Higher Education Institution Engagement in Innovation Ecosystems in LMICs: Findings from the Philippines

Dr. Francis Mark A. Quimba, *Senior Research Fellow*
Abigail E. Andrada, *Research Analyst II*
Mark Anthony A. Barral, *Supervising Research Specialist*

Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Outline


STUDY CONTEXT: AGRIBUSINESS INNOVATION ECOSYSTEM
SAMPLE AND METHODOLOGY
RESULTS AND ASSESSMENT OF FINDINGS
POLICY RECOMMENDATIONS

Study Context: Agribusiness Innovation Ecosystem

HEIs and Innovation Ecosystems in the PH

New government and university programs have been developed to address challenges in the innovation ecosystem (STRIDE 2020) such as:

Establishing industry connections to government and academia

Spurring entrepreneurship, education, human capital, research quality, and output:

Enabling knowledge transfer and collaboration. However, procurement regulations remain a major barrier to innovation

Innovation Performance of the PH

The Philippines dropped from 51st (2021) to 59th of 132 countries on the Global Innovation Index (2022).

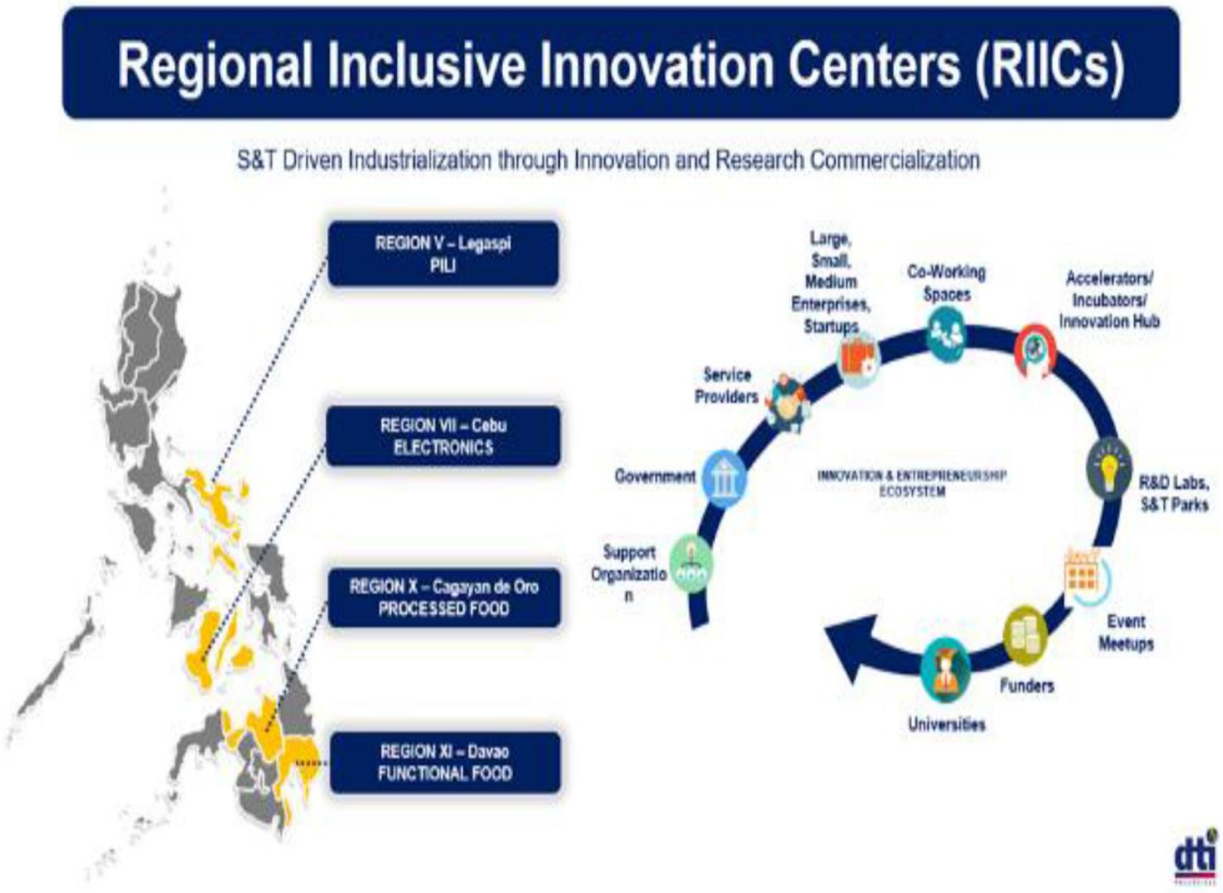
This drop was driven by decreases in:

