

Setting The Stage: Introduction to Agricultural Innovation Systems & Implications for Operations

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International Conference on Investing in and Strengthening
Agricultural Innovation Systems

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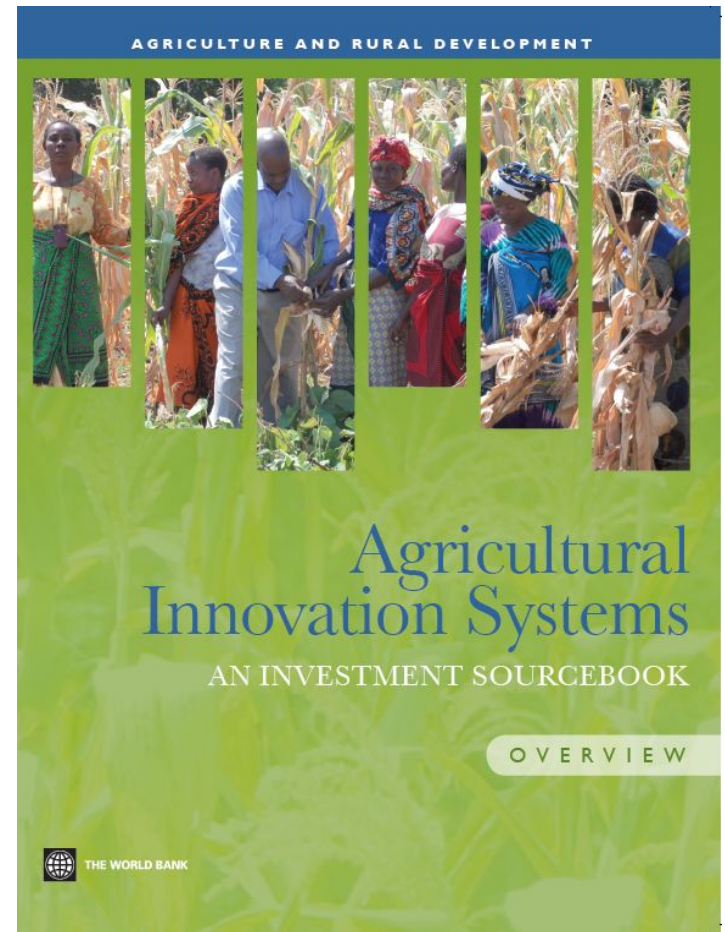
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Outline

- Objectives of the Workshop
- Agenda & Process

- The AIS Sourcebook
- General AIS Messages
- Key elements of AIS
- Practical implications?



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Objectives of the Conference

1. To launch, and disseminate and discuss findings from the recently published “[Investment Sourcebook: Agricultural Innovation Systems](#)”
2. To learn from other on-going operational and analytical initiatives on AIS
3. To identify key recommendations for and issues requiring further analysis, experimentation and implementation to promote operationalization of AIS approach
4. To consolidate the Community of Practice on AIS

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AGENDA – DAY 1

1. **Setting the Stage – Introduction to the Topic & Implication for Operations**
2. **THE IMPORTANCE OF COORDINATION AND COLLECTIVE ACTION**
 - **Setting the Stage:** Coordination and collective action for agricultural innovation
 - Governing National Innovation System
 - The role of platforms and networks in AIS
 - How to engage producers via RPOs in AIS
3. **RURAL ADVISORY SERVICES & ITS ROLE IN PROMOTING INNOVATION**
 - **Setting the Stage:** Pluralism and brokering as the defining factors for Rural Advisory Services in an AIS
 - Application of ICT for RAS - evidence from case studies
 - Private sector driven RAS
 - What can brokers offer for RAS and Agricultural Innovation
4. **Reception** – Outside the Conference Room at 18:00

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AGENDA – DAY 2

4. ROLE OF RESEARCH AND TECHNOLOGY IN AIS

- **Setting the Stage:** Strengthening research system to function in AIS
- Building effective demand articulation and interface between research system and other
- Lessons on consortia and R&D partnerships with the private sector (Australia, Chile and India)
- Change management within agricultural research systems
- 20 years of AIS implementation in Uruguay – what have we learned from INIA?
- Agricultural Innovations - using the Integrated Agricultural Research for Development approach

