

# ECR Methodological Salon

**Challenge Oriented Research Design & Stakeholder Engaged Fieldwork**

**13:20 - 15:00 GMT (21:20 - 23:00 Beijing Time) Monday 15th November 2021**

**Chaired by Prof. Gubo Qi, China Agricultural University**

- By what criteria and scientific procedure can good questions be identified for further research?
- How can the good question to be addressed via interdisciplinary and stakeholder engaged fieldwork?



## Session 1 Challenge oriented research: Approach and Practice

- Prof. Songliang Wang (Fujian Agricultural & Forestry University)  
Global challenges and stakeholder engaged research design: A case study of the top 100 questions to address global agriculture in the future.
- Dr. Bin Wu (Nottingham University Business School)  
Global-local knowledge system building for local challenges: my personal experience in field research design and delivery.
- Q & A



# **Global challenges and multiple stakeholder engaged research design: A case of addressing the top 100 questions of global agriculture**

**Prof. Wang Songliang, Ph.D**

**College of Agriculture**

**Fujian Agriculture and Forestry University (FAFU)**

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# Today's outline



- A paradigm shift imperative in agricultural education and research
- A horizon-scanning approach to addressing the 100 questions in world agriculture
- A rural ecology discipline to understand the rural ecosystem





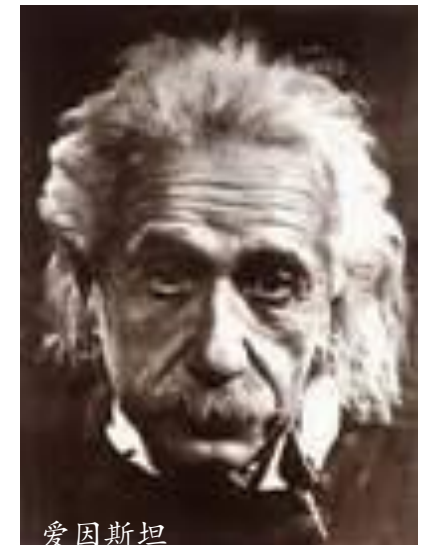
# A Qian question: where are the masters

- Reductionisms dominate

→ Intervention therapy

- Deductionisms lose

$E=MC^2$



The plenty discrete disciplines in an agricultural university like the five blindmen guess an elephant?

绿色革命

It's a Fan!

农药

杂交水稻

It's

W...H...

It's a  
Spear!

University has departments, farmer has problems (Lieblein et al., 2000)

It's  
a  
Rope!

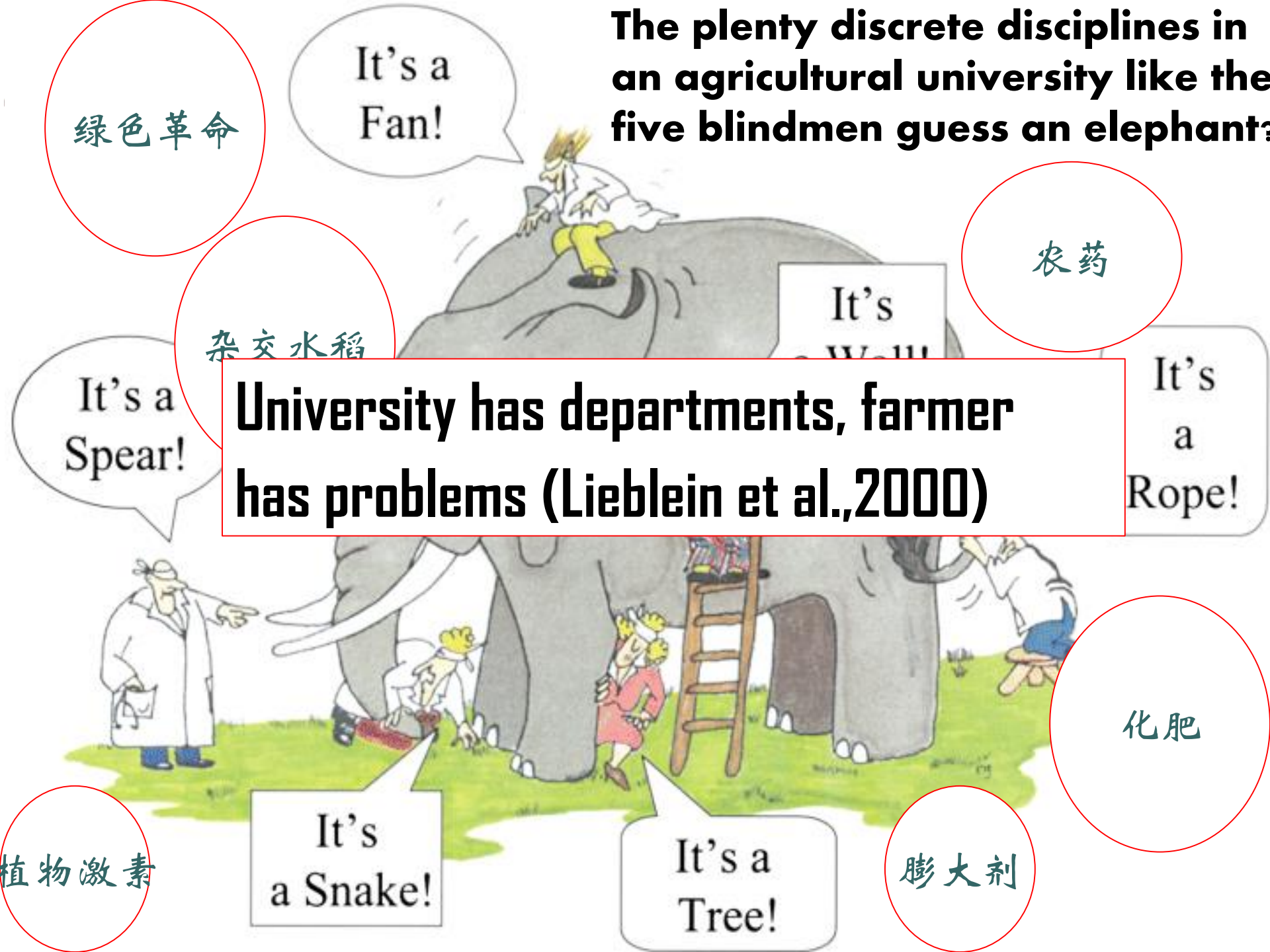
化肥

It's  
a Snake!

It's a  
Tree!

