

New Approaches for Data Collection on National Agricultural Research System

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Uses of ASTI: Analyzing Regional Trends and Characterization of Agricultural R&D Systems

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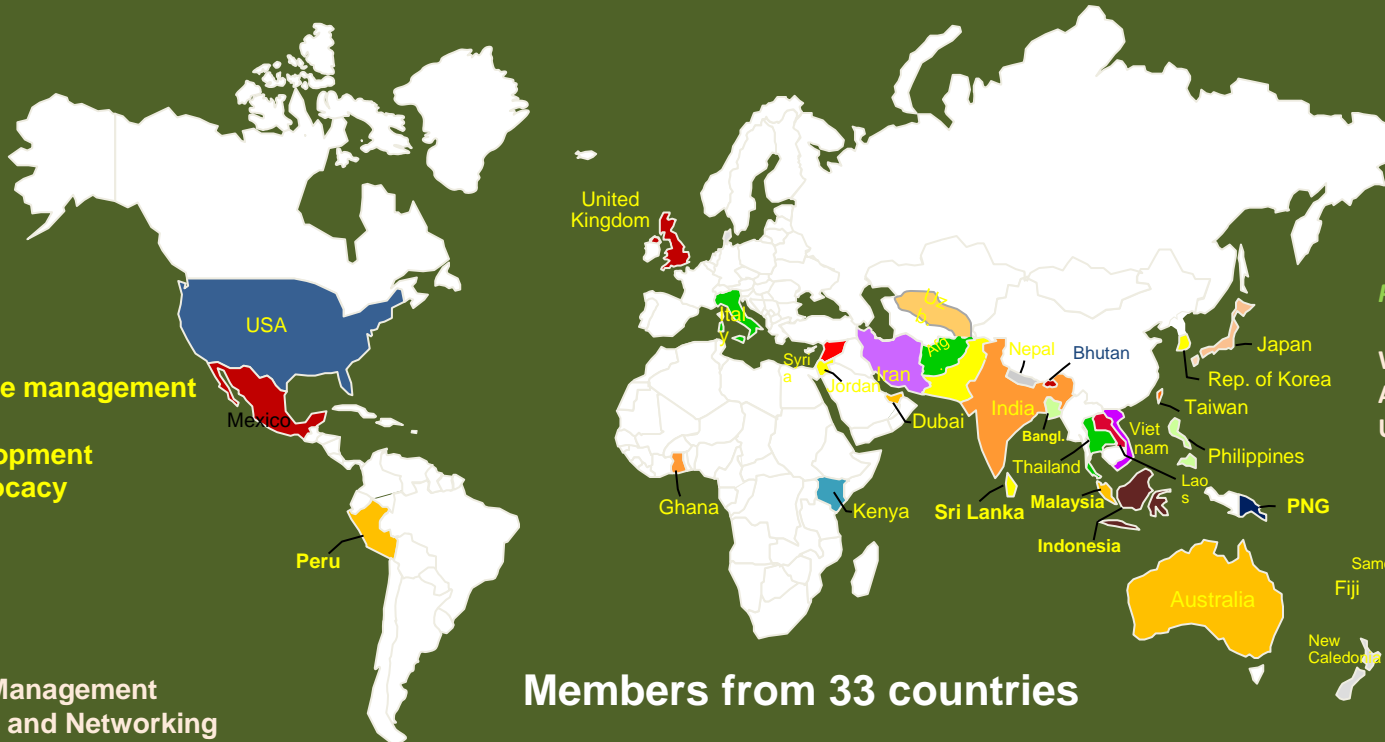
APAARI

Strengthening Agri-food research and innovations
for sustainable agricultural development in Asia and the Pacific
Apolitical, membership based, multistakeholder platform



- Established in 1990
- FAO initiative

- Legal Status being Revisited
- Q-IGO status in pipe-line



Members from 33 countries

Projects sponsors

World Bank, WTO, EU, AFD, FAO, ACIAR, USDA, GFAiR, FICCI

Thematic areas

- Natural resource management
- Risk mitigation
- Inclusive development
- Policy and advocacy

Key Programmes

- Knowledge Management
- Partnerships and Networking
- Capacity Development
- Policy and Advocacy

KPMG Growth Strategy being implemented from 2023

APAARI's Contribution to Implementing ASTI in the Asia-Pacific Region



Established in 1990 to strengthen agri-food research in Asia-Pacific. The partnership was formalized in 2015 during high-level policy dialogues, marking a significant milestone