5. INNOVATION PARTNERSHIPS AND BUSINESS DEVELOPMENT FOR AIS

- **Setting the stage:** Incentives and resources for effective partnership and private sector engagement
- Partnerships beyond Corporate Social Responsibility: PPP cases in agroindustry development
- FINCAGRO: a private sector driven fund for agricultural innovation in Peru
- Supporting agricultural innovation & business development via agribusiness incubators
- Enhancing technology commercialization through IPR management and Technology Transfer Offices

6. IGNITE - Speed presentations of AIS approaches/initiatives/products (awards)

Working Groups (parallel): Building National AIS; Regional Research in AIS; Climate-resilient agriculture & AIS

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AGENDA – DAY 3

7. EDUCATION AND TRAINING TO BUILD INNOVATION SKILLS

- **Setting the Stage:** Building AIS skills: What is Needed
- Wageningen University & Research Centre: transition to a 3rd generation university
- Reforming AET in Egypt
- Producing technical HR for the agricultural sector – The case of Agrifood skills, Australia
- Agricultural education & training in Brazil

8. ENABLING ENVIRONMENT AND MEANS FOR PRIORITIZING AND ASSESSING AIS

- **Setting the Stage:** Enabling policies, regulations and means for prioritizing and assessing AIS
- Enabling innovation policy and policy making process in ‘mature’ innovation contexts
- Tools and methods for information collection and decision-making
 - Scenario-Foresighting for informing and guiding AIS investments: experience arising from India and Chile processes
 - Organization and network assessments guiding AIS
 - Benchmarking, M&E methods for guiding policy and investment programs

3. Report back from the Working Groups

4. KEY RECOMMENDATIONS FOR MOVING FORWARD – A Closing Panel

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Action & Questions?

Action:

- Learning needs – drop box
- Sign up for the WGs
- Evaluation forms

Questions:

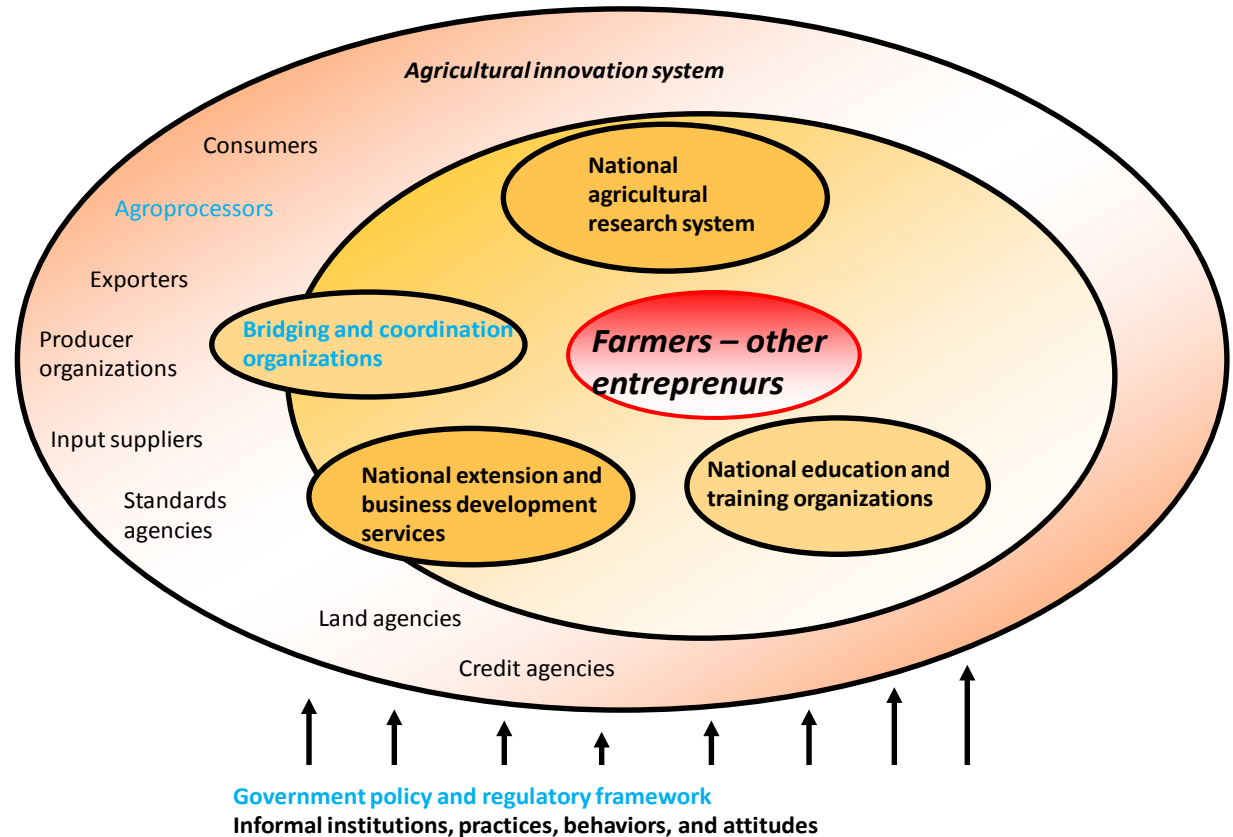
- Agenda – Riikka and Andrea
- Logistics, incl. remuneration – Sarian