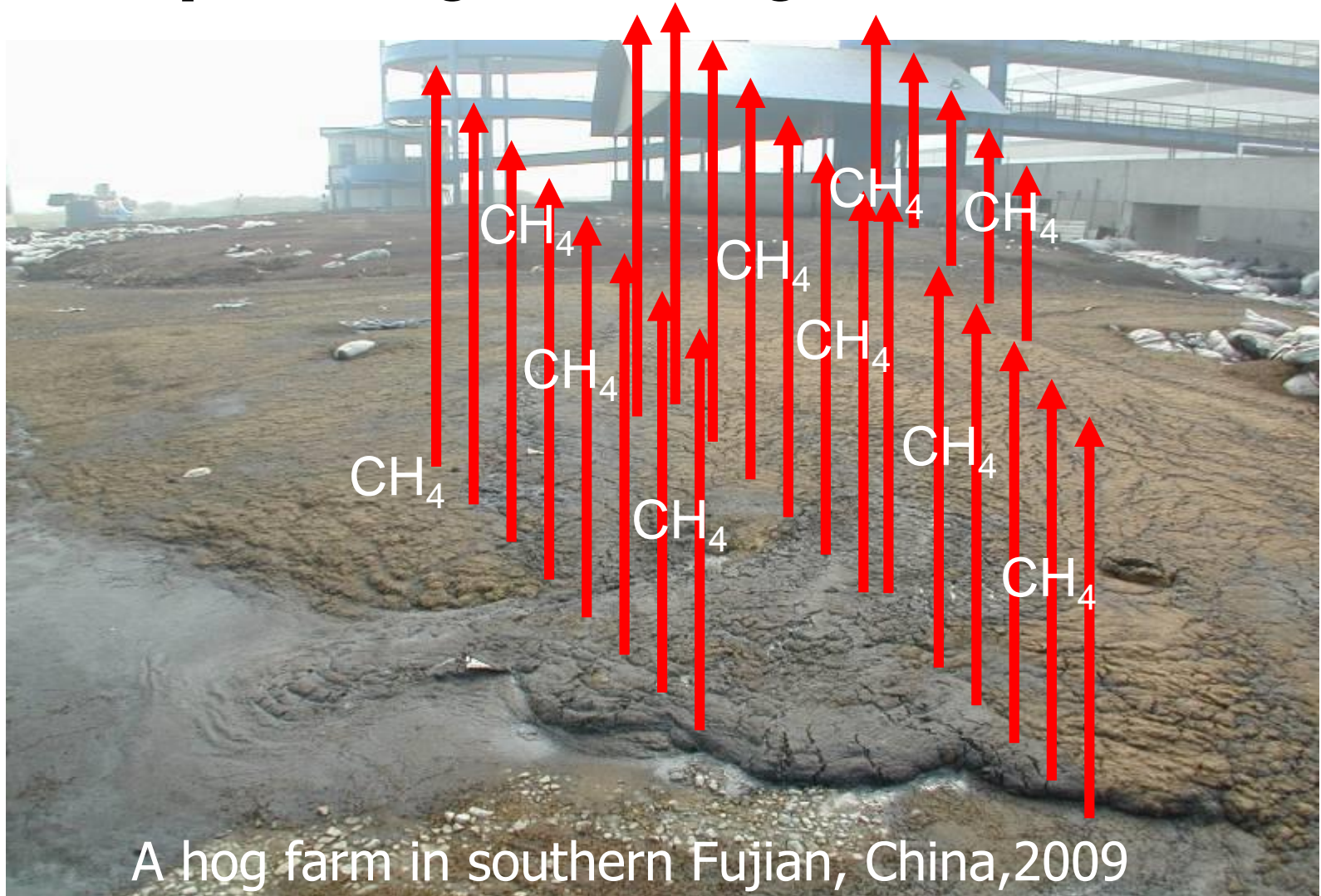
膨大剂

植物激素





# Example #1: harvesting meat by polluting the living environment

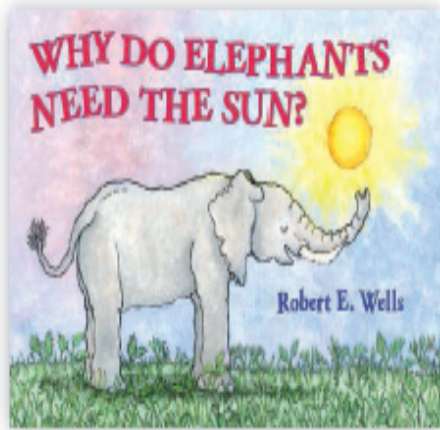


A hog farm in southern Fujian, China, 2009





# All fresh are grass!




**Why Do Elephants Need the Sun?** Robert E. Wells. Albert Whitman, Park Ridge, IL, 2010. 32 pp. \$16.99. ISBN 9780807590812.

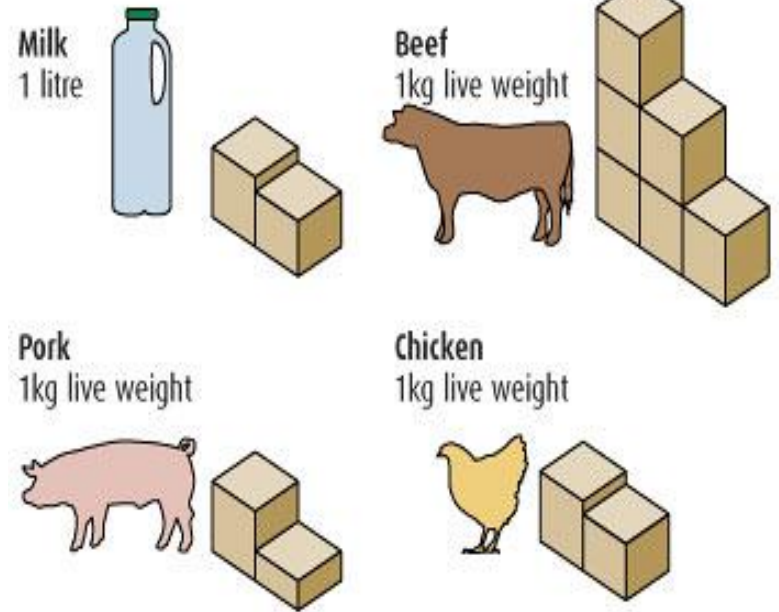
This playful but substantive book uses a fun story to show the interconnectedness of the natural world and, in particular, the many roles played by the Sun.

Wells introduces young readers to our closest star and its important functions and uses (including gravity, nuclear fusion, photosynthesis, telling time, and generating electricity). His accessible presentation features an elephant who needs the Sun for warmth, food, and even water (evaporated from the sea and blown inland to fall as rain or snow). Full of the author's kid-friendly drawings and diagrams, the book should help children begin to understand several, sometimes abstract, scientific concepts.

