



# ARIMNet2

## International Conference on Agricultural Knowledge and Innovation Systems (AKIS) in the Mediterranean

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### The agricultural development model and its relationship with the research-innovation system – The case of Tunisia

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# IRESA (Institution for Agricultural Research and Higher Education)



- Supervisory authority on agricultural research and higher education establishments (1991)
  - 11 establishments for Agricultural research
  - 12 establishments for Agricultural Higher Education (Engineer, Veterinarian and bachelors degrees, postgraduate studies)
  - > 800 researchers
  - Development & implementation of national strategies of agricultural research and capacity development
  - Mandated for funding, programming, monitoring and evaluating research activities
  - Boosting bilateral and multilateral international cooperation in agricultural research and higher education

# Tunisia global agricultural development model

## Green Revolution Generic (USA/EU) Model

- Embedded innovations
  - Machineries and Equipment
  - Genetic material / pesticides / fertilizers
- National R&I system
  - Lead by a “productivity-targeted” paradigm, Teaching farmers new skills
  - Top Down Approach

# Tunisia global agricultural development model

## Green Revolution Generic (USA/EU) Model

- Positive impact
  - Effective results for large-scale farms
  - Self-sufficiency for several commodities
- Negative impact
  - Economically unsuitable for small-scale farming
  - Agro-ecosystems (water, soil, ecosystems, public health, ...)
  - Transparency, equity of value chains
  - Conflict of knowledge (farmers know how/"modern" knowledge)
  - Weakening of the small-scale farming sector

# Overview on the current AKIS organisation

## Linear model

- Research sector institutionally linked directly to mass extension services
  - Not suitable for delivering applied and basic research deliverables
- Institutional efforts to introduce participatory mechanisms
  - “CPERA” (platforms for programming and evaluation of research activities (Farmers Union’s representatives, Development, Extension, Research))
  - But:
    - Platforms engineering dominated by the perception of researchers
    - Representativeness and capacities of stakeholders (farming scale issue)
    - Lack of established methodology of work : identification, categorisation, prioritization of needs and expectations and alignment with the research strategy, translation into research issues and expected research prototypes,

# Overview on the current AKIS organisation

## Linear model

- Several examples of success in spite of the limitation of the current AKIS
  - Aid to decision, (hydrology, irrigation, olive trees cultivation, fisheries, forestry,.....), technical packages, plant varieties, integrated pest management, etc.
  - Presence of a potential of impact outside the current model (Development of new thematic approaches of R&I by researchers not relayed by the current AKIS)
- Major limitation: AKIS model more oriented *to diffuse knowledge* than to *promote, breakthrough innovations, systemic approaches* and *rural development*

