

Global High-Tech Agricultural University Network (GHAN): Current Status and Future Prospects

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Ph.D. in Crop Science, University of Georgia (1990)

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Relevant Trends

Increasing world population and wealth

Increasing demand for food

Growing demand for safe and healthy nutrition

Increased pressure on environment, land usage and nature

Scarcity of fresh water and energy

Climate change

Competing claims: Food vs Energy

Increasing urbanisation and population density

Increased disease pressure, invasive pests

Food prices to remain high for now: FAO
Reuters, Posted online: Wednesday, April 09
The United Nations' Food and Agriculture Organisation on Wednesday said global commodity prices were far from easing in the near future because of a supply-demand situation and warned of flare-ups.

Food crisis will take hold before climate change, warns chief scientist

The Guardian, Friday March 7 2008

... Professor John Beddington said the global rush to grow biofuels was compounding the problem, and cutting down rainforest to produce biofuel crops was "profoundly stupid". He predicted that price rises in staples such as rice, maize and wheat would continue because of increased demand caused by population growth and increasing wealth in developing nations. He also said that climate change would lead to pressure on food supplies because of decreased rainfall in many areas and crop failures related to drought. "The agriculture industry needs to double its food production in the next 10 years, today," he said.

Climate change serious - beer affected
From: NEWS.com.au April 08, 2008

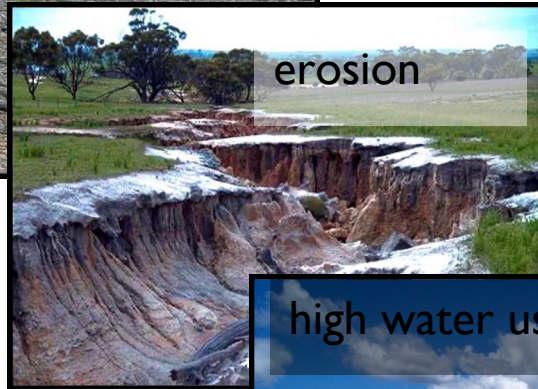
BEER will be short supply, more expensive and may taste different as climate change affects barley production, a scientist says.

Relevant Trends

degradation



pollution



erosion



high water use



carbon emissions

- Frequently agricultural activities are seen association with environmental problems such as...
- Global changes has resulted in an image problem for agricultural science