## THE GRAIN DRAIN

Livestock and dairy farming consumes large quantities of precious grain

 = kg of grain required



SOURCE: AUSTRALIAN FARM INSTITUTE



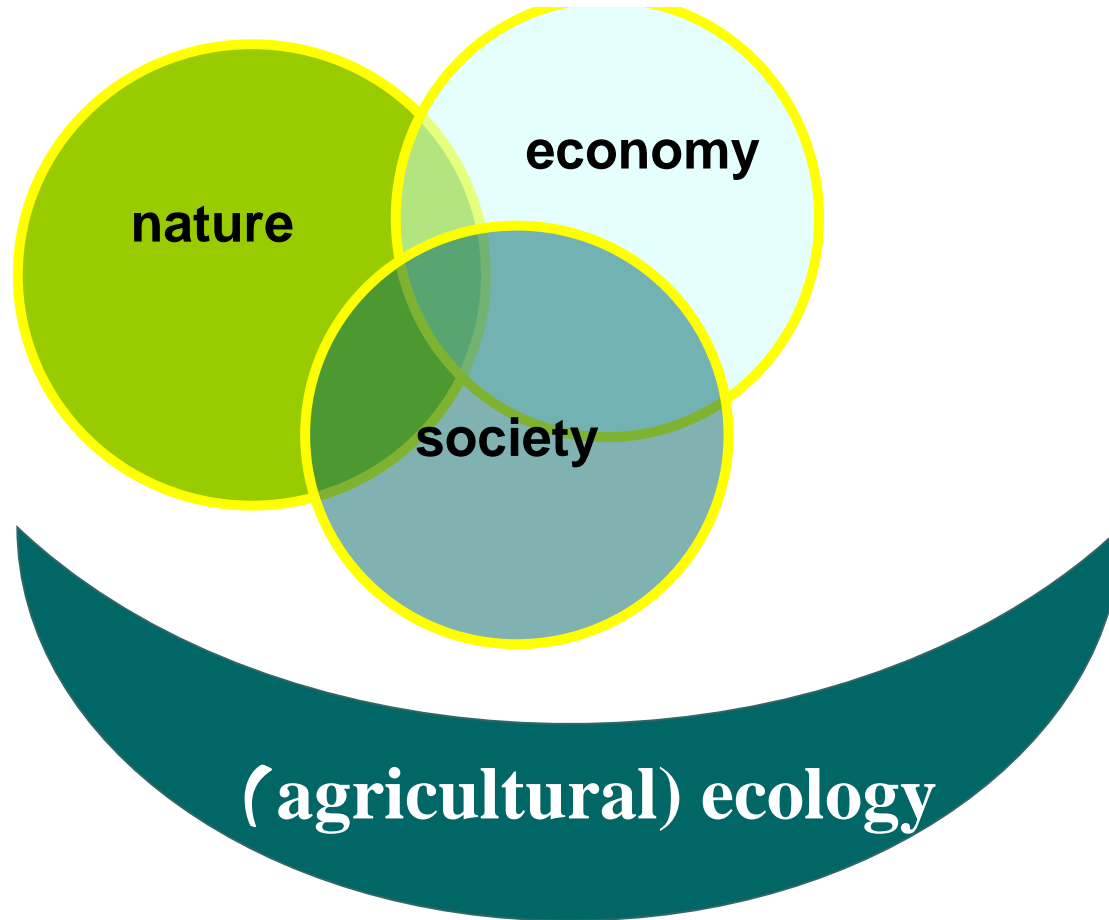
# Understanding rural ecosystem and farmer by understanding the “AGRICULTURE”

- AGRICULTURE is the science, art, politics and sociology of changing sunlight into happy, healthy people (CD Caldwell, 1996).
- 农业是把太阳光转变成人们健康、幸福生活的科学、艺术、政治学和社会学) (王松良, 2005)。

**Wang SL. ITs: Toward the sustainable Agroecosystem Management. Agricultural Network Information, 2005, 8:4-7,12**  
王松良.信息技术:走向农业生态系统的可持续管理.农业网络信息, 2005,8:4-7,12.



# The new AGRICULTURE needs new paradigm in SCIENCE or DISCIPLINE

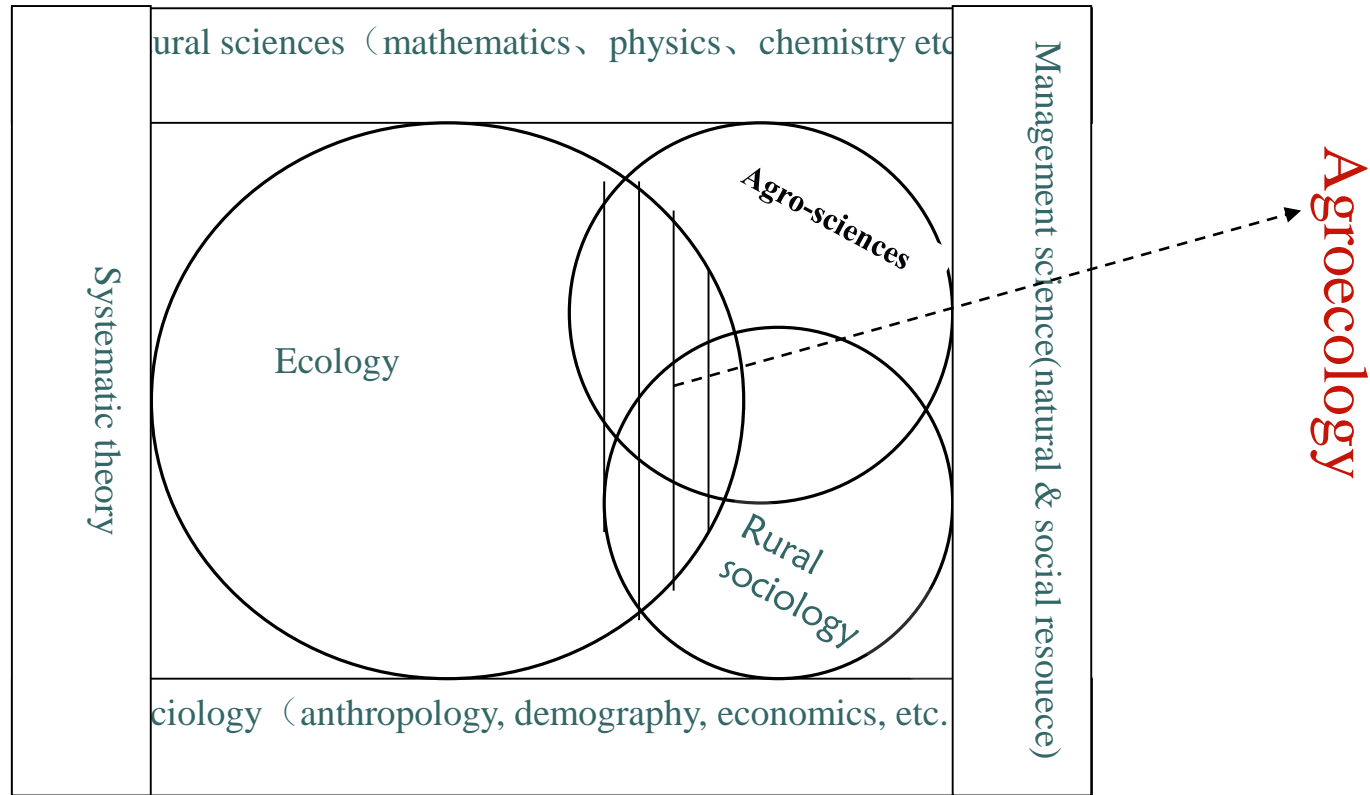


**The triple bottom line for agricultural sciences**






# Agroecology: the ecology of food system (Francis et al.,2003) with systematic thinking and interdisciplinary approaches



**The niche of Agroecology** (Wang, Caldwell ,Kilyanek and Smukler,2019)



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-  ○ A horizon-scanning approach to addressing the 100 questions in world agriculture
- A rural ecology discipline to understand the rural ecosystem



Jules Pretty et al.. The top 100 questions of importance to the future of global agriculture. International journal of agricultural sustainability, 2010, 8(4): 219–236.



## International Journal of Agricultural Sustainability



ISSN: 1473-5903 (Print) 1747-762X (Online) Journal homepage: <http://www.tandfonline.com/loi/tags20>

## The top 100 questions of importance to the future of global agriculture

Jules Pretty , William J. Sutherland , Jacqueline Ashby , Jill Auburn , David





# Research aims

- At compiling a list of the top 100 questions with a significant impact on global agricultural practices worldwide, while improving the synergy between agricultural policy, practice and research.
- At bridging agricultural scientists and policy makers by using sound scientific evidences to inform decision making and guide policymakers for abstracting the research priorities.
- At searching more applicable to the practices of organizations wishing to review and direct their research and funding programs.



# A horizon-scanning approach

- Scientifically based on consultations with representatives from the world's major academic organizations, scientific societies and universities.
- Socially based on consultations with representatives from 37 UK organizations, including government, non-government organizations (NGOs) and academia.
- 100 questions generate from 70 essential and 146 possible questions within agroecosystem components by 55 core group experts selected from 21 countries in multiple disciplinary fields during **3 stages process** of asking and answering questions that fix to the certain criteria.