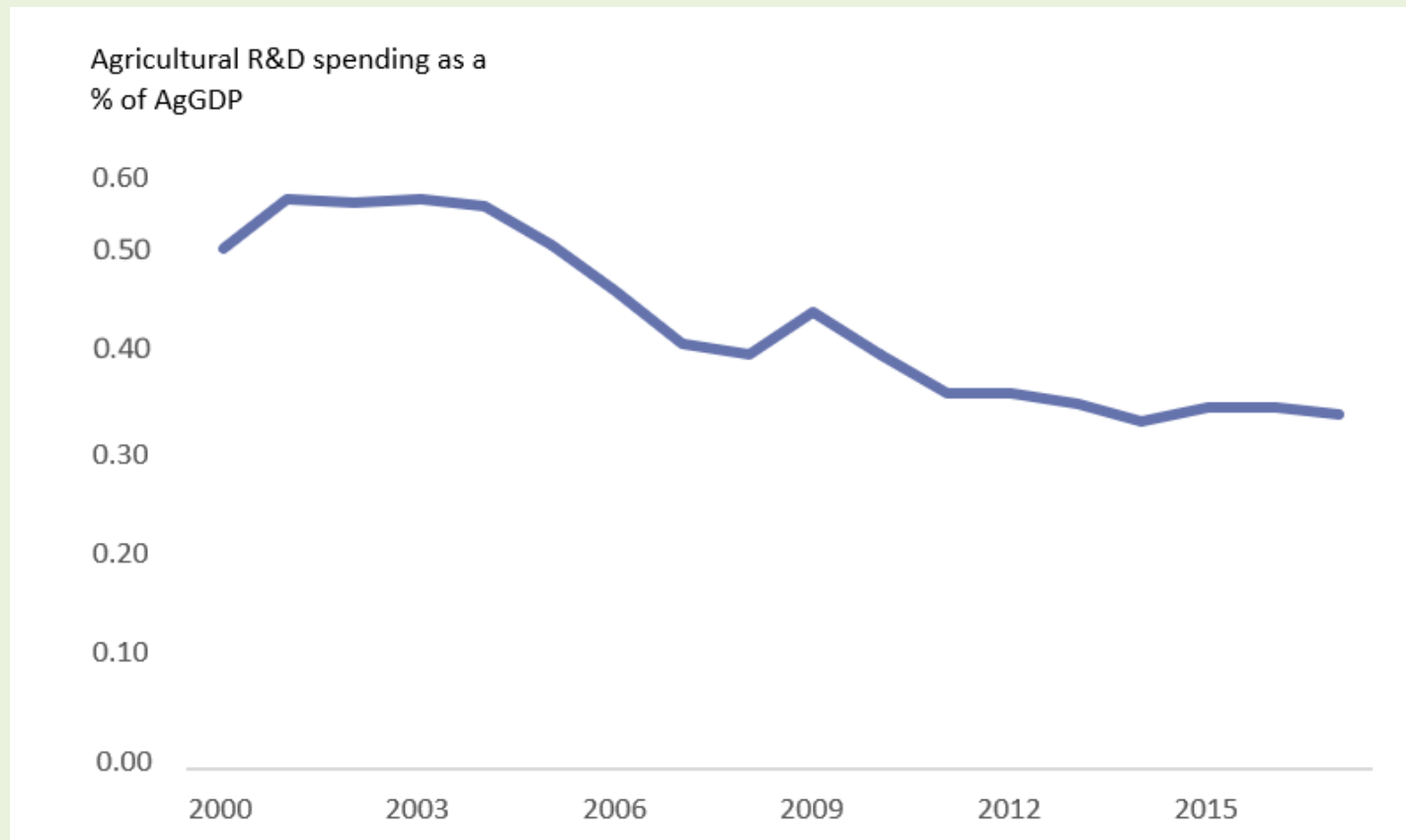
Acted as the regional facilitator for ASTI in collaboration with IFPRI

Provided guidance for implementing ASTI surveys in multiple countries. Supported countries in the region in developing focused R&D frameworks.

Connected governments, research institutions, universities, and nonprofits for collective action.

Highlighted gaps in funding and redirected attention to underfunded areas like climate resilience.

Regional agricultural R&D spending as a share of AgGDP, 2000–2017





More ambitious policy measures are needed to

- tackle Southeast Asia's underinvestment in agricultural research
- ensure that the research conducted targets well-defined areas of priority
- ensure that research institutions stay adequately staffed into the future
- strengthen research linkages both in-country and at the subregional level.