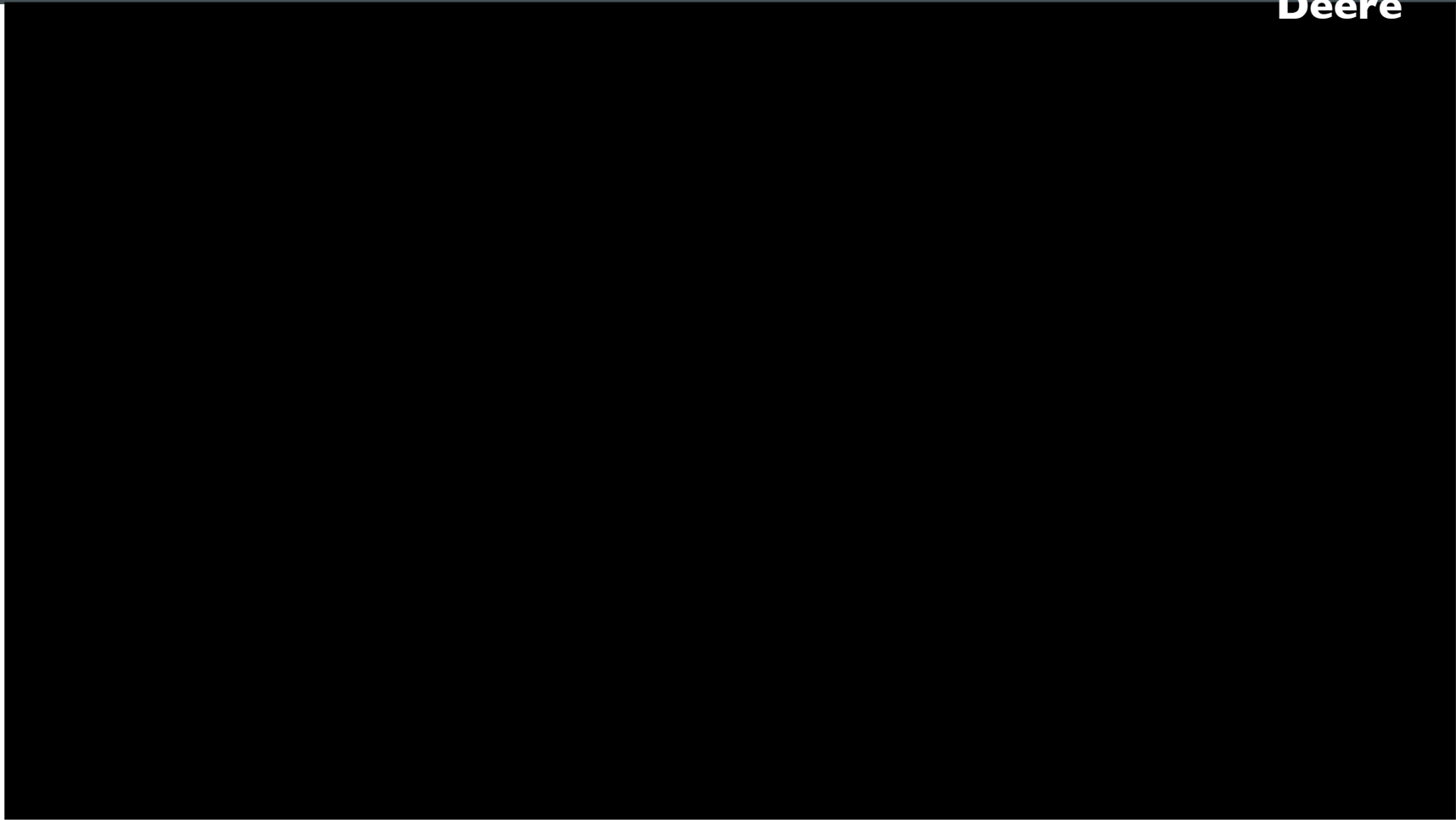
Relevant Trends



- ... while the ecosystems services provided by the agricultural sector are less visible.

Future Farming

Source : John
Deere



Need for Revamping Ag Higher Education

- **Modern agriculture requires high-tech skills and innovation**
- **Traditional agricultural education system fails to attract younger generations**
 - **Younger generations seek more tertiary education in DMCs**
- **Agricultural universities in DMCs lack capacity and resources to transfer cutting-edge technologies**
- **Need for a new paradigm to train ‘agropreneurs’ with practical skills in a well-designed program**
 - **Strengthen academic-industry partnership across AVC**

Proposal for the Establishment of GHAN

- **Ensure sustainable agricultural development by training future leaders of high-tech agriculture, promoting agricultural innovation and transforming production systems**
- **Utilize the best scientific knowledge and technological pathways, disseminate revolutionary technologies and techniques, and strengthen industrial and academic operation across the**
- **agricultural value chain**

Rationale for Establishing a Global Hub in Korea

○ **Rapid growth of Korean agriculture**

- **Korea has achieved rapid and extraordinary improvement in agricultural productivity in about 70 years while it took several centuries for advanced countries**
 - **The success of the Green Revolution, which dramatically increased yields through the introduction of new agricultural technologies, such as improved varieties and the use of irrigation, fertilizers, and pesticides**
 - **The success of the White Revolution through the spread of facility farming technology using the plastic greenhouse method.**
 - **Achieved improvement in land and labor productivity in the shortest period**

Rationale for Establishing a Global Hub in Korea

- **Key to compressed growth of South Korea's agriculture**
 - **Expansion of the government-led EER system as a key factor:**
 - Since 1962, the operation of the 'EER system' consisting of agricultural research (R) technology extension (E), and farmer education (E) centered on Rural Development Administration (RDA)
 - Promoted rapid innovation during the 1970s and 1980s through the government-led agricultural growth strategy
- **Strong in ICT and high technology**
 - Well-earned reputation as a global ICT leader
- **Well-established agricultural higher education base**
 - Established global and smart campus/field training facilities
 - Maintaining excellence in education and practices from low to high

Progress and Current Status of Global Initiatives

- **The 3rd Global ODA Forum for Sustainable Agricultural Development (May 13-14, 2019, The Plaza Seoul)**

- **Proposal on “Initiating GHAN” by the Director General’s Meeting of the International Organizations (ADB, FAO, WFP, ICBA, and MAFRA)**



- **Kickoff Workshop for ADB-MAFRA Cooperation Project on Agricultural Value Chain Development in Selected Asian Countries (July 31, 2019, Seoul National Univ)**

- **ABD Proposal for establishing GHAN in Korea to train agricultural officials, leaders and young agropreneurs in Asia**

Progress and Current Status of Global Initiatives

- **Discussion with former UN Secretary General BAN Ki-moon (October 2, 2019)**

- **Former Secretary General BAN Ki-moon has accepted as an offer to serve as an advisor to the Global Advisory Council of GHAN**



- **ADB-MAFRA International Joint Workshop for Agricultural Value Chain and GHAN (Hoam Faculty House of SNU, Nov. 28, 2019)**

- **Emphasize the need to establish a GHAN in collaboration with the world-class universities and global companies, focusing on innovative curricula and on-site education**
- **Seoul National University's potential role as a global hub for GHAN, GHAN's governance frameworks, roadmaps and future directions for implementation**



