Global cassava markets: understanding the drivers and market dynamics

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ACIAR Mid-term Review
Vientiane, Lao PDR
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Framework for Objective 1

Our vision, a sustainable food future
Project objectives

AGB
Objective 1 – Assess opportunities and constraints for smallholder production and marketing of cassava within different value chains

1.1 Understand the macro-level drivers for the development of the cassava industry including changing market and policy arrangements for cassava (starch, feed, chips) and substitutes (e.g., maize, potato, and sugar) and the potential benefits and risks to value chain actors

ASEM
Objective 1 – Assess the current production, marketing, and institutional arrangements for cassava in major agroeconomic zones and value chains in Laos and Cambodia.

1.1 Understand the macro-level drivers for the development of the local cassava industry in different agroeconomic zones in each country, including changing market conditions and policy settings.
Activity and output

Activity
Review information on global and national cassava production, utilisation, trade, and policies.

Original output
Annual market update

Actual output
Annual market updates, blogs, presentations, Facebook group, website
Market outlook for cassava needs to be considered in the context of substitutes in different applications

1. Cassava for direct consumption or sale into short value chains as fresh roots for food. Competition with other food such as rice based on price and consumer preferences.

2. Global markets where cassava chips compete with other forms of carbohydrate for processing animal feed or ethanol such as maize, sorghum, wheat, molasses – oil, gas.

3. Markets where cassava starch competes largely on price with substitutes such as maize and potato starch, sugarcane.

4. Markets where the functional properties of the starch are desired.
At the national scale: cassava not a large contributor to calories
Sub-national level it is an important food crop

Over 306,000 cassava households in *Nusa Tenggara Timur* – 85% sell no cassava

FAO Stats

Our vision, a sustainable food future
Cultivation of cassava in Southeast Asia has a long history of association with markets, trade and policy.

**Phase 1 – Imperial trade**

**Phase 2 – European livestock**

**Phase 3 – Starch & East Asia**

**Phase 4 – China and maize policy**

The graph shows the cassava area (in million hectares) from 1961 to 2015 for various countries in Southeast Asia: Indonesia, Philippines, Thailand, Viet Nam, Cambodia, Lao PDR, Myanmar, and Other. The data is sourced from FAO Stats.
Policy induced re-orientation of cassava trade from Europe to Asia

Value of cassava (fresh and dried)

Value of cassava starch

FAO Stats

Our vision, a sustainable food future
Value of cassava trade and relative importance of cassava starch in global trade
Not an “economic inferior” good

- Livestock feed
- Paper industry and glues
- Textiles
- Sweeteners
- Processed food sector
- Pharmaceuticals
- Alcohol
- Bioplastics
- Biofuel

Desirable functional traits:
Meat products, sauces, frozen foods, dairy products, noodles
- High viscosity, firm and elastic texture
- Freeze thaw stability.
- Provide short texture and reduce water separation
- Smooth texture and paste clarity
- Prevent cracking, good freeze thaw
- Smooth and improve mouth feel

Cost competitive compared to substitutes?
- Maize, sorghum, sugarcane, potatoes, etc
- Oil
Rising incomes in Asia: changing diets and consumption

GDP per capita (constant 2010 US$)

- World
- Malaysia
- East Asia & Pacific (excluding high income)
- China
- Thailand
- Indonesia
- Philippines
- India
- Vietnam
- Lao PDR

Our vision, a sustainable food future
Utilisation of starch in Thailand and China

Thai Domestic use of cassava starch

- Sweeteners: 44%
  - Monosodium Glutamate (MSG): 18%
  - Modified Starch: 10%
  - Whole Salers: 13%
  - Paper: 7%
  - Tapioca Pearls: 4%
  - Textile: 1%
  - Other: 3%

Chinese use of all starch

- Starch Sweeteners: 46%
  - Lysine: 5%
  - Citric Acid: 7%
  - Lactic acid: 1%
  - Polyol: 2%
  - Modified Starch: 7%
  - Other amino acids: 1%
  - Sugar-nol: 5%
  - Food: 8%
  - glutanate: 18%
  - Other: 1%

Source: TTTA

Source: Jin Shu-ren
Demand for animal feed in Vietnam

**Consumption of meat per capita**

**Import of maize and soy**

Food supply quantity (kg/capita/yr)

- Pigmeat
- Bovine Meat
- Poultry Meat
- Mutton & Goat Meat

Value of imports (Billion USD)

- Soy (1201)
- Maize (1005)

Our vision, a sustainable food future
Trade in syrups and sweeteners and fermentation products

**Import of sweeteners**
- D-glucitol (sorbitol)
- Chemically pure fructose
- Glucose, glucose syrup (20-50% dry weight fructose)
- Other fructose and fructose syrup, <50% by dry weight of fructose
- Glucose, glucose syrup, <20% fructose

**Trade in Glutamic acid (MSG+) & Lysine**
- Glutamic acid and its salts
- Lysine and its esters

Comtrade
Demand for animal feed and sweeteners in Indonesia

Consumption of meat per capita

Consumption of sugar per capita (Raw Equivalent)
Trade in syrups and sweeteners (Indonesia)

The diagram shows the export and import trade value (in million USD) of various sweeteners from 2006 to 2015.