Is agricultural R&D investment and focus consistent across Asia-Pacific?



No



- Focal points identified
- Data collection methodology harmonized
- Challenges observed
- ASTI visibly imbibed in national strategic Plan/ Used for Policy decisions in investment (Vietnam, Indonesia, Laos....)

Why Trends Differ?



Factors Influencing Differences:

- Economic capacity
- National priorities
- Dependency on external funding

Migrating to FAO: Strengthening Characterization of R&D Sector



Sustainability:

- Reduce dependency on donor funding.
- Institutionalize data collection within National Statistical Systems (NSS).



Global Standards:

- Align with United Nations' methodologies for consistency.
- Ensure harmonized and comparable data across countries.



Enhanced Relevance:

- Increase country ownership and local validation of data.
- Expand focus to underrepresented R&D areas and emerging challenges.

The ASTI data allows for a comprehensive analysis of the agricultural R&D systems in the Asia and Pacific region, enabling policymakers and stakeholders to make informed decisions and develop effective strategies to support and enhance agricultural innovation.

Agricultural R&D investment intensity: A misleading conventional measure and a new intensity index



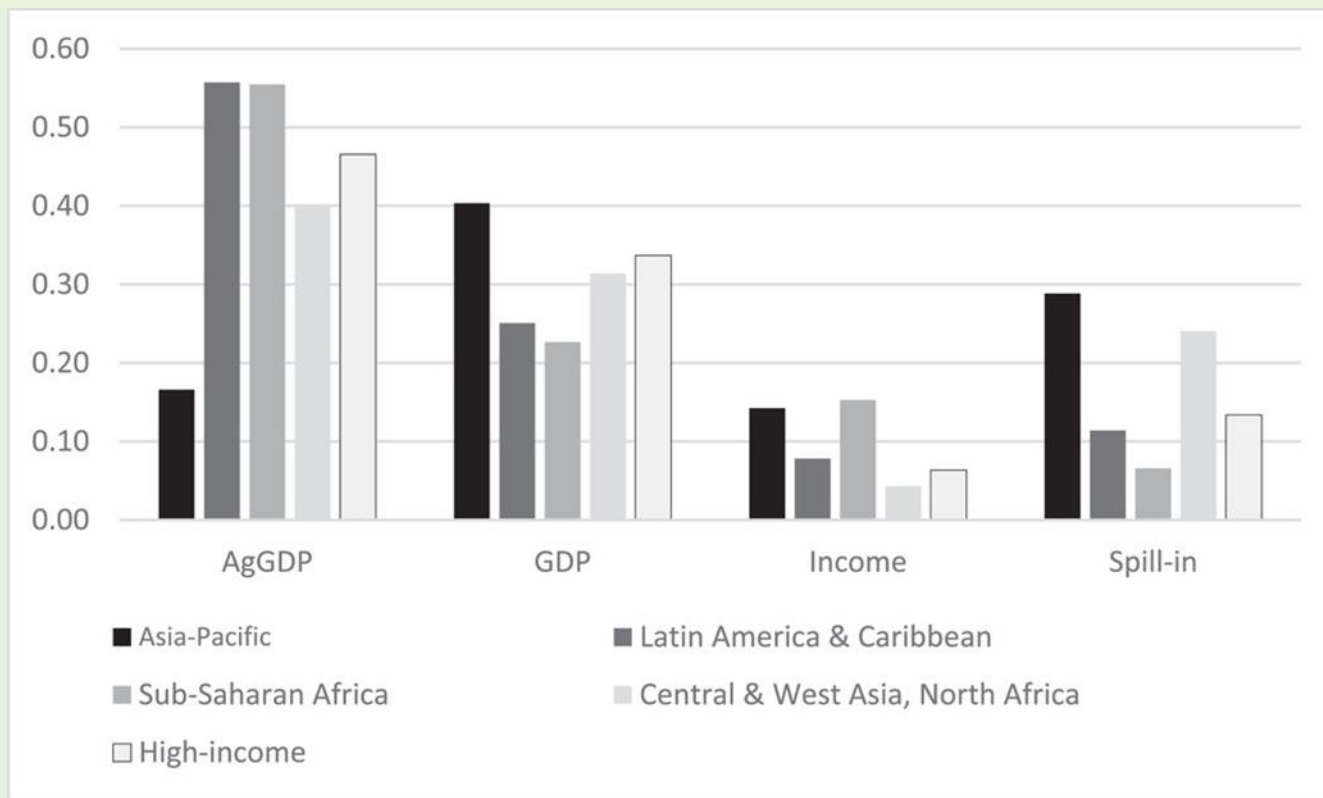
- The conventional wisdom that developing countries are significantly underinvesting in agricultural research and development (R&D) has been challenged.
- It is now argued that IR is an inadequate indicator to measure and compare agricultural research effort at the country level.
- This is because this measure assumes that the level of R&D investment in every country should be proportional to the size of its agricultural sector.