Progress and Current Status of Global Initiatives

- **Visit to Seoul National University by a group of professors of Bangladesh Agricultural University and the ADB official (Jan. 28, 2020~Feb. 24, 2020)**

- **Discussions on recruiting students for master's and Ph.D. programs and establishing inter-university research facilities**



- **Special Report to the Minister of MAFRA on the Progress of GHAN (June 10, 2020)**

- **Report on the initiative and directions of promotion of GHAN and cooperation with Bangladesh Agricultural University (BAU)**



Progress and Current Status of Global Initiatives

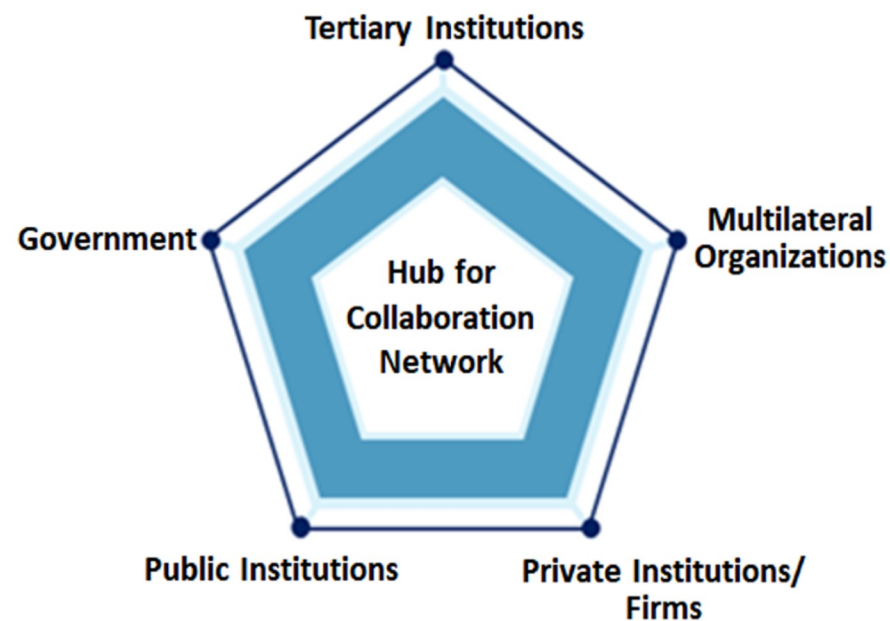
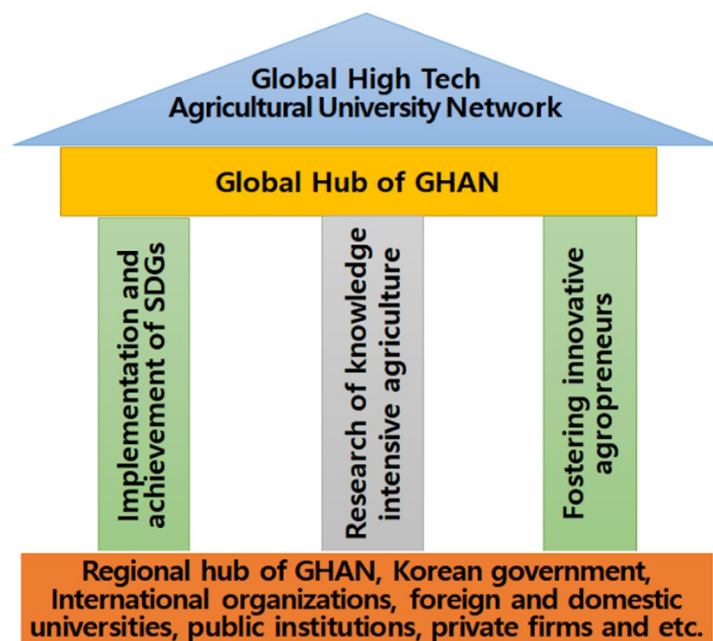
● Signed LOA between SNU-CALS and BAU (2021.7.16)

- LOA was signed on the basis of MOU in December 2019 for cooperation in the promotion of agricultural human resources in Bangladesh

