Rice Value Chain Management in Thailand

Consultation Workshop
on Rice Value Chain Management
29 Jan – 2 Feb, 2018
AfricaRice
Abidjan, Cote d’Ivoire

By
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Rice Department, Ministry of Agricultural and Cooperatives
1. General information of Thai Agriculture & Rice
2. Fact about Rice in Thailand
3. Challenge and way forward
4. Development strategies in value chain management
5. Example current implementation projects
6. Conclusion
General Information

- Climate: Tropical monsoon (Hot and Humid)
- Area: 51.3 Mill. Ha (513,120 Sq.Km)
- Population: 65 Mill., Density: 123 persons / sq.km
- Language: Thai, Religion: Buddhism 95%
- Area Unit:
  - 1 Rai = 1,600 m²
  - 2.50 Rai = 1 acre
  - 6.25 Rai = 1 hectare
- Exchange rate: 1 $US = 31-36 Bath (approx)
- Member State of ASEAN
Map of South East Asia

Situated on the Golden Peninsular of South-East Asia

5°37’ - 20°27’N
97°22’ - 105°37’E
### Value and Ranking of Agriculture Export of Thailand 2017

<table>
<thead>
<tr>
<th>Item</th>
<th>Value (Mill. Baht)</th>
<th>Ranked in the world</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice &amp; Products</td>
<td>172,241</td>
<td>1,2</td>
</tr>
<tr>
<td>Natural Rubber</td>
<td>167,156</td>
<td>2</td>
</tr>
<tr>
<td>Fruit &amp; Products</td>
<td>125,845</td>
<td>3</td>
</tr>
<tr>
<td>Fish &amp; Products</td>
<td>110,288</td>
<td>4</td>
</tr>
<tr>
<td>Cassava &amp; Products</td>
<td>101,462</td>
<td>5</td>
</tr>
<tr>
<td>Sugar &amp; Products</td>
<td>89,635</td>
<td>6</td>
</tr>
<tr>
<td>Chicken &amp; Products</td>
<td>89,202</td>
<td>7</td>
</tr>
<tr>
<td>Shrimp &amp; Products</td>
<td>65,005</td>
<td>8</td>
</tr>
<tr>
<td>Vegetable &amp; Product</td>
<td>22,270</td>
<td>9</td>
</tr>
<tr>
<td>Others</td>
<td>238,845</td>
<td></td>
</tr>
</tbody>
</table>

Source: Office of Agricultural Economic
Gross Domestic Products, 2017

- Agriculture: 8.29%
- Industry: 38.08%
- Wholesale-Retail: 13.40%
- Hotel & Restaurant: 4.63%
- Logistic: 10.24%
- Public Administration & Defense: 2.66%
- Education: 2.50%
- Others: 20.20%

Total: 5,039,794 Million Baht (100%)

Source: Office of the National Economic and Social Development Board (NESDB)
World Rice Production 2017/18

Total World Production = 481.04 Million Tons (Milled Rice)

decrease from 2016/17 2.06 mll.tons (0.43%)

Ref: *USDA Jul 2017  forecast year 2017/18
## Top World Rice Exporters

Unit: Mill. Tons (Milled Rice)

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop year 2012/13</th>
<th>Crop year 2013/14</th>
<th>Crop year 2014/15</th>
<th>Crop year 2015/16</th>
<th>Crop year 2016/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>10.480</td>
<td>11.588</td>
<td>11.048</td>
<td>10.04</td>
<td>11.600</td>
</tr>
<tr>
<td>Thailand</td>
<td>6.722</td>
<td>10.969</td>
<td>9.779</td>
<td>9.867</td>
<td>11.000</td>
</tr>
<tr>
<td>Pakistan</td>
<td>4.126</td>
<td>3.700</td>
<td>4.000</td>
<td>4.000</td>
<td>3.600</td>
</tr>
<tr>
<td>USA</td>
<td>3.295</td>
<td>2.947</td>
<td>3.381</td>
<td>3.373</td>
<td>3.400</td>
</tr>
<tr>
<td>others</td>
<td>8.110</td>
<td>8.590</td>
<td>7.835</td>
<td>7.740</td>
<td>10.096</td>
</tr>
<tr>
<td>Total</td>
<td>39.432</td>
<td>44.123</td>
<td>42.649</td>
<td>40.105</td>
<td>46.296</td>
</tr>
</tbody>
</table>