Agricultural R&D investment intensity: A misleading conventional measure and a new intensity index



- The literature on R&D investment and the analysis conducted showed that the capacity of countries to invest does not depend only on the size of their agricultural sector but also on other structural variables not controlled by policymakers.
- To overcome the problems it is proposed to have a multifactored indicator of R&D intensity that combines four different intensity ratios, each relating R&D investment to one of four variables that are proxies for structural characteristics that affect a country's possibilities for investment.

Agricultural R&D investment intensity: A misleading conventional measure and a new intensity index



Investment Scenarios for Food Security in Asia and the Pacific



Three types of agricultural research and investment strategies

- ❑ One set of scenarios increases **agricultural productivity** through differing levels of investment by IARCs and NARS, with different levels of research efficiency.
- ❑ A second set of scenarios focused on investments to **improve water management** through expansion in irrigation and increases in basin-level water use efficiency.
- ❑ A third set of scenarios explores **infrastructure investments** to reduce marketing costs.

Investment Scenarios for Food Security in Asia and the Pacific



- ❑ Population is projected to rise by 18% from 2015 to 2030, with South Asia accounting for two-thirds of the population increase. Rapid urbanization is projected to continue, with the proportion of the population in urban areas increasing from 48% to 55% from 2014 to 2030.
- ❑ The combination of income growth and urbanization will not only increase food demand but will induce diversification of demand and production away from cereals and roots and tubers and into meat, oils, and fruits and vegetables.
- ❑ Cereal production in Asia and the Pacific is projected to increase by 11%, meat production by 26%, production of fruits and vegetables by 28%, oilseeds by 44%, pulses by 16% and roots and tubers by 8% from 2015 to 2030.

Investment Scenarios for Food Security in Asia and the Pacific



- ❑ Increased investment in IARC and NARS agricultural R&D achieves major reductions in hunger and child malnutrition.
- ❑ Each of the three agricultural R&D scenarios reduces hunger and malnutrition through increased food production, lower prices, and higher incomes.
- ❑ Higher investment in international research related to Asia and the Pacific commodities and higher investment in NARS in Asia and the Pacific with increased investment in advanced breeding technology, has the highest impact.