- Human Capital & Research (sub-indicators: Education & Tertiary Education);
- Knowledge & Technology Outputs (sub-indicators: Knowledge Creation & Knowledge Impact);
- Creative Outputs (Sub-indicator: Creative Goods and Services);
- Intellectual Property (Sub-indicators: Industrial Designs, Cultural and Creative Service Exports; Utility Models; Patent Families; University-Industry R&D Collaboration; Trademarks)

Study Context: Agribusiness Innovation Ecosystem

Addressing Innovation Performance

- DOST has expressed continued **commitment to improve the investments in science and technology (S&T) facilities and laboratory networks** to support local industries
- **Science for Change Program (S4CP)**
- HEIs can facilitate **funding** through DOST-PCAARRD, DOST-PCIEERD, DA-BFAR, and CHED
- **Agricultural research** supported by DA's Bureau of Plant Industry; DOST's Technology Development Institut; and DA's Philippine Center for Postharvest Development and Mechanization (PhilMech)
- DTI established **Regional Inclusive Innovation Centers (RIICs)** to connect the innovation and entrepreneurial ecosystem



Source: DTI (https://innovate.dti.gov.ph/programs/riics/)

Study Context: Agribusiness Innovation Ecosystem

Region VII Innovation Landscape

17th

The **2022 Cities and Municipalities Competitiveness Index (CMCI)** of highly urbanized cities ranked Cebu City 17th in the innovation pillar, Mandaue 18th, and Lapu-Lapu 31st

Widespread use of the **Electronic Business Permit and Licensing System (eBPLS)** software and online payment facilities

Recently generated notable **IP filing figures**

Established a **Regional Inclusive Innovation Committee (RIICom)**

R&D expenditures of PhP 795 million+, the sixth highest among the regions—in 2018

- Agribusiness encompasses all activities related to agriculture.
- Involves farmers, processors, distributors, and consumers in a system responsible for producing, processing, transporting, marketing, and distributing agricultural goods (BOI n.d.).
- Agribusiness mainly contributes to the regional economy by supplying inputs, such as food and beverage, wood products, paper, and furniture, to industry
- While Region VII is dominated by manufacturing & services sectors, agribusiness is considered an emerging industry

1.2% Contribution to total employment

0.9% Agriculture, fisheries and forestry establishments in Region 7

5% Agri-business related manufacturing of the total number of Region 7 firms

Study Context: Agribusiness Innovation Ecosystem

HEI Involvement in R&D and Innovation – The NICER and CRADLE Programs

Despite the limitations in R&D personnel and centralized sources of funding for R&D, there have been bright spots in R&D and innovation in recent years. These have been achieved through the NICER and CRADLE projects of the S4CP.

Current Issues Related to HEI Involvement

- Funding for HEIs is being focused on Metro Manila
- Emerging Innovation and R&D Participation of HEIs
- HEIs not regarded as important sources of information by the private sector
- Conflicting perspectives between HEIs and other actors on the timeliness of research and innovation production

Methodology and Sample

Research Questions

1. What are ecosystem actors' perceptions of the level of development, functionality, and purpose of the innovation ecosystems under study?

2. What roles are higher education institutions in this study currently playing in the innovation ecosystems of focus?

3. What is the level of coordination and partnership between key actors in the HEIs under study and the actors engaged in the innovation ecosystems under study?

4. What resources do the stakeholders at the higher education institutions included in the study need to be able to engage effectively in the innovation ecosystems of focus?

5. What are ecosystem actors' perceptions of higher education institutions' provision of key resources needed for strengthening the Agribusiness Innovation Ecosystem in Region VII?