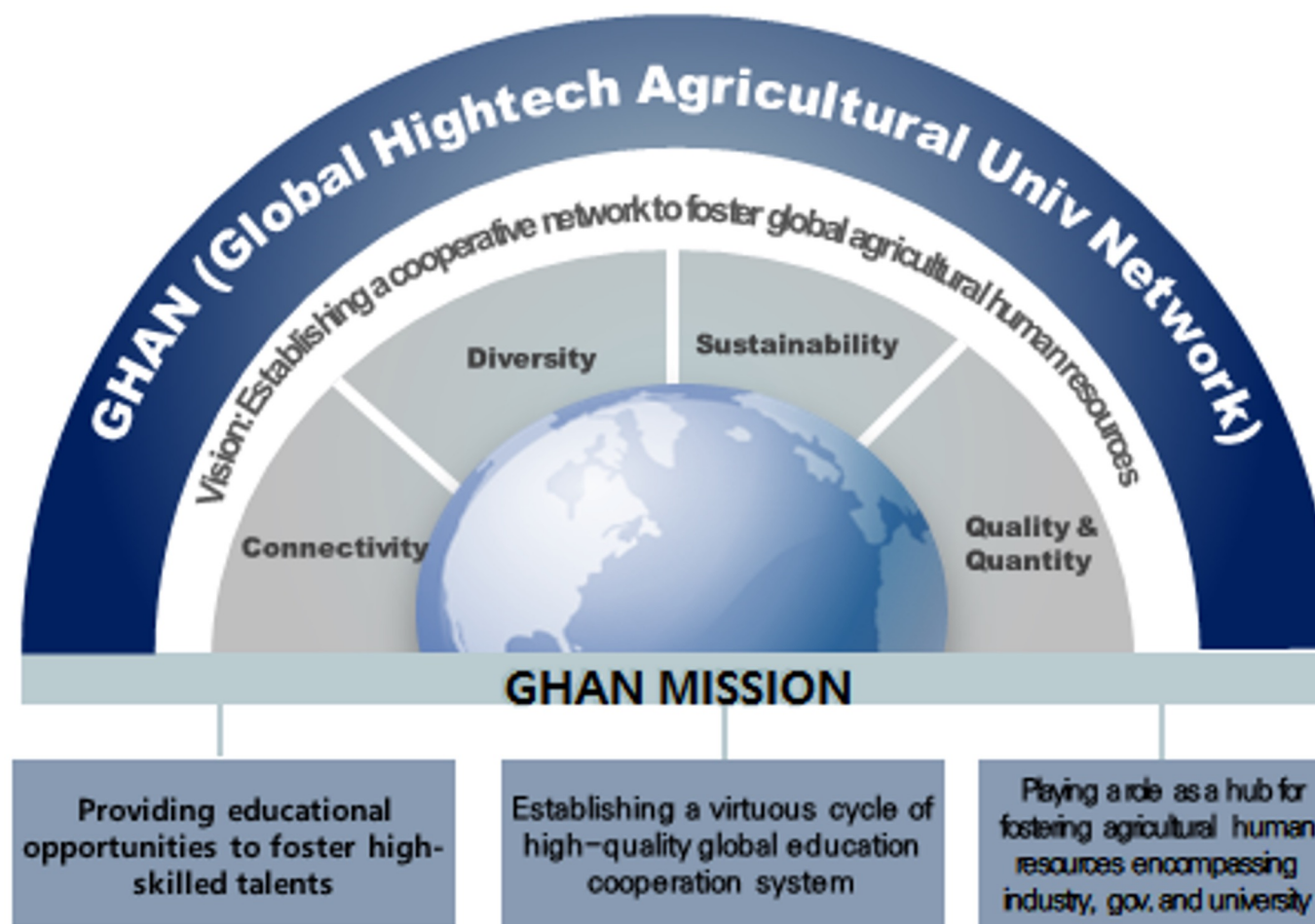


Overview of GHAN

- A network that provides a framework for or requires cooperation among, groups or organizations involved in the promotion of human resources for capacity building in the agricultural sectors of DMCs



Mission and Vision of GHAN



Governance Structure of GHAN

Core Governance Units

- **Global Advisory Council/Steering Committee/Technical Committee/Secretariat**
- **Policy Network/University Network/Enterprise Network/ Technical Innovation Network**

