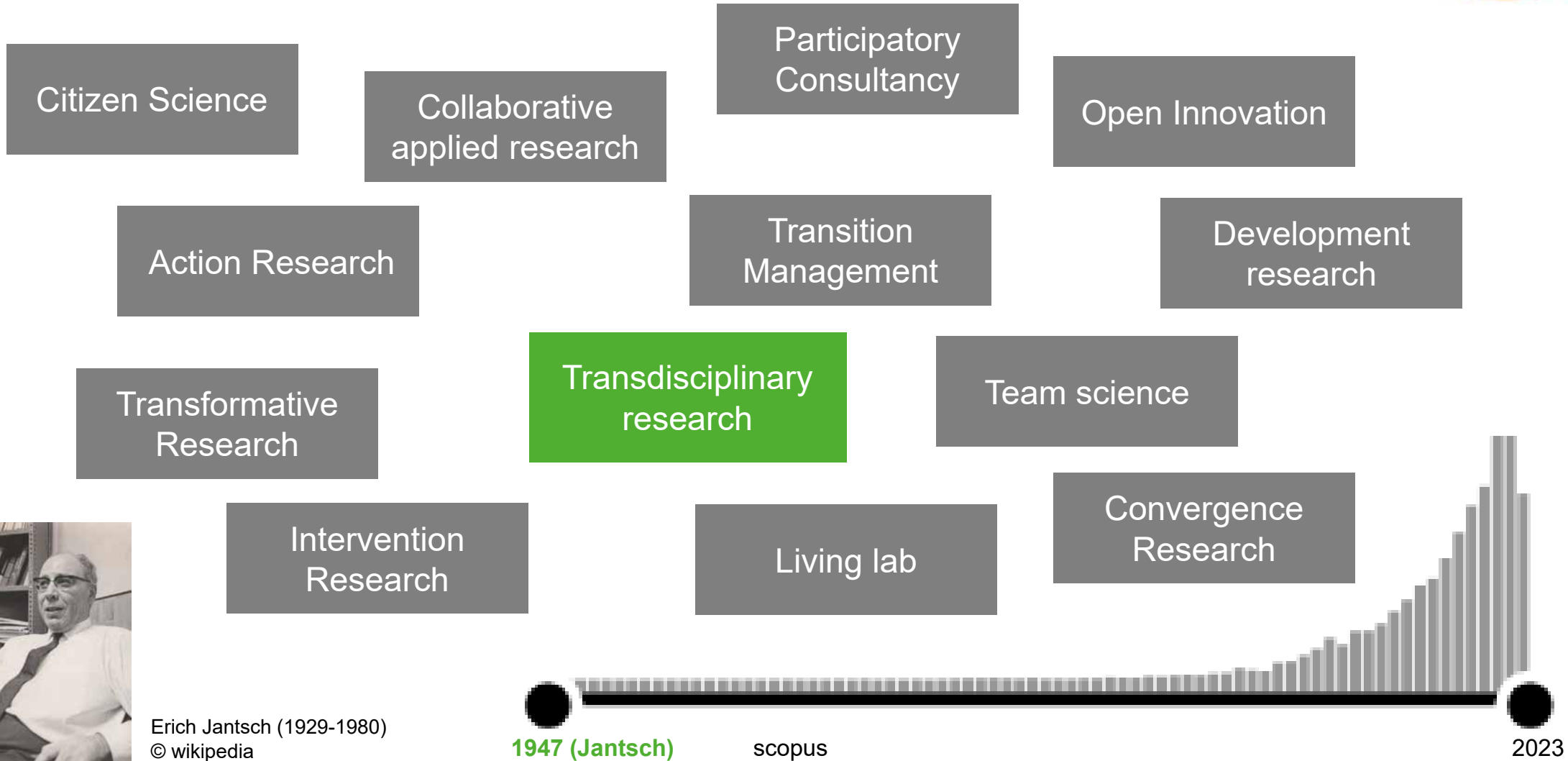


**Silvio Funtowicz & Jerome Ravetz**  
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Adapted from Funtowicz/Ravetz 1992

# Transdisciplinary research in a family of related concepts

(Penker & Muhar 2015)