What is Agricultural Innovation and an AIS?

Innovation - the process of creating and **putting into use** combinations of knowledge from many different sources.

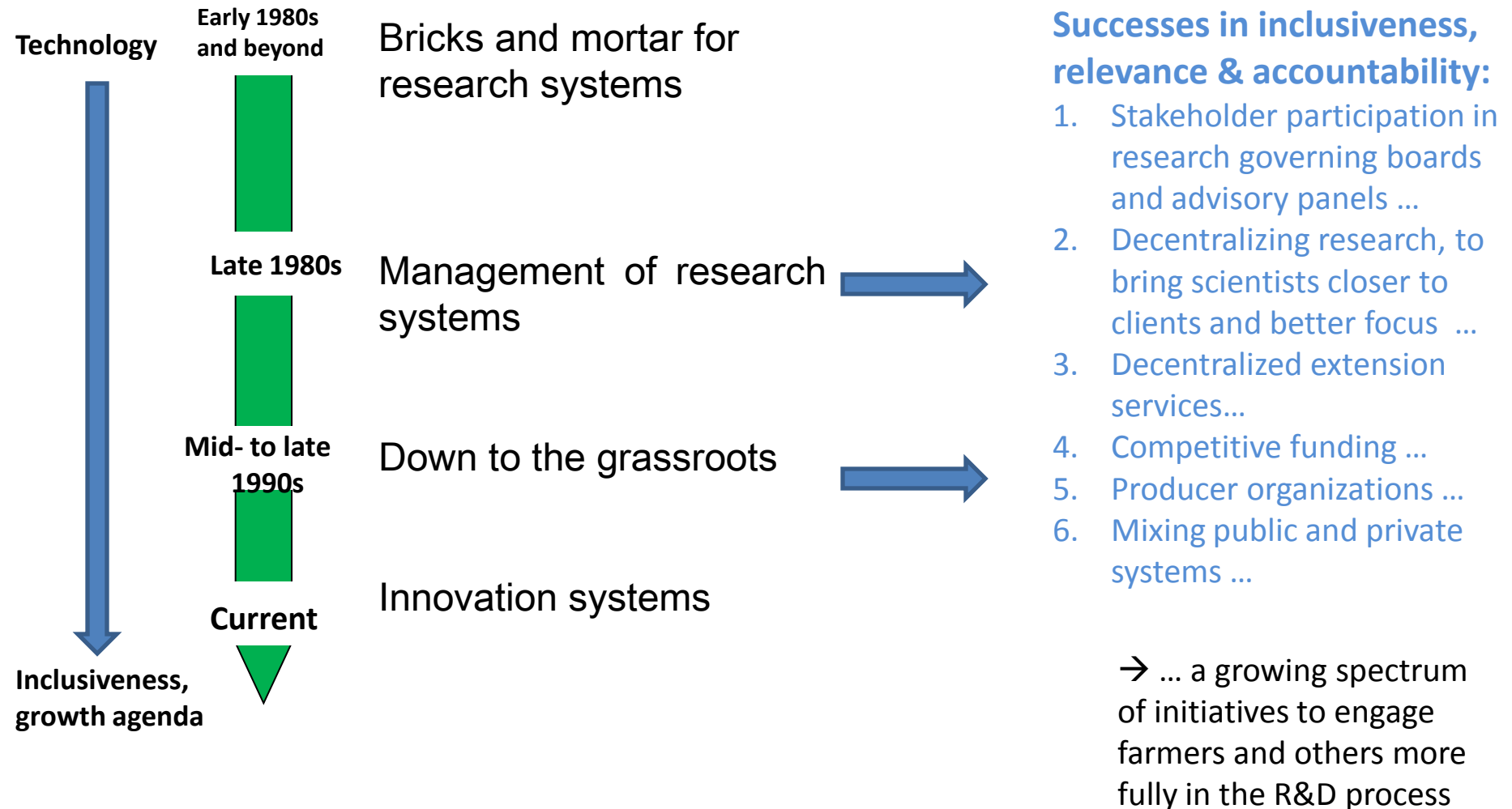
AIS can be considered a **network** of public, private, civil, FA actors engaged in the generation, dissemination and use of knowledge and information for innovation, together with the institutions, policies and the **wider enabling environment** that affect their behavior and performance.