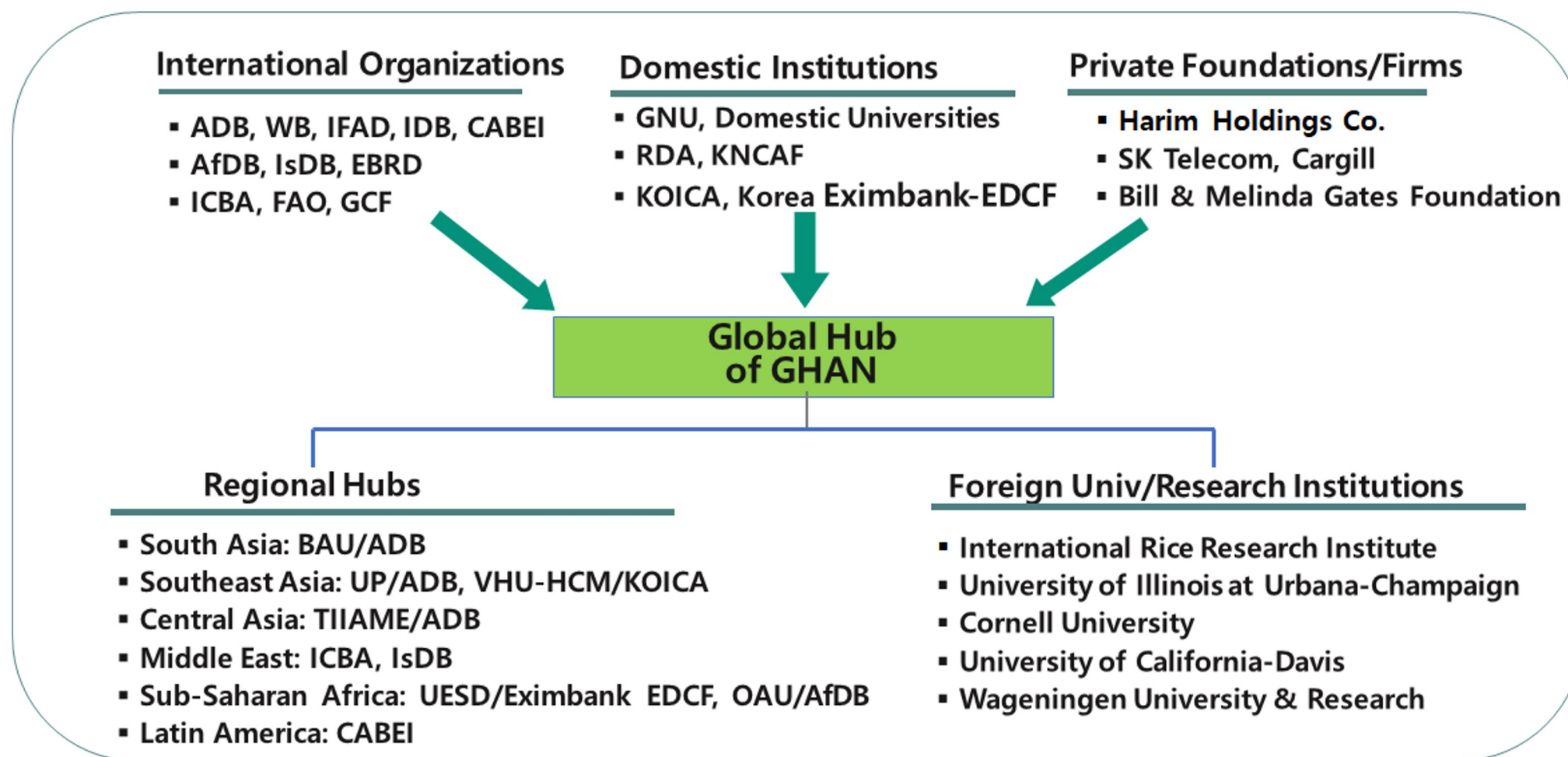
Key Roles of Global and Regional Hubs

- **Global Hub/Secretariat: Teaching and training, Innovative technology development, and network management and outreach**
- **Regional Hubs: Teaching & training, high-tech localization and business incubation**

Key Functions of the Secretariat

- **Networking functions (cooperation and coordination between global and regional hubs)**
- **Functions to support the Steering Committee and Global Advisory Council**

