

# Current status of Agricultural Engineering Research and Climate-Smart Agricultural Policy in Korea

*Presentation by*

Name : Jehoon Sung

Title : Team leader, Dept. of Agricultural Engineering

Agency : National Institute of Agricultural Science, RDA



CSAM



# Contents

I

Current status of agriculture and rural

II

Researches of Korean agricultural engineering

III

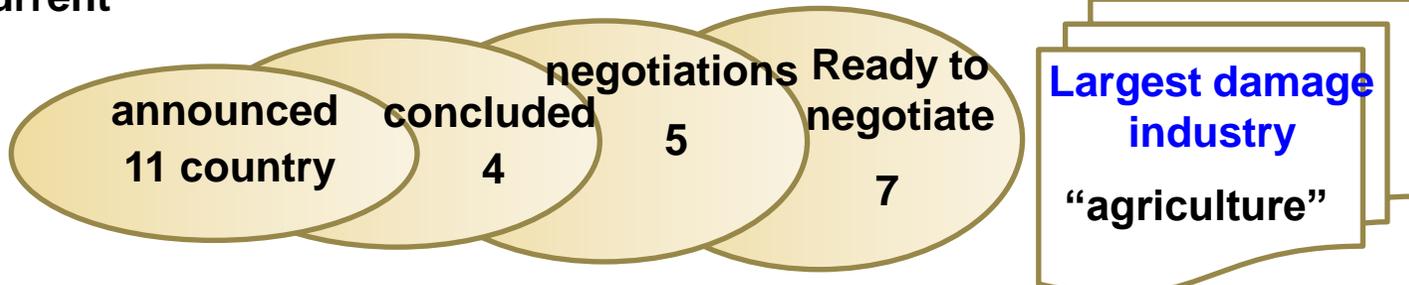
Climate-smart agricultural policy

# Current status of Agriculture and rural (1/3)

## Market open(FTA)

'16 current

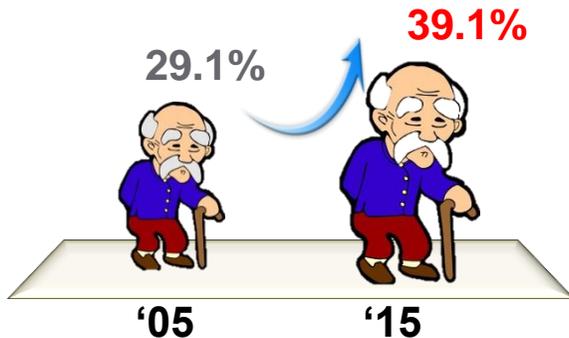
Openness Shrinking



Largest damage industry  
"agriculture"

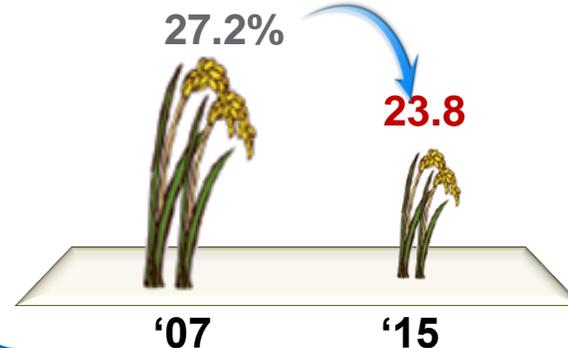
Accelerated market opening FTA,WTO etc.

