Partnerships in Agricultural Research
Evidence from the international agricultural research system

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Changing Realities

- Agriculture and Food Systems
  - Food chain is demand driven: Consumer as “king”
  - Globalization
  - More market, less government intervention
  - New technologies: information and bio-sciences
  - Food competes with energy

- To address these changing realities large scale public sector investment alone is no longer an option
Working Hypothesis

Public Sector (Public Interest) → Impact

Private Sector (Private Interest) → Impact

Impact

Higher
Faster
Cheaper
Partnership: A Narrow Definition

Any type of formal or informal arrangement between public and private entities, such as knowledge-sharing networks, technology financing, or subcontracted research.
Partnership: A Wide Definition

Collaborations between public and private entities in which partners

- jointly plan and execute activities
- to accomplish mutually agreed objectives
- while sharing costs, risks, and benefits
‘I’m going to explain Public, Private Partnerships until you feel drowsy and fall asleep’
Public Spending on Agricultural R&D, 1981-2000

- SSA (44)
- AP (28)
- LAC (27)
- WANA (18)
- Developing countries, subtotal (117)
- Higher-income countries, subtotal (22)
R&D Expenditures by Sector

2000 total = $36 billion (2000 international prices)

- Developed, public: 34%
- Developed, private: 2%
- Developing, public: 36%
- Developing, private: 28%

Source: ASTI (2006)
Dimensions 2007

- **Syngenta**
  - R & D expenditures: $US 830 Mio

- **CGIAR**
  - Funding (2005): $US 448 Mio
The Economic Intuition

- PPPs overcoming barriers to the exchange and use of knowledge for development:

  Examples

  - Private firms won’t invest in plant varietal improvement for poor farmers
  - Intellectual property rights do not adequately reward innovators
  - Public and private scientists do not trust each other enough to share information
The Knowledge Gap

- But what do we really know about PPPs?
  - Do they reduce the costs of research (cheaper)?
  - Do they facilitate innovation (faster)?
  - Do they enhance the impact of research on the poor (higher)?

- IFPRI’s goal: To find out how PPPs in agricultural R&D stimulate greater investment in pro-poor science, technology, and innovation
Unit of Analysis: The CGIAR

- **IFPRI**
  - Food policy
  - Washington, D.C., USA

- **CIMMYT**
  - Maize and wheat
  - Mexico City, Mexico

- **CIAT**
  - Tropical agriculture
  - Cali, Colombia

- **CIP**
  - Roots and tubers
  - Lima, Peru

- **Bioversity Intl**
  - Agricultural biodiversity
  - Rome, Italy

- **WARDA**
  - Rice in West Africa
  - Bouaké, Côte d’Ivoire

- **ICARDA**
  - Agriculture in the dry areas
  - Aleppo, Syria

- **ICRISAT**
  - Semi-arid tropical agriculture
  - Patancheru, India

- **WorldFish**
  - Penang, Malaysia

- **IRRI**
  - Rice
  - Los Baños, Philippines

- **IITA**
  - Tropical agriculture
  - Ibadan, Nigeria

- **ILRI**
  - Livestock
  - Nairobi, Kenya

- **IWMI**
  - Water resources
  - Colombo, Sri Lanka

- **CIFOR**
  - Forestry
  - Bogor, Indonesia

- **World Agroforestry**
  - Nairobi, Kenya

- **IFPRI**
  - Food policy
  - Washington, D.C., USA

- **World Agroforestry**
  - Nairobi, Kenya
Data Sources

- **Document analysis**
  - Project descriptions, progress reports, published articles, material transfer agreements, etc.

- **Email survey**
  - Questions on project goals, purposes, funding, etc., with 12 of 15 (75%) centers responding

- **Semi-structured key informant interviews**
  - Interviews held with CGIAR scientists and partners in projects at 4 centers
Findings: A Typology of Projects

- PPPs can be classified into five general types
  - Resourcing
    - Projects funded by Monsanto, Tata Foundations
  - Contracting
    - Outsourcing laboratory tasks, renting out Center facilities
  - Commercialization
    - Distribution of CGIAR breeding materials to seed companies
  - Frontier research
    - Cutting edge research on livestock vaccines, apomixis
  - Value chain development
    - Improving shea butter, allanblackia supply chains
Findings: Project Characteristics

A breakdown of surveyed PPPs in the CGIAR

- Private Charitable Foundations: 10%
- Private Research Organizations: 6%
- Producers Associations: 13%
- Domestic companies: 22%
- Foreign Companies: 41%
- Industry Associations: 8%
Findings: Project Objectives

Goals and purposes of surveyed PPPs in the CGIAR

Purpose
- Reduce research costs
- Develop pro-poor products
- Access new scientific knowledge
- Increase outreach to poor clients
Some Implications

- **Foreign companies:** Exclusive, monogamous partnerships
  - Transfer of proprietary technologies from private to public

- **Domestic companies:** Multi-stakeholder platforms and private sector development
  - Dissemination of seeds to small farmers; bringing key players together to upgrade a supply chain

- Generate funding for centers in an era of scarcity

- Small proportion: Joint research on cutting edge science
  - May reflect knowledge and technology gap between private public

Photo credit: Spielman 2006
Cost Management

- PPPs contribute significantly to reducing R&D costs for centers by
  - Providing new sources of funding
  - Outsourcing to lower-cost service providers
  - Making prohibitive R&D possible

- **But** reductions can also be quickly offset by the costs of coordinating collaborative research
Example: Maize Improvement in Africa

CIMMT, KARI, EIAR, NARO, DRD
and other public sector organizations

Syngenta Foundation, Rockefeller Foundation, DFID, and other donors

Western Seed, Lagrotech, Freshco and other local firms

CRS, CARE, SCODP and other non-governmental and civil society organizations

BASF, Syngenta, Pioneer, Monsanto and other global cropscience firms
Innovation

- PPPs promote innovation by
  - Improving access to advanced science and private Intellectual Property
  - Fostering change in organizational cultures, behaviors

- *But* few PPPs realize synergies in R&D through “co-innovation processes” i.e., real collaboration
Example: Livestock Vaccines for Africa

- **The problem:** Good public sector research without capacity to pursue regulatory approval, product development and commercialization of a vaccine

- **The project:** Development of a vaccine that was safe, effective, affordable and easily deliverable to livestock holders in East Africa

- **Results:** New experience for public researchers on when to kill a project if proof of concept isn’t forthcoming
Risks

- Public & private partners face extensive risks
  - Unique risks of a research project
  - Systemic risks of developing-country agriculture
  - Coordination risks: commitment, trust

- *But* few PPPs are designed with risk management or mitigation strategies in mind
Poverty Reduction

- PPPs potentially reduce poverty by
  - Directly improving livelihoods at the individual and household levels
  - Strengthening sectoral performance and economy-wide linkages
  - Conserving and unlocking genetic diversity and natural resources for future generations

- But few PPPs are designed with ex ante analysis of the poverty impacts
Conclusion: Six Elements of Success

1. Build platforms to identify opportunities, assign roles and responsibilities
2. Commit resources to both the project activities *and* coordination efforts
3. Design mechanisms to facilitate knowledge exchanges and resolve conflicts
4. Develop benchmarks and decision-points to evaluate progress and choose to continue or terminate
5. Create formal and informal strategies to manage and mitigate project risks
6. Explicit analysis of the impact pathways through which projects affect poverty