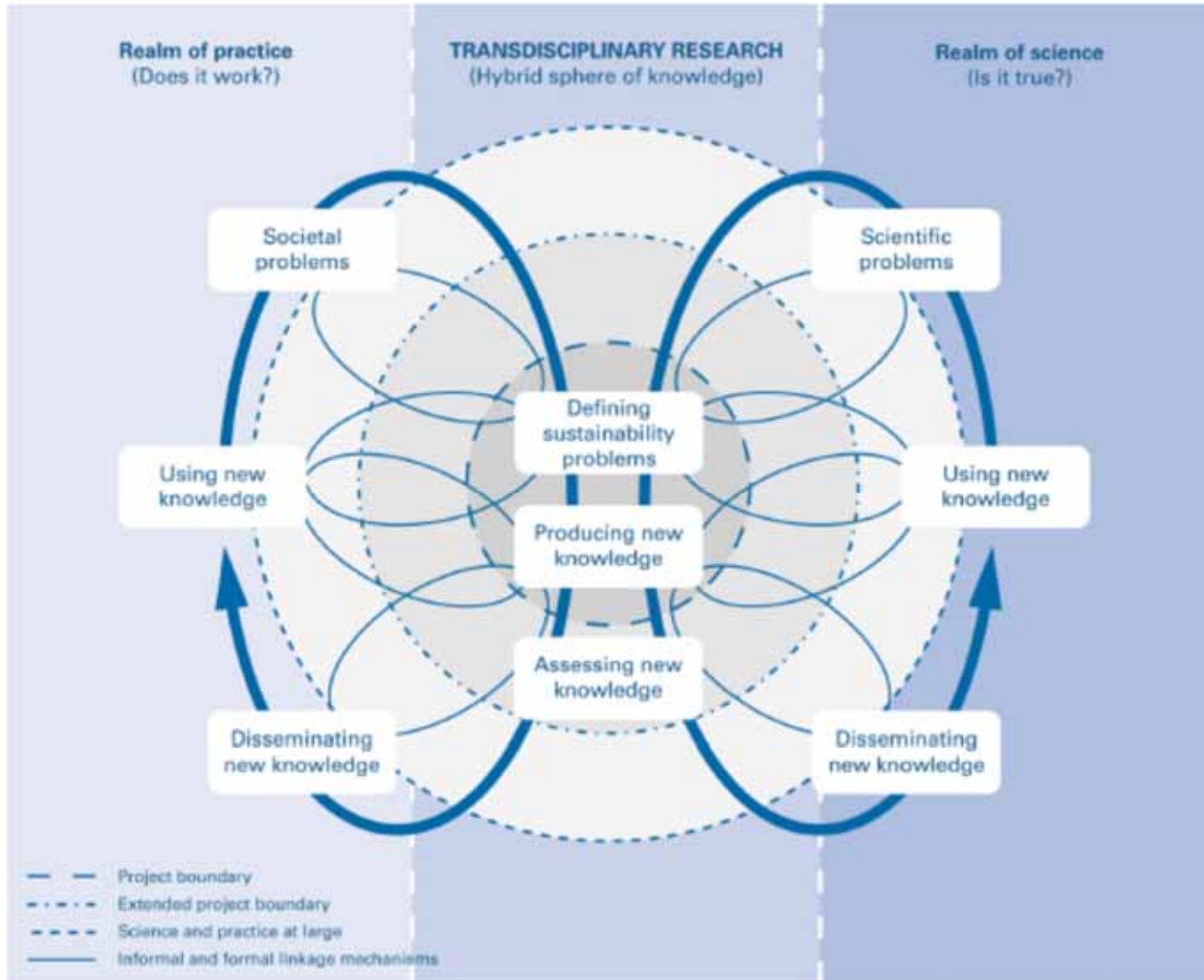


Erich Jantsch (1929-1980)  
© wikipedia



# Transdisciplinary research projects

# Transdisciplinary research linking science and practice



Feldhoff et al. 2019

# COWLEARNING

FWF: CM 400B





vetmeduni



NETZWERK KULINARIK



Ernährungsrat Wien

Tierschutz. Weltweit.



Land schafft Leben

## Society

Beef and milk supply challenges: climate change, biodiversity loss, human and animal welfare deficits, health risks, food waste

Practice knowledge on targets and transformability

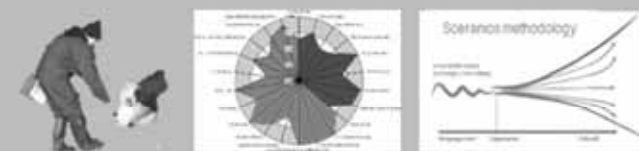


Transition paths towards more sustainable beef and dairy supply

## Science

Knowledge gaps on animals and agency in agro-food transition studies, role of social learning

Expertise on integrated assessment, human and animal welfare, supply chain governance, transdisciplinary methods