Ref: *OAE, Thailand Dec 2017
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Fact about Thai Agriculture

**Good Performance**
- Leading export country: Rice, Rubber, Cassava, Sugar, Canned Tuna, Canned Pineapple
- Never facing trade deficit

**Fatigue Thai Farmers**
- Old age, poor (compare to poverty line and compare with other career)
- High debt situation

**Present Situation**
- Drought
- Fluctuated Price

**But in high Risk Situation**
- Too much Rely on Export market
- Depending on import production input (Chemical fertilizer/chemical Substance)
- Climate change and fluctuate selling price
Fact About Thailand Rice

- **Major Source of Foreign Exchange Earning**
- **Staple Food/Food Security**
- **Major Contribution to the Thai Economy**
- **Employment**
- **Ways of Life**

**Rice Farmers: The Backbone of The Country**
Respect to Rice Goddess
For having good crop
Parade request for rain
Cat parade request for rain
Thailand Food Self - sufficiency ratio (2011-2013 average)

Crops

Rice: 182
Corn: 106
Sugar: 421
Cassava: 358
Soybeans: 5
Palm Oil: 205

Source: OAE
Food Self-sufficiency ratio 
(2011-2013 average)

Livestocks

Source: OAE
Fact about Rice Production in Thailand

Crop Calendar 2015/16

Yield (kg/rai)

6.25 rais = ha

World vs World

Thailand

Crop Calendar 2015/16

Yield (kg/rai)

6.25 rais = ha

World vs World

Thailand
Facts About Thai Rice Production

- **Harvested area (2 crops)**: \(\approx 14\) mill. hectares/yr.
- **Paddy production**: \(\approx 35\) mill. tons/yr. (paddy)
- **Total rice export**: \(\approx 6,500\) mill.$US/yr.
- **Number of rice growers**: 4 millions (farms)
- **Low yield**: Major crop < 3 tons/ha, Second crop < 5 tons/ha
- **Native varieties**: \(\approx 40\%\) of planted area (Hommali Rice)
- **Good Quality Rice**: Hom Mali Rice
- **Rainfed**: About 25% irrigated
- **Poor Soil**: \(\approx 50\%\) of planted area in N.E
Facts About Thai Rice Farmers

Old age
- 33% > 60 years
- Average 56 years

Low education
- 80% Primary school

Poor
- 42% < Poverty line: 2,500 Baht/person/Month

Small scale
- 4.80 ha
- Average land holding = 4 ha
- Average paddy field = 3 ha
- Average 4.5 persons/household

Average family member
- 4.5 Persons/household

Average age of head of rice farmer
- 56 years

Average net family Income Non-irrigated: 139,282 baht/hh/yr
Average net family Income Irrigated: 298,454 baht/hh/Yr
86% of farmers have cell phone and 21% have computer

Exchange rate: 1 US$ ≈ 31-36 Baht
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<table>
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<tr>
<th>Issues</th>
<th>Production Effect</th>
<th>Trade Effect</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Internal Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Land Conversion, limited suitable land</td>
<td>✓</td>
<td></td>
<td>• Intensive Farming</td>
</tr>
<tr>
<td>➢ Water Shortage</td>
<td>✓</td>
<td></td>
<td>• required both /supply and demand management</td>
</tr>
<tr>
<td>➢ Labor Shortage</td>
<td>✓</td>
<td></td>
<td>• required machineries</td>
</tr>
<tr>
<td>➢ Spread of Pests and Diseases</td>
<td>✓</td>
<td></td>
<td>• change cropping system</td>
</tr>
<tr>
<td>➢ Variety Improvement (pests and diseases tolerant)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Price Volatility</td>
<td>✓</td>
<td></td>
<td>• price insurance</td>
</tr>
<tr>
<td>➢ Government Policy</td>
<td>✓</td>
<td>✓</td>
<td>• Sustainable policy</td>
</tr>
</tbody>
</table>
# Challenges

