

Diagnosis and Tasks for Building ATIS - A Korean Perspective

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Background Information

> What is Technologies?

- New inputs, method, new process or new innovation to increase productivity
- An essential role in agricultural production and a big role in developing the agricultural business and industry

> What is Research and Development (R&D)?

 Creative work undertaken on a systematic basis in order to increase the stock of knowledge (including man, culture, and society) and the use of this knowledge to devise new applications.

What is innovation?

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- Development or adoption of new concepts and ideas
- Creative destruction by Schumpeter

- Situation of Ag Tech Innovation System (ATIS)
- Continually expanded investment in R&D to realize creative economy in agriculture. However, problem-solving for improving the competitiveness is insufficient
- Need for establishing a use-led ATIS centered technology demanders and surpassing the supplier-oriented linear model like "R&D extension and dissemination-commercialization"
 - ⇒ Creating the user-led ATIS that leads to innovation through agricultural holdings' cooperation with various agents





I Concept and Components of ATIS







Concept of Ag Technology Innovation System (ATIS)

- Creating new values through new agri-food, a new production process, new marketing techniques and new types of organizations
- Network of private sectors of farmer and producer groups, enterprises involved in agrifood, public authorities of central/local governments, Rural Development Administration





Framework of Ag Tech Innovation System



Source: Adapted from OECD(2013: 22).







- ATIS is composed of
 - 1) actors and their roles
 - 2) actor's innovation capacity and their implementation
 - 3) interaction between actors networking
 - 4) innovative environment affecting the actors
 - 5) outcomes and performance





Components of Ag Tech Innovation System







III Network Analysis of ATIS







Results of Network Analysis

- Questionnaire Survey (11 actors and 553 respondents in the agricultural technology innovation system to analyze their social connection network)
 - central role in the agricultural technology innovation system of Korea is carried out by the RDA, the Agricultural Research & Extension Services, and the Agricultural Technology Centers
 - private actors, for example, private R&D institutes, crop associations, enterprises involved in agri-food, and Nonghyup, except farmers, do not implement relatively strong networking
- ⇒ Need for even closer connection between the R&D institutes and ministries to enhance the connection between R&D and policies
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Results of Network Analysis

Information flow for connection strength among actors

- RDA (Rural Development Administration) → Agricultural Research & Extension Services at provincial levels → Agricultural Development & Technology Centers at county levels → farmers
- Central government \rightarrow local governments
- RDA \rightarrow Universities \rightarrow Agri-food enterprises
- ⇒ ATIS of Korea is in the top-to-bottom business structure led by the governments.
- Necessary to switch the system to a bottom-to-top ATIS centered on demanders in the future to further apply developed technology to actual users
 - Necessary to enhance the relation between the private sectors and the public sectors to switch the system to an agricultural technology innovation system centered on users





IV Diagnosis of ATIS and Farmers' Innovation Capacity







Current Status of ATIS in Korea

Diagnosis of Strength and Weakness

- Strength in the roles carried out public authorities, for example, R&D, capacity, instruction and training task forces, and government budgets.
- Weakness in the roles conducted by the private sectors, for example, cooperation with the private sectors, private investment, participation of private sectors in innovation projects and capacity thereof.
- ⇒ Most actors recognition of the necessity for innovation is strength, which implies actors agree with each other for the recognition of innovation.





Suggestions for Improving Performance

- Expanding participation and investment of private sectors in innovation projects for improving the outcome of the agricultural technology innovation system
 - Based on the IPA (Importance-Performance Analysis) with strength and weakness and priorities of enhancement
 - 'Participation and capacity of the private sectors in innovation projects' as the 'first areas requiring improvement' and then 'investment of the private sectors in innovation projects' and 'planning innovation projects and cooperation with the private sectors in conducting the projects'





Suggestions for Improving Farmers' Performance

- 1. Need for enhancing cooperation among farmers and involved authorities, build trust, and making a time and effort investment in various innovation activities
- 2. Establishing policies and expand projects to promote innovation network activities, for example, research working groups, participation in research farms, and experience in commercialization with neighboring farmers.
- 3. Making a plan for enhancing normal or nonofficial cooperative relations to reduce no interest/no response that is a main factor of impeding farmer's innovation activities











Directions for Activating Promotion Planns

- 1. Establishing ag-technology innovation strategies based on mutual understanding about roles of actors in ATIS
- 2. Building a system for creating substantial outcomes by raising the level of all actors' recognition about the necessity for innovation
 - Necessary to allocate more budgets to technology innovation projects and ensure self-regulation of projects for enhancing each actor's technology innovation capacity
 - Necessary to plan competition-type innovation projects and devise a performance system for finding various ideas from involved parties and achieving better outcomes from the innovation projects





Policy Directions for Establishing ATIS

1. Basic directions including productivity improvement, added-value creation, and site-oriented innovation with priority-setting should be established.









Directions for Activating Promotion Planns

- Establishing substantial resolution plans for field issues through 'Policy-R&D-Field' for which farmers and policy experts participate in R&D for R&D system innovation in the agricultural sector
- 3. Reestablishing a cooperative R&D system between the central government and the local government
- Improving the system for field supply and propagation of developed technology and expanding demonstration projects for farmers and SNS technology consulting, and build a technology information provision network for each crop





Knowledge Sharing

- Knowledge Sharing on an Inventory of Applicable Technologies for Climate Smart Agriculture (CSA)
 - Technologies applied to climate smart agriculture pursue the increased resilience in response to the increased water volume, greenhouse gas mitigation and abnormal weather conditions
 - Technology inventory categorized into water, energy, nutrient, weather, stress resistant seed, crop combination, and others for each source field

Knowledge Sharing on Sustainable Intensification (SI)

- Highly complementary relationship between the SI approach and CSA
- SI is an essential means of adapting to climate change, also resulting in lower emissions per unit of output.
- With its emphasis on improving risk management, information flows and local institutions to support adaptive capacity





THANK YOU FOR YOUR ATTENTIONS!