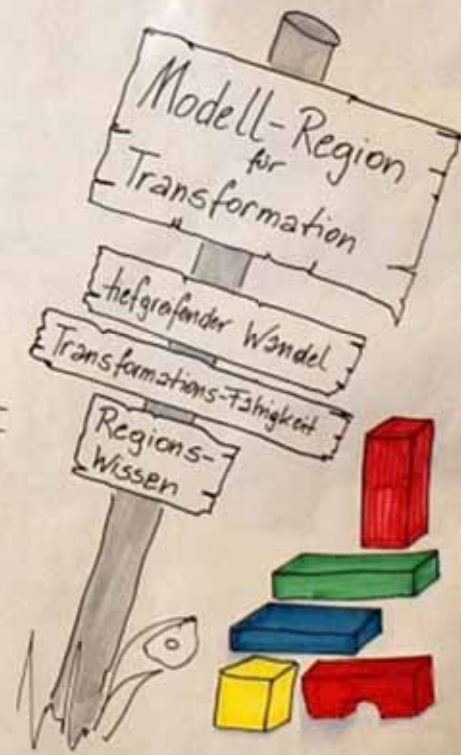


Contribution to agro-food transition theories and methods

**Farm-to-Fork assessment, scenarios & serious gaming**

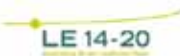


RLC2040



**UMWELTFONDS**  
Fonds zur Förderung einer nachhaltigen Entwicklung der Region rund um den Flughafen Wien

Mit Unterstützung von Bund, Land und Europäischer Union  
Bundesministerium Nachhaltigkeit und Tourismus





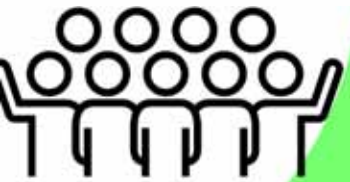
# Austrian Climate Council – no research project

SCAN ME



DER KLIMARAT

[Der Klimarat](#) [Die Menschen](#) [Dokumentation](#) [Ne](#)



# DIE EMPFEHLUNGEN DER BÜRGER:INNEN

HIER GEHT'S  
ZUM ENDBERICHT



## Agricultural and rural studies

- Disciplinary generalizable knowledge – needed as basis for transdisciplinary research
- Stakeholder involvement
  - Long-standing relations
  - Rich (implicit) knowledge on what works and what not
  - Whom to work with and whom not
- Low number of publications on stakeholder integration
- Can contribute a lot to transformative research agenda



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# Need for publications and knowledge gaps

# Why publishing on transformative research – or a new specialisation?

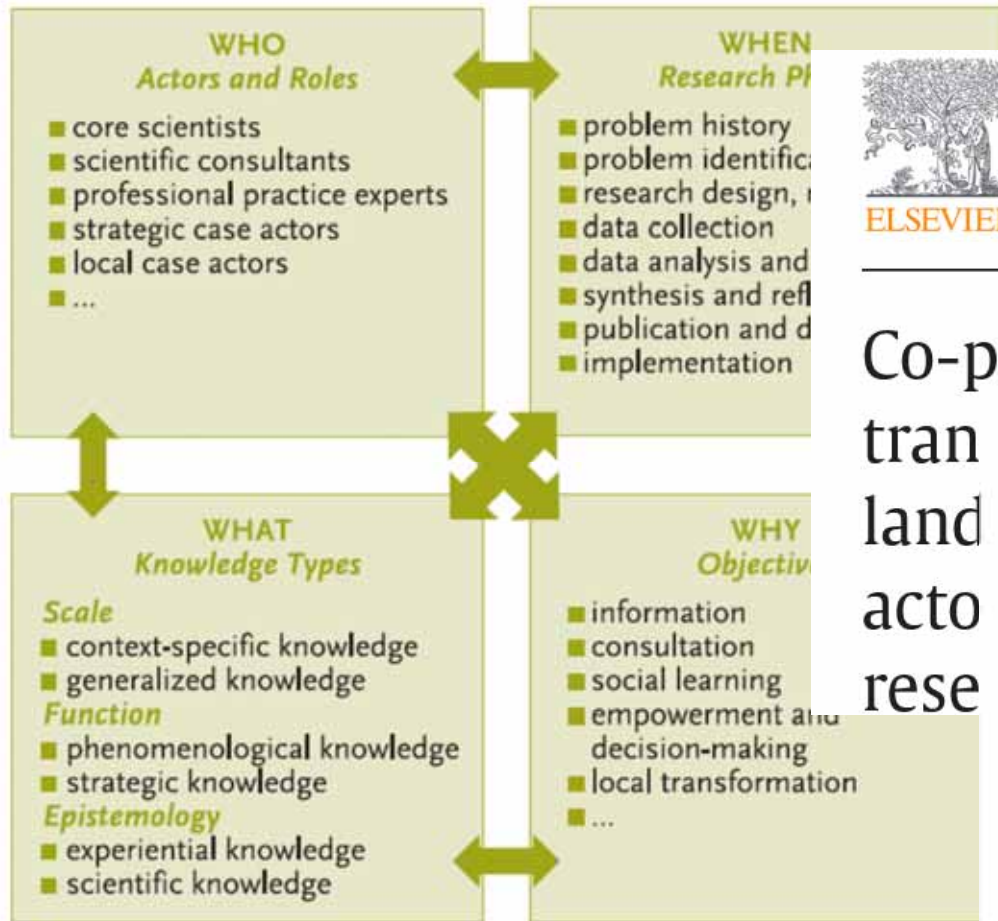
(Bammer 2005)