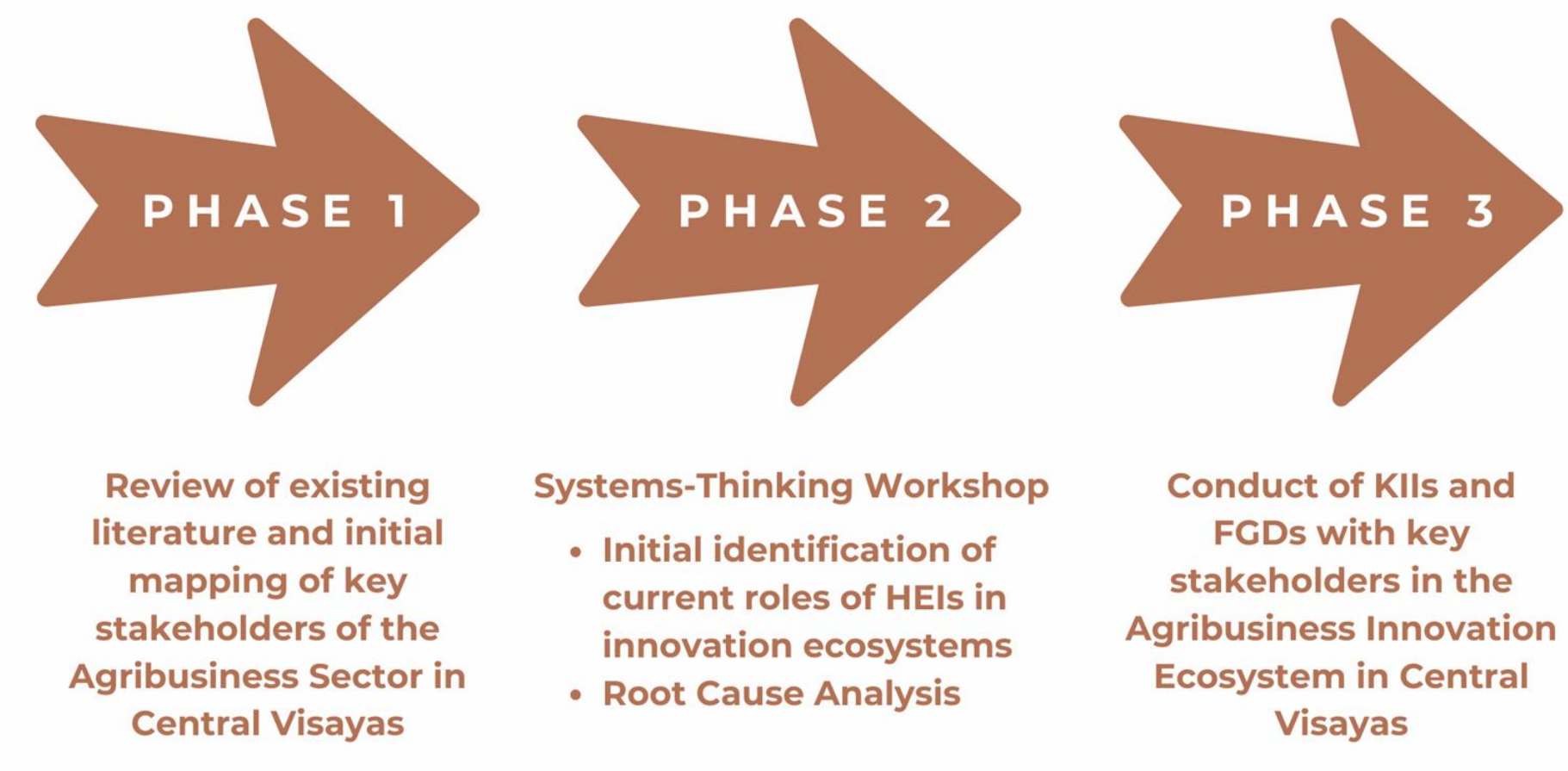
6a. Government policy: How does the policy/regulatory environment (legal formation, tax implications of investment, intellectual property protection, level of policy responsiveness to emerging new fields and needs) shape the incentives and disincentives for HEI engagement in innovation ecosystems?

6b. Higher Education Policy: How do higher education institutions' policies influence the incentives and disincentives for HEI engagement in innovation ecosystems (e.g., faculty and students' proclivity to engage and business interest in collaborating with HEI stakeholders to meet innovation needs)?

7. How do market-related factors in each country shape opportunities for HEI engagement in innovation ecosystems?

8. How do context-specific norms, perceptions, and values affect HEI actors' proclivity to engage in innovation ecosystems?

