INNOVATION AND PARTICIPATORY RESEARCH IN SHEEP AND GOAT FARMING

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TRAINING COURSE
Innovation to enhance the sustainability of sheep and goat production systems
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The session

1. Background (30’)
2. Overview of iSAGE approach and findings (15’)
3. Innovation and participatory research in Oviaragon (30’)
4. Questions and discussion (15’)

Agriculture innovations

What is an innovation?

What is innovation?

- It is not just technology, but…

"The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations which can be new to the firm, new to the market and new to the world"

(OECD)

- The definition of an innovation depends on the system/situation analyzed

What is innovation in agriculture?

- Technology: usualy refers to equipment
- Innovation:
  - Products and equipment
  - Structure and organization
  - Method and ideas for practice changes

- Innovations are not always totally “new”
- “New” is not always good
- Innovations present opportunities but also threats:

➡ Technology innovations produce winners and losers

Innovation types

There are many perspectives to look to innovations

Innovation types

1. Embodied in good and products: <u>Private interest</u>

2. Disembodied, as organizational or management schemes changes: area for <u>public actions</u>

   e.g. management practices to make farms more sustainable

Innov. types. Physical form

Each raise different political issues

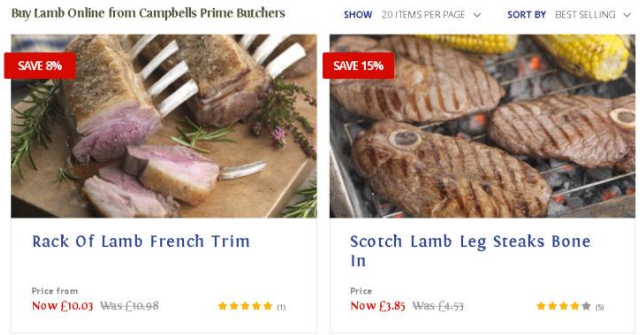
- Mechanical → May negatively affect labor
- Biological → Problems of public acceptance and environmental concerns
- Chemical → Problems of public acceptance and environmental concerns
- Agronomic → New management practices
- Biotechnological → Ethical and public acceptance problems
- Informatics → High support by agencies; too much expectations?

The Gartner Hype Curve (1995)

Innovation types

- **Process innovations:** e.g., a way to modify a gene
- **Product innovations:** e.g., a new cheese type, new meat cuts
- **Marketing innovation:** e.g., internet marketing, home delivery
- **Organization innovation:** e.g., Operational groups, inter-professionals