## 3 stages process

- **Stage#1:** all Core Group members were asked to canvas their professional networks and consult widely among their colleagues in order to submit a list of priority questions answerable with 6 criteria , by convening workshops, seminars, discussions groups and circulating e-mails, producing 618 raw questions;
- **Stage #2:** The submitted questions were sorted into 14 prior themes, and experts were grouped accordingly with 1 coordinator to review , revise, rephrase, refine (reject) the questions electronically, producing 70 essential and 146 possible questions.
- **Stage#3:** the 70 Essential questions were automatically qualified for inclusion in the final 100. The other 30 questions were selected from the 146 possible questions through an electronic voting process mediated by a secretariat, producing final 100 questions after each experts 'final round editing.





# Findings

- The 100 questions into four overarching sections that reflect stages of the agricultural system: (i) natural resource inputs, question 1-33; (ii) agronomic practice, question 34-58; (iii) agricultural development, question 59-78; and (iv) markets and consumption, question 79-100.

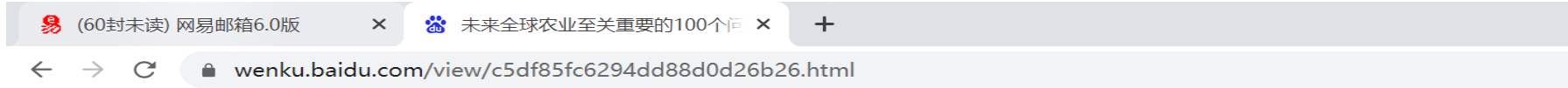


# Implications (to China)

- To guide our researcher to find the true questions concerning the challenges from “The three dimensional issue of China’ agriculture”（“三农”问题），interwoven with economic, environmental and social plights.
- To contribute to the many dialogues between scientists, practitioners and policy makers driving agricultural research and discourse, professor in university being a grassroots!



# The paper was translated into Chinese and gained huge influence



农学 农林牧渔 专业资料

## 未来全球农业至关重要的100个问题

★ 4.3分 (超过78%的文档) | 70阅读 | 27下载 | 2013-06-27上传 | 15页 | 57KB



1 / 15 免广告阅读

### 未来全球农业至为重要的 100 个问题

王松良、曹志全 翻译

(福建农林大学作物科学学院, 福州 350002)

摘要:尽管在过去的半个世纪中全球粮食生产有显著的增长,但当今社会需要面对的最重要挑战之一是,如何养活 21 世纪中叶全球即将达到的 90 亿人口。为了满足粮食需求又不明显增加粮价,基于气候变化所带来的影响,对能源安全、地区饮食结构变迁的关注,以及到 2015 年全球贫穷和饥饿减半的千年目标,估计届时世界粮食要比目前增产 70%-100%或者更多。农业生产的目标已不在简单地追求生产力的最大化,而在工业化区域农业、乡村发展、环境保护和社会公平与粮食消费之间的资源分配。同时,还有一些重要的挑战是



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中国农林科技网 2018-04-04 00:20

百度为您找到相关结果约76,900,000个 搜索工具

### 未来全球农业至为重要的100个问题

2018年4月4日 本文编辑了全球农业研究机构的顶尖科学家和相关行业代表的意见,确认了当前**全球农业至为重要的100个问题**,以此促进农业研究与政策之间的对话与了解,用可靠的科学证据为决策者的规划和政...

搜狐网 百度快照

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### 【深度分析】未来全球农业至为重要的100个问题 研究

2020年7月29日 导读:本文编辑了全球农业研究机构的顶尖科学家和相关行业代表的意见,确认了当前**全球农业至为重要的100个问题**,以此促进农业研究与政策之间的对话与了解,用可靠的科学证据为决策者的规...

搜狐网 百度快照

问题1: 气候变化(如气温、风速、湿度、水分可用性、风暴强度、农业用水的需求量、融雪程度的变化和季节径流量、害虫数量、渍水程度、农业生态系统的转变、人口迁移)对农业产量、栽培技术、农作物病虫害的蔓延、抗病性和灌溉发展有什么重大影响?

### 《未来全球农业至关重要的100个问题》.docx

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2016年12月13日 《未来全球农业至关重要的100个问题》.docx,未来全球农业至为重要的100个问题王松良、曹志全 翻译(福建农林大学作物科学学院,福州 350002)摘要:尽管在过去的半...

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导读: 本文编辑了全球农业研究机构的顶尖科学家和相关行业代表的意见,确认了当前**全球农业至为重要的100个问题**,以此促进农业研究与政策之间的对话与了解,用可靠的科学证据为决策者的规划和政策制定提供支持。

同时, 本文的研究尺度把与农业相关的空间(全球的和区域的)、时间(过去、现在和未来)和社会、政治、经济等多维度的因素包含在内,对中国农业和农村研究和实践亦


未来全球农业至为重要的 100 个问题

王松良、曹志全 翻译  
(福建农林大学作物科学学院,福州 350002)

摘要: 尽管在过去的半个世纪中全球粮食生产有显著的增长,但当今社会需要面对的最重要挑战之一,是如何养活 21 世纪中叶全球即将达到的 90 亿人口。为了满足粮食需求及不明显增加碳排放,基于气候变化所带来的影响,对能源安全、地区饮食结构变化的关注,以及到 2015 年全球贫穷和饥饿减半的千年目标,估计届时世界粮食要比目前增产 70%-100% 或者更多。农业生产的目标已不再简单地追求生产力的最大化,更在于优化区域产量、乡村发展、环境保护和社会公平与粮食消费之间的资源分配。同时,还有一些重大的挑战是如何制定适当的国内与国际政策以满足不断涌现对土地的水体利用与农业生产效率提高的要求,尽管基于证据的决策机制不断得到重视,但横亘在科学家、农民与决策者之间信息鸿沟的缺少使得上述挑战更加艰巨。本文应用前曾降途径(horizon-