Future Productivity Growth Through Increased Agricultural Research Investment

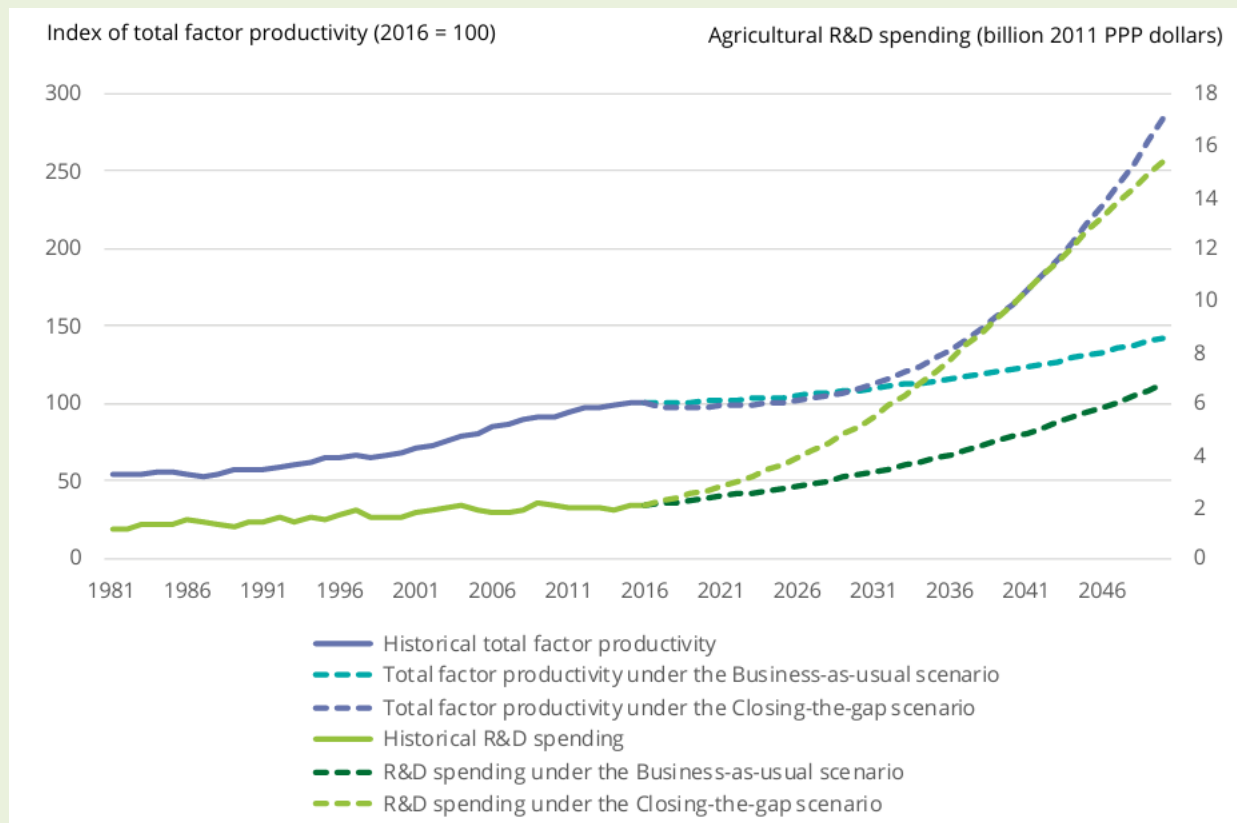


- Increased agricultural research spending would trigger considerable agricultural productivity growth across Southeast Asia.
- Prioritizing R&D investment in high-value commodities would result in faster future productivity growth in Indonesia, Malaysia, the Philippines, and Vietnam.
- Prioritizing R&D investment in staple crops is still a prudent course of action in Cambodia, Laos, Myanmar, and Thailand.
- Attaining self-sufficiency in rice production by 2050 is highly unlikely in Malaysia and challenging for Indonesia. Much higher investment in rice research, coupled with a large increase in land area under rice cultivation, would be required.
- The remaining Southeast Asian countries are projected to maintain rice self sufficiency to 2050, even at relatively modest rates of future growth in rice research investment.

Future Productivity Growth Through Increased Agricultural Research Investment



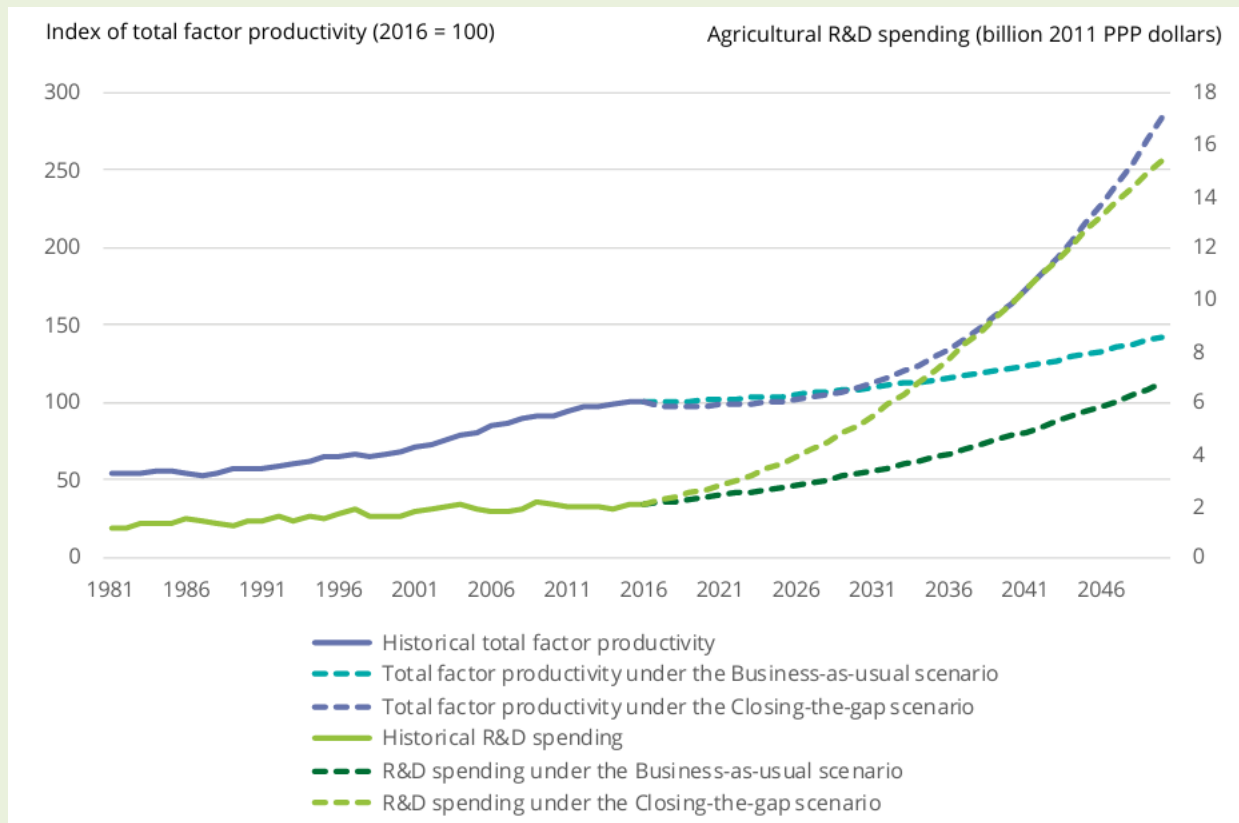
Regional productivity growth projections to 2050 under two investment scenarios