Methodology Overview



Sample

Stakeholder Groups		FGD	KII
Government Representatives		**13**	**2**
Regional Offices of National Government Institutions		7	1
Local Government Units within Region VII		6	1
HEI Representatives		**10**	**6**
Public		7	4
Private		3	2
Private Sector Representatives		**9**	**4**
Industry		3	2
Development Leaders		6	2
Total		**32**	**12**
Gender	Male	13	3
	Female	19	9

Results and Assessment of Findings

RQ1: Outcomes/Results

What are ecosystem actors' perceptions of the level of development, functionality, and purpose of the agribusiness innovation ecosystem in Region VII?

The purpose of the Agribusiness Innovation Ecosystem is to **drive sustainable economic growth in the region** through the development of new products and processes that can **address food security** and **increase the income of farmers.**

While key functions of the AIE are being fulfilled to a certain extent, such as knowledge and resource sharing, the AIE remains fragmented.

The innovation ecosystem serves as a network for knowledge and resources sharing.

Ecosystem actors view the agribusiness innovation ecosystem as limited and in its early stages

RQ2: HEI Roles in the Agribusiness Innovation Ecosystem

What roles are higher education institutions in this study currently playing in the agribusiness innovation ecosystem in Region VII?

HEIS ARE PERCEIVED BY IE ACTORS TO PRIMARILY FUNCTION AS KNOWLEDGE SHARERS, CONVENERS, INNOVATORS, AND TRAINERS.

Knowledge Sharers: Disseminate information and expertise, especially to researchers, companies and students interested in furniture or fiber industry which is part of theAIE

Conveners: HEIs have the ability to bring together diverse stakeholders, including those from the government, private sector, civic organizations, farmer groups, and other educational institutions.

Innovators: HEIs play a role in advancing agricultural technology, processes, and products through research and development

Trainers: Impart knowledge to students and industry professionals in both technological aspects and entrepreneurship

RQ2: HEI Roles in the Agribusiness Innovation Ecosystem

Support for Research and Development

- Existing partnerships between HEIs and agricultural enterprises have been established through knowledge transfer of agri-technologies and innovations to address the research requirements of the latter.
- HEIs are also at the forefront of reviving traditional industries (e.g. work on cinnamon industry; sustainable farming practices; organic hog farming; and product development)
- HEIs are addressing environmental concerns through biodiversity conservation research and exploring the potential of agri-tech solutions.
- This multifaceted approach to research demonstrates the significant contribution of HEIs to the agribusiness innovation ecosystem, fostering sustainability, economic growth, and technological advancement in the agricultural sector.

RQ3: HEIs Partnerships with Other Actors within the Agribusiness Innovation Ecosystem

What is the level of coordination and partnership between key actors in the HEIs under study and the actors engaged in the agribusiness innovation ecosystems in Region VII?

THE DEGREE OF COOPERATION IN GENERAL IS HIGH

- Most stakeholders in the ecosystem affirm that **collaboration between HEIs and other participants in agribusiness is strong**. They highlight the robust connections between government, the private sector, and HEIs as evidence of the substantial collaboration among key players in the Agribusiness Innovation Ecosystem.

- Some individuals **remain skeptical** about the engagement and active participation of HEIs with stakeholders in the innovation ecosystem, primarily due to the observed limited activity within HEIs. This is **attributed to the early stage of the ecosystem's development** and conflicts of interest that emerge

Partnerships between HEIs and stakeholders are influenced by:

1. Technology
2. Funding
3. Infrastructure
4. Extension services
5. Human resources
6. HEI Management
7. Innovation Council

RQ4: HEIs Resource Needs in the Agribusiness Innovation Ecosystem

What resources do the stakeholders at higher education institutions included in the study need to be able to engage effectively in the agribusiness innovation Ecosystems in Region VII?