INTERPROVIC
ORGANIZACIÓN INTERPROFESIONAL AGROALIMENTARIA DEL OVINO Y EL CAPRINO



Innovation process

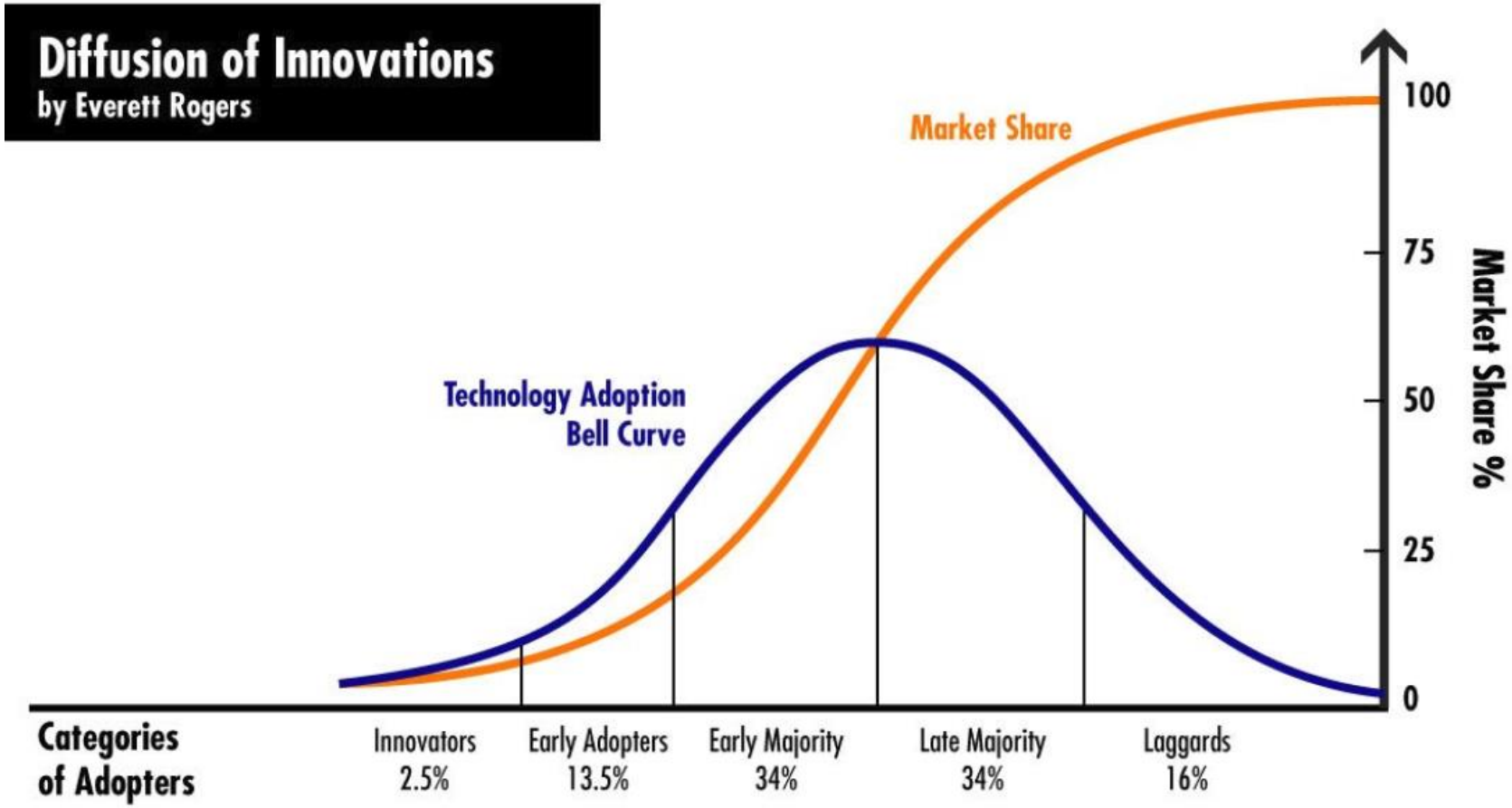
How are innovations created, disseminated and used by farmer community?

Innovation diffusion model

Diffussion is a process where:

1. an **innovation**
2. is **comunicated** through certain channels
3. over **time**
4. among the members of a **social** system

Roger´s Innovations difussion model (1957)

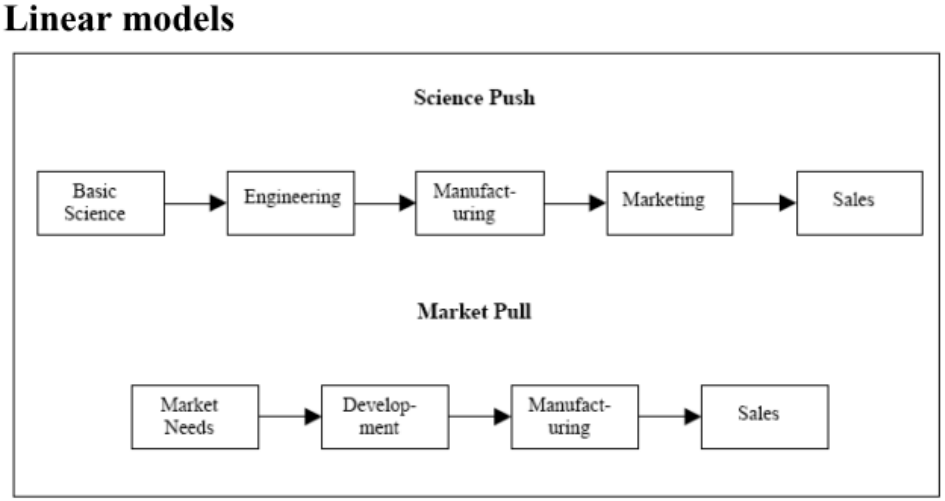


Innovations difussion model

What do you think of the diffusion of innovations model?