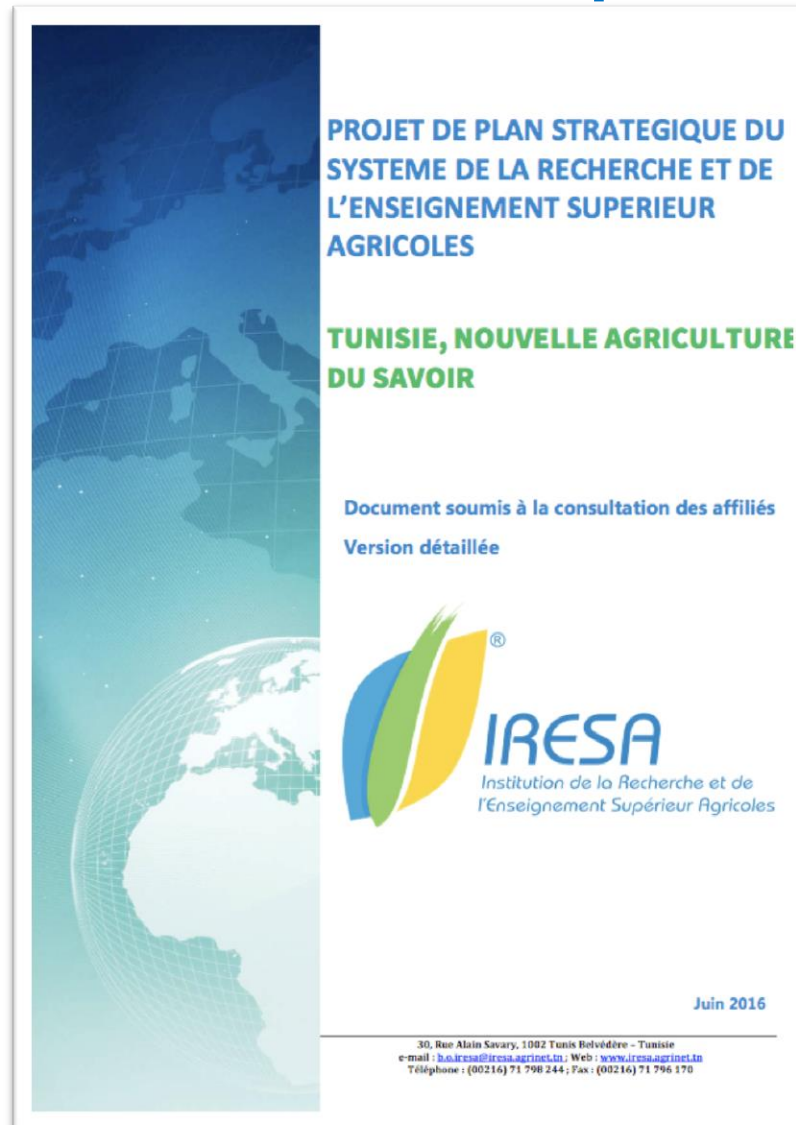


# Toward a new paradigm for the Tunisian agriculture?

## Two overall models for agricultural development

- **Large-scale farming:** better appropriation of the classic green revolution model (performances / sustainability)
  - Approx. 4000 Farms / > One Million of ha (Field crop mainly)
  - Strategic role for national food security
- **Small-scale farming:** modern sustainable (economically viable) specific models draining local, affordable and adapted services and inputs
  - 75% of farms < 10 ha, (diversified activities)
  - Important role in local economic growth and social stability,

# How the Tunisian SARHE and AKIS could anticipate the needs for the new paradigm ?





# How the Tunisian SARHE and AKIS could anticipate the needs for the new paradigm ?

## Global level

- **New vision**: foster **innovation** for creating **wealth** and **employment** for a **sustainable, resilient** and **inclusive agriculture**
- **Evolution of the mandate and missions of IRESA**
  - Develop **strategies** for **R&I** and **HE** through a **multi-actors approach**
  - Focus R&I and HE on **employability, development of entrepreneurship, sustainable development** and **preservation of ecosystems.**
- **Slogan: *Tunisia, new knowledge agriculture***

# How the Tunisian SARHE and AKIS could anticipate the needs for a new paradigm ?

## Organisational level

- **New AKIS model:** triple helix for innovation (Research, socio-economic actors, Government)
- **New interactive value chains for innovation:**
  - producers of knowledge, facilitators of transfer, innovators (socioeconomic actors)
  - development of work processes and tools
- **New function for animating the AKIS interfaces**
  - Leader of researcher colleges
- **New institutional space for hosting and governing multi-actors initiatives**
  - Alliance groups (R&I, HE, Private, NGOs, Development ...)