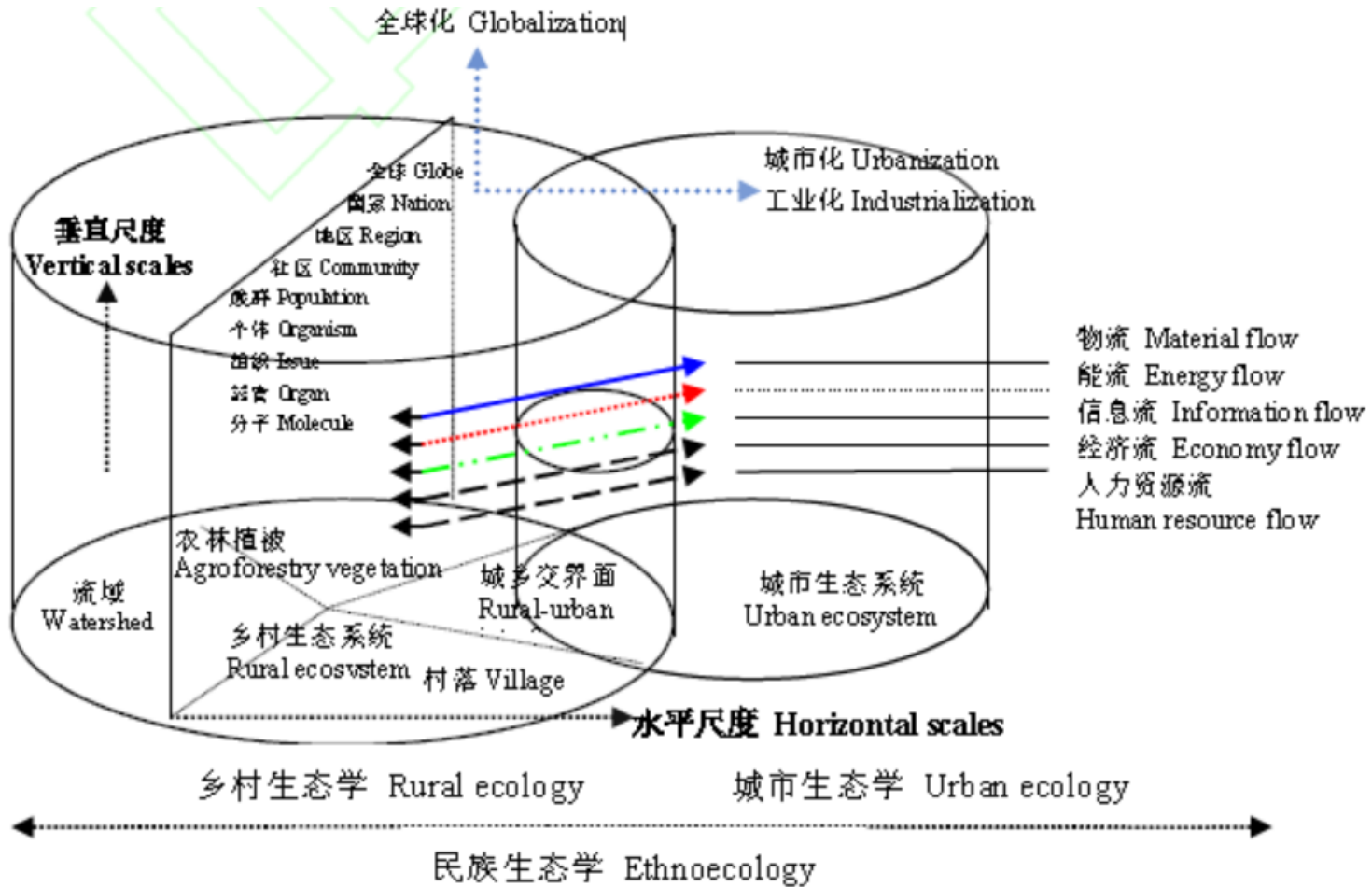
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- A paradigm shift imperative in agricultural education and research
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# A rural ecology discipline built to understand rural ecosystem



王松良等, 2021



## Example#2: the true value of agroecosystem of Fujian Province of China (Zhu,2011)

Multi-functions	Economic value ( $\times 10^8$ Yuan)	In percentages (%)	Values per ha (yuan $\cdot$ hm <sup>-2</sup> )
Marketing product value	1182.7400	5.203	9537.189
ecotourism	1125.000	4.949	9071.595
Art, educational and scientific value	331.2136	1.457	2670.787
Climate Regulating	1263.357	5.558	10187.251
Air Freshening	687.3346	3.024	5542.419
Water cleaning	2219.303	9.763	17895.659
Soil conservation	15862.056	69.779	127905.905
Resisting natural disaster	61.006	0.268	491.929
total	22732.001	100.000	183302.732



# Building a sustainable rural ecosystem in China

- Revaluing the multi-functionalities of agriculture: agriculture is not only an economics but also an ecology: **agroecology being an interdisciplinary science.**
  - Reorganizing the agricultural industry :farmer participation and empowerment, e.g. Rural Cooperatives, Community Supported Agriculture (CSA): **agroecology being a social movement.**
  - Recycling the agricultural resources: Ecological agriculture
  - Innovating the food production technology: return to organic farming and molecular farming
- agroecology  
being a  
practice
- 王松良等，2021



# A reference list

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Sketched by Yiyang Wang, a UBC student in 2020







**University of  
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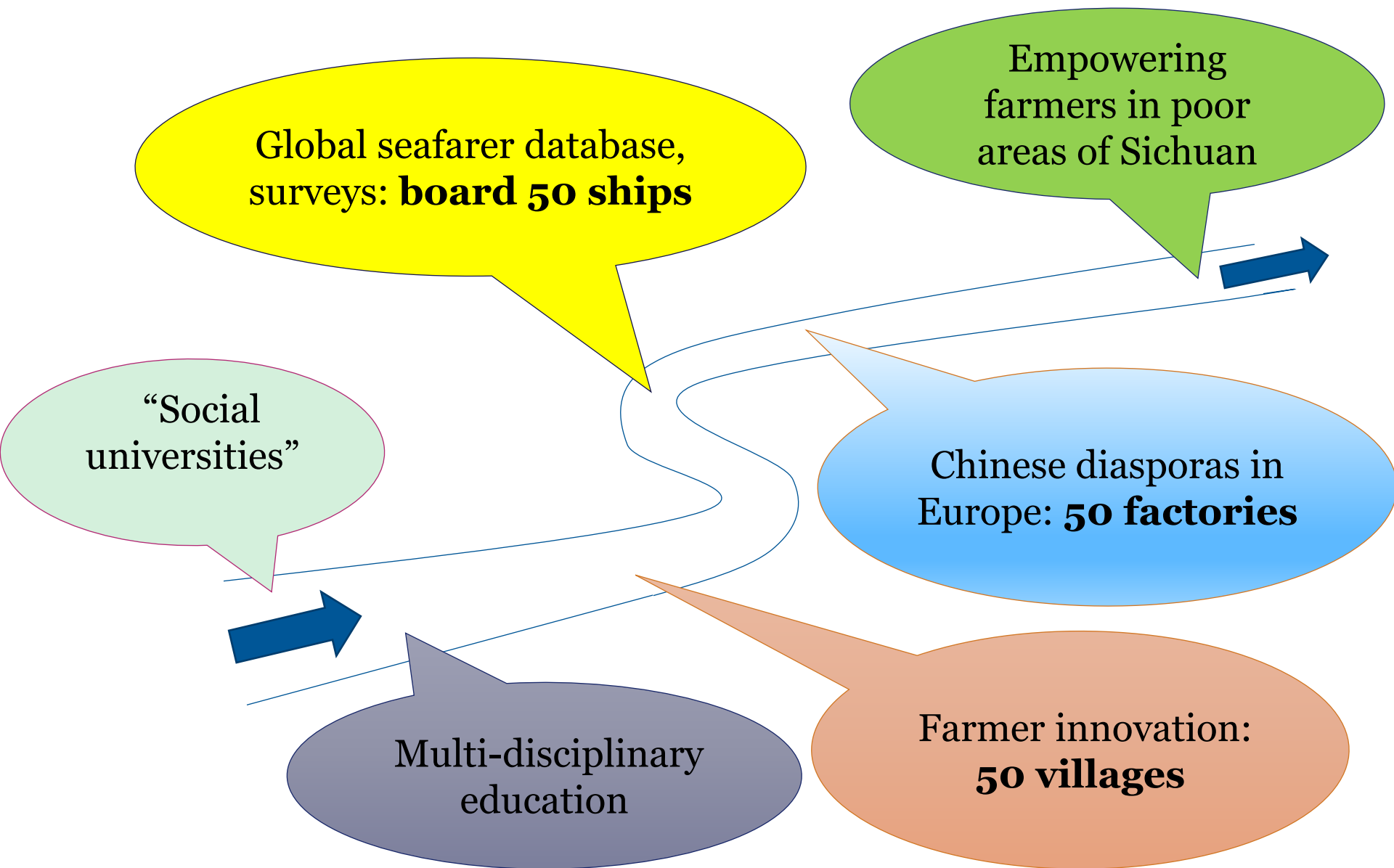
**Global-local  
knowledge system  
building for  
challenge oriented  
research & practice:  
Fieldwork design  
and delivery**