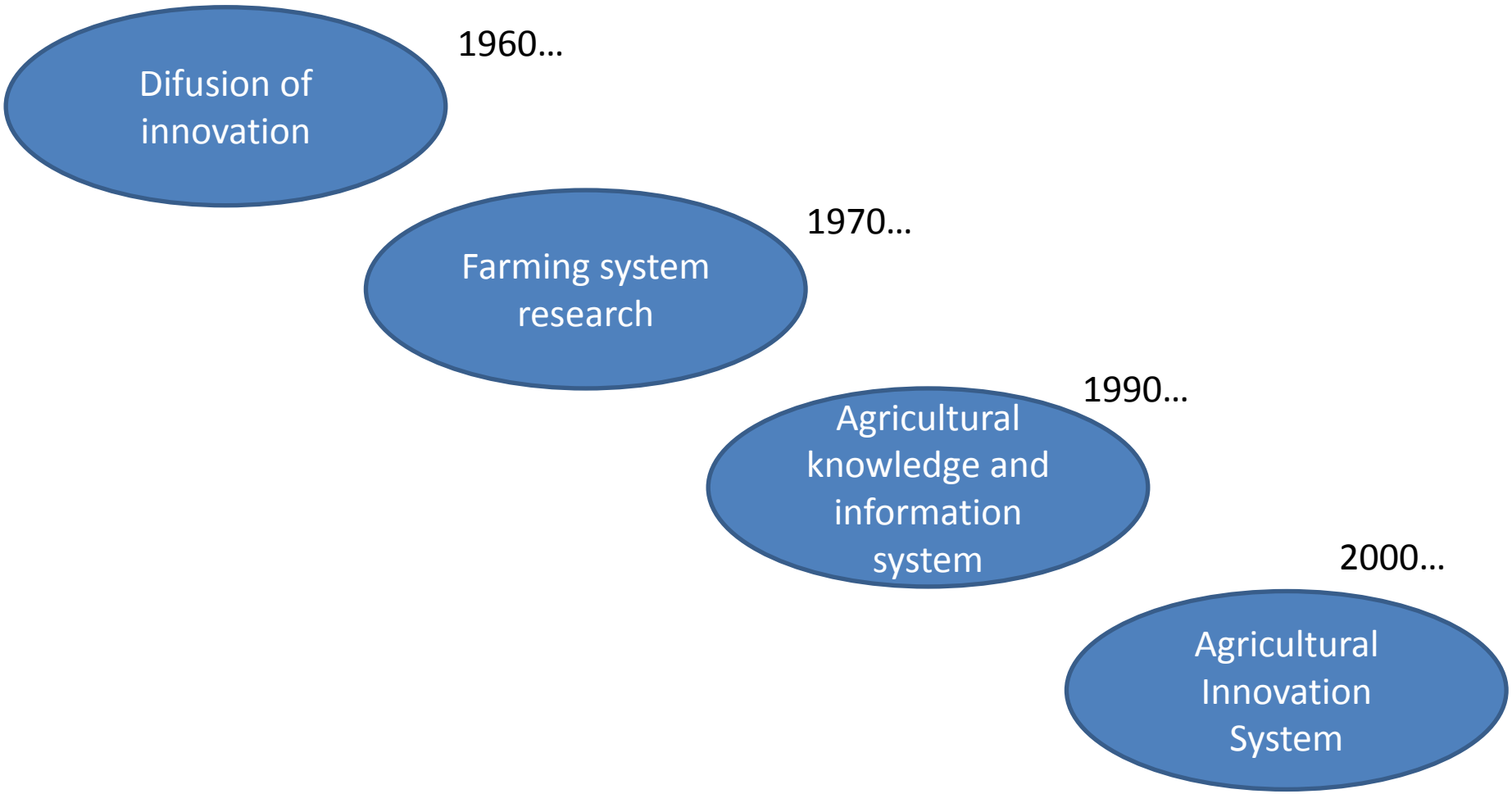
Critics to the model

- Linear view of innovation process



- Top-down approach. Researchers ⟶ farmers
- Farmers would be merely end users of technology
- Not applicable to most agriculture innovations

Other Agriculture innovation models



Other Agriculture innovation models

Farming system research

Agricultural knowledge & information system

Agricultural Innovation System

	Diffusion & adoption			
Era	Central since 1960's	From 1970's/ 1980's	From 1990's	From 2000's
Mental model	Supply technologies through pipeline	Learn farmers constraints through surveys	Collaborate in research and extension	Co-develop innovation in partnerships