HEIs require the following to attain the objectives of the Agri-business innovation ecosystem:

CAPACITY BUIDING AND PROFESSIONAL DEVELOPMENT OPPORTUNITIES

- To enhance their skills, knowledge, and expertise in agribusiness innovation;
- Develop entrepreneurial skills among faculty /researchers
- Training on developing partnership and collaboration skills

FINANCIAL RESOURCES AND PHYSICAL CAPITAL

- HEIs require funding to pursue research ideas
- Funding is also crucial for infrastructure and physical requirements for the conduct of research
- While government has been crucial in supporting innovation among HEIs, not all needs receive funding

FINANCIAL INCENTIVES AND RECOGNITION

- Incentives structure in place to encourage faculty and researchers to engage in the AIE are insufficient
- While non-monetary forms of recognition (e.g. presidential citations) are valuable, there is also a need for financial incentives to encourage and reward faculty/researchers

ROBUST SUPPORT FROM HEI LEADERSHIP AND ADMINISTRATION

- Policy guidance from HEI leadership is important in engaging stakeholders to engage in the AIE
- Underscore the importance of having a mandate to support innovation

SUSTAINABLE COLLABORATION AND PARTNERSHIPS

- Important to establish partnerships/collaborations that align with the priorities and goals of the HEIs
- Collaboration with other HEIs and experts is crucial to support a wide range of expertise and specialties

DISSEMINATION PLATFORMS FOR HEIs

- Difficulties in working with HEIs due to lack of awareness on HEI innovations and research
- Centralized database or repository for HEI research/innovations
- Research fair for HEIs to showcase their research

RQ5: HEI Resource Provision to Agribusiness Innovation Ecosystem

What are ecosystem actors' perceptions of higher education institutions' provision of key resources needed for strengthening the agribusiness innovation ecosystems in Region VII?

HUMAN CAPITAL AND EXPERTISE ARE HOUSED WITHIN HEIs

- Stakeholders perceive HEIs as having the necessary manpower and expertise to conduct research on agribusiness and advance innovation

PHYSICAL INFRASTRUCTURE AND ADVANCED TECHNOLOGICAL REFSOURCES WITHIN HEIs

- Representatives perceive that HEIs have access to well-equipped laboratories and technology that can be leveraged to study and develop agribusiness innovations
- Certain public HEIs have adequate land resources
- Various laboratories are present within HEIs

INADEQUATE FINANCIAL RESOURCES

- HEIs do not have access to adequate funding
- There is reluctance on the part of industry to fund HEI research due to lack of awareness on perceived immediate benefits
- Need to have adequate funding through dedicated budgets
- Highlighted alternative sources of funding apart from government such as venture capitalists and private investors

AREAS FOR IMPROVEMENT: NEED FOR PRACTICAL RESEARCH AND EFFECTIVE STAKEHOLDER ENGAGEMENT

- Stakeholders highlight the need for practical research--with tangible value for beneficiaries/partners
- Need for better engagement and communication between HEIs and ecosystem stakeholders

RQ6: Government Policy

Government Policy *: How does the policy/regulatory environment shape the incentives and disincentives for HEI engagement in innovation ecosystems?*

NATIONAL LEVEL POLICIES

- Stringent procurement laws act disincentivize HEIs from engaging in entrepreneurial activities
- Civil service rules restrict personnel from receiving additional renumeration, which discourages participation in agribusiness innovation
- Laws enacted ensure funding (Philippine Innovation Act & Innovative Start-up Act)

TAX EXEMPTION TO INCENTIVIZE PARTNERSHIPS

- Tax environment and its implications for investment can support HEI engagement as it encourages partnerships with institutions that are exempted

  ➢ Tax exemptions are available for cooperatives

NATIONAL POLICY RESPONSIVENESS TO EMERGING ISSUES

- National policies that address emerging issues (e.g. climate change) , encourages HEIs to engage in the AIE

  ➢ HEIs are motivated to fill gaps in stakeholders' information needs

RQ6: HEI Policy

HEI Policy *: How do higher education institutions' policies influence the incentives and disincentives for HEI engagement in innovation ecosystems (e.g., faculty and students' proclivity to engage and business interest in collaborating with HEI stakeholders to meet innovation needs)?*

RESEARCH AND PUBLICATION POLICIES

- HEIs prioritize publication as a key criteria for faculty promotion
  - ➢ Incentive: encourages faculty to pursue research that can lead to innovations
  - ➢ Disincentive: focus on publication may not be aligned with the practical needs of the agribusiness sector

EXTENSION AND COMMUNITY ENGAGEMENT POLICIES

- Extension policies that prioritize impact and innovation can incentivize HEI stakeholders to engage with farmers and develop innovative solutions for the agribusiness sector

