Overview of Agriculture, Research and Extension in THAILAND

34TH INTERNATIONAL VEGETABLE TRAINING COURSE MODULE 3: SUSTAINABLE DEVELOPMENT, 18 NOVEMBER 2015 @ AVRDC RESEARCH AND TRAINING STATION, KASETSART UNIVERSITY: KAMPHAENG SAEN CAMPUS BY DEPARTMENT OF AGRICULTURAL EXTENSION - DOAE

Topics' talk today

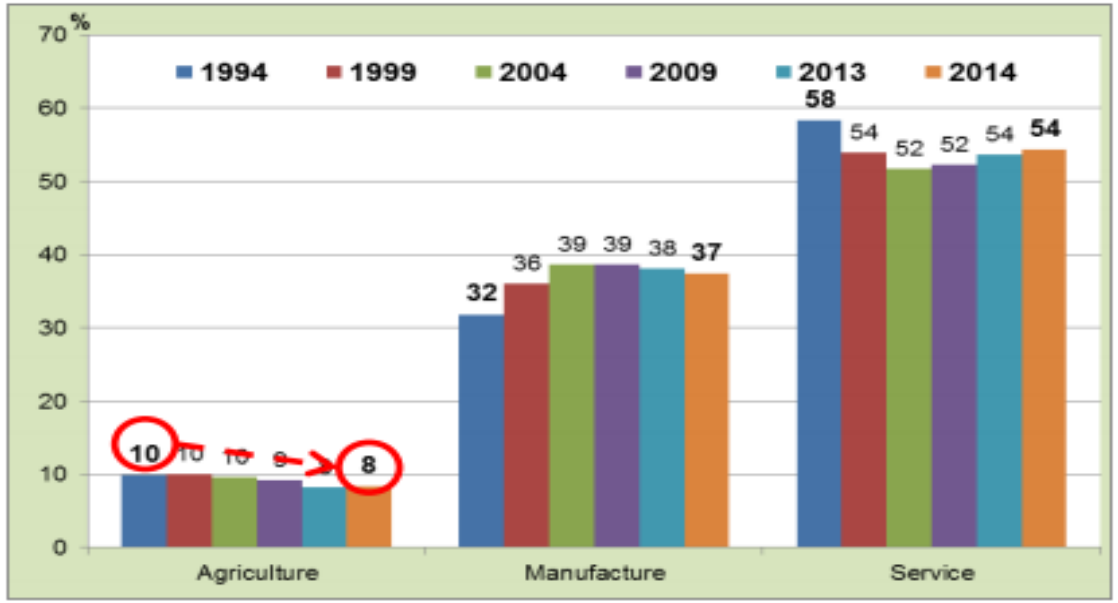
1. **Challenge & THAILAND Agriculture policy**
2. **Agriculture Research**
3. **Research & Extension**
4. **DOAE & Agricultural Extension**
5. **Ex. Sustainable Agriculture Learning Center**

Challenge & Thailand Agriculture Policy

Importance of agricultural sector

Thailand's development has been generally based on agricultural production

GDP by Sectors



Share of GDP in agricultural sector has been decreasing.

- Agricultural production accounts for only 8% of GDP in 2014.
- However, the agricultural sector still has an important role to play in the country's production structure.

LABOR: The agricultural sector is mainly supported by smallholders , about 1/3 is presently employed in agriculture.

LAND: 133 million rais or 41% of total land is engaged in agricultural sector.

- 68 million rais or 50% is accounted for paddy area,
- 30 million rais or 23% is accounted for other croplands.

EXPORT: Although its GDP share has decreased substantially, it still accounts for 30% of total exports by value, and agricultural imports remain very small.

SAFETY NET: The agricultural sector is the unofficial social safety net which helps absorb the newly unemployed during the crisis by providing job opportunities in farmland

Credit to NESDB

Diversification of agriculture in Thailand

Agriculture is highly diversified and specialised, different geography conditions

Northern Region

- Mountainous area

Southern Region

- Coastal

North-eastern Region

- Plain area / low rainfall and

Central Region

- Plain area / Irrigated area

Credit to NESDB

Characteristics of Thailand's Agriculture

Problems of internal factors in agriculture

INPUT

LAND

LABOR

CAPITAL

LAND

- **Small average farm size**
  →average farm holding area per household 4.07 ha
  →farmers in the Central plain region had the highest farm size 5.9 ha, while the Northeast 3.71 ha
- **Decrease in percentage of farmers own farms**
  → prevent expansion in investment and returns to scale
  →farmers in the Central plain had the highest rented area/farm
- **Extensive utilization of land but limited fertile and irrigated land**
  →the majority of the farming population depends on the weather and other natural conditions
- **Surface soil which contains nutrients were lost covering and the damaged area has been increasing**
  →directly hurt agriculture production as it reduced production efficiency and accelerated the use of chemicals

Characteristics of Thailand's Agriculture

Problems of internal factors in agriculture

INPUT

LAND

LABOR

CAPITAL

LABOR

- Decrease in agricultural laborers 37% of total labor, increase in average age of the agricultural labor
- **The intensive chemical use of commercial farming damaged farmers' health and quality of life**
  →increase in illnesses and casualties from pesticides (both producer and consumer)

CAPITAL / TECHNOLOGY

- Low level of application of modern technology / R&D
- Inefficient and high cost of agricultural logistics mechanism

Characteristics of Thailand's Agriculture

Low agricultural productivities and poverty in agricultural sector

INPUT

LAND

LABOR

CAPITAL

OUTPUT

Sources of growth in agriculture

Plans	GDP Growth	Source of growth			
		Land	Labor	Capital	TFP
6th Plan (1987 - 1991)	4.2	0.10	-0.10	3.00	**1.20**
7th Plan (1992 - 1996)	3.2	0.05	-0.27	6.75	**-3.37**
8th Plan (1997 - 2001)	2.0	0.06	-0.07	3.34	**-1.29**
9th Plan (2002 - 2006)	2.9	0.14	0.08	3.19	**-0.51**
10th Plan (2007 - 2011)	1.6	0.05	0.07	3.55	**-2.03**
11th Plan (2012)	3.8	0.02	0.23	3.93	**-0.39**
Average 1987 - 2012	**3.0**	**0.07**	**-0.01**	**3.96**	**-1.07**

Source: NESDB (2013)

Natural Disasters

Instability of Market Price

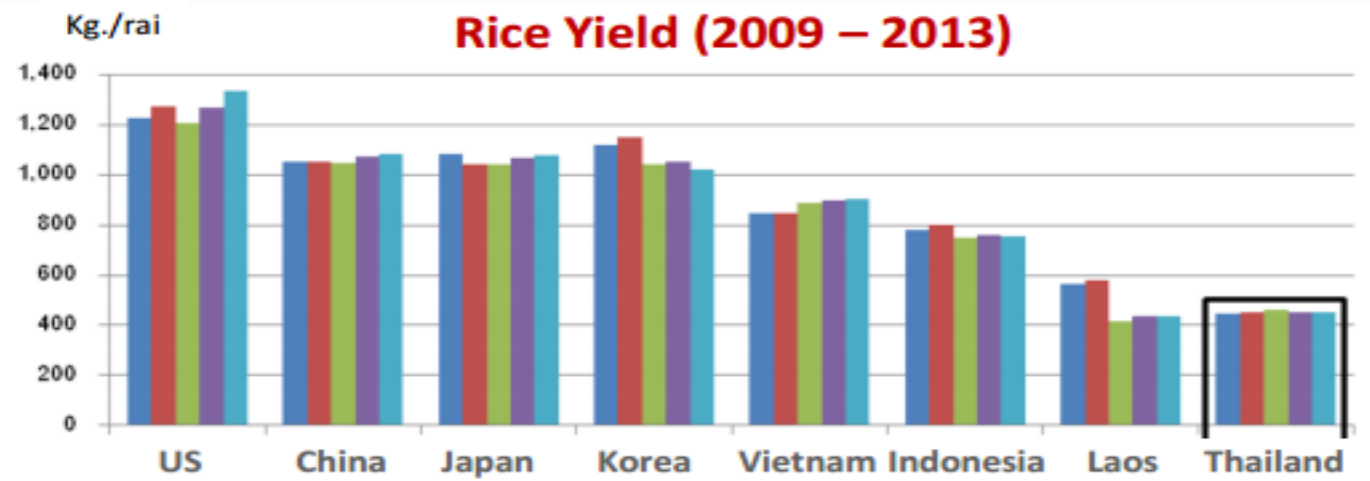
POVERTY

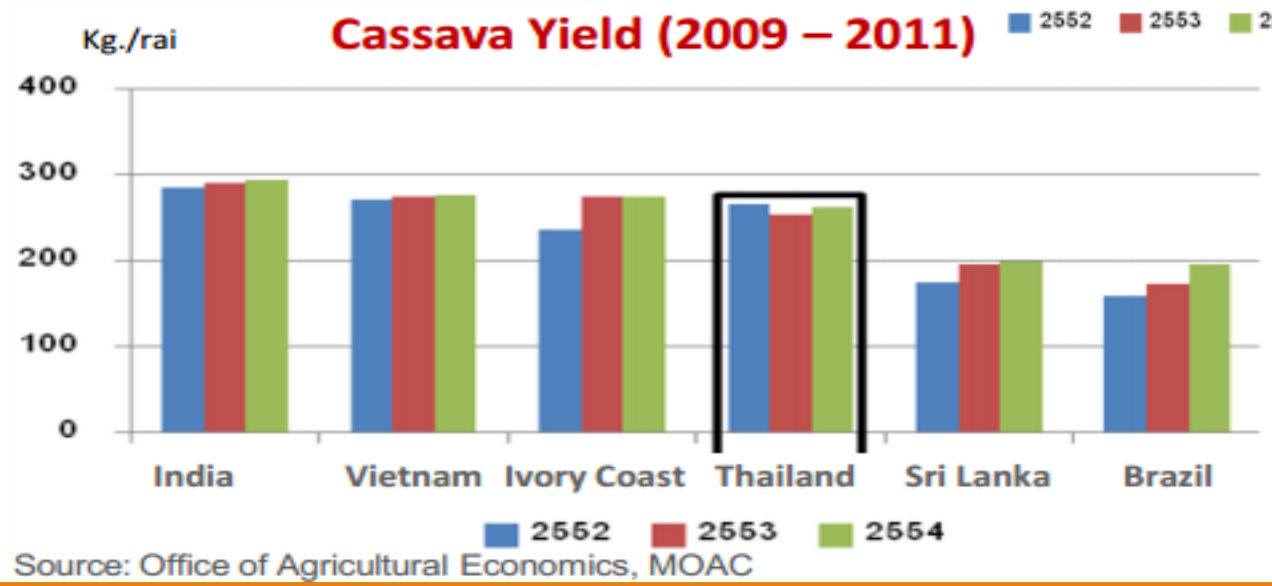
- Farmers suffer net losses from their production, especially for small farmers.
- Low product price, debt, and quality of life are main problems to the farmers