## Ageing(over 65ys)



Labor force is growing slowly down

## Self sufficiency decrease



Due to market opening,  
self sufficiency decrease

# Current status of Agriculture and rural (2/3)

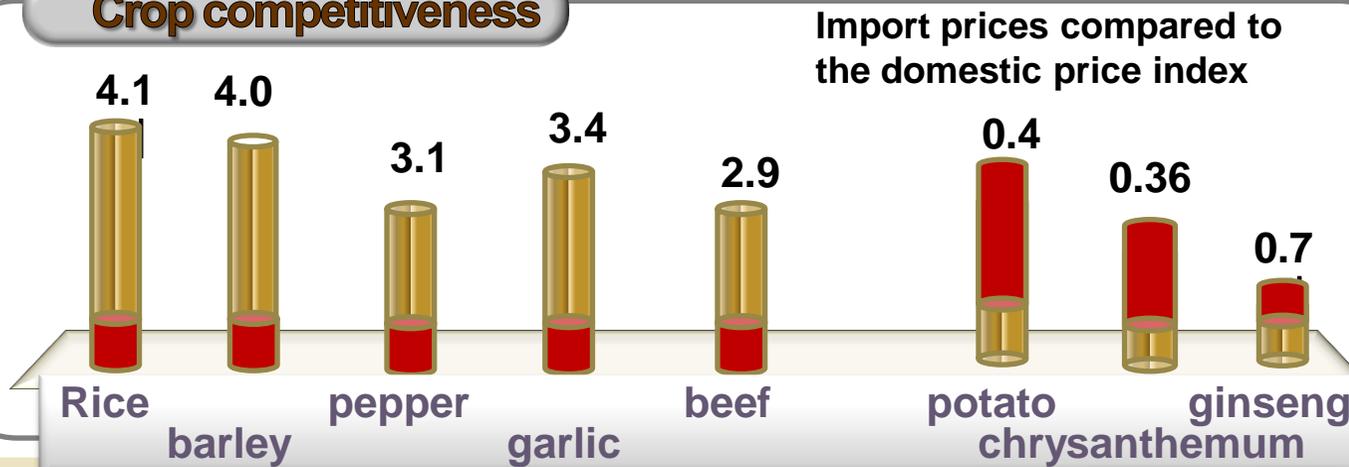
## Nat'l agricultural competitiveness



※ Cultivating area per farmer

USA 32.08ha  
France 14.08ha  
Japan 1.59ha  
Korea 0.73ha

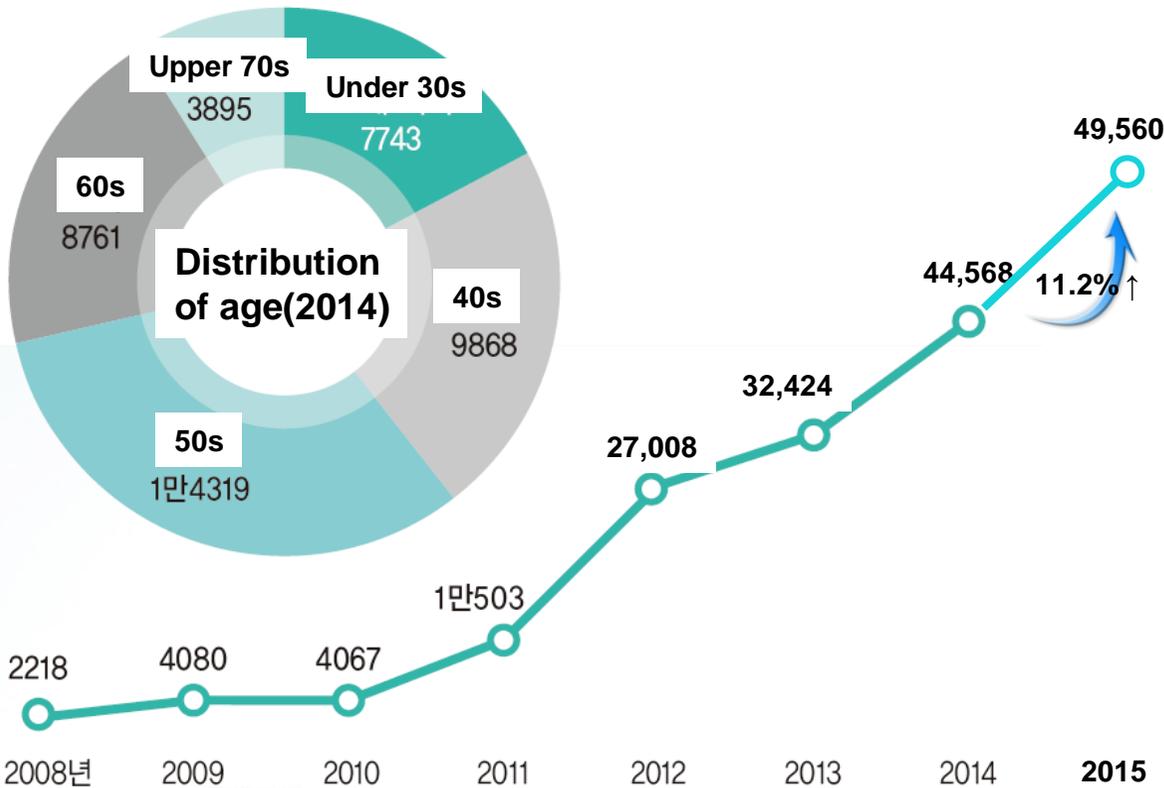