Governance Framework of GHAN



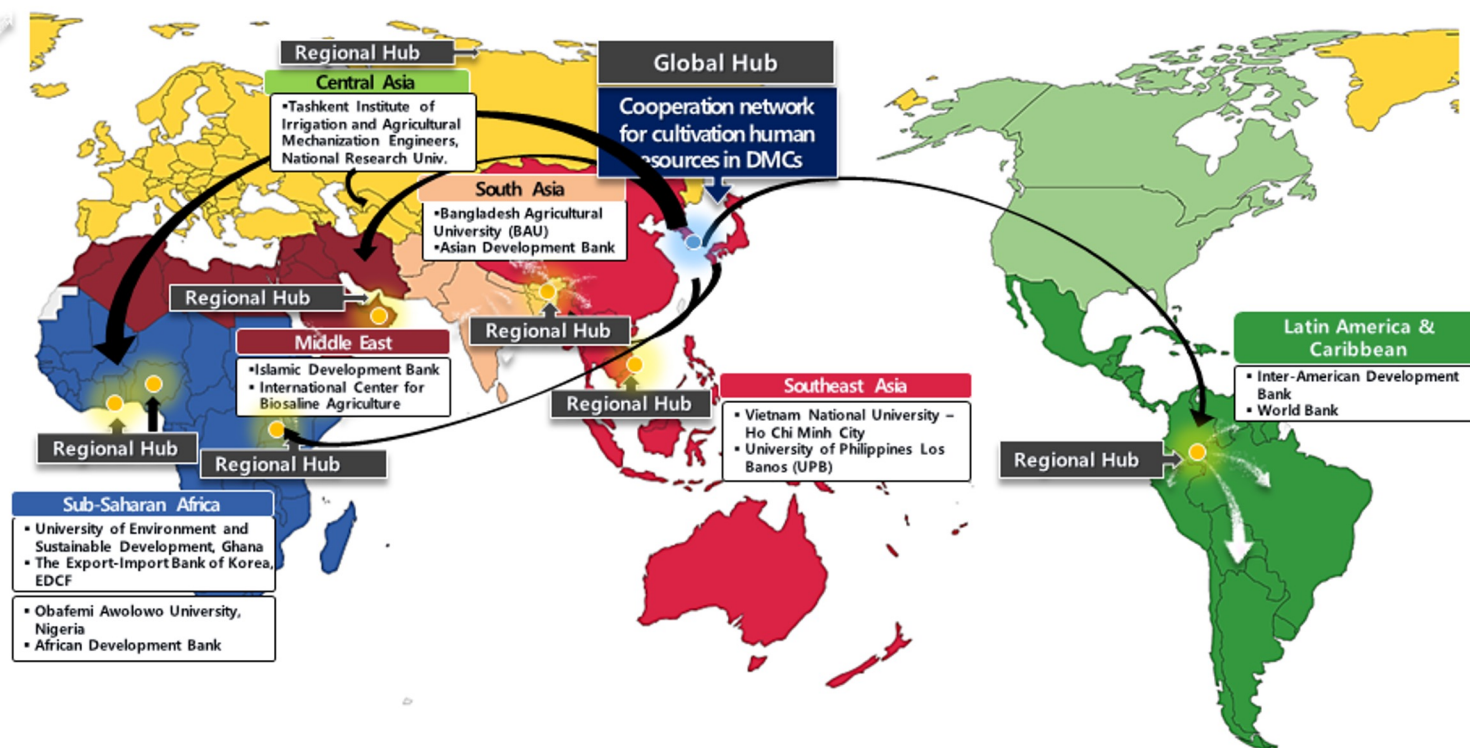
Global Hub and Regional Hubs of GHAN

• Global Hub

- General management of education and training, development of innovative technologies, policy planning and implementation, network operation and outreach activities

• Regional Hubs

- Regional management of education and training, localization of high-tech and business incubation, support with representative universities, and matching international organizations



KOICA-SNU-AGU in Vietnam

Project for Strengthening Agricultural Higher Education of VNUHCM(Vietnam National University–Ho Chi Minh City) in Vietnam

2021-2030 (10 M\$)



INITIATIVE OF **KOICA-ICAB**

Capacity Building for the Center for Agriculture and Bioscience of IPB University in Indonesia (**11M\$, 2022-2028**)



Record of Discussion (ROD) was signed (6 Oct. 2022)

Contract was signed between **KOICA** and **Seoul National University** (4 Nov 2022)

Nation Instrumentation Center for Environmental Management (NICEM)



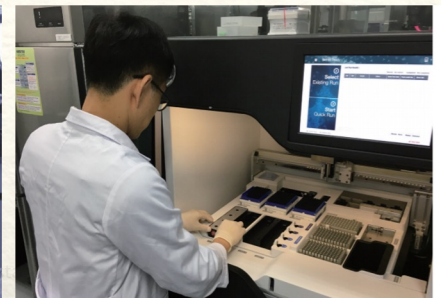
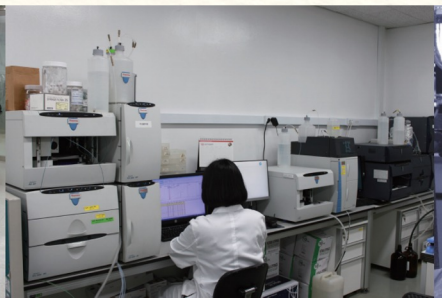
Capacity Building for Leapfrogging Higher Education towards Techno-Socio-Entrepreneurial University on Tropical Agriculture, Life Sciences and Environmental Management in Indonesia (5 years/10,000,000 USD)

Indonesia

Project Concept Paper

IPB visited GBST, SNU (April 2019)

Proposal submitted by IPB to KOICA (2019)