**Dr Bin Wu**

**HGI, University of Nottingham**



# “Barefoot academia”: my experience



# Aims of Newton ECR Links' Project

- *Develop challenge-oriented and interdisciplinary research collaboration for better understanding the complexity in the real world*
- *Build a platform for young researchers to develop competences and networks with multiple stakeholders to address local challenge with constructive solutions*

- Segregation between theory and practices:  
*communication channels and mechanisms*
- Fragmentation of knowledge system: *disciplinary views without picture to reflect the complexity*
- Top-down approach and professional domination:  
*lack of voices & contribution from local communities*



- **Challenge oriented thinking (value change)**  
Put local challenges, needs and considerations first,  
open-mind, knowledge interfaces
- **Global-local knowledge system (holistic perspective)**  
Interconnection between global and local challenges,  
balance/interface between scientific and local knowledge
- **Stakeholder engagement (local solutions)**  
Mutual trust, common interests, resources &  
opportunities, platform for multiple collaboration

# What is local knowledge?

- A sum of facts, concepts, beliefs, perceptions and observations used by local people
- Reflecting or interpreting the world around them
- Creating, accumulating, disseminating via them
- Stored within local “experts” who may be belonged to different social groups

***Local knowledge ≠ traditional knowledge***

# Importance of local knowledge

- Complexity: diversity, conditions in local context
- Transitional: many assumptions invalidated
- Social divide in needs, voices, good practices
- Effective communication with stakeholders

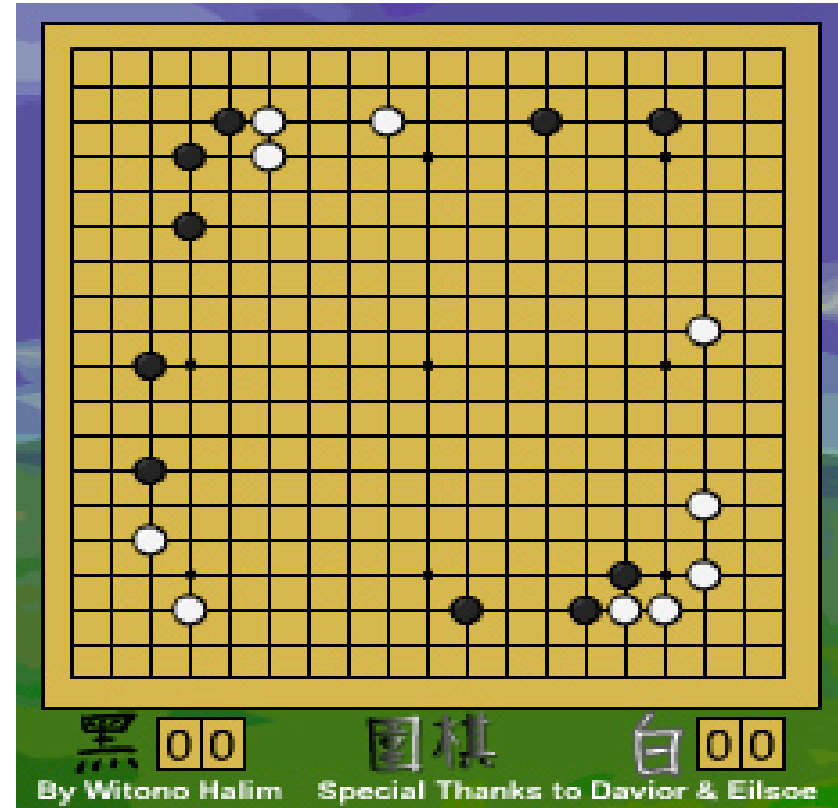
***Interfaces with local knowledge for big picture,  
local solutions, avoiding disciplinary biases***



# Two approaches for stakeholders engage

Item	Academic -driven	Community-based
<b>Definition</b>	Without local knowledge	Based upon local knowledge
<b>Motivation</b>	Testing hypotheses	Developing theories
<b>Process</b>	One-way data collection	Two-way communication
<b>Local people</b>	Information providers	Researchers and innovators
<b>Stakeholders</b>	Limited, random or passive	Part of research team
<b>Outcomes</b>	Partial picture	Whole picture
<b>Beneficial</b>	Researchers	Researchers & local people
<b>Request</b>	Robust procedure	Open mind, learning attitude, interdisciplinary

- Local challenge and mutual trust
- Key stakeholders, multiple voices
- Opportunities, resources and partnerships







# Empowering Chinese workers in EU

## Context and background

- Access to community:  
challenge & common interests
- “Advisory board” for research  
design and implementation
- Two-tier sampling process,  
mixed methods
- Roundtable meeting for  
constructive solutions



# Empowering small farmers (1)

- Background: global-local knowledge system workshop(2019); GERF Pilot project in Sichuan (2019-2020)
- Focus on local challenges in poverty alleviation, cooperative development
- Access to community: potato industrialisation in poor areas as the priority of Sichuan-UoN collaboration







# Empowering small farmers (2)

## ➤ Key elements:

- Multidisciplinary: 4 Schools
- Platform: Butuo Potato STB
- Multiple stakeholders involve
- International perspective

## ➤ Key steps:

- Roundtable meeting
- Joint fieldwork in Liangshan
- Methodological salons

## ➤ Outcomes:

- New innovation model
- “STB +” for function upgrade
- A base for int’l collaboration
- Sustainability competences



# Survey results (N=97)

Competence development goals	respondents (%)	Rank
Question-oriented research/communication	79.7	1
Open mind in field research	74.6	2
Challenge-oriented thinking	71.2	3
Local knowledge & grassroots innovation	69.5	4
Representativeness in sampling process	66.1	5
Ecosystem approach	66.1	6
Engagement with stakeholders	59.3	7
Boundary & initial conditions of typical cases	59.3	8
Cooperatives for empowering small farmers	54.2	9
Academic research and writing skills	55.9	10

# Conclusion and implications

1. Global challenge call for ***paradigm transition*** to account local voices and good practices in the global south
2. Global-local knowledge system sheds new light on value & pathway of ***local participation*** for knowledge develop.
3. ***Challenge oriented perspective*** is vital for mutual trust and effective communication for research collaboration
4. A ***balance account*** is needed to ensure that voices, needs, good practices from all groups are properly heard
5. A ***platform for all stakeholders*** is necessary to develop common interests and constructive solutions.