Knowledge and disciplines	Single discipline driven (e.g. breeding)	Multi-disciplinary (agronomy and economics)	Inter-disciplinary (plus sociology and farmers)	Trans-disciplinary, holistic systems perspective
Role science	Innovators	Experts	Collaborators	Partners, one of many responding to demands
Role farmers	Adopters/ laggards	Sources of information	Experimenters	Partners, entrepreneurs, innovators exerting demands

Klerks et al (2012)

The Agricultural Information System

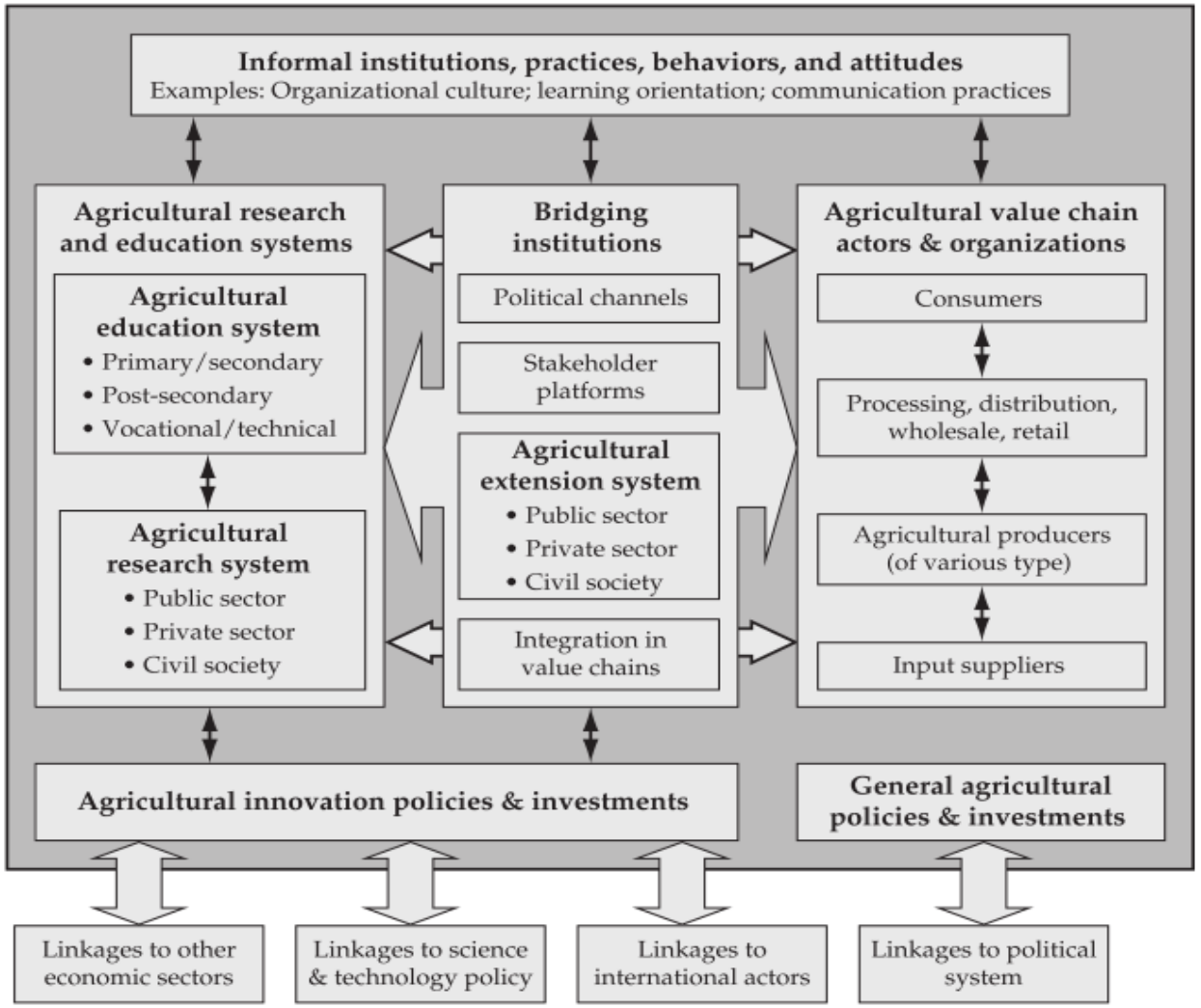
"A network of organizations, enterprises, and individuals focused on bringing new products, new processes, and new forms of organization into economic use, together with the institutions and policies that affect their behavior and performance"