Emphasis on actors & context – why?

Ability to innovate ... besides technical skills and R&D, is closely related e.g., to collective action and knowledge exchange, skills, incentives and resources for collaboration, conditions that enable adoption and innovation

Past efforts on investing in agricultural innovation



What is the Sourcebook About?

Objective:

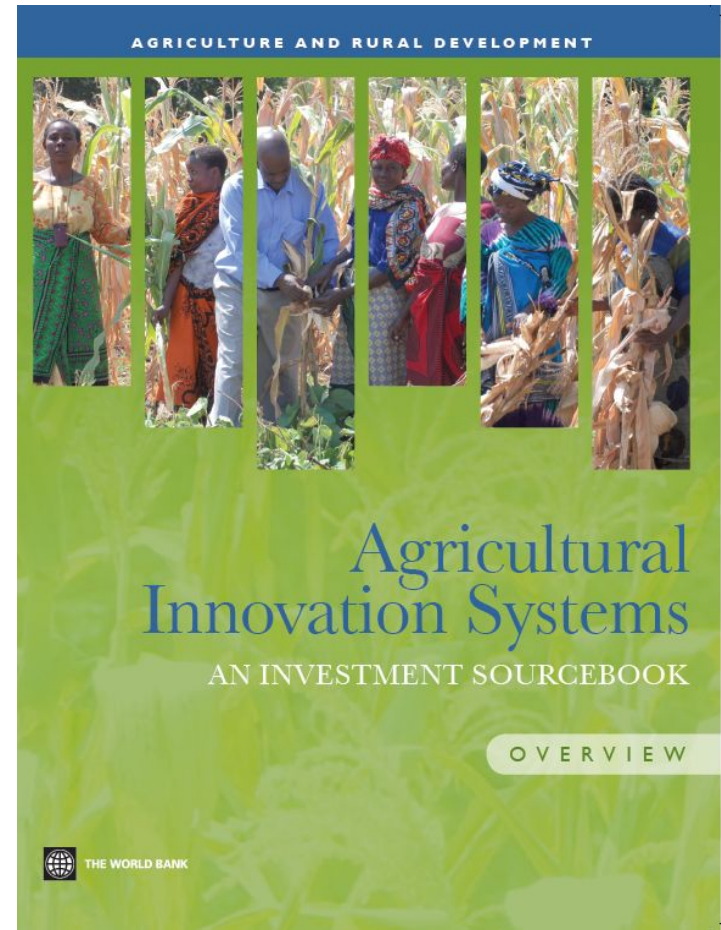
- To provide a menu of tools and guidance to invest in agricultural innovation in different contexts.
- The content is drawn on tested good practice examples and innovative approaches with emphasis on lessons learned, benefits and impacts, implementation issues, and replicability.
- Builds on existing products.

Target audience:

- Practitioners - operational staff of donor organizations and relevant client country organizations.
- Civil society, professional associations and networks of the specific topics involved; IS networks and organizations; Academic community and International agriculture research organizations, including CCIAR.