- Validation, peer review, quality criteria
- Methodological, theoretical advancement
- Accountability and transparency
- Interdisciplinary collaboration
- Impact assessment and unintended consequences
- ...

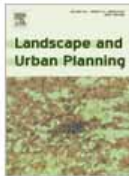
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# Whose knowledge to integrate when and how? Gaia Frameworks for transdisciplinary research – #5



Landscape and Urban Planning  
Volume 105, Issues 1–2, 30 March 2012, Pages 106–117



## Co-production of knowledge in transdisciplinary landscape action research

Sustainability Science  
<https://doi.org/10.1007/s11625-022-01287-9>

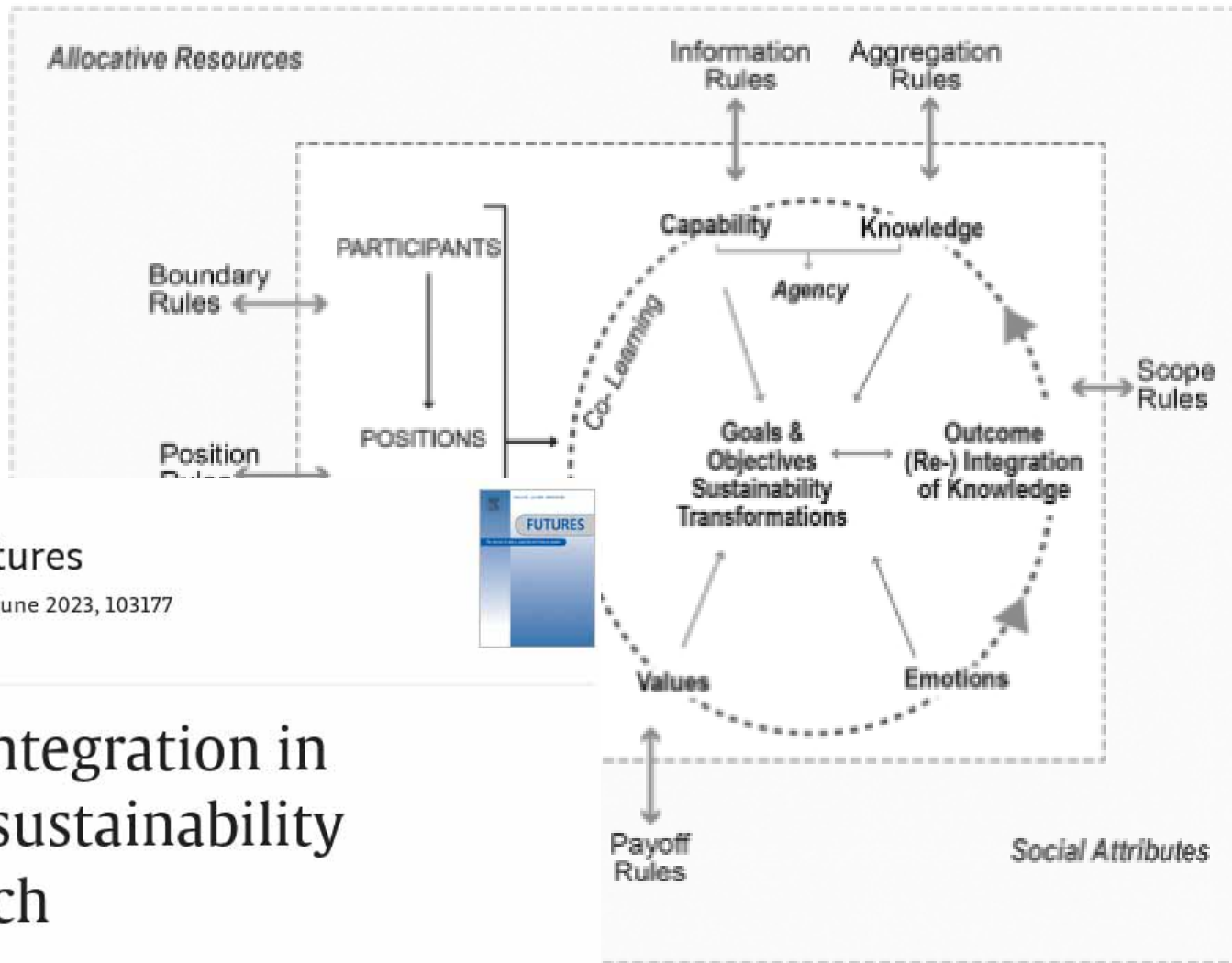
ORIGINAL ARTICLE

**Diverse types of knowledge on a plate: a multi-perspective  
and multi-method approach for the transformation of urban  
systems towards sustainable diets**

Marta López Cifuentes<sup>1,2</sup> · Marianne Penker<sup>1</sup> · Lisa Kaufmann<sup>3</sup> · Fritz Wittmann<sup>4</sup> · V. Christina Gugerell<sup>2</sup> · Christian Lauk<sup>3</sup> · Fridolin Krausmann<sup>3</sup> · Michael Eder<sup>4</sup> · Bernhard ...

Muhar & Penker 2018, Enengel et al. 2012, Cifuentes et al. 2023

# Adaptive and transparent procedures and how to co-craft rules and principles of collaboration



Futures

Volume 150, June 2023, 103177



Systemic knowledge integration in transdisciplinary and sustainability transformation research



# Differing objectives and priorities – and how to manage expectations



Sustainability Science (2022) 17:2459–2472  
<https://doi.org/10.1007/s11625-022-01192-1>



ORIGINAL ARTICLE



## Different perspectives on a common goal? The Q-method as a formative assessment to elucidate varying expectations towards transdisciplinary research collaborations

Verena Radinger-Peer<sup>1</sup> · Elisabeth Schauppenlehn

**Table 3** Q-statements and factor loadings of the two revealed viewpoints (own illustration)

C	No	Statement	VP1	VP2
1	1	<i>In my opinion, the most important goal of our TDR project is to improve the actual situation in the region</i>	– 2	– 2
2	2	<i>I am concerned with understanding the theoretical and methodological features of TDR projects</i>	2	0
6	3	<i>It is easy for me to put my professional expertise behind me and enter into an open dialog within the team</i>	0	0
6	4	<i>I can easily empathise with and understand the priorities and attitudes of other team members</i>	– 1	– 1
2	5	<i>I believe that the most important aspect of our TDR project is learning from each other and reflecting together</i>	4	0