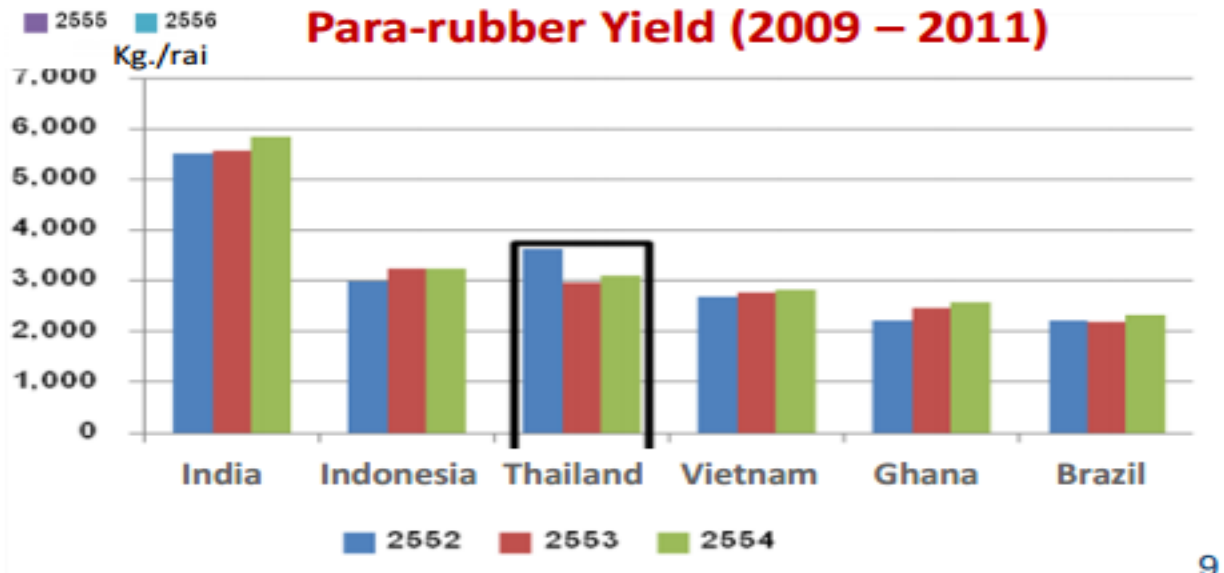
Credit to NESDB

Low Agricultural Productivities

Economic crops: Rice, Cassava, Para-rubber







Source: Office of Agricultural Economics, MOAC

Credit to NESDB

National Development Plans

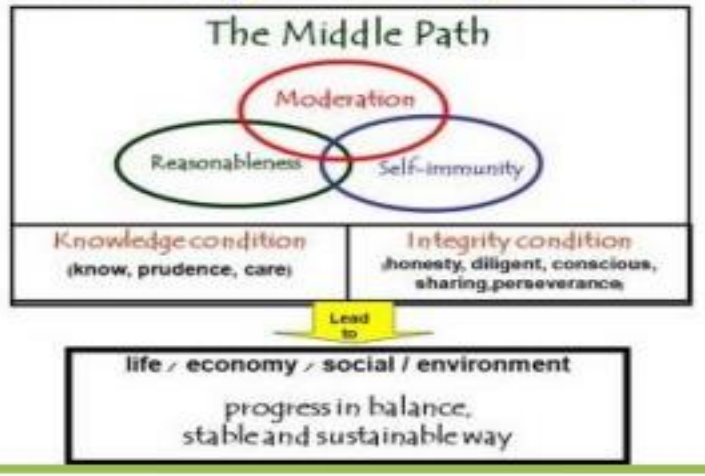
Evaluation of national plans to balance and sustainability

1st – 7th Development Plans

Focused on utilizing workforce and natural resources

An imbalanced economic growth

Philosophy of Sufficiency Economy



8th – 10th Development Plans

Stressed on Human Capital development

Moved Towards Sufficiency Economy

11th Development Plan (2012-2016)

Use Human Capital + Technology and Innovation + Reconciliation

Happiness=

- Equity +
- Green +
- Creativity

Credit to NESDB

National Agricultural Plans

Focus on increasing productivity, food security and sustainable development

1st – 3rd Plan

- To increase productivity continuously in order to respond to export markets especially cash crops (rice, corn, cassava rubber)
- To develop the irrigation system
- To provide soft loan for farmers

4th – 7th Plan

- To increase productivity continuously
- To restructure agricultural production
- To develop farmers' skill to increase ability at making decision on marketing instead of supporting production inputs

8th – 10th Plan

- To develop farmers' skill to increase ability at making decision on marketing instead of supporting production inputs
- To develop quality and standard for Thai products in order to respond to the non-tariff barriers

Sustainable Agriculture Promotion in 8th Plan

Aim to revive the rural community using sustainable farming by **reaching 25 mil rai for sustainable agriculture** and **20 percent of national arable land** targeting **8 mil farmers.**

Credit to NESDB

Situation changes during 11th NESDP

Evaluation of national plans to balance and sustainability

Major global changes

- Global rules and regulation
- Multi-polar world economy
- Aging society
- Global climate change
- **Global security on food and energy**
- Technological progress
- International terrorism threat

Major internal changes

- Economic and financial aspect
- Social aspect
- **Natural resource and environmental aspect**
- Spatial aspect
- National security aspect

Credit to NESDB

Objectives and Targets

Under 11th National Economic and Social Development Plan

Main Objectives

- To promote **a peaceful society** with good governance.
- To promote **sustainable development** through restructuring the economy, society and politics, and nurturing natural resources and environment.
- To prepare the **people and the community** to be resilient to changes

Key Targets

- **Thai society** is more **peaceful** and has good governance.
- **All citizens** are under **social protection**.
- **Total factor productivity** in every sector is **increased**.
- **Shares of agricultural and service sectors** in the economy are **increased.**
- Share of **creative economy** is **increased.**
- Thailand's **competitiveness** ranking is **improved**.
- **Natural resources and environmental** quality are **improved**.

The 11th National Plan in Agriculture

Targets

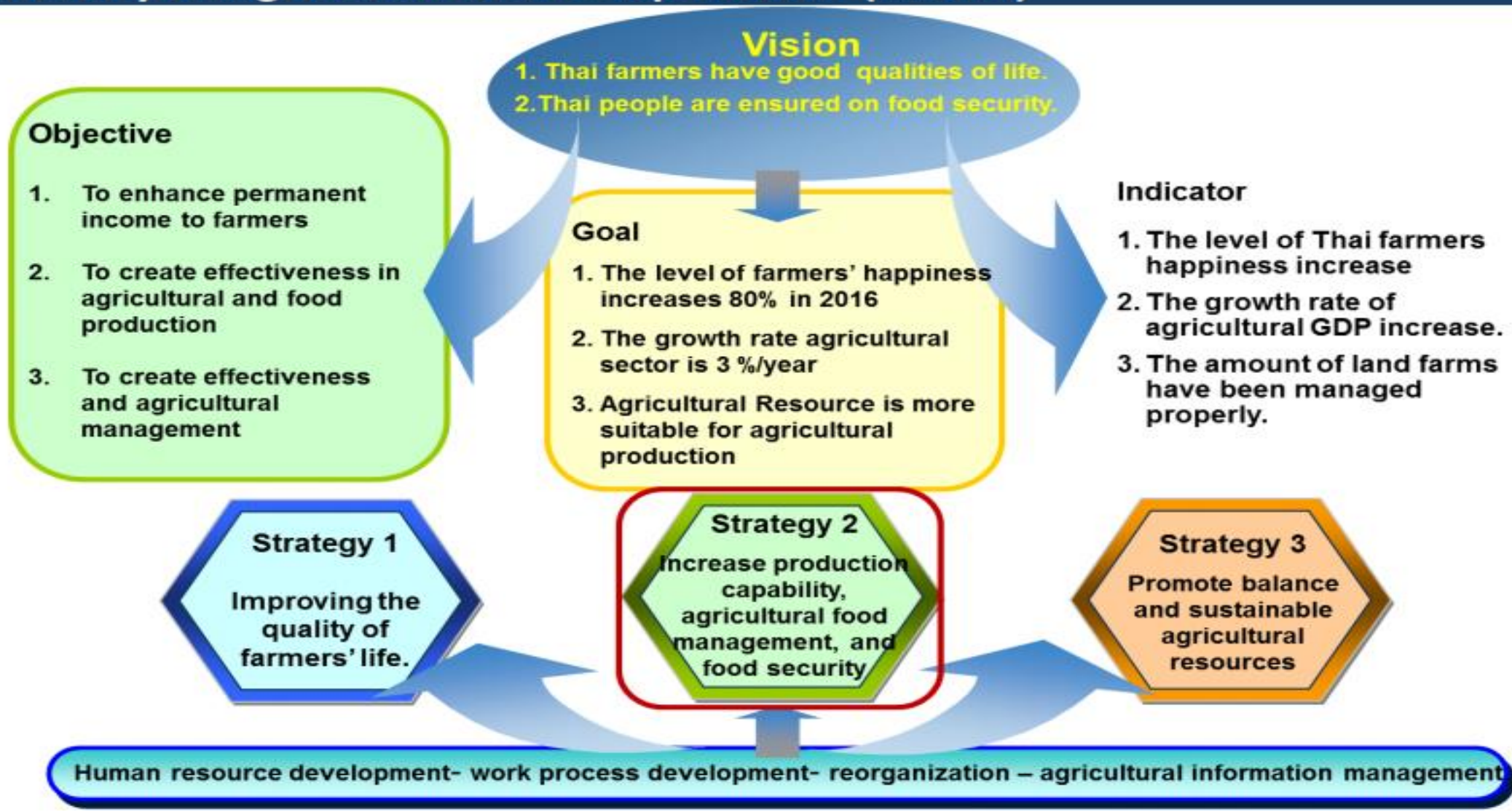
- To empower the agricultural sector to become an efficient production base that can produce food and energy with value, quality and high standards, including using environmentally friendly methods to generate sufficient food supplies to meet market demands with fair trade and at affordable prices, but with consideration for food security as the first priority