# How the Tunisian SARHE and AKIS could anticipate the needs for a new paradigm ?

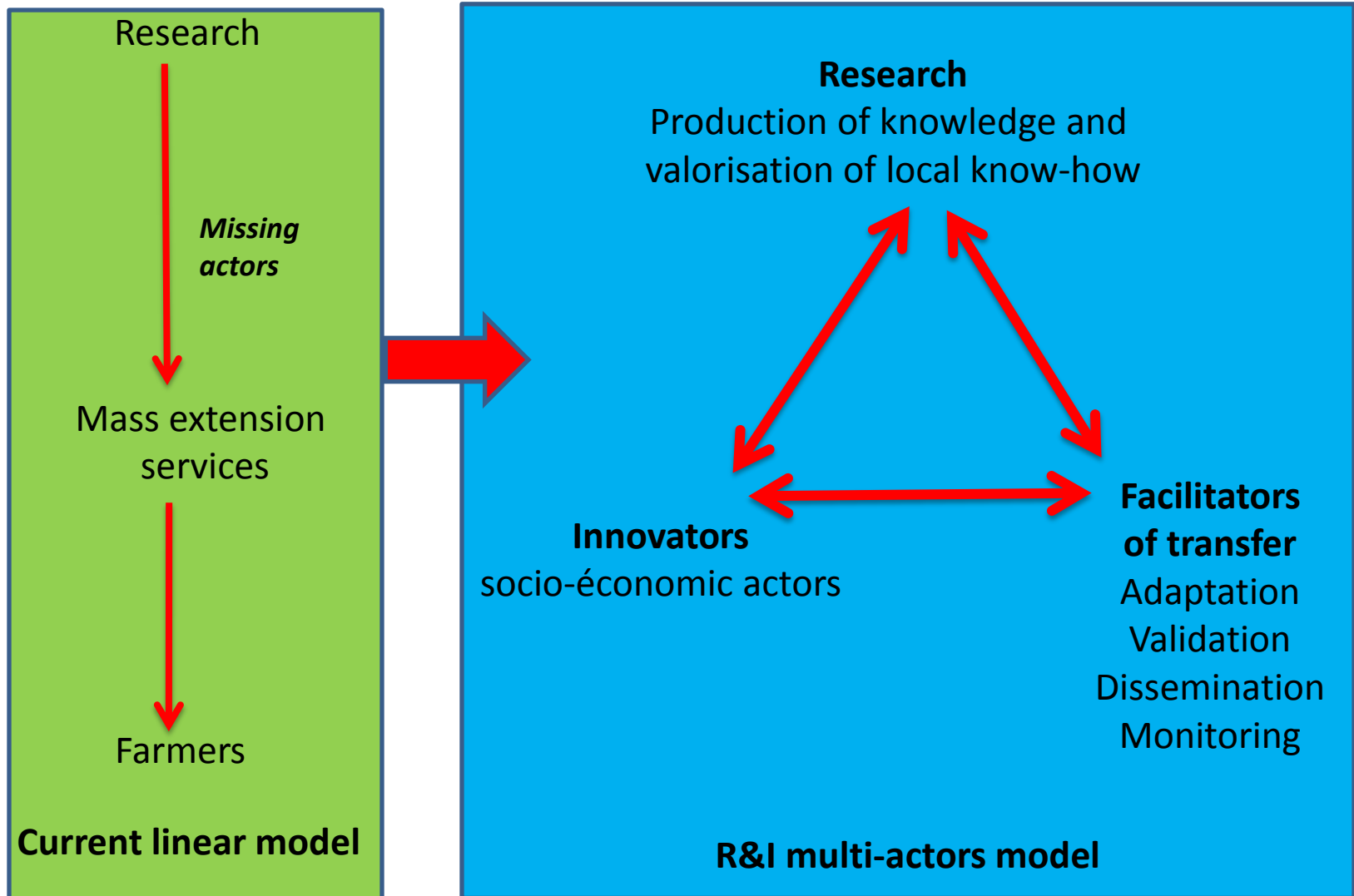
## New procedures for releasing potential innovations:

- introduction royalties in the structure prices for strategic certified seeds
- Access of all the Tunisian seed producers to certified plant varieties released by the national research on state funding using an uniform royalties rate

## Research Programs

- **Small-scale farming, local genetic resources, equitable and sustainable value chains, innovations**
- **Linking regional research challenges to national research structures (Research Laboratories)**