<table>
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<tr>
<th>Issues</th>
<th>Production Effect</th>
<th>Trade Effect</th>
<th>Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External Factors</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Climate change</td>
<td>✓</td>
<td>✓</td>
<td>▪ Adaptation/ mitigation</td>
</tr>
<tr>
<td>➢ Natural disaster</td>
<td>✓</td>
<td></td>
<td>▪ Promote crop insurance</td>
</tr>
<tr>
<td>➢ Growing world population</td>
<td>✓</td>
<td>✓</td>
<td>▪ Variety improvement (flood tolerant, drought tolerant)</td>
</tr>
<tr>
<td>▪ About 50% consume rice as a staple food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ About 800 million people still undernourished</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Free trade agreements (FTA)</td>
<td></td>
<td>✓</td>
<td>▪ Reduce cost of production</td>
</tr>
<tr>
<td>▪ Reduce tariff measures</td>
<td></td>
<td>✓</td>
<td>▪ Improve quality</td>
</tr>
<tr>
<td>▪ Increase non-tariff measures</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Changing in consumers’ behavior</td>
<td>✓</td>
<td>✓</td>
<td>▪ Improve quality</td>
</tr>
<tr>
<td>▪ Prefer healthy and safety food (less carbohydrate)</td>
<td></td>
<td>✓</td>
<td>▪ Establish traceability system</td>
</tr>
<tr>
<td>▪ Prefer green products</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Prefer local food</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▪ Prefer traceability</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>➢ Food security concerned of importing countries</td>
<td></td>
<td>✓</td>
<td>▪ Look for new markets</td>
</tr>
<tr>
<td>▪ To be self-sufficiency/less import</td>
<td></td>
<td></td>
<td>▪ Demand &amp; supply planning</td>
</tr>
</tbody>
</table>
1. Moving to consume local produce
   - Save energy for transportation/reduce global warming

2. Consume for health concern
   - Safe food/Nutrition food

3. Global environment concern
   - Select product from environmental friendly production system

4. Traceability System
   - Be able to trace back to producers for quality guarantee

Opportunities and Challenges for Agricultural Sectors
Climate Change

Global Warming

Causes
GHG effect from industrial – energy & transportation including agricultural sectors (open burning & flooded farming condition)

Solution

Mitigation
Change / follow recommendation/ stop activities

Adaptation
Find the ways to stay in

Government
• R & D for technologies improvement
• Awareness raising and law enforcement

Farmers
• Follow recommend technologies, rules and regulations

Production yield decreased

Global Warming

Production yield decreased

Change / follow recommendation/ stop activities

Find the ways to stay in

Government
• R & D for technologies improvement
• Awareness raising and law enforcement

Farmers
• Follow recommend technologies, rules and regulations
**National Rice Strategy 2016-2020**

**Production Strategy**

1. Manage the rice planted area and production appropriately to match the demand and supply
2. Improve rice production efficiency
3. Improve quality and create value added of rice products
4. Strengthen rice farmers’ organizations

**Marketing Strategy**

1. Establish a sustainable and stable rice development plan
2. Create a fair rice trade system
3. Promote the adoption of rice standard in production and trade
4. Develop a potential in rice trade system
5. Create a value in rice consumption
6. Create innovation in rice industry
7. Improve the logistics management
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Rice Supply Chain in Thailand

- **Input Acquiring**
  - Seed
  - Fertilizer
  - Chemical
  - Farmer’s Household Consumption (Community Mills)

- **Production**
  - Rice Farmers
  - Government Stock
  - Rice Mills (Private)
  - Ag. Cooperatives Rice Mills
  - Local Assemblers

- **Paddy Distribution**
  - Agricultural Futures Exchange of Thailand

- **Milled Rice Distribution**
  - Brokers
  - Exporters
  - Wholesalers
  - Export
  - Food and Non-Food Industries
  - Wholesalers
  - Retailers And Modern Trades
  - Domestic Consumers

* depend on government policies: pledging scheme, delay selling at peak harvesting period
Rice Supply chain: Farm Level

- Preparation Production input
  - Price
  - Quality
  - Investment money
- On-farm Production
  - Variety
  - Technology
  - Water supply
  - Pest & Disease
- Harvesting
  - Quality
  - Loss
  - Time
- Transportation
  - Sufficient
  - Accuracy
  - Cost
- Marketing
  - Customers
  - Place
  - Standard
  - Price

Value Chain Management

- Each steps need to analyze constraints, solution and improvement
- In theory, should analyze marketing situation before start on-farm production (not easy to implement for small holder farmers)
Rice Supply Chain: Economic Level (commercial mass production)