- An increase in the proportion of agricultural commodities and agro-industrial products to be at least **16% of GDP**
- Expanding sustainable agricultural areas **at least 5% per year** and enhancing consumer access to safe and healthy food at fair prices
- An improved employment security and income for farmers to enhance the ability to repay debt
- Agricultural households to become self-sufficient and **consume up to 50% of their own produce by 2016**
- An increase in ethanol and biodiesel production with the target of **not less than 6.2 and 3.6 million liters per day**, respectively

Credit to NESDB

Agricultural Development Plan

By Ministry of Agriculture and Cooperatives (MOAC)



Credit to NESDB

Thailand: Kitchen of the World

International Agriculture Strategies for 2012 - 2016

- Develop Thailand as a **center for food trade and food production of high quality** to meet the demand of consumers with high income and unique preferences.
- Develop Thailand to be a **center of futures markets** for such agricultural commodities as rice, sugar, and tapioca.

Increase crop productivity through R&D on crop strain improvement, develop production technology, and transfer research knowledge to farmers, so that they can use crop strains and technologies that are appropriate to local conditions.

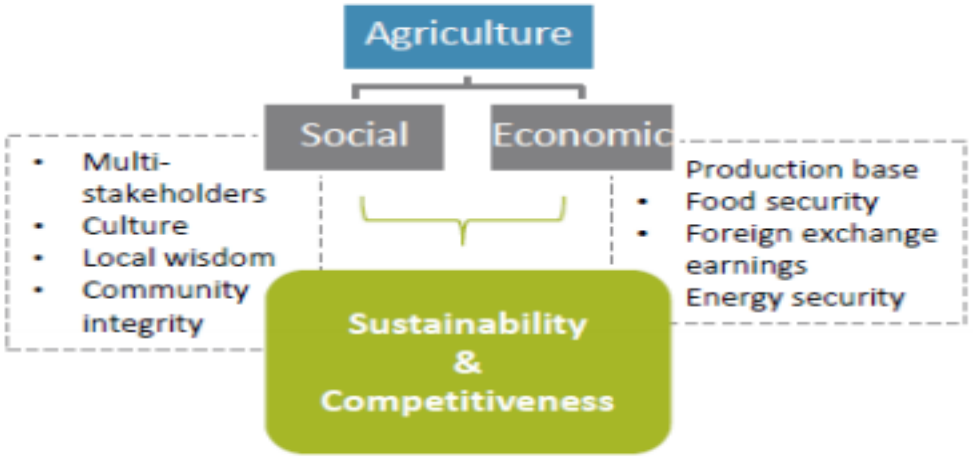
Develop value-added agro-industries to increase Thailand's competitiveness in the world market by upgrading the quality of Thai agricultural goods, so that they will gain greater recognition in foreign markets.

Promote cooperation with the international community under various cooperative frameworks. Esp. prepare for holding international negotiations to ease the problem of protectionist measures imposed by foreign countries.

Credit to NESDB

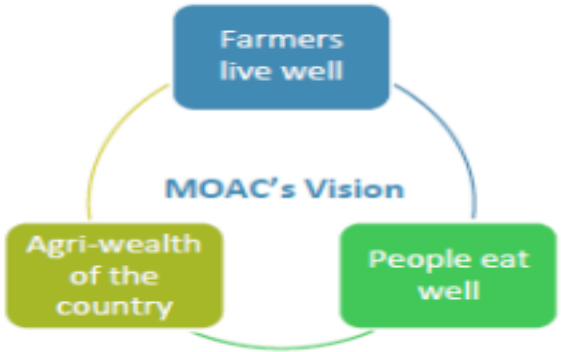
Agriculture Research

Thailand Agriculture Research Framework



Key factors:

- Quality of living
- Food security
- Participation of provinces/localities/communities
- Production/products competitiveness
- Efficient agriculture resources management
- Efficient value chain management



Challenges

- World economy and financial situation influencing Thai agricultural sector
- Trade/Investment rules lead to protectionism/NTB
- Degradation of natural and agricultural resources impair the sector
- Climate change
- Agricultural players: Aging/ reducing number, uncertain incomes
- Low production efficiency
- High production cost
- Lack or low availability of inputs
- Agriculture as primary products has low competitiveness

Strategy

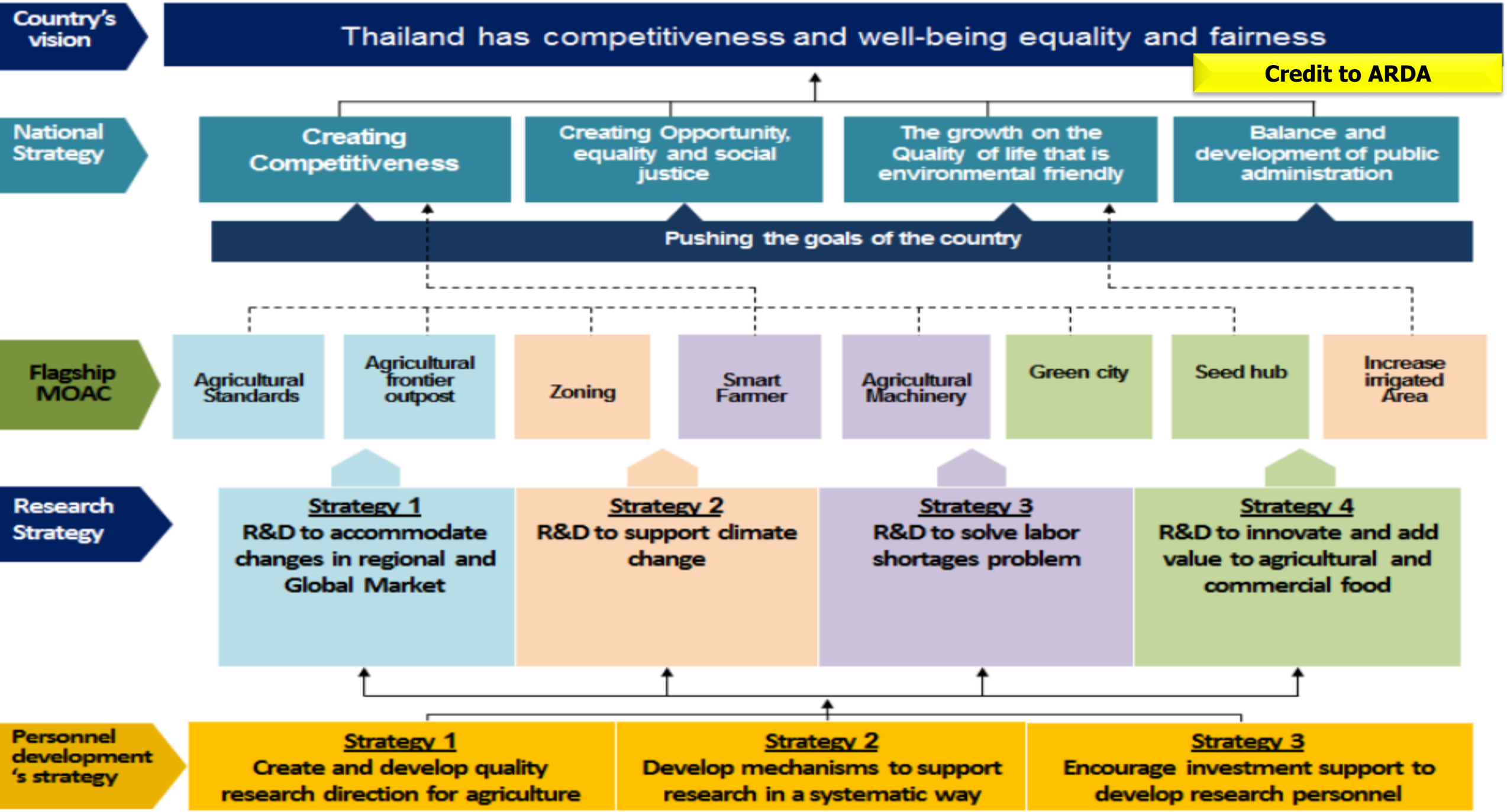
Farmers	Resources	Process	Market
• Self-dependence • Safety net • Knowledge • Competitive • Welfare • Farmers organizations • Young farmers	• Efficient use/ improvement/ rehabilitation • Adapt /mitigate to climate change • Land protection	• Cost efficiency • Green process • logistics management	• Market development • Networking and expanding regional/international markets • Safe/green/CSR products

Research Framework

- Policy & strategy research for farmers' better livelihoods
- Increase efficiency and green production practice and process
- Genetics/ crops and species improvement
- Plants, animals, fisheries, biodiversity protection/ rehabilitation
- Agriculture as adapted or mitigated to climate change
- Agricultural systems and resources management
- Microbes for agriculture, food, energy and environment
- Post-harvest technology and innovation of products
- Agricultural machinery
- Market-research for competitiveness