*(*The World Bank, 2006)

- Embraces the science suppliers and all stakeholders involved
- Goes beyond the creation of knowledge to…

… the factors affecting demand for and use of knowledge.

An AIS conceptual diagram



Source: Authors; adapted from Arnold and Bell 2001.

AIS research methods

Three approaches:

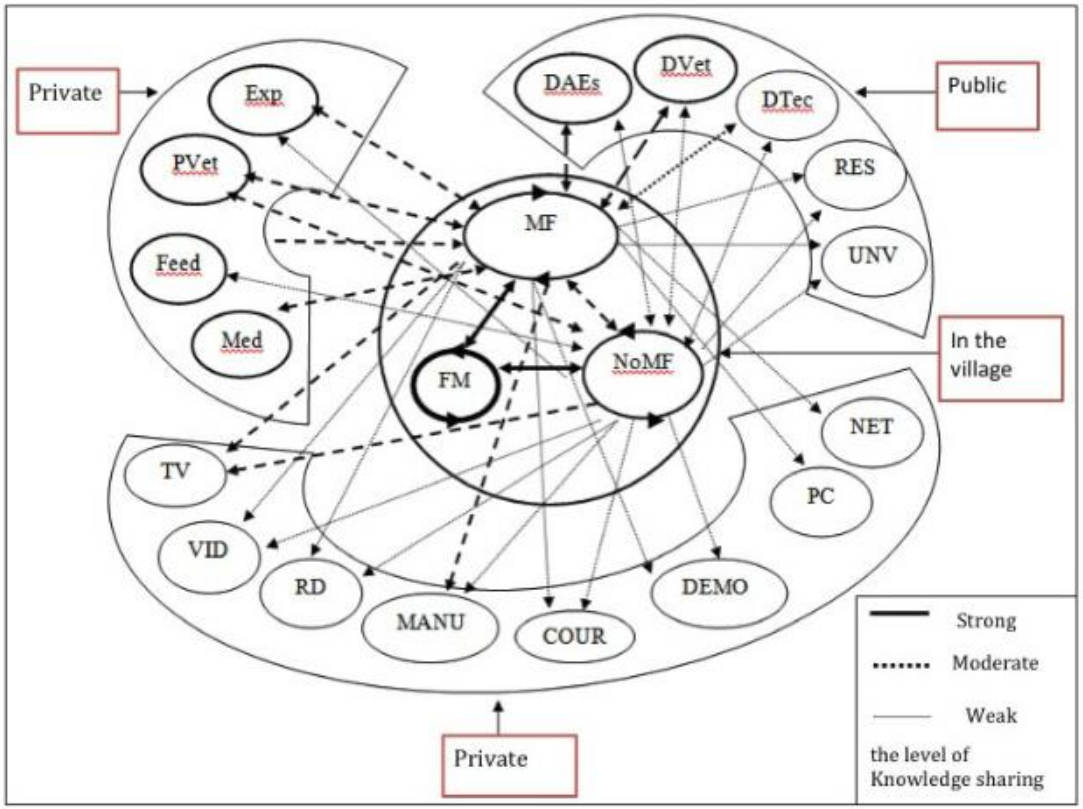
1. Benchmark analysis
2. Social network analysis
3. Functions of innovation system approach