The product:

- An Investment Sourcebook that provides operational guidelines and good practice lessons for designing and investing in AIS
- Overview and 7 modules – a living document.



www.worldbank/ard/ais

AIS Sourcebook Structure:

Overview Chapter, Notes and IAPs

1. Coordination and Collective Action for Agricultural Innovation
2. Agricultural Education and Training to Support AIS
3. Investment in Extension and Advisory Services as Part of AIS
4. Agricultural Research within an AIS
5. Incentives for Innovation Partnerships and Business Development
6. Creating an Enabling Environment for Agricultural Innovation
7. Assessing, Prioritizing, Monitoring and Evaluating AIS

Mainstream themes: Role of public and private sector, Gender

Integrated nature & cross-referencing



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Multiple individuals and organizations ...



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AIS Investment Sourcebook

– Key Messages

1. **Agricultural development depends on innovation.**

- Innovation is a major source of improved productivity, competitiveness, and economic growth throughout advanced and emerging economies
- Plays an important role in creating jobs, generating income, alleviating poverty, and driving social development.

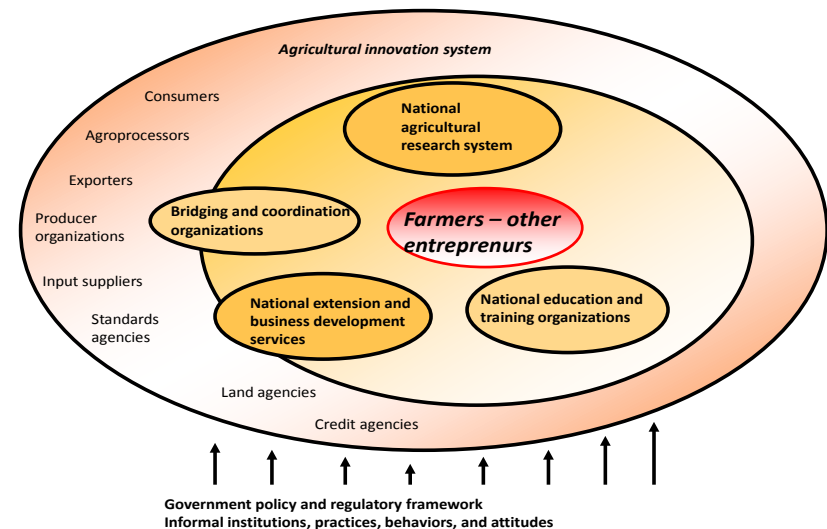
2. If farmers, agribusinesses, and even nations are to cope, compete, and thrive in the midst of changes in agriculture and economy, they **must innovate continuously**.

3. **Investments in science and technology are a key component** of most strategies to improve and maintain agricultural productivity and innovate.

4. **Research, education, and extension** investments are necessary componentsbut in the traditional sense have not been sufficient for agricultural innovation to occur.

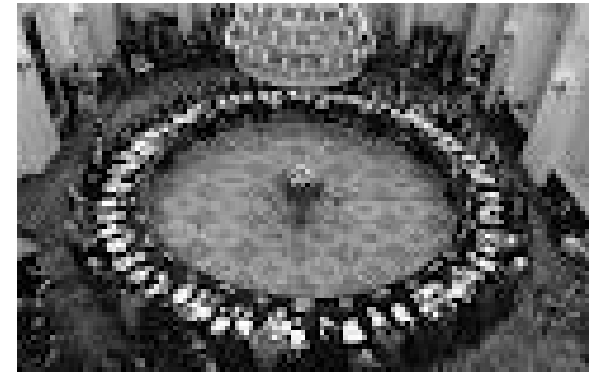
→ **Other conditions and complementary interventions** are needed ([next](#)).

5. AIS investments must be **context specific and respond to the stage of and vision** for development in a particular country and agricultural sector. Given the resource limitations, investments need to be assessed, prioritized, **sequenced, and tailored** to the needs, challenges, and resources that are present.