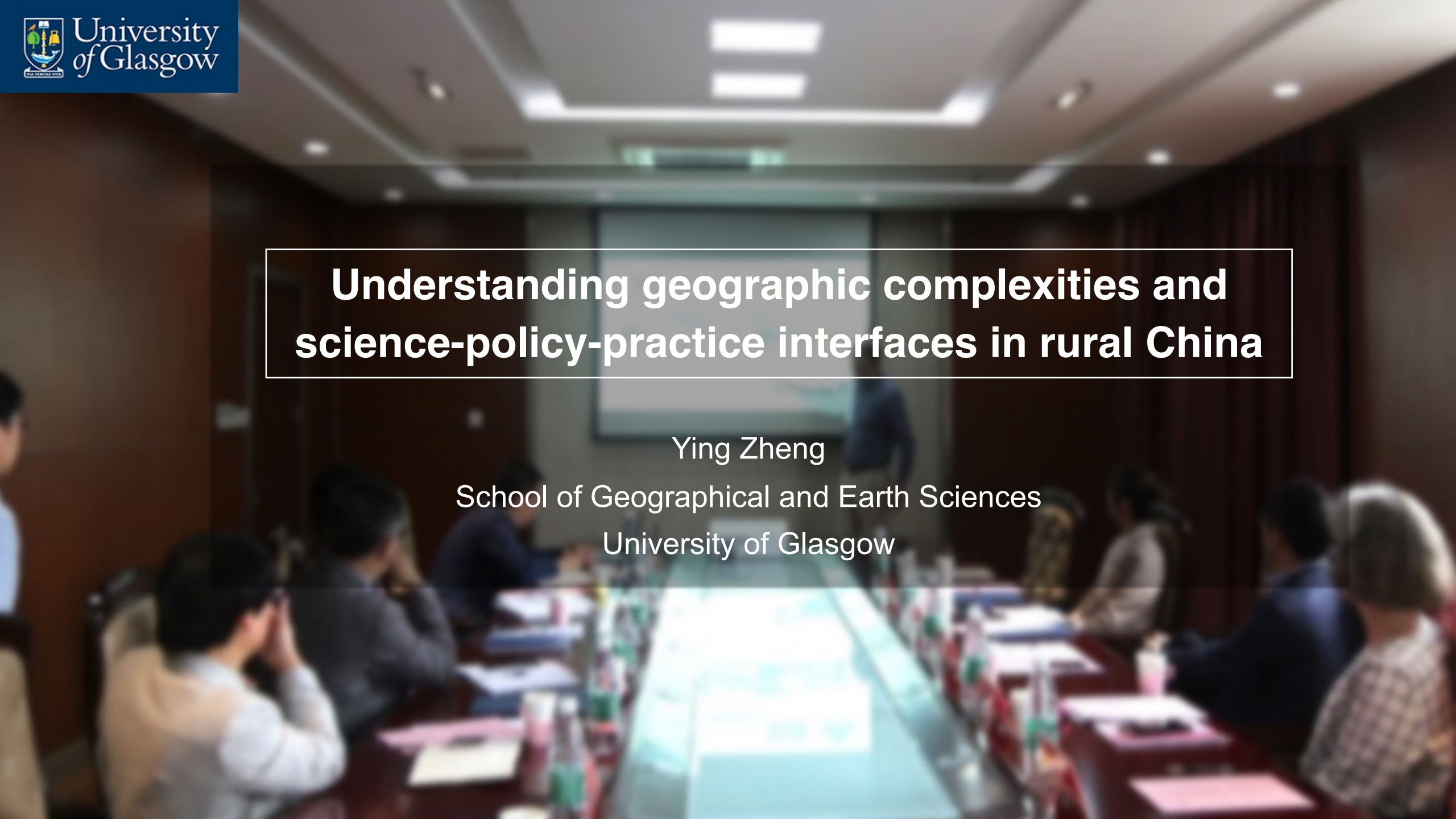
# What is next?

1. Roundtable meetings: rural tourism (29/11), potato industrialisation (1/12) and smart farms (3/12, TBC)
2. A wechat group, *Agroecological Research Group* (?) for challenge-oriented research design and publication
3. A group presentation (5 minutes) to Section 3, ECR  
Workshop 8 December
4. Welcome proposals for joint academic papers and blogs to address challenges, reinterpret data, share experience and good practices



## Session 2: Share of ECR experience in research design & field practice

- Dr. Zhenzhong Si (Wilfrid Laurier University, Canada): Adjustment of research focus to reflect to the dynamics of ecological agriculture development in China.
- Dr. Ying Zheng (Glasgow University): Understanding geographic complexities and science-policy-practice interfaces in rural China: My field research experience.
- Dr. Yan Jin (Yunnan Agricultural University): Rethinking and interpreting empirical data: What I have learnt from challenge-oriented research approach?
- Sharing of experiences by other ECRs.



**Understanding geographic complexities and  
science-policy-practice interfaces in rural China**

Ying Zheng

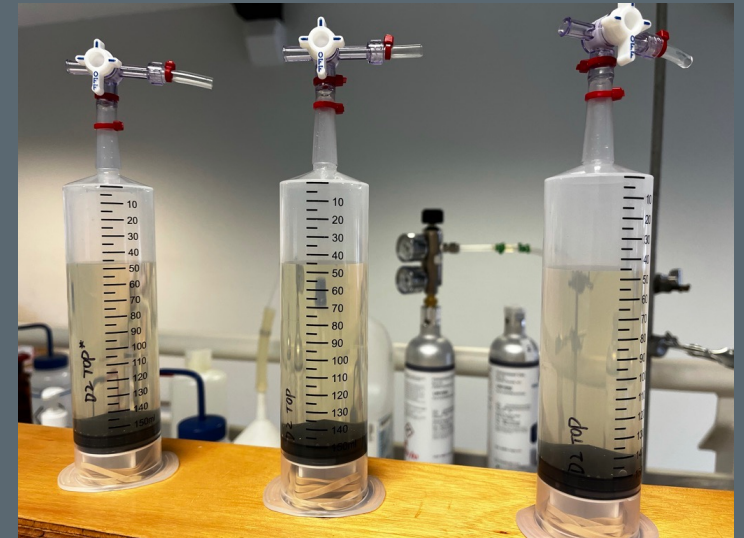
School of Geographical and Earth Sciences  
University of Glasgow

# Transition to interdisciplinary research

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## PhD research project

Natural science research: carbon cycling in freshwater affected by windfarm development in Scotland







## Transition to interdisciplinary research

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## Post-doc research

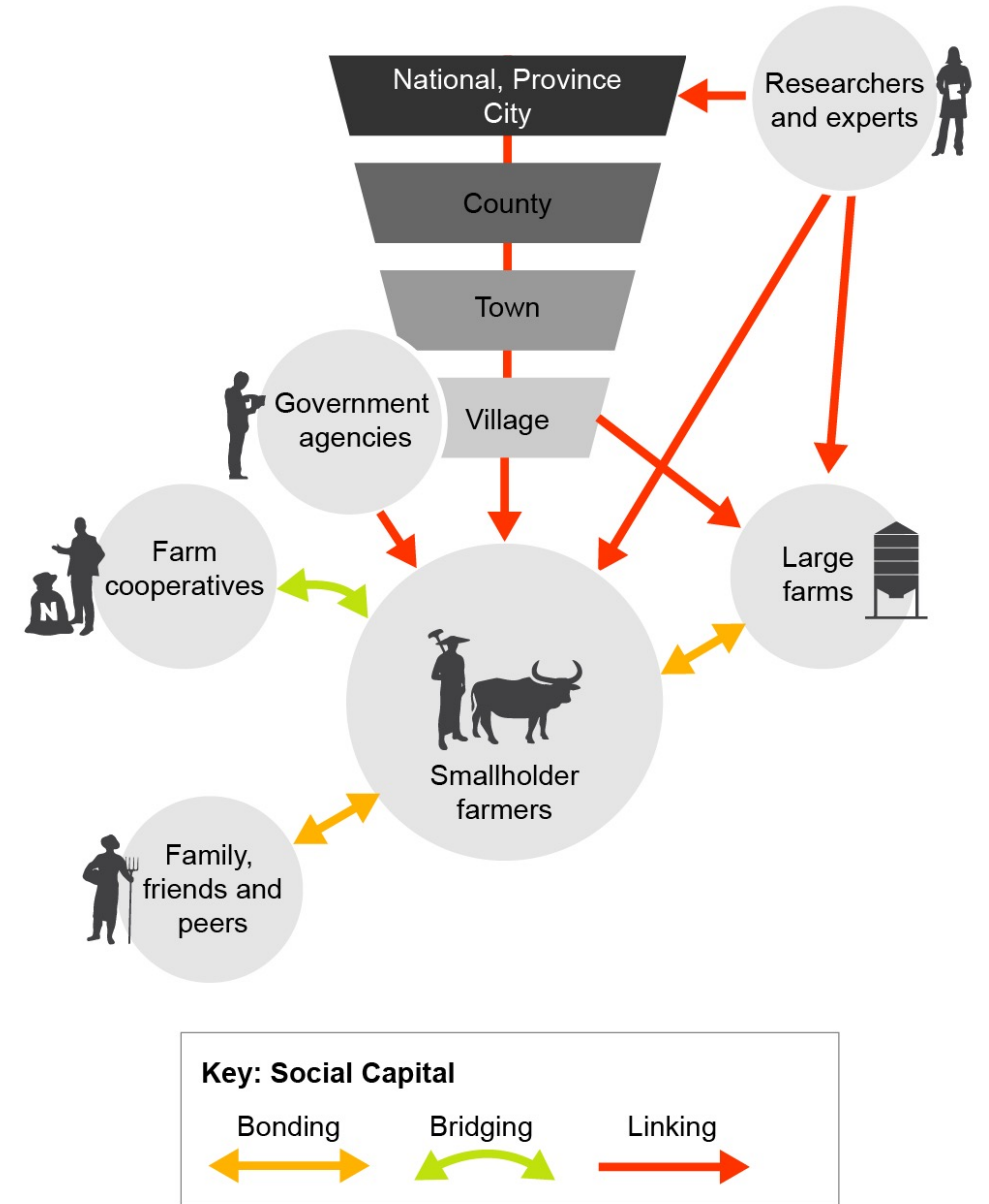
Knowledge exchange in rural areas in China facing socio-ecological challenges, conducting surveys and interview across provinces