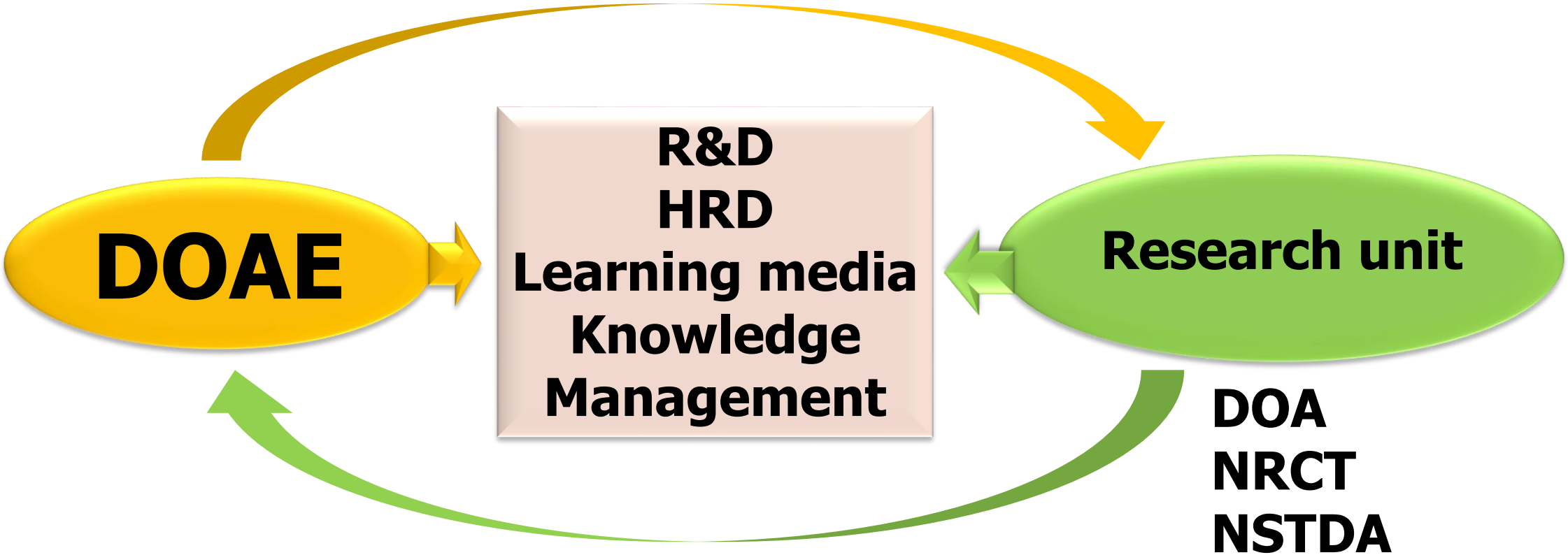
Credit to Dr.Wimol MOAC & ARDA

Dr. Wimol Jant


Country's vision
Thailand has competitiveness and well-being equality and fairness
Credit to ARDA
National Strategy
Creating Competitiveness
Creating Opportunity, equality and social justice
The growth on the Quality of life that is environmental friendly
Balance and development of public administration
Pushing the goals of the country
Flagship MOAC
Agricultural Standards
Agricultural frontier outpost
Zoning
Smart Farmer
Agricultural Machinery
Green city
Seed hub
Increase irrigated Area
Research Strategy
Strategy 1
R&D to accommodate changes in regional and Global Market
Strategy 2
R&D to support climate change
Strategy 3
R&D to solve labor shortages problem
Strategy 4
R&D to innovate and add value to agricultural and commercial food
Personnel development 's strategy
Strategy 1
Create and develop quality research direction for agriculture
Strategy 2
Develop mechanisms to support research in a systematic way
Strategy 3
Encourage investment support to develop research personnel

Research & Extension

Research problem & Needs



DOA
NRCT
NSTDA
ARDA
Universities
.....

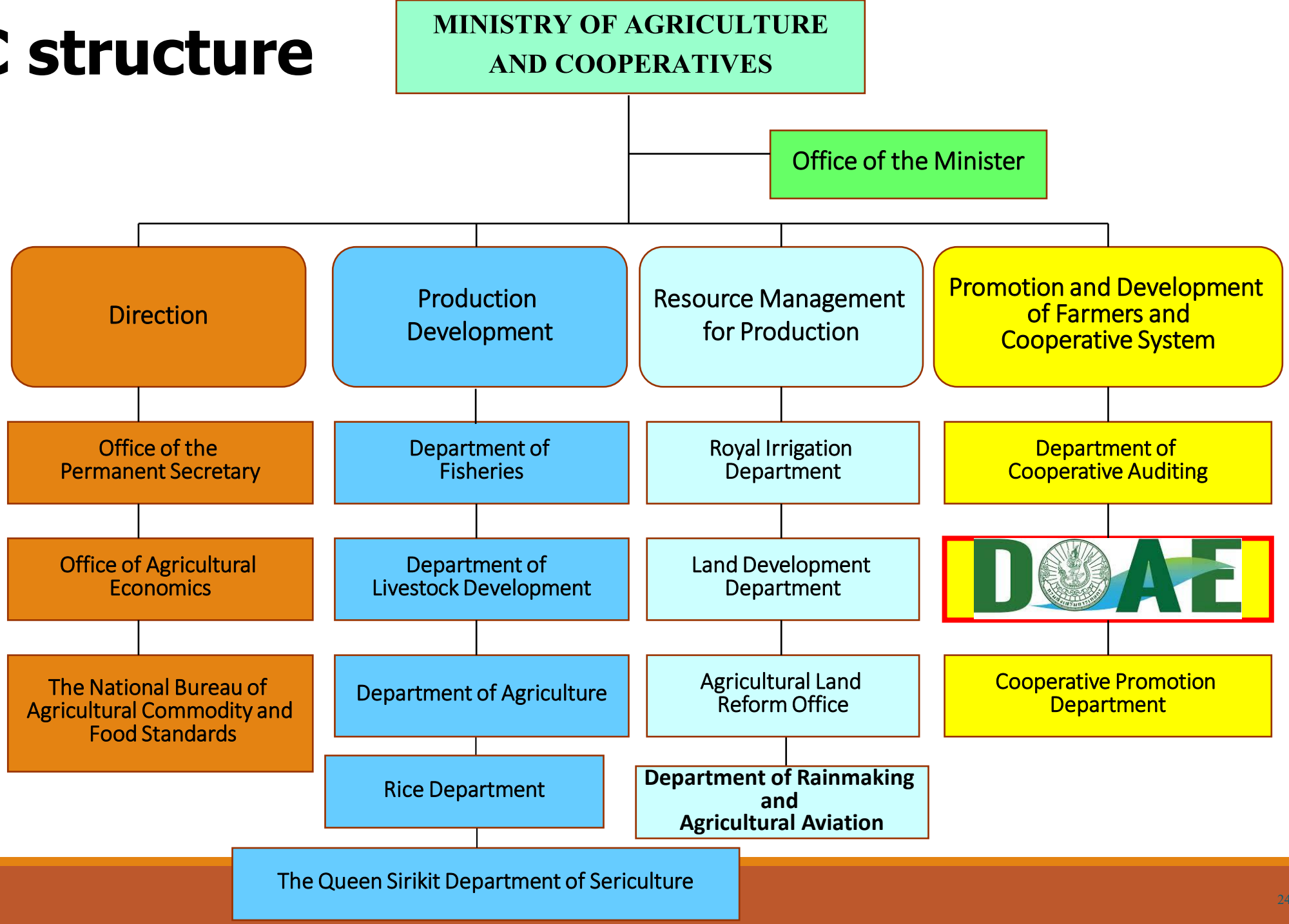
Knowledge – Technology - Funding

DOAE & Extension

Agricultural Extension at a glance

- To promote the application of scientific research, new or local knowledge through farmer education/learning in order to improve their agricultural practices
- AE is the informal education
- Follow the Self Sufficiency Economy Philosophy
- MRCF is the tool for the e-Extension
- AE needs R&D
- DOAE is the leading agency for Thailand AE

MOAC structure



Department of Agricultural Extension

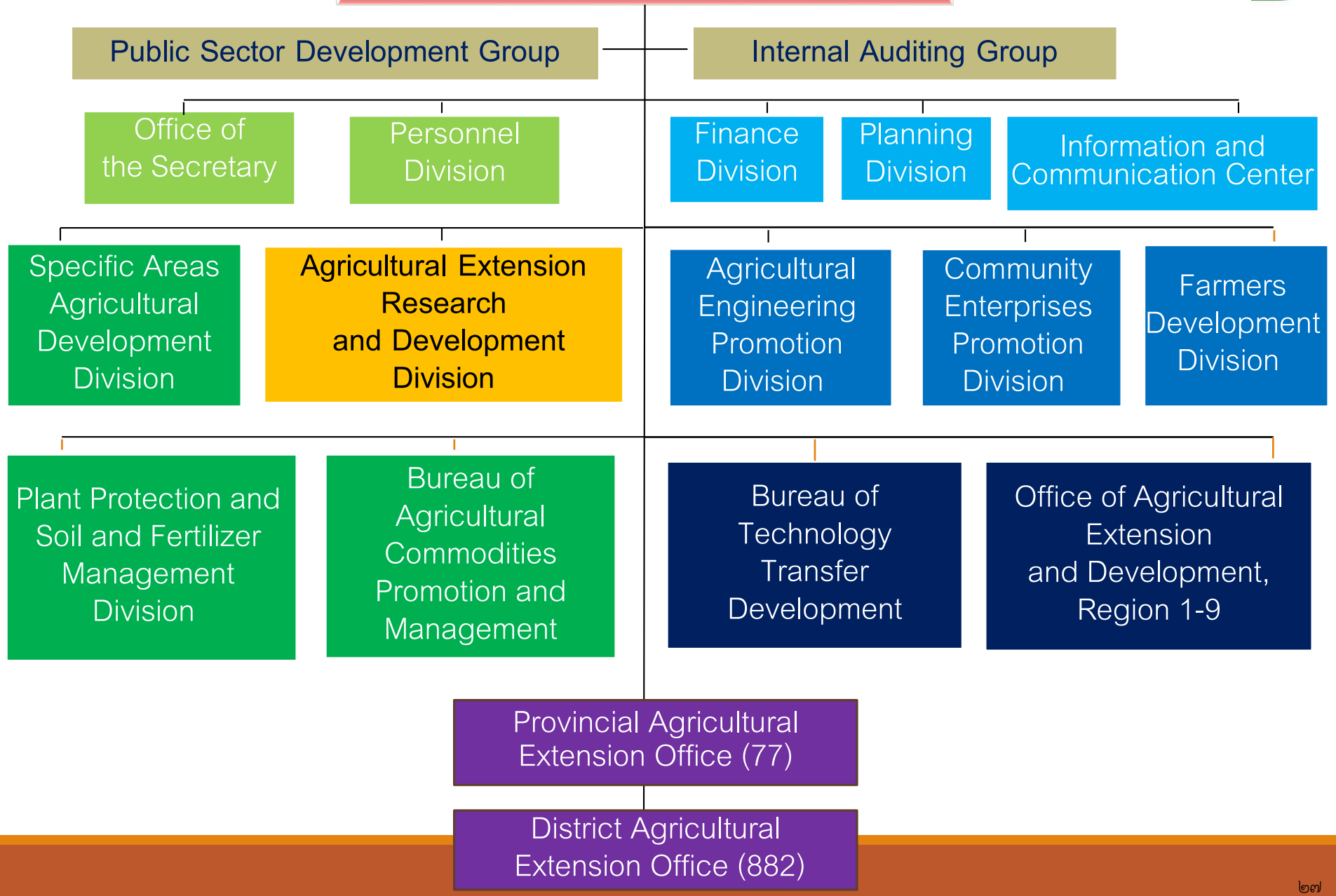
Vision...