Policy coordination and collective action for AI

1. **AIS investments must be context specific and respond to the stage, vision and resources** for development in a particular country-sector.
2. **Implementation of innovation process requires coordination and organization of stakeholders.**
 - Policies & policy coordination and effective **organizations (or brokers/intermediaries)** are needed to help organize often fragmented stakeholders with different assets, knowledge, and experience to participate in innovation processes and governance
 - Adequate information, analytical capacity and leadership is required to assess performance and identify future needs → Mechanisms for strategy development, priority setting, assessments, and M&E
 - Facilitating inclusive collective action: e.g., national sector governance; research-innovation or sub-sectoral platforms; RPOs/SHGs/networks



Research within AIS

1. **A strong science and technology system** contributes to innovation and sustainable, equitable agricultural development.
2. **Need a balance** between short-term needs and long-term productivity investments
3. **Need the research system basics:** infrastructure, human resources, management systems, resources.
4. Basics is not sufficient any longer... complement hardware with enhanced software -- **institutional mechanisms and incentive structures for:**
 - improved demand articulation – agri-food system;
 - more effective international and national institutional partnerships & spill-overs;
 - predictable & diversified funding (incl. co-funding)
5. Investments in capacity & implementation mechanisms (e.g., co-design, innovation platforms, alliances and consortia, and technology transfer and commercialization).



Rural advisory services

1. Extension and advisory services are critical for facilitating smallholder access to knowledge and technology.
2. Countries that have invested in extension simultaneously with investment in research have had the strongest TFP growth.
3. New actors and tools filling the gap - private sector, ICT & group-based approaches – but many tasks still have a public goods nature.
4. **Extension & advisory services is an integrated function of AIS – toward pluralistic & demand-driven approach.**
 - Can become nodes for exchanging information and services that help put knowledge to use.
 - Well positioned to facilitate and support multi-stakeholder processes and the heterogeneous client base of an AIS.
 - New models vis-à-vis shifting focus and changing roles, incl. integrated services, brokering AIS.



Engaging private sector

1. Transformative role of private sector in producing **goods and services - through innovation, partnerships and enterprise development.**
2. Strong links between knowledge and business development are a good indication of the vitality of an AIS
3. Importance in service provision, technology development and commercialization, or other business related innovation.
4. Governments can employ instruments to direct private investments to areas of significant public interest and areas where the private sector alone would generally under-invest.

- Partnerships and business development promotion via:
- Enabling policy & regulatory context – e.g., creating viable markets for services and R&D
 - Incentives for services and technology generation (grants, contracts) and technology commercialization (e.g., TTOs, incubators, and science parks)
 - Support for business development
 - Innovative funding mechanisms –innovation funds, risk capital, tax incentives, and market pull mechanisms (?)



Creating enabling conditions & mechanisms for assessing, prioritizing, M&E

1. Innovation and business development by different stakeholders does not occur without complementary investments to create a supportive environment.
2. Enabling conditions in a given context depend on:
 - A set of conducive policies for innovation (e.g. innovation finance),
 - Innovation governance arrangements,
 - Conducive regulatory frameworks: quality & safety, IPR, and biosafety
 - Synergistic infrastructure, market, and financial services
3. Given the resource limitations and numerous choices, investments in an enabling environment must be prioritized and sequenced with great care.
→ Mechanisms for strategy development, priority setting, assessments, and M&E



Innovation Capacity-Skills

1. For an innovation system to be effective, the **capacity of its diverse actors** (incl. policy makers) must be built and strengthened
2. **Stronger technical skills must be complemented with functional expertise**
 1. Scientific, technical, and entrepreneurial skills
 2. Skills and routines related to policy analysis, IPR, management, communication, ...
3. **Agricultural education and training (AET) institutions** - develop human resources and provide knowledge and technology.
4. **Matching supply with demand of agri-food system:**
 - Overall greater investments
 - Reforming/reorienting -- long-term reform process, curriculum reform, technician training, on-the-job training
5. **Transforming role of ICT - better knowledge sharing and better use of available information and knowledge at the center of innovation processes – affects entire AIS.**



What does this mean in practice?