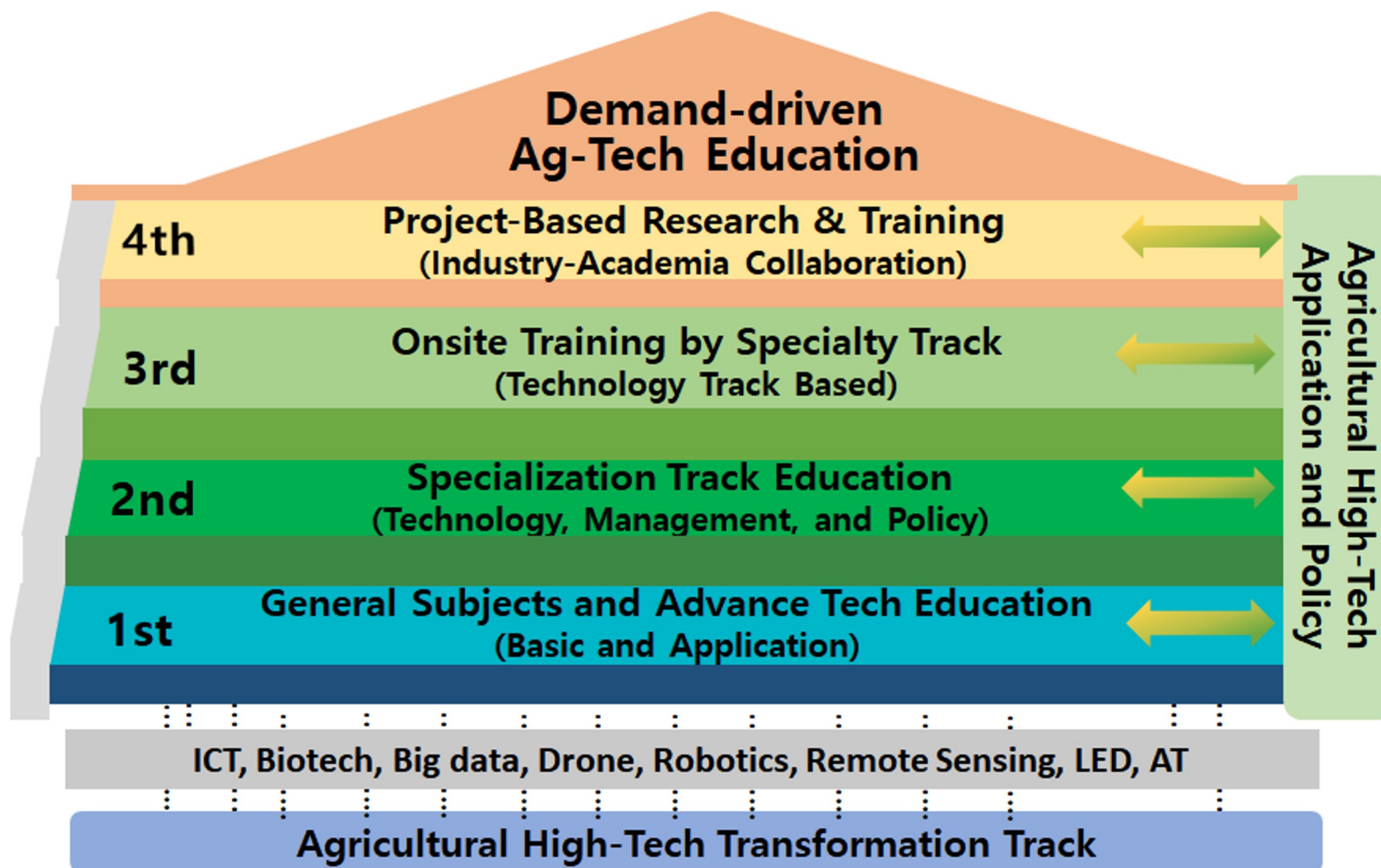
Future Prospects of GHAN – Composition and operations of Governance

- **Organization of the secretariat and presentation of specific roles**
- **Composition and roles of related committees**
 - **Technical Committee**
 - **Steering Committee**
 - **Global Advisory Council (High Level Group)**
- **Establish a cooperative system of GHAN governance**
 - **Sign MOU with related international organizations to fulfill the role of global hub**
 - **Establish an organic cooperative system with world-class universities and domestic agricultural universities to participate in the global hub**

Future Prospects of GHAN – Operational Management of the Programs

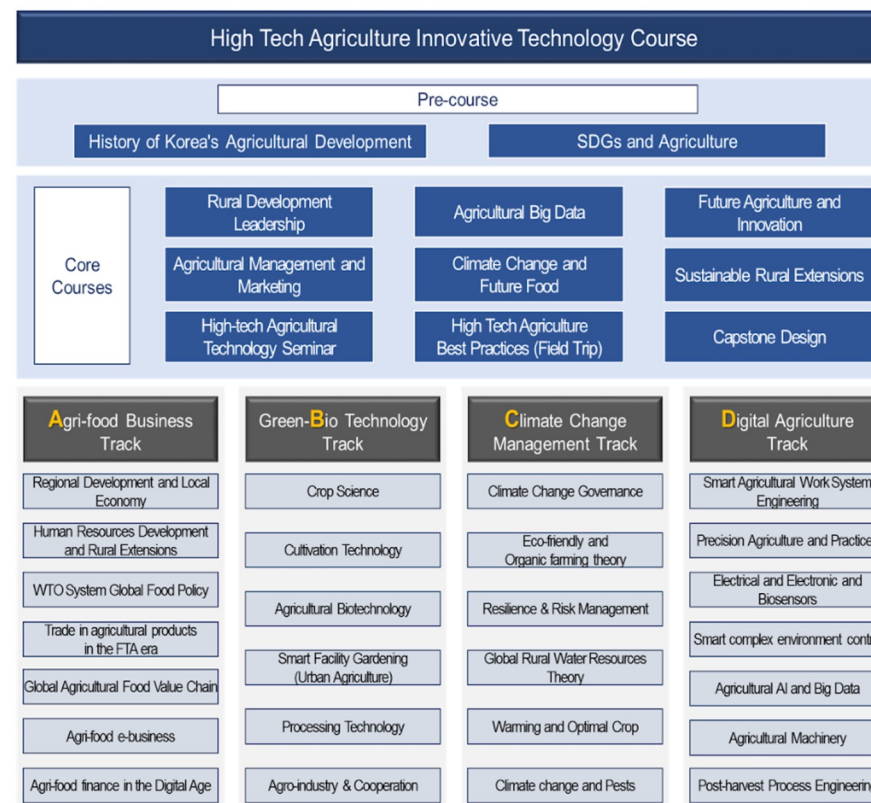
- **Completed roadmap and master plan to establish GHAN**
- **Prepared curriculum for master's degree and short-term training programs**
- **Organized dedicated faculty for each field and selected on-site training institutions**
- **Prepared detailed programs including curriculum and step-by-step training for each discipline**
- **Prepared for trainee selection**