Benchmark analysis

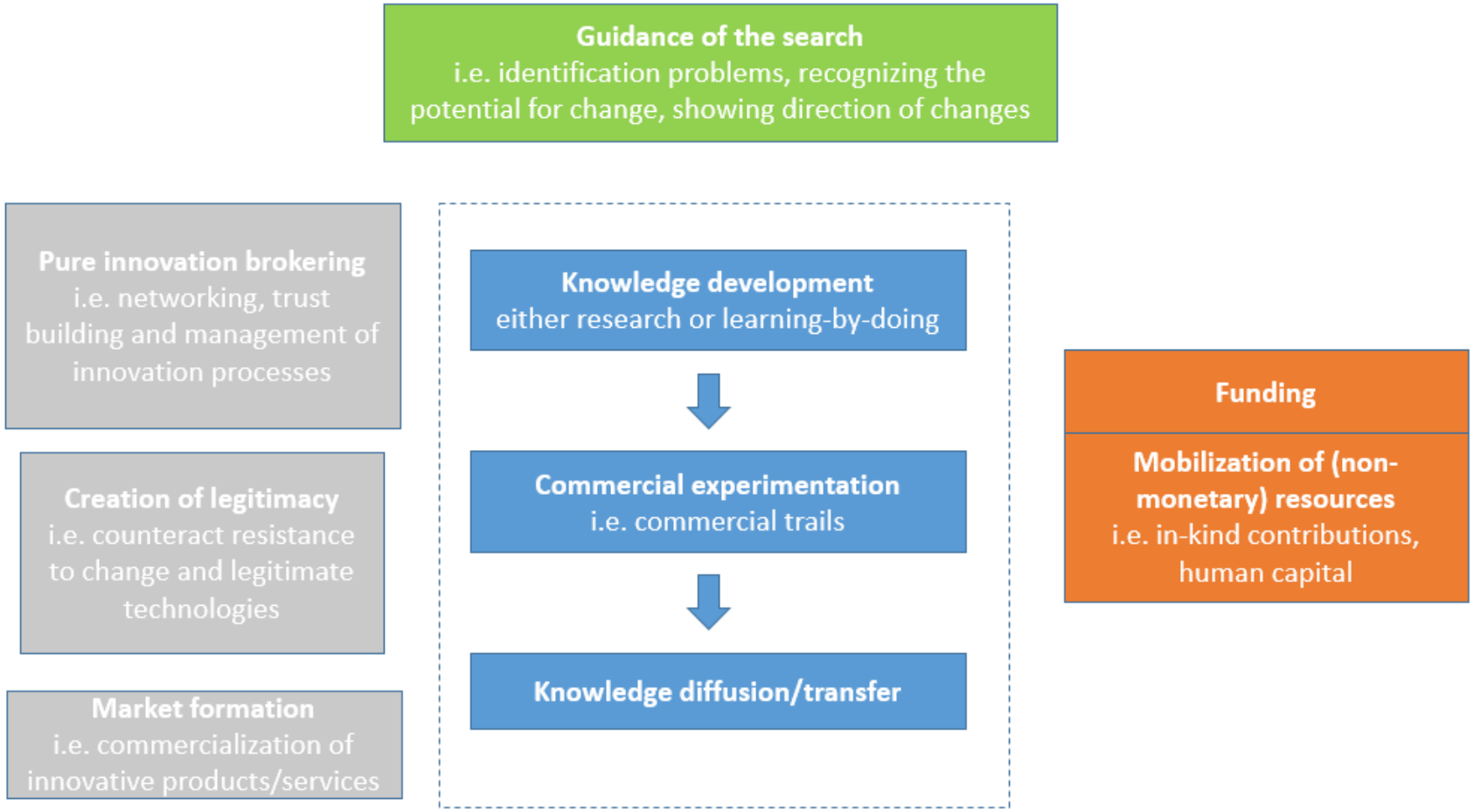
- Uses indicators:
  - Patents
  - R&D expenditures
  - Numbers of researchers
  - Number of extension activities staff
  - Type of projects
  - Innovation adoption rate
  - Input-output/spill-over analysis on R&D investment
  - Returns on risk capital
  - …