# Challenges in interdisciplinary research

## Achievement

- Contribution to interdisciplinary research in rural China
- Baseline understanding of farmers' awareness of environmental protection
- Current knowledge exchange methods & pathways

Figure 1. Conceptual Overview



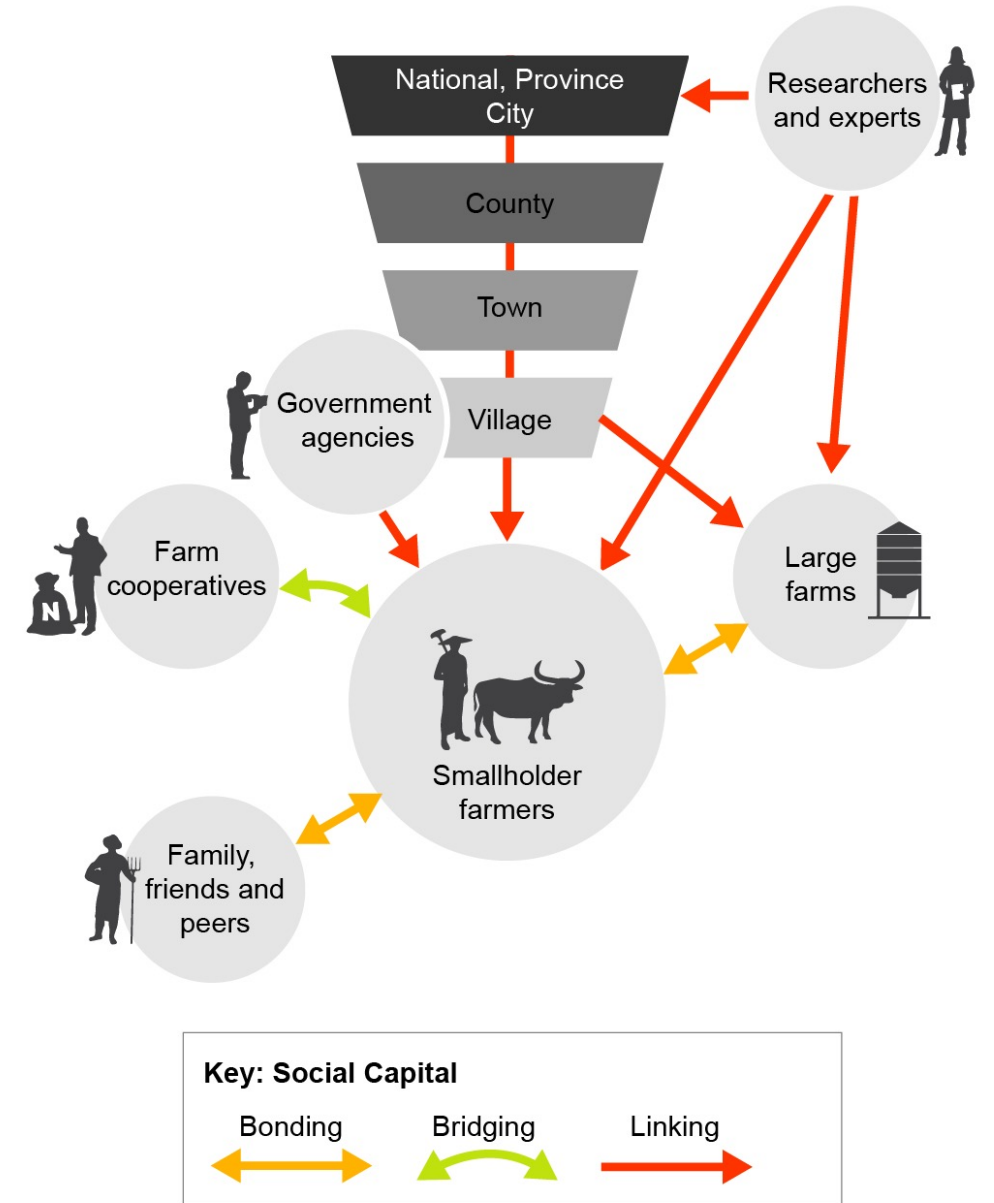


# Challenges in interdisciplinary research

## Challenges

- Self-learning through training & literature review  
Is it thorough? Geographical and political complexity in China?
- Collaboration with social scientists  
Should co-design the project
- Project-oriented  
How to identify good research questions?

Figure 1. Conceptual Overview



# Thank you

Ying Zheng

School of Geographical and Earth Sciences

University of Glasgow



# Rethinking and interpreting empirical data: What I have learnt from challenge-oriented research approach?

Yan JIN    Nov. 15, 2021

Yunnan Agricultural University,  
Kunming, Yunnan province, China







# Chinese agricultural investment in Laos







Field surveys with Chinese companies and technicians, local officials, farmers and village head in community





Communication in  
community





# Infrastructures in community

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# Challenges

---

How to state the investment story?

---

Quantity or quality?

---

The research contribution?

# Rethinking and interpreting empirical data in ECRs

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Challenge oriented research design

---

Confirmed the topic

---

List the needed information

---

High-quality paper

---

Rethinking and interpreting empirical data

---

Narrative from multiple stakeholders



In the  
following  
days

---

Learn the experience from mentors  
and ECRs in rural study

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Hope to develop and apply the  
National Social Science Foundation

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Live locally, think and act globally

## Session 3: Discussion & further questions from ECRs

- Why is challenge-oriented research important for rural studies in China and beyond?
- What factors may influence young researchers to design and conduct a challenge-oriented research?
- By what mechanisms can ECRs work together to develop challenge-oriented research?



# ECR Methodological Salon

Challenge Oriented Research Design & Stakeholder Engaged Fieldwork  
Chaired by Prof. Gubo Qi, China Agricultural University

Welcome to scan the QR code  
to join our WeChat group  
for FAQ and stay in touch!