## Crop competitiveness



# Current status of Agriculture and rural (3/3)

Increasing return farm and/or rural

Unit : household



자료: 통계청

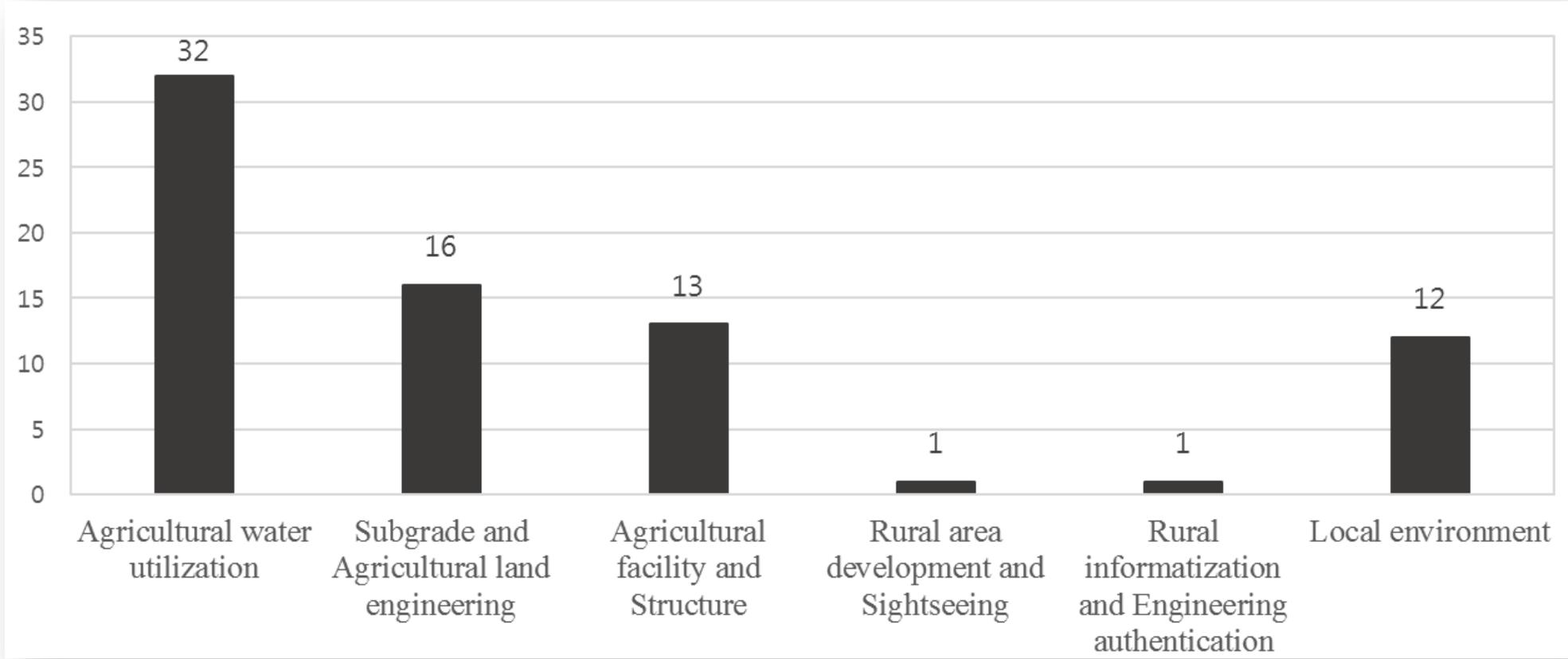
The world's largest high-speed Internet penetration rate

The world's No. 1 smart phone penetration rate

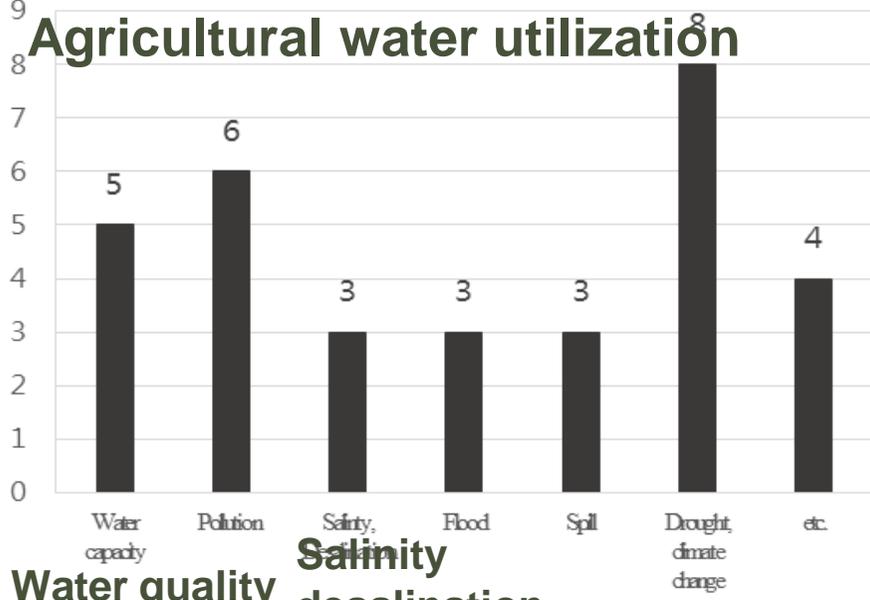
*The new paradigm shift needed at agriculture and rural*