"DOAE is the agency that has strong deliberation to develop and promote farmers to have sustainable well-being."

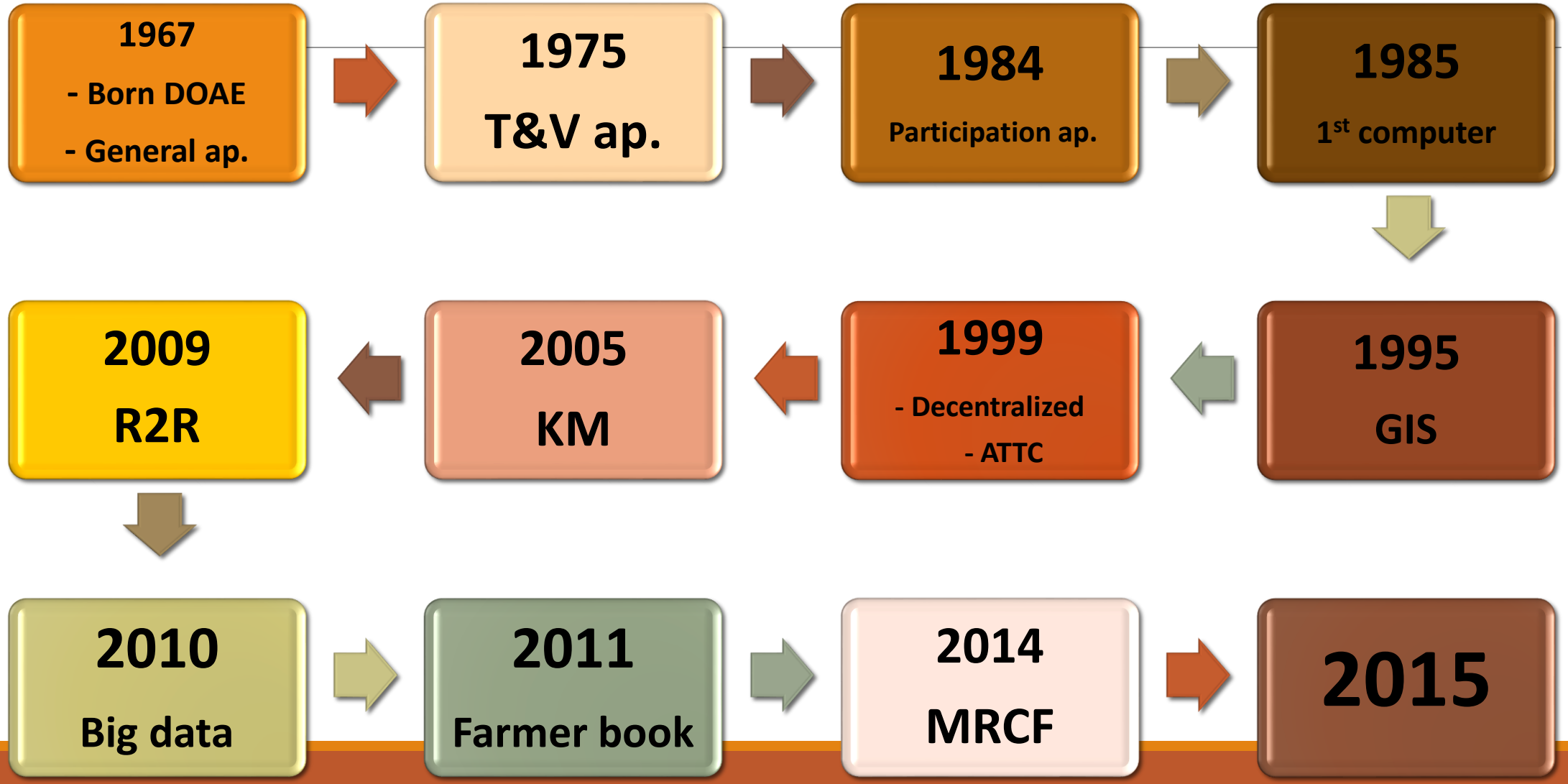
Mandate.....

1. Perform duties according to Community Enterprise Promotion Act and other related Acts
2. Promote and develop farmers, farmers' families, farmer organizations and community enterprises
3. Promote and develop agricultural commodities production and management
4. Provide agricultural occupation training, transfer technology, and render agricultural services
5. Conduct agricultural extension research and development
6. Carry out other duties as stipulated by laws or as assigned by the Minister or the Cabinet

DOAE's Organizational Chart



The 48th year of DOAE



Administrative

DG Olan Pitak

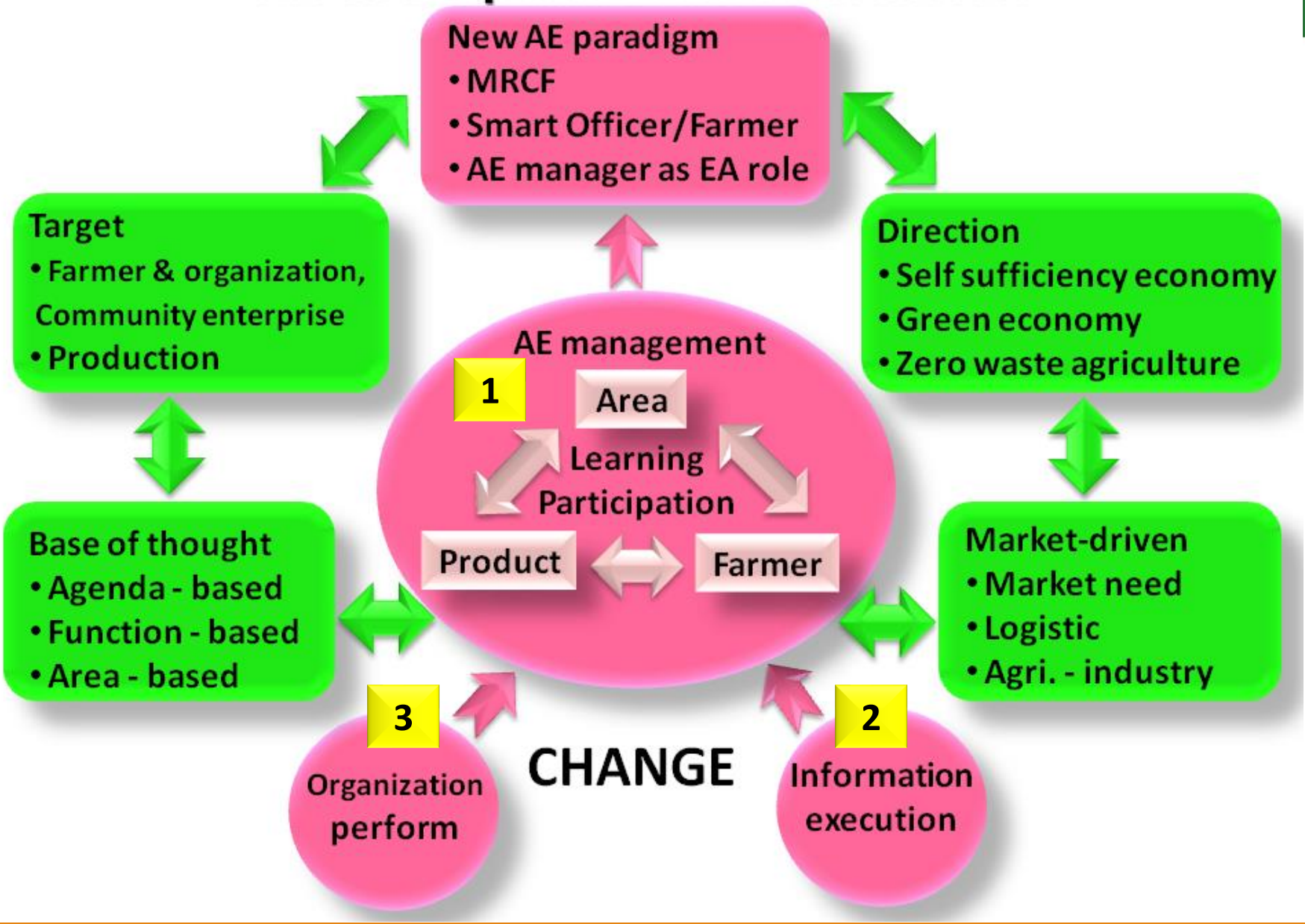
Lead by DG & 3DDs

- 15 Divisions in the central
- 9 Regional offices
- 77 Provincial offices
- 882 District offices
- About 14,000 Staffs