1. Raw Materials (Paddy)
   - Volume
   - Quality
   - Price

2. Raw Mat. Transportation
   - Sufficient
   - Speed
   - Cost

3. Rice Milling Manufacturing
   - Technology
   - Standard
   - Capability

4. Milled Rice Transportation & Delivery
   - Sufficient
   - Speed
   - Cost

5. Marketing: Domestic & Export
   - Customers
   - Competitor
   - Product Standard
   - Price

Value Chain Management

- Each steps need to analyze constraints, solution and improvement: Plan – Do – Check - Action
- Farmer’s organization (Cooperatives) should develop professional manager for running economical criteria as globalization challenges.
Rice Restructuring Plan

Total Existing Rice Area

Suitable Area
- Improve Efficiency & Quality
- Niche Market Rice

Unsuitable Area
- Mixed Farming
- Change to other Crops
Restructuring Rice Sector

Production System

- Traceability
- Zoning
- Farmers’ database
- Management production system
- Site Specific Technology
- Biotechnology/Farm Machinery
- Intensive Farming
- Value adding
- Inspection & certification for GAP/GMP
- Quality seed supply system

Restructuring Rice Sector
Restructuring Rice Sector

- Public sectors facilitate for supporting driven & mechanism
- Enhance private sectors take main roles
- Implement & enhance local farmers’ market
- Develop consumer supporting agriculture (CSA)
- Strengthen Fair trade
- Profit - Revenue Sharing
- Strengthen agriculture future market
- Implement & enhance local farmers’ market
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1. Annual Production and Marketing Plan

- Marketing Negotiations (G-G)
- Existing markets + new markets
- Promotion & public relations
- Generate awareness & expand rice market
- Specialty rice (niche market)

- Diversify flow of production to market
- Fair trade
- Developing and reviewing the standard of Hom Mali rice
- R&D (promote for commerce)
- Potential value-added rice (colored/organic/GI)
- Fair trade/Standard

- Demand vs Supply
  - Demand 25.01 MT
  - Supply 27.01 MT

- Production
  - Target of rice production area
  - Registration of rice farmers
  - Inputs management
  - Reduction of production costs
  - Crop Insurance
  - Loan/Low interest rate (cultivation)
  - R&D (new varieties)
  - New generation of farmers
  - Self-reliance farmers

- Harvest / Post-Harvest period
  - Agricultural machinery support and management
  - Optimization and the mill standard
  - Promotion development of comprehensive quality Q value rice production
2. Large Rice Field Project for Improving Small Scale Farmer’s Management in Supply Chain

- Extension Approach in Large Production Area
  - Land Ownership: Still belong to each farmers
  - Develop farmer’s organization (group/Cooperatives)
  - Not Dealing with political issue
  - Land Consolidation for near by area (Ownership not change)
  - Supply Chain Management from farm production to marketing
  - Integrated activities from various government offices
2. Implement Area-based Extension for Small Scale Farmers

**Objectives**
- Economy of Scale
- Easy for Official Integration
- Easy access to the Market
- Easy access to the Technology

**Small Farmers Large Field Approach**

**Procedure**
- Land Consolidation (Ownership Unchanged)
- Establishing Farmers’ Organization
- Executive committee
- Field Manager

**Applied**
- Site Specific Technology (SST)
- Demonstration Plot/Field day
- Standard Setting (GAP/Organic)
- Machinery Pool

**Public Private Partnership (PPP)**
- Competition and Rewards
- Mass media/Social Media Campaign
Approaches to Empower Rice Farmers

1. Develop local Technology Transferring Center
2. Develop & Support local smart farmer
3. Increase Farmer capability in Rice Production
4. Promote & Support crop insurance program
5. Rice area rental Law & Legal ratify and other legislation
6. Establish farmer Development Fund
7. Socio-economics study for need of rice farmers including extension approach

KPI: Strong farmer organization
3. Improve Seed Supply and Distribution system by integrate with Area-based Approach in Rice Production Extension (Small Farmers, Large Field Approach)

“Fried Egg Model”

- Quality Rice Grain Producers (Q-grain)
- 500-1,000 hectares
- Supervise by Field Manager
- Community Rice Center (Seed Producers) (Q-seed)
- 20-30 farmers
- 30-50 hectares

Seed distribution area

- Farmers’ seed grower

- Marketing Plan
- Production Plan
- Cropping System Plan
- Technology Transfer Plan
4. Improve Rice Productivity & quality by Promoting Cost reduction technology 3 must do + 3 must reduce