**New leap forward required by the ICT convergence of Agriculture Rural**

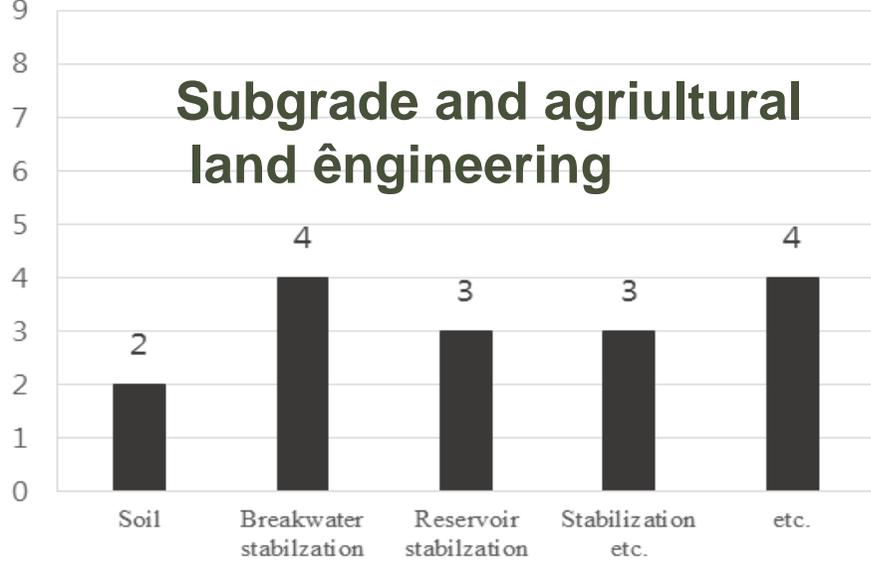
# Researches of Korean Agricultural Engineering (1/4)



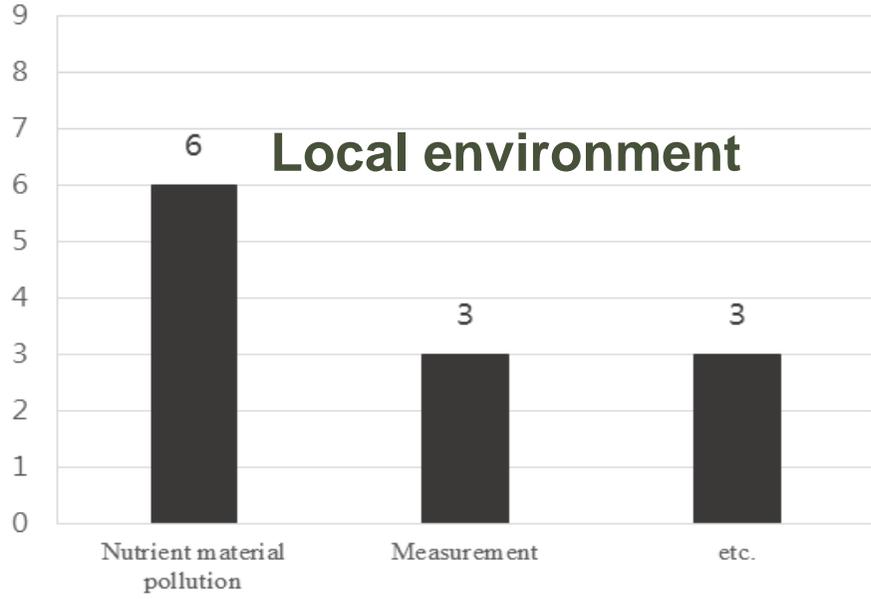
**KSAE published papers for totally 6 research fields from 2014 to 2015**