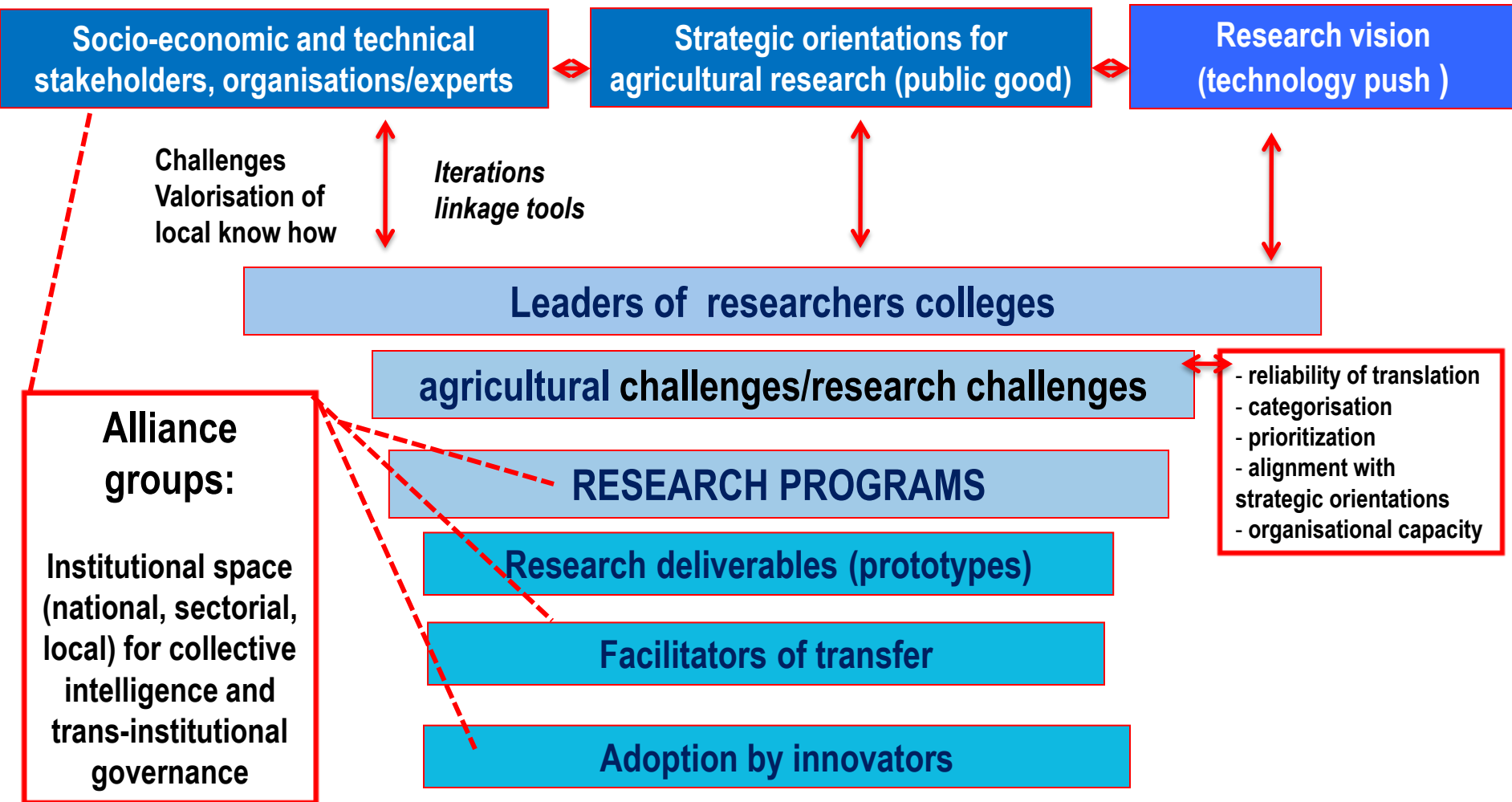
# Tunisian AKIS: current and new models outlines



Inefficient

Promising

# Global organisation of new AKIS





# Conclusion

**New Tunisian AKIS architecture based triple helix model**

**Importance representativeness small and large scale farming categories**

**Implication all researchers (colleges specialities)**

**Flexible management interfaces by the function of leader of colleges**

**Set up appropriate methodology and tools**