Current production practices: Over use production input
- Over seeding rate
- Over use fertilizer
- Induce disease and insect followed of more chemical application

Organic Rice Community
- Utilization organic matter in farming system
- Local organic material utilization

GAP Rice Community
- Follow recommendation practices: production inputs, farm record
  - Increase organic fertilizer application

Cost Reduction Community
- Suitable seeding rate
- Follow recommendation practices (Type + time + Rate)
  - Increase organic fertilizer application
  - Apply chemical when necessary
5. Develop Quality Rice Production: Niche Market

- **Farmers’ Registration**
- **Seed Certification (Q-Seed)**
- **Cropping System, Good Practice (GAP) (Q-Farm)**
- **Product Certification (Q-Grain)**
- **Rice Milling (GMP) Product Processing**
- **Branding: Q-Mark, Organic Thailand**
- **Consumers: Niche Market**

*From... FARM ...To... TABLE*
6. Implement Niche Market Project for Thai Rice

- Luxury Quality
- Premium Quality
- GAP+GMP
- Standard Quality
- Pre GAP

 มาตรฐานข้าว GI
 มาตรฐานข้าวอินทรีย์
 มาตรฐาน GAP ข้าว
 มาตรฐาน GMP โรงสีข้าว
 ข้อกำหนด Pre GAP
 Primary GMP

 GI ไทย
 GI EU
 Organic

 ที่มา : บกช.
 ปรับปรุงโดย : กรมการข้าว
The Sustainable Rice Platform (SRP)
Public Private Partnership

To Build a SRP Rice Value Chain in Thailand
New SRP Rice Value Chain Market Linkages

- Farmers (Community Rice Centers)
- Millers
- GMP
- On-farm practices
- Sustainable Jasmine Rice
- Consumers eat sustainable rice

SRP Standards + IMS + Certification by BRIA TH (GIZ, RD, BAYER, OLAM, BASF)

Traceability by Database Management System (OFIS)
New SRP Rice Value Chain Market Linkages

- Provide inputs (with special treatment)
- Provide new technology
- Provide market access
- Capacity building for public sector
- Jointly conduct R&D with public sector

Starting of Inclusive Development
8. Rice Products Development Project to create value added for alternative & additional marketing

Paddy

Demand Chain
Supply Chain
Logistic
Value Chain

- Milled rice
- Broken rice
- husk
- bran

- flour
- fuel
- brick
- media
- etc.
- feed
- Bran oil
- cosmetic
- pickled fish
- etc.

- Husk ash

Defatted bran
Compost

noodle dessert snack etc.
Utilities of rice and By products
Primary Products: Ready to Cook

- White rice
- Brown rice
- Vitamin coating rice
- Herb coating rice
- Flavor added rice
Products from Rice

Secondary Products

° Partly Cooked: heated before serving

° Ready to Eat: warm before serving or ready to serve
Products from Rice

° Snacks

° Sauces and Seasoning
Value Added Product

- Functional Food
- Riceutical
- Tablet Filler
- Cosmetics
Products from Rice

- Beverages
- Saucses and Seasoning
- Product from Hull
- Green Energy
Functional Food

Neurofood

With Polysaccharide Peptides
A Functional Food that supports the Brain and Memory Functions
Net Wt. 165g
Cosmetics

- Powder
- Lotion and Moisturizer
- Kojic Acid: Whitening cream
- Rice peptides: skin protection from collagen degradation
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Conclusion

- Sustainable management on rice value chain will be focus for Thailand which need long term plan and implementation and develop by mean of lesson learn integrated with new approaches.

- Develop strategies to empower rice farmers and new generation of rice farmers

- Strengthen research & develop to increase productivity and serve globalization trend

- Develop & improve technology transferring by integrating and participation from stakeholder
Conclusion

- Encourage PPP project to create fair benefit in rice value chain
- Strengthen Niche market and value added roadmap in rice sector
- Promote and strengthen standard practices on rice production
- Create consumer supporting to link with on farm production
- Encourage and expand Sufficiency Economy (moderation philosophy) for leading sustainable development
Moderation Philosophy

moderation

reasonableness

Built-in Resilience against the risks

Knowledge
Being aware, and careful

Moral & Honesty
Intelligence, sharing
Thank You!