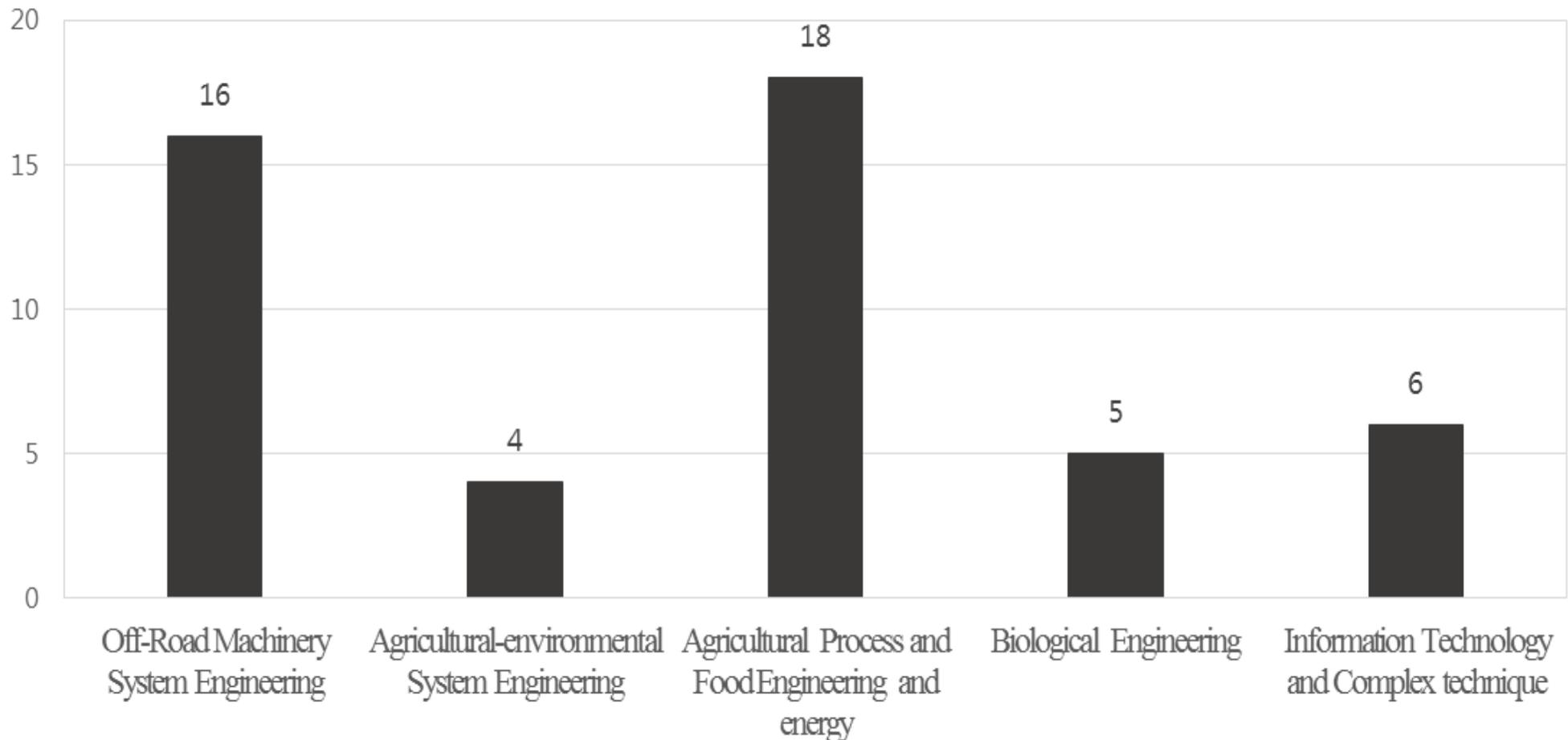
Water quality pollution  
 Salinity desalination



### Agricultural facility and structure



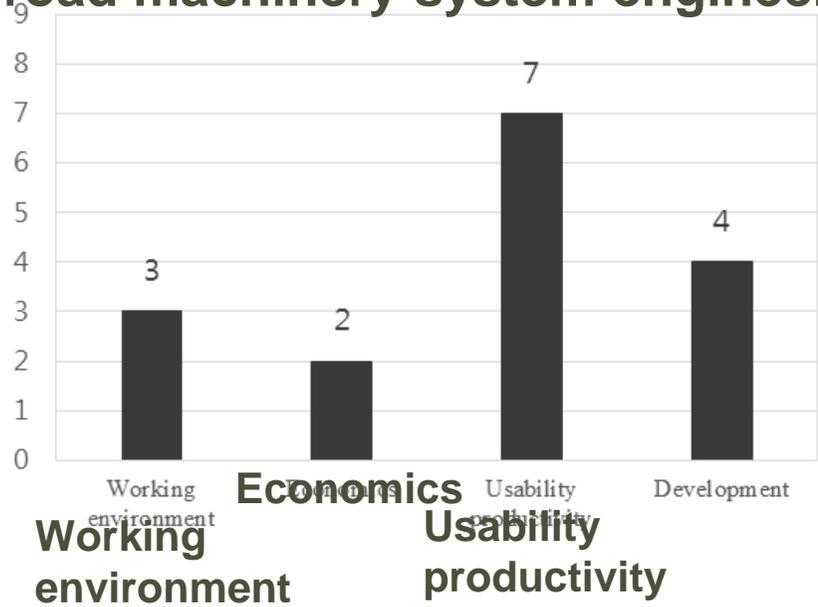
# Researches of Korean Agricultural Engineering (3/4)



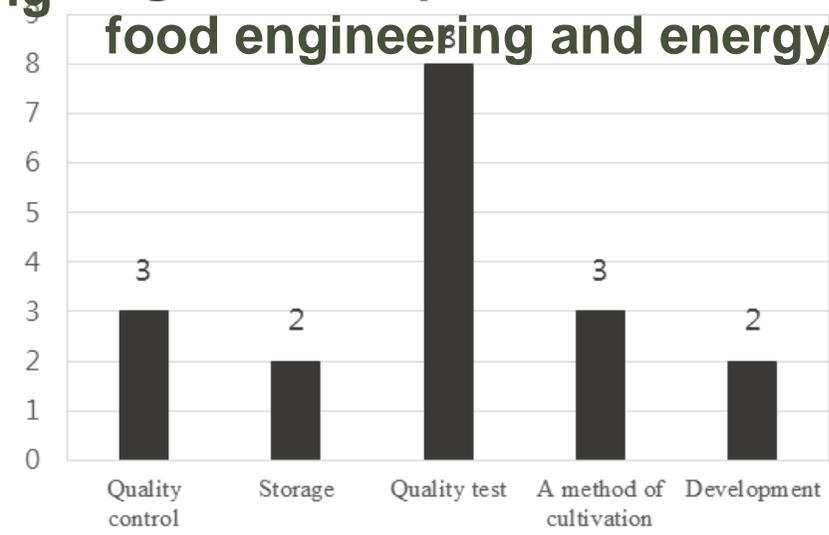
**KSME published papers for totally 5 research area from 2014 to 2015**