DD. Khanit Likhitwittayawuti

DD. Songkran Pakdeekong

AE Conceptual Framework 2014



AE Target

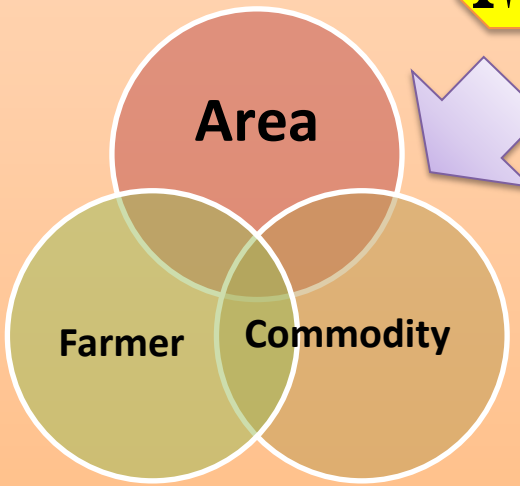
- Thai population = 64,871,000 / Farmer = 23,875,909
- Farmer Household = 7,074,355
- Smart farmer = 150,290 / Youth smart farmer = 5,881
- Agricultural Village Volunteer = 75,352
- Farmer group =9,552
- Community entrepreneur = 72,830 C.E.
- Total Land = 320,696,888 Rai
- Agri. Land used = 46.54%

EXTENSION AGENT

- AE Manager
- Change agent

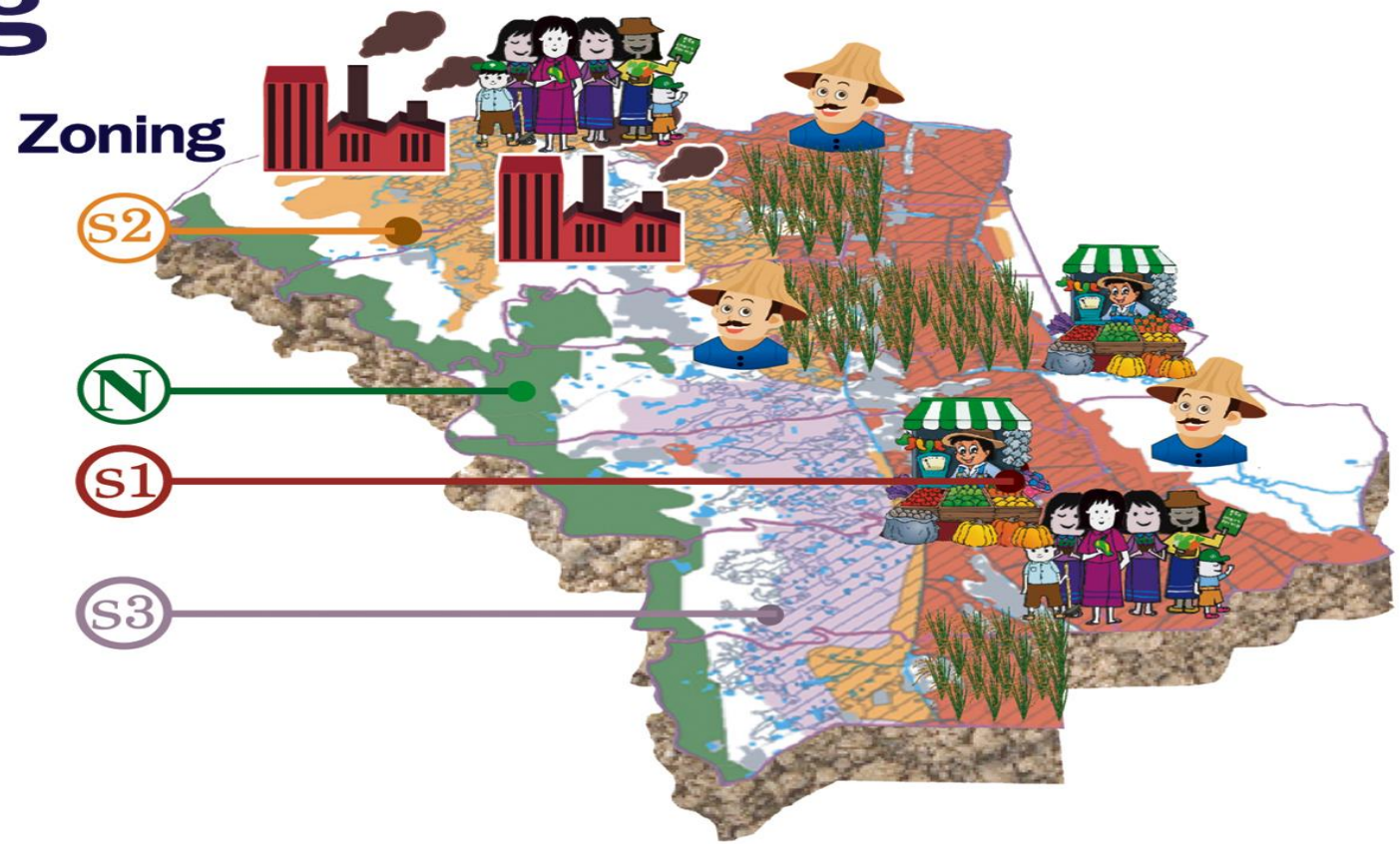
MRCF

- **M** • Mapping
- **R** • Remote sensing
- **C** • Community Participation
- **F** • Specific Field Service



- SMART OFFICE
- SMART OFFICER
- SMART FARMER
- SMART GROUP
- SMART PRODUCT

Mapping



Factory

Demand–Supply

Farmer Group

Smart Farmer

Plantation

Agriculture Problems
Farmer Needs
Area Potential

Development Plan

Remote sensing

Community Participation

Farmer,Farm Women,Youth

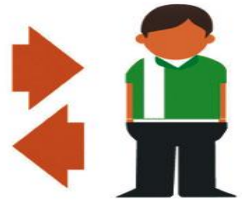
Agriculture Technology Transfer and service Center
(Sub-District Level)

Community Pest Management Center

Community Soil and Fertilizer Management Center

Agriculture village Volunteer

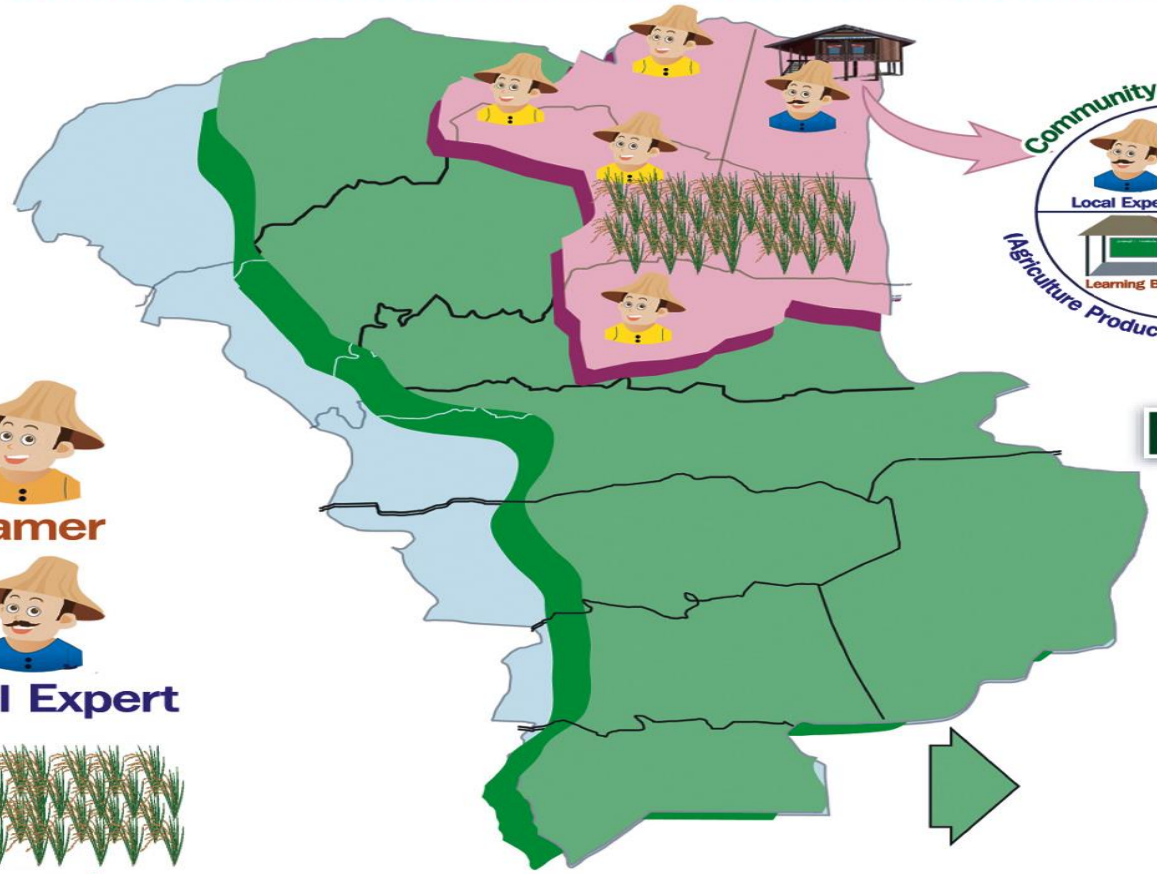
Stakeholders

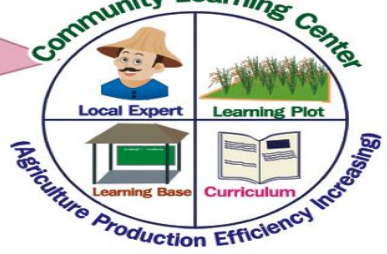


Extension Agent

Specific Field Service

- Area
- Farmer/Group/Community Enterprise
- Product/Commodity
- Technology





Famer

Local Expert

Plantation

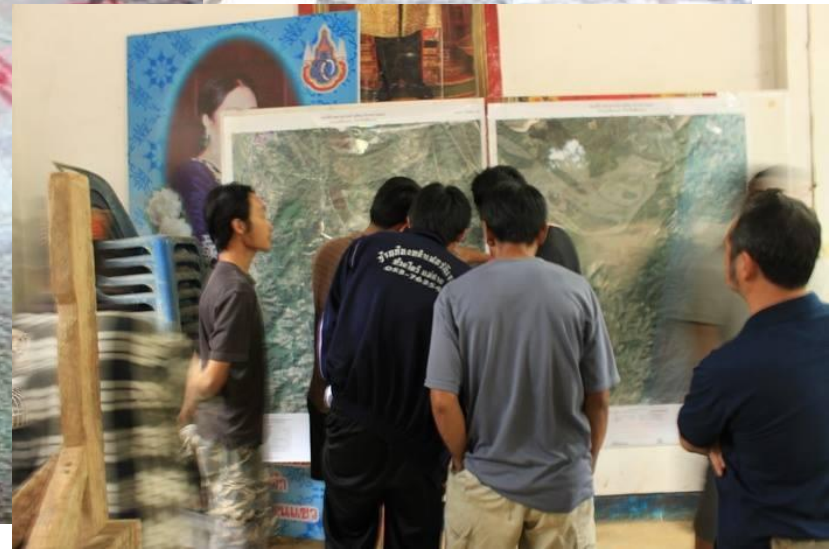
Big Area/Big Plantation

- Manager
- Management
  - Input
  - Technology
  - Marketing
  - Logistic
- Market–Driven