Social network analysis

- Visualizes the network of relationships between stakeholders and assesses the position of actors within the system



Functions of Agricultural Innovation System



Participative research in agriculture

Participative research projects

Research strategies which emphasize participation are increasingly common

PRIMA initiative is based on an extensive participatory process that will target a critical mass of key players at international level and all relevant stakeholders of the food and water sectors.

WHY PARTICIPATIVE RESEARCH?

The problems of “conventional” research

- Lack of relevance for the sector
- Stakeholders knowledge not considered if does not follow the scientific protocol
- Need to make simplification of reality:
  - Theoretical paradigms avoid researchers seeing much of reality
- Inappropriate recommendations; failure to take account of stakeholders/farmers priorities

New research challenges

1. Governments are demanding more cost-effective reserch outcomes to shrink funding
2. Private sector is becoming a provider of extension and research
3. Pro-active farmers groups are initiating their own reserch

Participative research projects

WHAT IS PARTICIPATIVE RESEARCH?

Basis of participative research

- Stakeholders have different knowledge and skills that complement each other
- Working together might get better results
- Constraints and limitations of one group compensated by strength of the other

Requires a sound understanding of both one's own and the other groups knowledge, skills and constraints

What is COLLABORATIVE research?

- It covers a wide variety of approaches and applications
- Participative research is not stakeholders (i.e. farmers) participating in a research project
- Stakeholders knowledge and perspectives not only acknowledged but the basis for research and planning
- Focus on all stakeholders priorities and perspectives

What is collaborative research?

- The key difference lies in the location of “power”:

> The control over the research process

- WHO, is the key question
- Raises personal, professional and political challenges which go beyond the production of information

WHO is the key question

- Who defines the reserch problem/question?
- Who generates the information?
- Who analyse the information?
- Who owns the outcomes or the knowledge generated?

Critics to participative research

- The panacea to solve all problems of conventional research
- Biased, lack of rigour and unreliable

Assumptions

- 'More' participation is always better.
- Researchers should work on the research priorities identified by farmers.
- Local innovation should be strengthened by farmers doing formal experimentation.

Innovations case studies in iSAGE

Approach and main findings

iSAGE is a fully participative project

Stakeholder type	Description	Number
Farmer/ breeder groups	Co-operative that assists and works with farmers or breeders directly i.e. manages breeding program, records data and advisors farm management	10
Farm	Commercial farms or breeders that work with research institutions	3
Industry	Large organisation that represents the commercial interest of farmers, including promotion, marketing and dissemination	4
University	Research group from a University that specialises in sheep and goats	5
Public research	Research group from a public organisation that specialises in sheep and goats	5
Farmer research	Non-profit, non-governmental research organization funded by farmer levies	3

Innovation case studies

- Test selected innovations in case studies…
- … to increase sustainability and viability of sheep and goat farming
- Innovations are selected in a participatory process
- Get feedback on effectiveness and implementation constrains