3	6	<i>I think that TDR projects promote more problem awareness and a higher level of ownership of solutions among the participants than more traditional research processes</i>	3	1
7	7	<i>I think that in our TDR project the project leader acts as a coordinator and represents the decisions of the group externally and internally</i>	– 1	– 3
4	8	<i>I experience the high need for coordination resulting from the heterogeneity of the project team as inefficient</i>	– 4	– 3
7	9	<i>I think that despite the collaboration in the project team at eye level, the project management has the control and final decision-making power</i>	– 1	– 2
1	10	<i>The project has failed for me if no direct tangible results (e.g. strategy, plans etc.) are produced</i>	– 3	– 2

## Tensions – and how to manage them



# Change agents under tensions: a paradox-approach to strategies for transforming higher education toward sustainability

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## When NOT to do transdisciplinary research

- Lack of relevance either scientifically or societally
- Selective publication and censorship, other challenges of scientific integrity
- Lack of openness towards adaptive approaches
- Lack of resources and capacities/training
- Inadequate ethics, sustainability
- .....
- **Done poorly, transdisciplinary research can undermine the legitimacy of science.**



## **Done well, collaboration between researchers and stakeholders can address threats to the legitimacy of science**

- Improve relevance and impact
- Promote scientific literacy - counter misinformation
- Foster transparency in research methodologies and data sharing
- Create awareness of unknowns and uncertainties
- ....
- Create spaces of informed and evidence-based public discourse

## Conclusions

- Uncertain times: demand for evidence and consensus-based decision support
- Rich experiences with stakeholder involvement in agricultural and rural studies
- The wheel is reinvented again and again
- Well done, transformative research can give orientation and support trust in science



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GLOBAL

## Transdisciplinarity: Universities have a chance to lead

**Aishwarya Ramachandran, Klara Abdi, Amanda Giang, Derek Gladwin and Naoko Ellis** 15 November 2022

# Thank you!

<https://www.universityworldnews.com/post.php?story=2022111507424615> (retrieved 15 Dec 2022)



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