Res

# Off road machinery system engineering



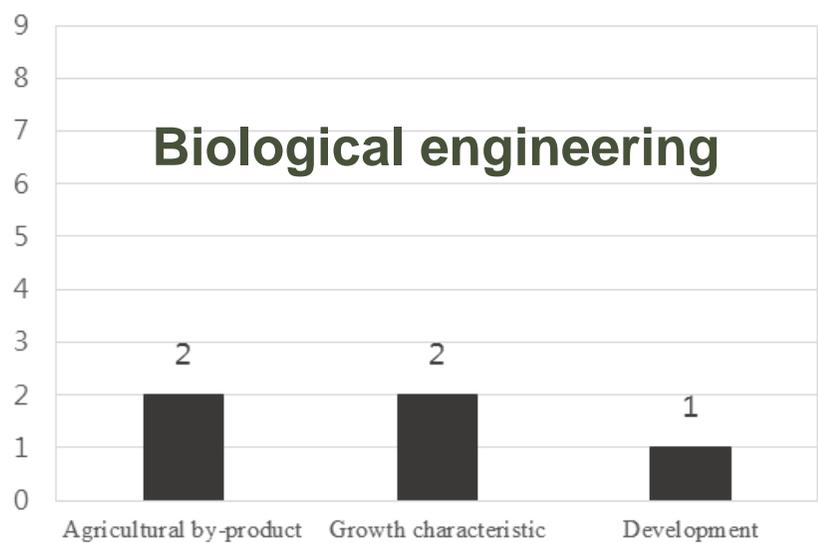
# Agricultural process and food engineering and energy