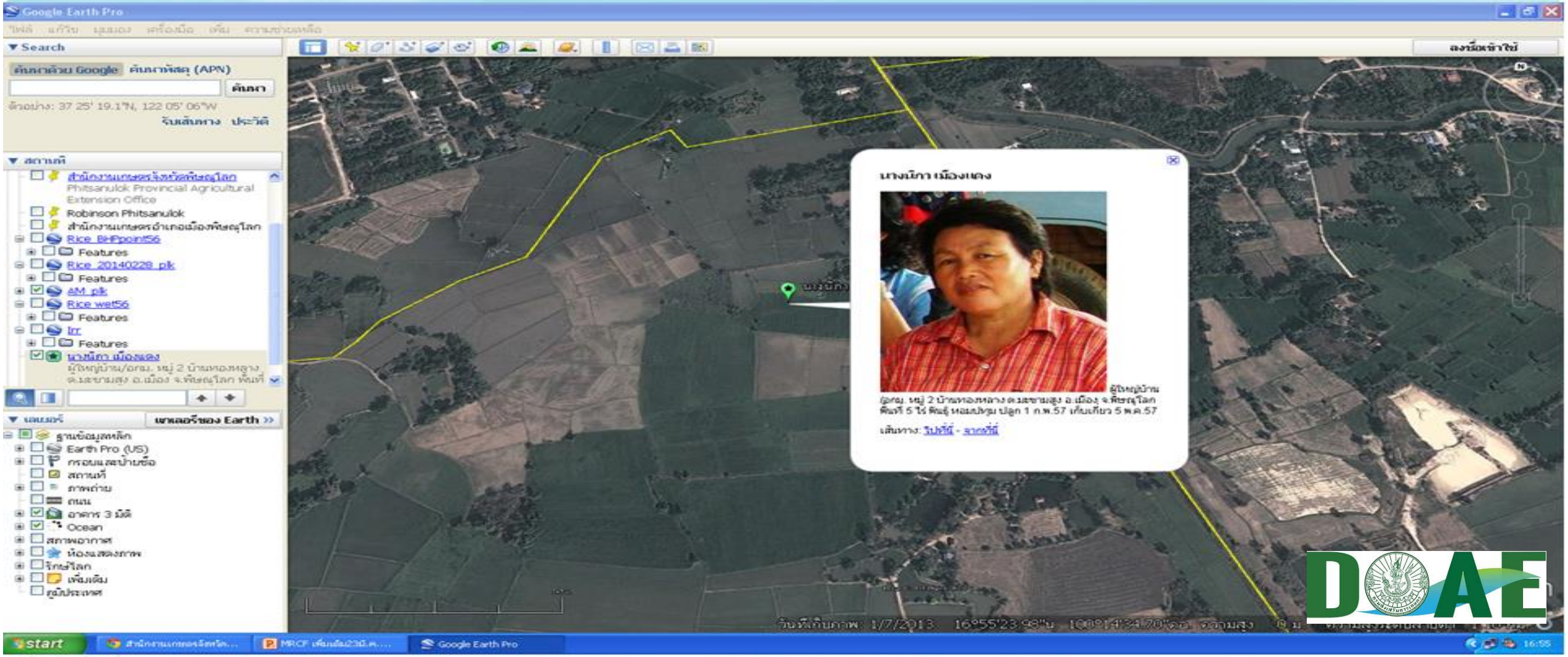
e –Extension Smart Office

www.doae.go.th

www.Thai Smart Farmer.net.th



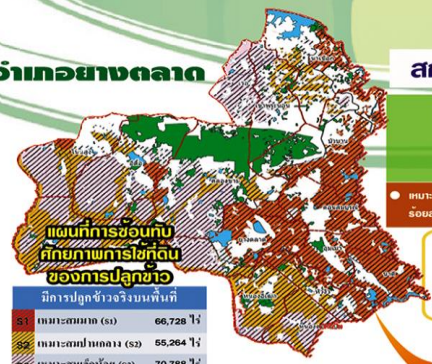
ตัวอย่าง ข้อมูลรายแปลงของเกษตรกรผู้ปลูกข้าวนาปรัง (แปลงเฝ้าระวัง)



ศูนย์เรียนรู้การเพิ่มประสิทธิภาพการผลิตสินค้าเกษตร

กิจกรรม ปรับเปลี่ยนพื้นที่นาข้าวเป็นอ้อยโรงงาน

อำเภอยางตลาด จังหวัดกาฬสินธุ์



มีการปลูกข้าวจริงบนพื้นที่		
S1	เหมาะสมมาก (S1)	66,728 ไร่
S2	เหมาะสมปานกลาง (S2)	55,264 ไร่
S3	เหมาะสมเล็กน้อย (S3)	70,788 ไร่
N	ไม่เหมาะสม (N)	19,459 ไร่

สถานการณ์

เป็นอำเภอที่ปลูกข้าวมากที่สุดของจังหวัด
พื้นที่ปลูกข้าวรวม 212,230 ไร่
ผลผลิตข้าวเฉลี่ย 392 กก.ต่อไร่

- เหมาะสม (S1)และ(S2) 121,992 ไร่ ร้อยละ 57.48 ของพื้นที่ปลูกข้าวทั้งหมด
- ไม่เหมาะสม (S3)และ(N) 90,238 ไร่ ร้อยละ 42.52 ของพื้นที่ปลูกข้าวทั้งหมด

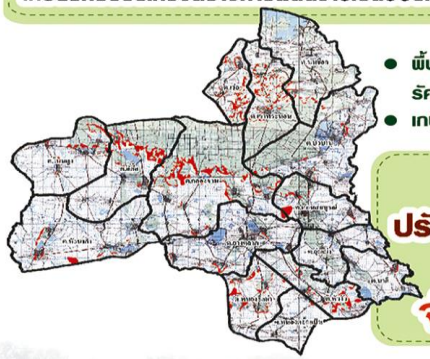
ปัญหา

พื้นที่ไม่เหมาะสมกับการปลูกข้าว

สัญลักษณ์	คำอธิบายแผนที่	เนื้อที่ (ไร่)
S1	ชั้นเหมาะสมมาก	55,523 ไร่
S2	ชั้นเหมาะสมปานกลาง	98,346 ไร่
S3	ชั้นเหมาะสมเล็กน้อย	76,711 ไร่
N	ไม่เหมาะสม	132,019 ไร่
	รวม	362,600 ไร่

แนวทางในการพัฒนา

เกษตรกรปรับโครงสร้างการผลิตข้าวเป็นอ้อยโรงงาน



- พื้นที่เป้าหมายขยายพื้นที่ปลูกอ้อยโรงงาน รัศมี 50 กิโลเมตร จากโรงงานน้ำตาล
- เกษตรกรสมัครใจ

พื้นที่เป้าหมาย
ปรับเปลี่ยนพื้นที่ปลูกข้าวไม่เหมาะสม
เป็นอ้อยโรงงาน
จำนวน 15,796 ไร่