EFFECTIVE INTELLECTUAL PROPERTY POLICIES VITAL FOR FOSTERING INNOVATION

- Policy environment for IP protection is crucial in influencing HEI engagement in agribusiness innovation.
- Incentive: IP policies protect researchers/innovators outputs and define ownership arrangements

PARTNERSHIP POLICIES

- Policies that encourage and facilitate partnerships can create opportunities for HEI stakeholders to work with businesses and address real-world challenges
- Absence of clear partnership policies and misaligned priorities can hinder the growth of collaborations between HEIs and agribusiness stakeholders

RQ7: Market factors that shape HEI engagement in the Agribusiness Innovation Ecosystem

How do market-related factors in each country shape opportunities for HEI engagement in agribusiness innovation ecosystems in Region VII?

LIMITED UNDERSTANDING OF THE OVERALL SUPPLY CHAINS

As the Agribusiness industry is still nascent, there is still **limited information available** to the businesses regarding the sourcing of their products and even availability of demand. Industry and local government unit respondents directly point to the **knowledge gap surrounding the agribusiness supply chain** and explicitly **call for HEIs to address this issue through research**.

MIDDLEMEN RESTRICTING FARMERS' ACCESS TO RESOURCES

Information is concentrated among middlemen/traders– who who are often the only source of information on prices for farmers. Potential for HEIs to empower farmers by equipping them with the knowledge and skills needed to navigate the value chain and negotiate better terms with middlemen

OVERDEPENDENCE ON AGRICULTURAL IMPORTATIONS

Over reliance on imported agricultural products could harm the local agribusiness sector by diminishing demand for locally produced goods and constraining growth opportunities for domestic farmers. There is an opportunity for HEIs to engage in the agribusiness innovation ecosystem by **focusing their research and development efforts on enhancing the competitiveness of local agricultural products**.

RQ8: Context-specific norms which affect HEI engagement in the Agribusiness Innovation Ecosystem

How do context specific norms, perceptions. and values affect HEI actors' proclivity to engage in innovation ecosystems?

PRIORITIZING RESEARCH AND PUBLICATION

- Emphasis on research output and publication metrics can overshadow the importance of engaging with stakeholders and contributing to policy development
- **Disconnect between academic research and the real-world challenges** faced by the agribusiness innovation ecosystem

PERCEPTIONS OF AGRIBUSINESS AS A LOW-PRIORITY AREA

- Certain HEIs **may view agribusiness as less important** than other areas of study or research, leading to a lack of focus and investment in the sector.
- Missed opportunities for HEIs to contribute to the growth and development of the agribusiness sector and to address key challenge

PERCEIVED LACK OF EXPERTISE AMONG HEI ACTORS

- Perception that expertise and focus areas are not well-aligned with the needs of the agribusiness sector, leads to a reluctance to engage in innovation
- perception of funders/ regulators based on HEIs' recognized fields of expertise prevent them from engaging in agribusiness

VALUING COMMUNITY IMPACT AND PRODUCING SKILLED GRADUATES

- **Desire to make a positive impact** on communities can drive HEI actors to engage in agribusiness innovation activities, even if they do not have a background in the field.
- Highlight the value that HEIs place on producing quality graduates thus, they are more likely to engage in innovation activities that provide students with hands-on experience

Policy Recommendations for National and/or Regional Government(s):

- Strengthen the implementation of supportive innovation policies and ensure adequate funding
- Review and reform policies that hinder engagement in the agribusiness innovation ecosystem
- Develop responsive policies that address emerging issues in the agribusiness sector
- Establish a regional/national platform for agribusiness innovation collaboration and knowledge sharing

Policy Recommendations for HEIs:

Develop clear and supportive intellectual policies

Align faculty promotion and evaluation criteria to recognize and reward engagement in agribusiness innovation activities

Establish agribusiness innovation hubs and incubation centers

Develop curriculum and extra-curricular programs that offer agribusiness innovation skills and mindsets

Philippine Institute for Development Studies
Surian sa mga Pag-aaral Pangkaunlaran ng Pilipinas

Service through policy research

Thank you!

/PIDS.PH

@PIDS_PH

http://www.pids.gov.p

EMAIL: fquimba@pids.gov.ph
aandrada@pidsg.gov.ph