Participative selection proccess

1. Analysis of challenges to be addressed
2. Case study protocols
3. Review of proposals
4. Implementation and monitoring
5. Reporting and dissemination

Innovation case studies

- 31 case studies
- Selection depended on:
  - Resources available
  - Organizational constrains
  - Interest and expertise
  - Challenges considered critical for each case

Case study leaflets

Innovation case studies

Type	Innovation case study	Country
Breeding & genetics	1) Evaluation of reproductive performance of crossbreeds of Romanov and Turkish Native Breed	Turkey
	2) Potential, drivers and constraints of genomic selection in sheep and goat sector	Spain, France and Greece
	3) Analysis of farmers perception of the drivers and constrains for the uptake of a new selection index for ewe productivity	Finland
	4) Assessing parasitic resistance of UK local and newly introduced sheep breeds in organic/low input and conventional farms.	United Kingdom
	5) Assessment of ROA GENE effect on Rasa Aragonesa breed productivity	Spain
	6) A new longevity breeding goal for Lleyn sheep	United Kingdom
Feeding	7) Better utilisation of farm forage– reduce reliance on imported concentrates and forages on the farm	France
	8) Assessment of feeding alternatives in sheep and goat farms in Turkey	Turkey
	9) Grazing in arable rotations	United Kingdom

Innovation case studies

Type	Innovation case study	Country
IT technologies and individual recording	10) Extension activities for individual recording	Greece
	11) Mobile flock management of intensive sheep farm	Turkey
	12) Reproductive performance recording in intensive dairy goat farming	Turkey
	13) Assessment of Eskardillo: a platform based on individual data collection to improve decision making and management in dairy goat farms.	Spain
	14) Individual data collected from RFID for several purposes	France
	15) Training and implementation of farm management application (AWIN)	Greece
Environment	16) Ecological knowledge transfer and sharing expertise from Transhumance	Turkey
	17) Carbon efficiency and footprint comparison for various farming systems	Turkey
	18) Small ruminant farmers' perception on climate change impact and assessment of adaptation innovations	Turkey
	19) Holistic Management and Farm Sustainability Assessment Tools	United Kingdom

Innovation case studies

Products and marketing	20) Participatory Guarantee System for Brogna sheep Association in Lessinia	Italy
	21) Functional food production from goat milk and lamb meat	Turkey
	22) Marketing innovations for transhumance dairy products	Greece
Reproduction	23) Testing of a new sheep and goat AI speculum	Spain, France and Greece
	24) Controlling reproduction in sheep and goats and developing easycare breeds	Turkey
	25) Testing assisted reproduction tecnologies in dairy goats and maternal sheep	Turkey
	26) Drivers and farmers perception on hormonal control uptake in extensive farms in Turkey	Turkey
Farmer training	27) Assesment of Ambassador programme	United Kingdom
	28) Assessment of Flock Health Programme	United Kingdom
Others	29) Controlled weaning in organic goat rearing	Italy and Greece
	30) Managing Haemonchus burden in lambs using a copper oxide bolus	United Kingdom
	31) Portable milking machine in different farming systems	Turkey

Challenges and dilemmas

- Multi-stakeholders participative work is far from easy

- Control over the research is rarely devolved completely onto the “stakeholders”…

  …nor do ‘stakeholders“ always want it

- Who participates influence the type, focus and usefulness of the research outcomes

Challenges and dilemmas

- Participative research aims to work with all stakeholders:
  - Assumption stakeholders exist as distinct entities: small, well-bounded, homogeneous and integrated.
  - Within these needs, values, sentiments and ideologies are shared
  - This is invariably not the case

Challenges and dilemmas

- (Long-term) motivation is key
- Farmers skeptical as to whether it is worth investing their time and energy in research…

  …particularly if it seems to offer little in terms of direct benefit
- Farmers (and researchers) have to weigh their input or time investment with the expected output

Challenges and dilemmas

Participative research implies

a sharing of aims

between stakeholders