1. การปรับปรุงบำรุงดิน
2. การลดต้นทุนการผลิต
3. การเพิ่มคุณภาพผลผลิต

นายมนูญ ขนันแข็ง

ผลที่เกิดขึ้น

เกษตรกร เปลี่ยนข้าวเป็นอ้อยโรงงาน 181 ราย

ปรับเปลี่ยนเป็นอ้อยโรงงาน
กำไร 3,650 บาท/ไร่

ผลตอบแทนเดิมข้าว
กำไร 152 บาท/ไร่

ลดต้นทุนการใช้ปุ๋ยเคมี
ได้ 513 บาทต่อไร่

พื้นที่ เปลี่ยน

ข้าว เป็น อ้อยโรงงาน 2,109 ไร่

เป้าหมาย เปลี่ยนข้าวเป็นอ้อยโรงงาน

- ปี 2559 จำนวน 1,000 ไร่
- ปี 2560 จำนวน 1,000 ไร่

Zoning = Area + Commodity + Human Resource

Credit to MOAC

1 ขับเคลื่อน & บูรณาการ

Smart Farmer

One ID Card for Smart Farmer

Smart Farmer Smart Officer | e-check

www.thaismartfarmer.net

Knowledge Base | e-Services

M Smart Farmer ต้นแบบ
E Existing Smart Farmer
D Developing Smart Farmer

Zoning

การซ้อนทับข้อมูล (OVERLAY)
↓
เขตความเหมาะสมสำหรับการปลูกพืชเศรษฐกิจ

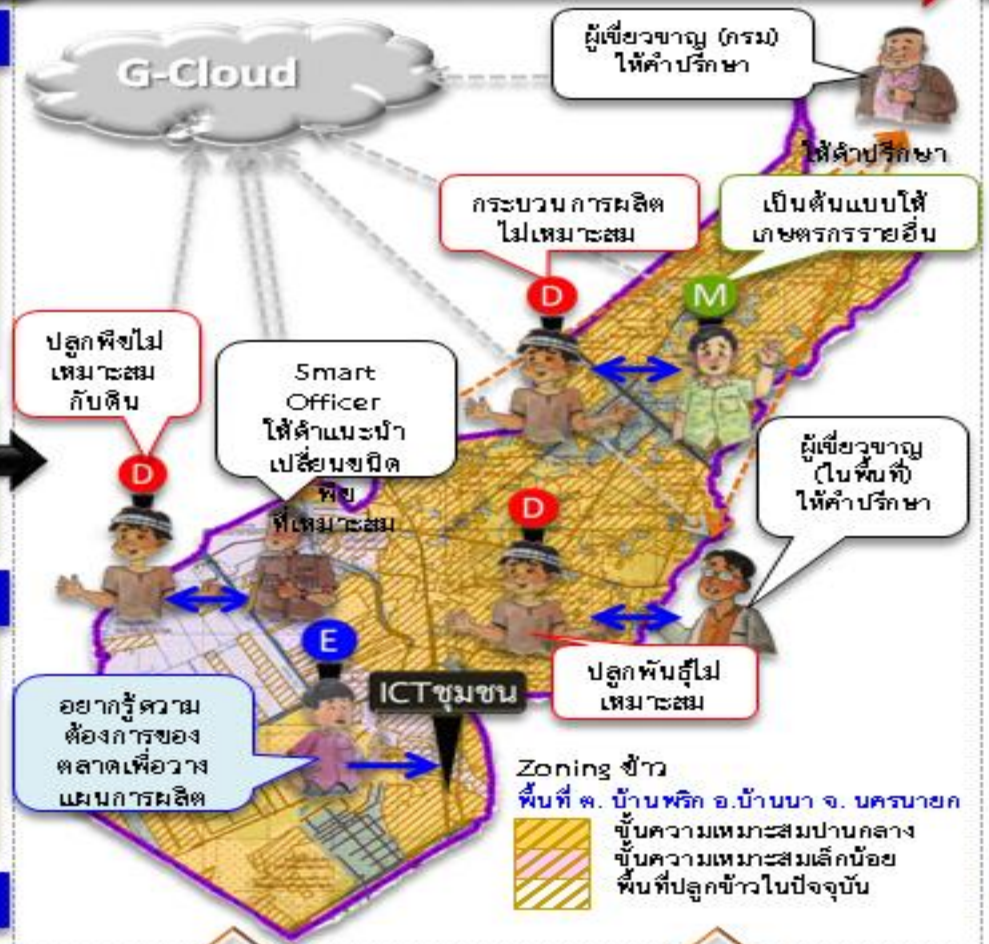
Commodity

- ศูนย์ข้อมูลการเกษตร (War Room)
- การจัดการข้อมูลที่มีประสิทธิภาพ
- แผนพัฒนาการเกษตรฯ ของจังหวัด

- ปรับระบบส่งเสริมและพัฒนาเกษตรกรใหม่
- One Stop Service
- MRF / คลังสมอง

- พัฒนาโครงสร้างพื้นฐาน & ระบบ Logistics ด้านการเกษตร
- การสนับสนุนทางการเงิน
- ฯลฯ

2 Information on Map & การดำเนินงานในพื้นที่



Zoning ข้าว
พื้นที่ ต. บ้านพริก อ.บ้านนา จ. นครนายก
ขั้นความเหมาะสมปานกลาง
ขั้นความเหมาะสมเล็กน้อย
พื้นที่ปลูกข้าวในปัจจุบัน

3 พัฒนา กลุ่มเป้าหมาย/พื้นที่/สินค้า ได้อย่างเหมาะสม

"เกษตรกรไทยเป็น Smart Farmer
โดยมี Smart Officer เป็นเพื่อนคู่คิด"

M
- โครงการต่อยอด
- ร่วมกับพัฒนากลุ่มอื่นๆ

E
- ส่งเสริม & ต่อยอด
- พัฒนาเพิ่มเติมตามคุณสมบัติ

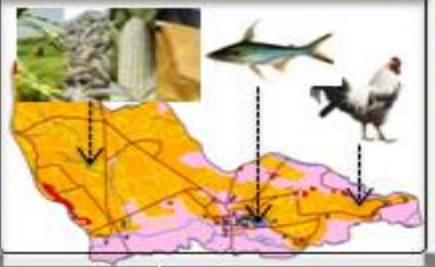
D
- ช่วยเหลือ & สนับสนุน
- พัฒนาปรับปรุงตามคุณสมบัติ
- ฯลฯ

ผู้เชี่ยวชาญ (กรม)
ศึกษาวิจัย นวัตกรรม ความร่วมมือต่างประเทศ ฯลฯ

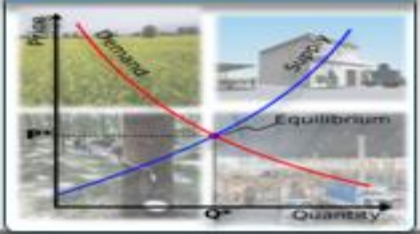
ผู้เชี่ยวชาญ (ในพื้นที่)
ความรู้เฉพาะสาขา/พื้นที่ มาตรฐานสินค้า การให้คำปรึกษา

Smart Officer
การใช้งานแผนที่ การถอดบทเรียน เพิ่ม Sense of Awareness ฯลฯ

ผลิตสินค้าเหมาะสมกับพื้นที่
Improve Productivity



ผลิตสินค้าตามความต้องการของตลาด
Balance Demand & Supply



<- บทบาทของ Smart Officer และภาคีเครือข่าย ->

ที่มา: แนวทางการขับเคลื่อนนโยบายกระทรวงเกษตรและสหกรณ์ (นายยุคล ลิ้มแหลมทอง)

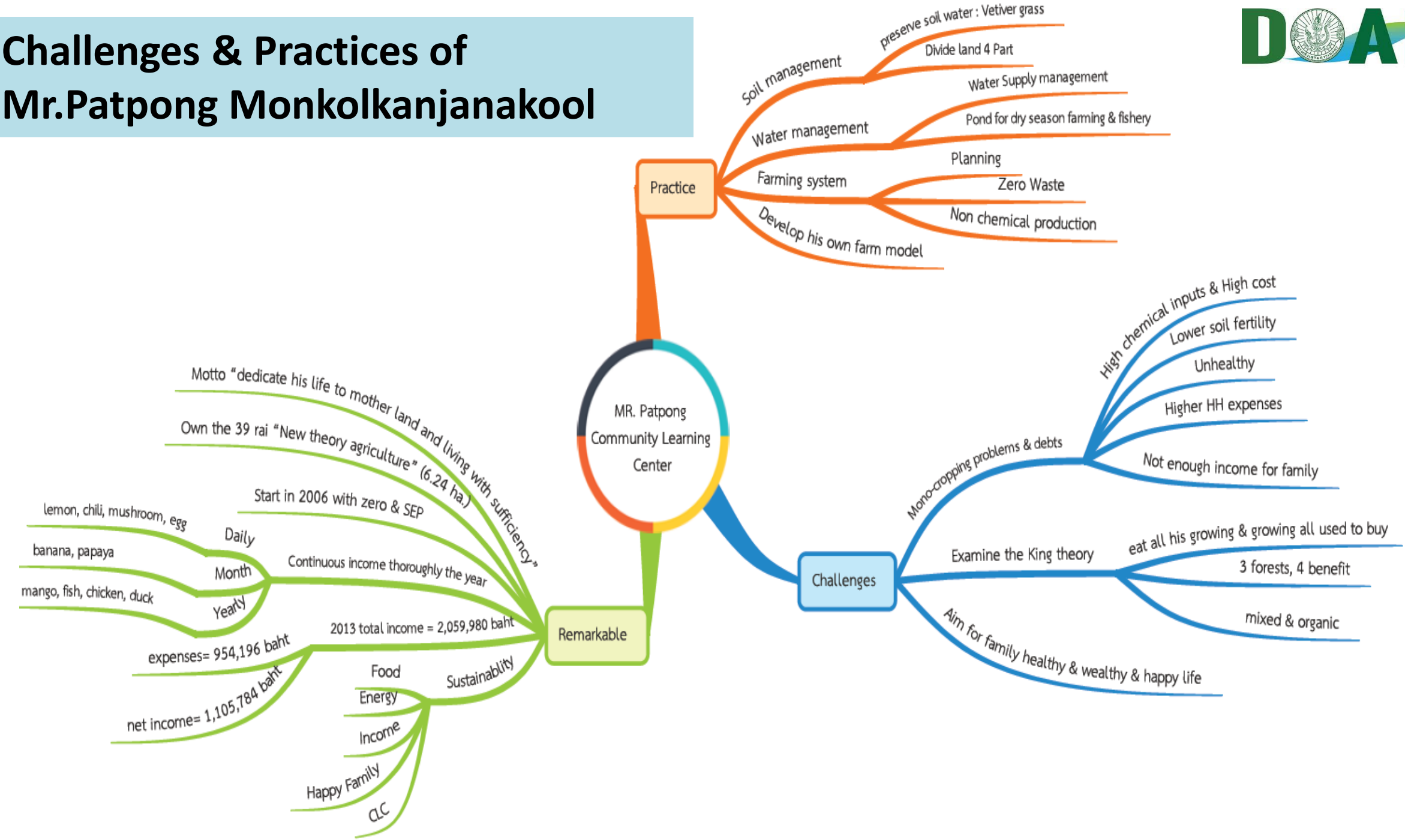
Ex. Sustainable Agriculture Learning Center

Mr.Patpong Monkolkanjanakool, Smart farmer

- The outstanding farmer who has been awarded in the 2014 Royal Ploughing Ceremony, regarding his practicing the "New theory agriculture".
- The representative of Thai farmer received the FAO outstanding award in the World Food Day, October 15, 2014 under the theme of "Feeding the World, Caring for the Earth".
- Live in Nhongpet Sub-district, Sri sawas district, Kanchanaburi province (200km far from BKK)

DOAE

Challenges & Practices of Mr.Patpong Monkolkanjanakool



Learning base 1 = organic rice
Learning base 2 = integrated farm
Learning 3 = vetiver grass contour
Learning4 = green manure






Learning base 5 = poultry production
Learning base 6 = swine production
Learning base 7 = bio gas






Learning base 8 = the mushroom house
Learning base 9 = the composed fertilizer
Learning base 10 = the lemon grass for insect protection

Thank you & Sawasdee

MELA 11
AVRDC 12

Present by
Mr.Supanart Ketcharoen; Director
Dr.Surangsri Wapet ; AE senior professional level
Agricultural Extension Research and Development Division (AERDD)
Department of Agricultural Extension (DOAE)
Ministry of Agriculture and Cooperatives (MOAC)
Kingdom of Thailand, www.doae.go.th

18 November 2015

DOAE