MOVING FORWARD AGRICULTURE

Dr. Theerayut Toojinda

Acting Deputy Executive Director
National Center for Genetic Engineering and Biotechnology (BIOTEC)

OUTLINE

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02 Thailand's Agriculture Challenges

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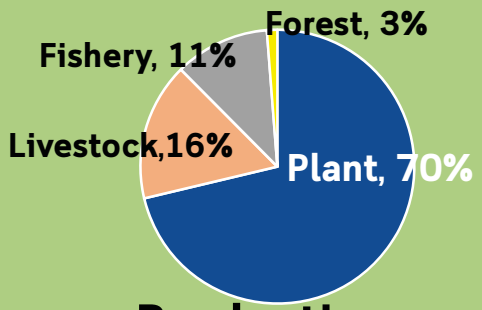
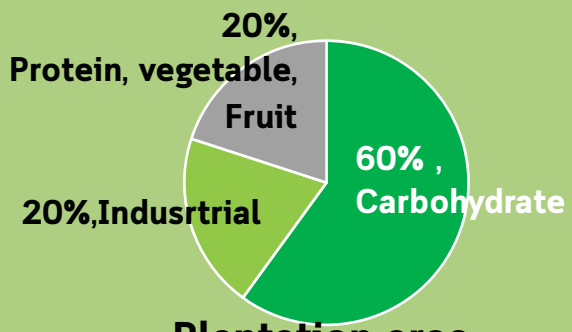
Thailand's
Agricultural Status

Thailand's Agricultural Status



Production



Plantation area
(24 million Hectares)

GDP 8.5% of GDP

Major Exports of Agricultural Products

- Rice 130,000 MB
- Rubber 128,500 MB
- Poultry 100,000 MB
- Sugar 96,200 MB
- Cassava 81,000 MB
- Shrimp 52,200 MB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Thailand's Agriculture
Challenges

Thailand's Agricultural Challenges

Too large a share of agricultural workers, causing low capita income
(More than 30 % of labor forces but has share of income 8-9 %of GDP)

- Lack of ability to access finance, knowledge, know-how and market (small-scale farming).
- High production costs (low yield, high labor cost, imported inputs)
- Climate change (water scarcity, harsh env.)
- Health Awareness
- Rapidly aging farmers (>60 Ys increased 14%)
- Natural resource depletion







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How to Moving
Forward Agriculture

BCG : Economic Model for Sustainable Development

Bioeconomy

- Maximize genetic potential of plants to meet market demands
- Minimize health risk associated with pesticide residue
- Optimize crop production system to maximize health benefits
- Add value to agricultural and food products

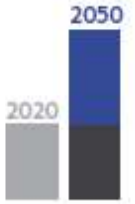
Circular economy

- Maximize the use of resources
- Minimize waste and production losses
- Prolong shelf life
- Preserve natural environment

Green economy

Achieve sustainability of natural resources coincide with local cultural and equality context leading to culture for sustainable development

Move Forward Thai Agriculture



Global food demand is expected to **increase 60 %** by 2050

Thailand is one of the few countries where **its agricultural production exceeds its domestic use**

Due to COVID-19 crisis, **certain groups of educated professionals return to their hometown**

Hygienic kitchen of the world

Transforming Thailand's agricultural sector to be more efficiency, higher standard and higher income

Increasing productivity under limited land used and climate change effect

More international trade restriction on agricultural products post COVID 19

Developing farmers' career path to motivate young generation to work in agricultural sector

Strategies for Driving Agricultural Sector

01

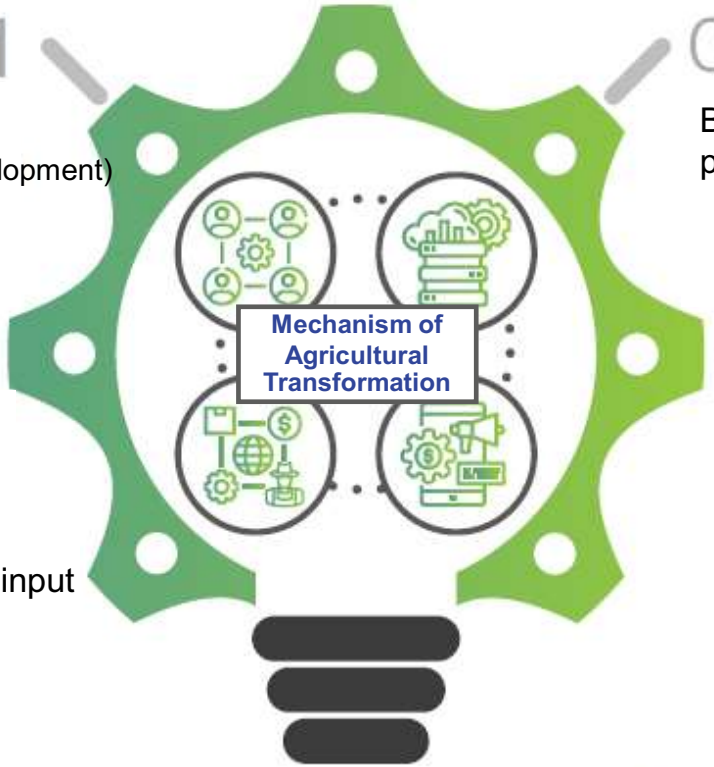
Talent Development

- Agricultural Talent Development (educating, knowledge transfer and development)
- Smart farmers development