**Working environment**  
**Usability productivity**

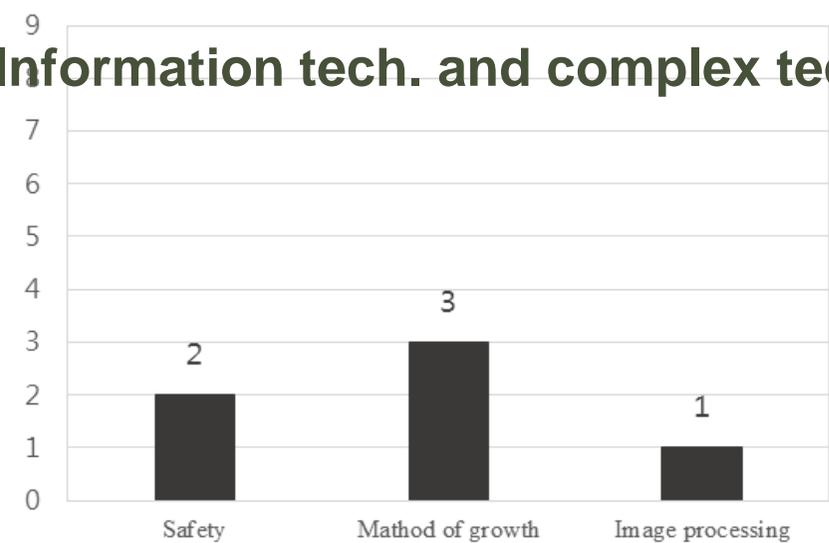
Biological Engineering

Information Technology and Complex technique



**Biological engineering**

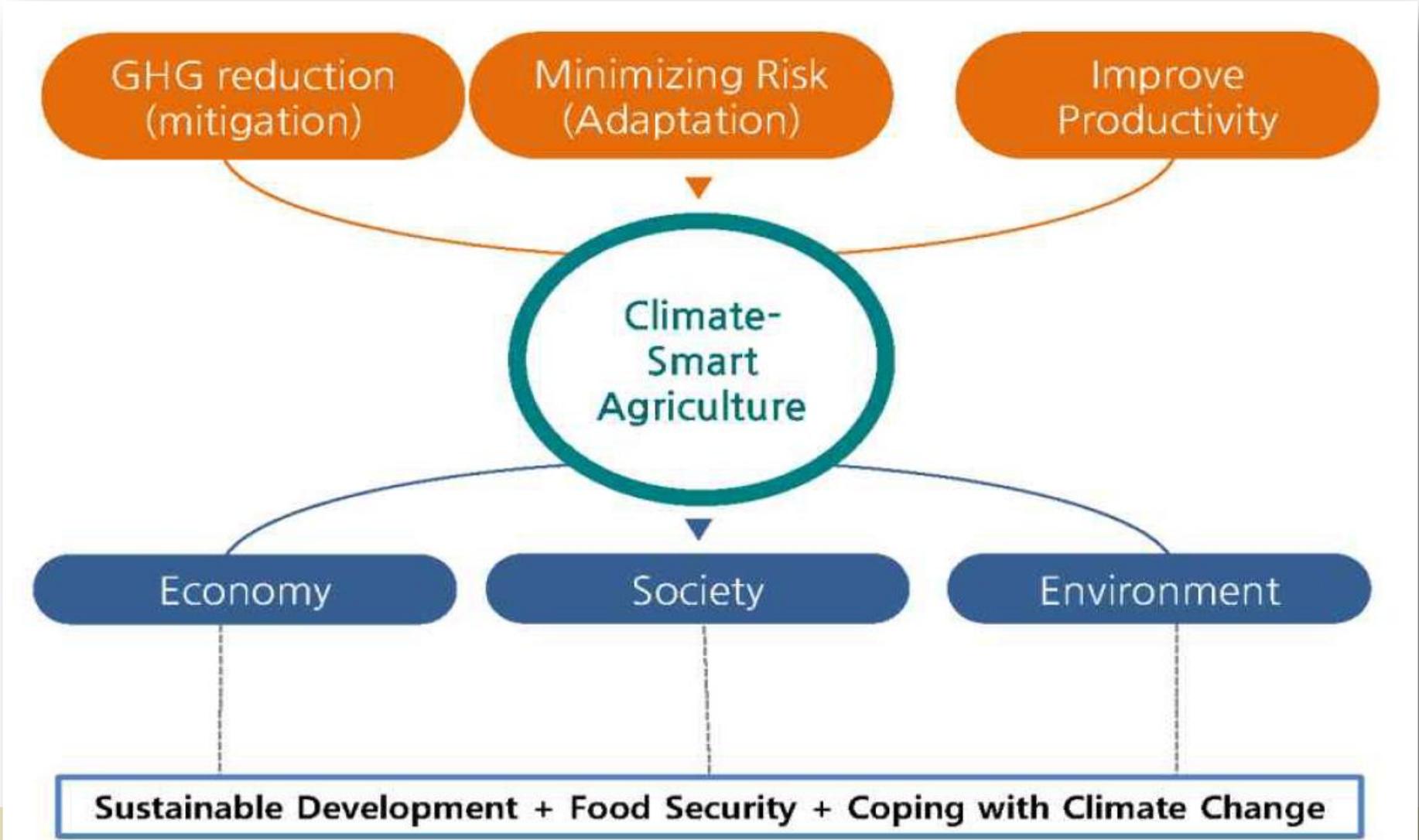
# Information tech. and complex tech.



KSME published papers of 5 research area categorized using some typical keywords

The 4th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific

# Concept of CSA(Climate-Smart Agriculture) (1/2)



# Concept of CSA(Climate-Smart Agriculture) (2/2)

- **Dealing with the Synergies and Trade-offs when integrating the Multi purposes → Necessity of benefit-cost analysis based on the interests of stakeholders**
- **Meaning the agricultural system which is context-specific**
- **Multiple Entrances at the Different Levels**
  - ex) setting up a climate change model, scenario calibration, IT, crop insurance, value chain, food system, etc.
- **Different from simple farming skills or technologies**

# Climate-smart agricultural policy (1/6)

- **Necessity for establishing climate-smart agricultural policy designed for Korea in consideration of regional uniqueness**
- **Candidate for climate-smart agriculture technology designed for agricultural conditions of Korea**
- **Policy considerations for vitalization are classified as follows.**
  - **Research/technology development**
  - **Economic means**
  - **Regulatory means**
  - **Promotion/education**
  - **Support for organizing joint activities of producers**

# Climate-smart agricultural policy (2/6)

## 1. Research/Technology Development ⇔ R&D

- Develop technology practically used(disease and harmful insect control, soil nutrient management, energy saving, water management technology)
- Develop drought-/cold-tolerant varieties.
- Develop GHG MRV(measurement, reporting, verification) technology
- Develop weather forecast technology for agriculture.

# Climate-smart agricultural policy (3/6)

## 2. Economic means

- Support farmers for stable income.
- Vitalize value chains and related agricultural market
- Make investment and provide loans to buy agricultural equipment
- Promote consumption by using policies currently enforced as climate-smart agricultural policies including crop insurance, direct payment program for eco-friendly agriculture, carbon offset program through emission trading scheme (being planned) and certification program for low-carbon agricultural and livestock products.