An Example : Curriculum Design



Illustrated Example of Curriculum

- The agricultural manpower training plan derived from the needs assessment and DACUM was established as a high-tech agricultural innovation technology course.
- The core curriculum of agricultural manpower training consists of pre-courses, core courses, and four tracks (ABCD)
 - **A**gri-food Business
 - **G**reen-**B**io Technology
 - **C**limate Change Management
 - **D**igital Agriculture



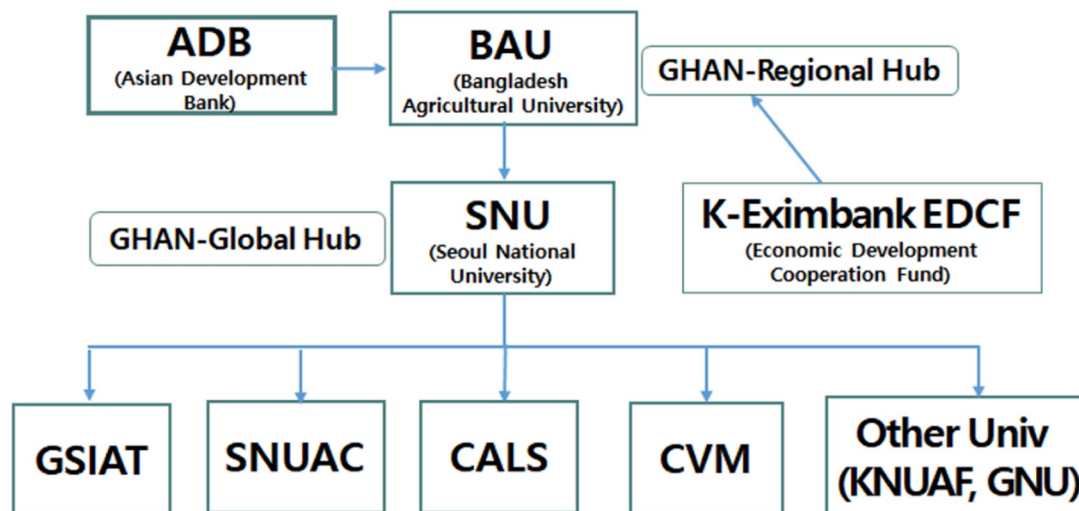
Choi,S.J. et al. 2021. *Studies on Establishing Cooperative Network for Fostering Agricultural Human Resources in DMCs – 2nd Stage*. Ministry of Agriculture, Food and Rural Affairs. p.262.

Financing Plan for GHAN Operation

- **Financial resources for the operation of the GHAN Secretariat**
 - Finding ways to support operating funds for the Secretariat from Korean government (Ministry of Agriculture, Food and Rural Affairs)
- **Financial resources for GHAN education and training**
 - Step 1: Utilize funds to support education and training for the cultivation of agropreneurs through the signing MOU with ADB.
 - Step 2: Leverage funds to strengthen capacity building of international organizations (WB, GCF, etc.) to realize UN SDGs.
 - Step 3: Funding from private foundations (Bill & Melinda Gates Foundation, etc.) related to strengthen capacity building in DMCs.

Roadmap for Establishing the GHAN

○ Pursuing cooperation with SNU-BAU as a regional hub for South Asia



- GSIAT : Graduate School of International Agricultural Technology at SNU
- SNUAC : Seoul National University Asia Center
- CALS : College of Agriculture and Life Sciences at SNU
- CVM : College of Veterinary at SNU
- KNUAF : Korea National University of Agriculture and Fisheries
- GNU: Gyeongsang National University)



- EDCF support for the establishment of Cooperative Center for Agricultural Research Facilities in BAU



Thank you for your listening!