02

Database

Big data application for agricultural production and business management



04

Availability of inputs

- Soil, water
- Appropriate agricultural input
- Agricultural services
- Sources of funding

03

S&T

- AI and Digitalization
- Quality control
- Marketing

Quadruple helix: Public private academic and community partnership

Agricultural Talent Development

- Enlarge the agricultural volunteers "Aor Kor Sor" to enhance their roles as coordinators and consultants. (240,000 to 300,000 volunteers)
- Enlarge Smart farmers (1 to 2 millions)
- Promote the old learning centers to be modern learning centers for agricultural technology and innovation.
- Develop a modern agriculture curriculum with an emphasis on the integration of agricultural knowledge and modern science.
- Provide the Agricultural Development Institute for personal skill improvement which is conducive to enhancing production efficiency.
- Form a network of researchers both within and beyond Thailand.

Database

Using big data for increasing productivity and targeted market strategies

- Integrate agricultural information and develop **a Big Data infrastructure**
- Invest in infrastructure such as **communications and IT**
- Provide **knowledge management** to link knowledge of production and technology with the regional units that disseminate information to local stakeholders (i.e. farmers)
- Develop an **incentive system** encouraging farmer participation in the sharing of locally gathered information relating to agricultural production

S &T

- Promoting the creation and use of knowledge in **technology and innovation** for agricultural production
- Establish **an innovation fund** for joint investment in research and technology development with private companies.
- **Endorse modern agriculture programs** with the aim to develop circular agriculture
- Invite **investments** from leading companies **in modern agricultural technology**, such as animal vaccine development
- Develop **an agricultural innovation district** such as an Agricultural Science Park.
- Promote Institutions responsible for the storage of genetic materials
- **Unlock barrier laws**, and develop clear strategies

Availability of inputs

- Promote the creation of agricultural innovation entrepreneurs
- Provide comprehensive quality inspection units at the area level
- Distribute knowledge and high-production technologies to farmers

Expected outcome of BCG in Agriculture sector

Economic

Increase GDP from 13 to 17 Trillion Baht

- Improve productivity efficiency and reduce food loss
- Being top 10 Agricultural exporters
- Quality agricultural inputs for industrial linkages
- Farmers' income increases 100,000 Baht/household/year (job security and job creation)

Health and wellness

- Farmers/consumer are safe from chemical residue
- Healthy Consumers from nutritional agricultural productivity

Environment

- Reduce environmental chemical contamination
- Reduce incineration process and PM 2.5
- Sustainable use of natural resource (soil and water)
- Cultivate more greenspace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ASEAN Collaboration

The Mekong Community of Practice in Rice

- Launched in 2004 by the Rice Gene Discovery Unit (BIOTEC-KU)
- Aims to promote the implementation of marker-assisted selection (MAS) into the rice breeding program in the Mekong region
- Activities includes hands-on training program/ sharing of genomic information and research facilities.

DAR Yezin, Myanmar · NAFRI · Generation A CGIAR Challenge Programme · The ROCKEFELLER FOUNDATION · SOUTHEAST ASIA-EUROPE JOINT FUNDING SCHEME FOR RESEARCH AND INNOVATION · BIOTEC a member of NSTDA · สวทช NSTDA

Marker-assisted Selection Technology

(Rockefeller Foundation ; NSTDA)
Kasetsart University)
- Transfer DNA technology and genomic information
- Improve grain qualities of Mekong rice varieties by MAS

Phase I
2004 - 2006

Phase II
2007 - 2009

Phase III
2009 - 2013

Phase IV
2014 - 2017

Phase V
2018 - 2021

(Generation Challenge Program ; NSTDA)
- Human resource development by providing scholarship
- Build phenotyping facilities and trait validation
- Research condition and farmer 's field trials of products of Phase II

(NSTDA under the SEA-EU Joint-Funding Scheme)
- Human resource development by providing scholarship
- Addition of heat tolerance to improved varieties

(Generation Challenge Program ; NSTDA)
- Continuation of line conversion Phase I
- Validation of introgression lines for target traits

(Generation Challenge Program ; NSTDA)
- Farmers' field trials of products of Phase II
- Release of several varieties in Laos and Myanmar

Rice varieties released

- Thukha Hmwe
- Saltol Sin Thwe Latt

- Hom Tha Dok Kham1
- Hom Xebangfai2
- Hom Xebangfai3
- Hom Xebangfai4
- Thasano11
- Hom Tha Dok Kham8


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Thank you