# Climate-smart agricultural policy (4/6)

## 3. Regulatory means

- **Direct regulation with environmental standards(Regional Nutrient Quota System, GHG Emission Target Management Scheme, Setting up standard for applying chemical fertilizers, monitoring regulations for environmental standards)**
- **Regulation by using levies(scheme for agricultural water fee, carbon tax, levy on fertilizer/agricultural chemical/surplus livestock animal waste)**
- **Policies currently enforced that can be used as climate-smart agriculture policies- GHG Emission Target Management Scheme, and standards for applying chemical fertilizers**

# Climate-smart agricultural policy (5/6)

## 4. Promotion/Education

- **Train CAS research and technology experts.**
- **Train farmers specialized in CSA**
- **Establish systematic CSA education program.**
- **Build comprehensive CSA consulting system designed for local situations**
- **Policies currently enforced that can be used as climate-smart agriculture policies-technology education, early warning system model project.**

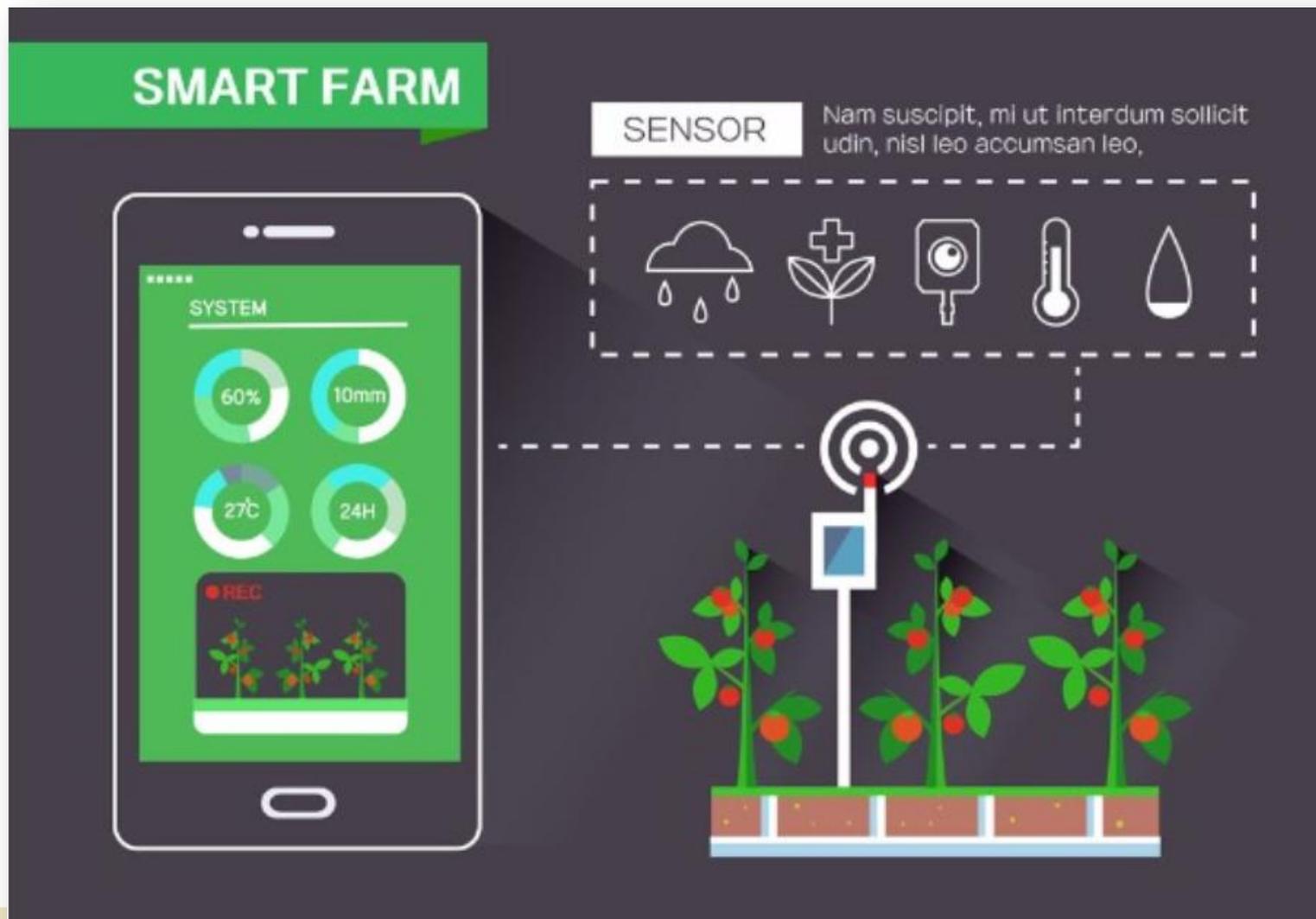
# Climate-smart agricultural policy (6/6)

## 5. Supporting organization for producer's communal activities

- Strengthen the power of association of producers.
  - ✓ Provide support to hold events related to CSA
- Provide support for activities based on regional community.
  - ✓ Provide support to build cooperative unit and district.

ex) Districts for environment-friendly agriculture, etc.

# One of solution of Climate-smart agriculture



# Thank you for your interest

**Jehoon Sung**

Senior Researcher, Ph. D.

Planning Team Leader

Department of Agricultural Engineering

NIA(National Institute of Agricultural Science

RDA(Rural Development Administration)

Rep. of Korea

tel 82-63-238-0447

fax 82-63-238-1762

e-mail [jhsung@korea.kr](mailto:jhsung@korea.kr)