- Integrated & institutional approach to addressing agricultural innovation
- Primary focus on national & sub-national & sub-sectoral AIS
- AIS themes work in synergy – need to identify the most realistic and appropriate combination
- Aligned with productivity, competitiveness, climate-resilient agriculture, and inclusive & green growth ..
- Multi-sectoral work



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AIS varies .. three worlds of agriculture & AIS

- **AGRARIAN:** Usually relatively small, mostly in sub-Saharan Africa countries that depend primarily on staple food crop production, and rely on agriculture for their economic growth. The agricultural markets are not well integrated, transport and logistics are costly, and private investment in rural areas is still limited.
- **TRANSITION:** Mostly countries in Asia, where economic growth is now led by the industrial sector and the economy is rapidly urbanizing. Growing urban demand, especially for higher-value products such as livestock and horticultural crops, is resulting in structural shifts in the agricultural economy. Even so, large areas of the rural economy still have high poverty rates and are not integrated into the growth process. *Many developing countries in South Asia, East Asia and the Pacific, the Middle East, and North Africa are in this category, including China and India.*
- **URBAN-MATURE:** Countries have most of their population in urban areas, and the agricultural sectors are well integrated into global markets. Poverty is principally an urban problem. *Most countries in Latin America and the Caribbean and many in Europe and Central Asia are in this category.*

Trends & approaches ...

- **Coordination:** From limited ministerial, R-E links, STI/research council to research, commodity and PO networks/platforms, toward AIS-IS wide consistent consultation & priority setting
- **Research:** from public & PTD toward research-university-PO collaboration, to co-innovation, FDI and PPPs with co-funding
- **Private sector:** from input provision & licensing agreements toward PPPs on R&D and services, diverse business models, own R&D units
- **RAS:** from limited & public oriented toward pluralistic, & demand-driven, integrated, highly PS oriented consultancy and brokering services
- **Innovation skills:** from severe limitations (#s and skills) to high technical & professional, balance b/w tertiary vs. vocational, links to industry
- **Enabling policy & environment:** from highly misaligned, to at best part of the IS policy decisions and enabling business context



xxx

Senegal
Uganda
Kenya

Vietnam

China
India

Chile

Holland
Australia

WB ARD Project Typology and Role of S&T&I

Local focus
Limited
ST but
innovation

Sub-regional
/National
Significant
ST &I inputs



South-South
CGIAR Interface

Livelihood –
CDD projects

**Productive
Partnership
projects**

**Agr. Competitiveness/
Agribusiness**

**Advisory Services
and/or R&D
Regional centers of
excellence**

**Projects with strong IS
features:**
• AIS projects
• Multi-sectoral IS

Local collective action – SHGs, councils...	Sub-national/ Commodity specific; Coordination of sellers and buyers; RPOs & brokering.	Enabling environment - esp. for business development;	Ag technology-services with a strong ST focus - organizational change; end-user focus but limited / increasing PS input	Strong STI; Moving beyond research to address growth – balance b/w basic and adapted but operations emphasis on the latter; Organizational change;
Social, technical & market focus	MGs for technical, business, market	Collective action for (sector)sub-sector;	Coordinated /inclusive agenda setting; Enhanced links b/w research & extension;	Increasing policy engagement, stakeholder coordination and mechanisms for (A)IS intelligence & evaluation; Enab. regulatory & business environ.
		MGs: business upgrade, market entry, technology...: BDS, finance, infrastructure...	GRGs & TA; Rarely MGs plus incubation and IPR support. Gradual focus on AET: skills for the market & long-term.	Alliances & PPPs; National STI Funds; Commercialization & business innovation – Innovation Funds, Incubators/TTOs, Tech Parks.

Opportunity to strengthen portfolio & Main project components

- Consider integrating Competitiveness and Agric. Technology-services projects
- Co-locating separate competitiveness and R&D projects - parallel and coordinated projects that take advantage of the synergies
- Scale up by integrating/coordinating CDD with the above?
- Coordinating with overall IS projects – synergies & instruments
- Moving toward NAIS approach wherein the core components are:
 - Country level mechanisms for policy, information gathering, intelligence , evaluation
 - Enabling investments, such as IPR and biosafety regulatory frameworks
 - Enhancing knowledge base (research institutes, advisory services, and/or universities & training institutes → building skills base; reforming for better match b/w supply and demand; international alliances)
 - Fostering market integration/commercialization – specific financing mechanisms and facilitation/support services

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Thank You.

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