Future Productivity Growth Through Increased Agricultural Research Investment



Projected average yearly growth in agricultural productivity under two investment scenarios, 2016–20250



Importance and output of ASTI



- More ambitious policy measures are needed to tackle Southeast Asia's underinvestment in agricultural research
- Ensure that the research conducted targets well-defined areas of priority
- Ensure that research institutions stay adequately staffed into the future
- Strengthen research linkages both in-country and at the subregional level.

Major Categories of NARS in Developing Countries



The nation's research needs in agriculture are guided by its National Agricultural Research System (NARS).

- NARS in developed nations are shaped mainly by the external demands in relation to the internal needs.
- The past colonial history had a very significant influence on the organization and functioning of many developing country NARS in Africa, Asia and Latin America.
- The developing country NARS have evolved over the years, and there exists wide variations, in terms of organizations and management of agricultural research, across the countries in Africa, Asia and Latin America.
- The developing country NARS can be broadly grouped into four major categories. They are:

Major Categories of NARS in Developing Countries



1. Ministry Model

- Research is conducted under the bureaucratic structure of one or more ministries.
- Institutions responsible for research have limited control over decision-making, particularly in resource management.

2. Autonomous Model

- Research responsibilities are assigned to an administratively independent organization.
- Decision-making on programs, administrative policies, and resource allocation is managed by an independent Board of Directors or Governors.

3. Agricultural Research Council Model

- A variation of the Autonomous Model, emphasizing coordination rather than direct research involvement.
- Research is carried out in a multi-organizational setting, coordinated by a central body.

4. Multi-Organizational Model

- Research is conducted by various independent agencies, including ministries, autonomous or semi-autonomous agencies, and universities.
- There is no central coordinating authority under this model.

Reflection from APAARI



- ❑ Co designing of survey questionnaire
- ❑ Periodic feedback mechanism
- ❑ Regular monitoring of changing trend
- ❑ In house & regional capacity building for highlighting methodology, importance & sustainability of ASTI
- ❑ Giving due importance to the qualitative indicators

Reflection from APAARI



- ❑ NARS model and size to be kept in focus for collection of data.
- ❑ Awareness of appropriate application of data collected for various purposes.
- ❑ Need for data collection strategy
- ❑ Indicator- Agrifood system transformation
- ❑ Regional review of progress of ASTI

Conclusion And Policy Recommendations



Public Infrastructure as a Catalyst:

- Strengthen public infrastructure to support advanced technologies in the agricultural value chain.
- Examples include sensors for food tracking, quality monitoring, and automation in the supply chain.

Policy Implications:

- Align investments with national priorities to address productivity gaps and future challenges.
- Foster collaboration between public and private sectors to maximize resource efficiency and innovation.

Enhancing Public and Private Investment:

- Expand public investments in agricultural R&D, irrigation, and rural infrastructure to address foundational needs.
- Evidence shows that public investment in R&D can stimulate private-sector contributions, particularly in applied research

Innovative Funding Mechanisms:

- Develop funding complementarities, combining public and private resources to amplify impact.
- Options include:
 - **Grants and government-backed loans:** Reduce financial risks for private investors.
 - **Blended finance:** Strategically leverage public and development finance to mobilize private-sector funding