- **D-glucitol (sorbitol)**
- **Fructose, syrup > 50% fructose, not pure fructose**
- **Fructose, chemically pure**
- **Glucose including syrup of 20%-50% dry weight fructose**
- **Glucose, glucose syrup < 20% fructose**

Our vision, a sustainable food future
Logistics and freight cost are important

$30/MT

$15-20/t + $10-20 truck and clearance

$30MT
Indonesian domestic market connected to regional market

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Indonesian imports of cassava starch from Thailand

Our vision, a sustainable food future
Maintaining connection with private sector partners in Myanmar

![Graph showing cassava starch price (USD/t) trends from Jul-12 to Nov-17. The graph includes lines for Wholesale Ayeyarwady (USD/t) and FOB Bangkok (USD/t), with a yellow line indicating the difference between the two.]

YAN PAE
CONR STARCH & SUNFLOWER OIL

Yan Pae
Corn Starch Factory
Taung Twin Gyi

Yan Pae
Corn Starch Product

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Myanmar sweetener trade

Value of exports to Myanmar (million USD)

- Sorbitol (Indonesia)
- Other sugars nes (Thailand)
- Glucose syrups (China)

Our vision, a sustainable food future
Market distortions, global commodities, local prices

Rabobank estimated that there was **232 million tons** of Chinese maize stock in 2015/16.
Cassava prices in Thailand respond to changing maize policy in China

Thailand supports cassava farmers

Bangkok (VNA) – The Commerce Ministry of Thailand plans to take measures to prevent cassava prices from falling sharply during the harvest season this year, when millions of tonnes of cassava are expected to flood the market.
Cassava root spot prices (Jan 2017)

<table>
<thead>
<tr>
<th>Location</th>
<th>Price USD/t (factory/collect point)</th>
<th>Starch content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thailand</td>
<td>$49 USD/T</td>
<td>25%</td>
</tr>
<tr>
<td>Tay Ninh (Vietnam)</td>
<td>$74 – 77 USD/T</td>
<td>30%</td>
</tr>
<tr>
<td>Central Highlands (Vietnam)</td>
<td>$64-65 USD/T</td>
<td>30%</td>
</tr>
<tr>
<td>Sonla (Vietnam)</td>
<td>$58 – 60 USD/T</td>
<td>30%</td>
</tr>
<tr>
<td>North Sumatra (Indonesia)</td>
<td>$47 USD/T</td>
<td>10 month min.</td>
</tr>
<tr>
<td>Bolikhamxai (Laos)</td>
<td>$37 USD/T</td>
<td></td>
</tr>
<tr>
<td>Champasak (Laos)</td>
<td>$37 USD/T</td>
<td></td>
</tr>
<tr>
<td>Xayabouli (Laos)</td>
<td>$36 – 49 USD/T</td>
<td></td>
</tr>
<tr>
<td>Tboung Khmun (Cambodia)</td>
<td>49-52 USD/T</td>
<td></td>
</tr>
<tr>
<td>Battambang (Cambodia)</td>
<td>$42 – 45 USD/T</td>
<td>Below and above 25%</td>
</tr>
</tbody>
</table>

Farm gate = $28
National area of cassava and maize in Indonesia

**Cassava**

**Maize**

Area of cultivation (million ha)

<table>
<thead>
<tr>
<th>Year</th>
<th>Area of Cultivation</th>
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<tbody>
<tr>
<td>1993</td>
<td>1.3</td>
</tr>
<tr>
<td>1995</td>
<td>1.1</td>
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<tr>
<td>1997</td>
<td>1.0</td>
</tr>
<tr>
<td>1999</td>
<td>0.9</td>
</tr>
<tr>
<td>2001</td>
<td>0.8</td>
</tr>
<tr>
<td>2003</td>
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<tr>
<td>2005</td>
<td>0.6</td>
</tr>
<tr>
<td>2007</td>
<td>0.5</td>
</tr>
<tr>
<td>2009</td>
<td>0.4</td>
</tr>
<tr>
<td>2011</td>
<td>0.3</td>
</tr>
<tr>
<td>2013</td>
<td>0.2</td>
</tr>
<tr>
<td>2015</td>
<td>0.1</td>
</tr>
</tbody>
</table>

Area of cultivation (million ha)

<table>
<thead>
<tr>
<th>Year</th>
<th>Area of Cultivation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1993</td>
<td>4.0</td>
</tr>
<tr>
<td>1995</td>
<td>3.5</td>
</tr>
<tr>
<td>1997</td>
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<td>-0.5</td>
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<td>2013</td>
<td>-1.0</td>
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<td>2015</td>
<td>-1.5</td>
</tr>
</tbody>
</table>
Fresh root price in Vietnam

VND/KG (30% STARCH)

WEEK

1 starch factory

41 starch factory

4 starch factory + ethanol

1200
1400
1600
1800
2000
2200
2400

Daklak (2016)
Daklak (2017)
Tay Ninh (2016)
Tay Ninh (2017)
Cambodia to Tay Ninh (2016)
Cambodia to Tay Ninh (2017)
Sonla
Sonla (2017)
Thailand and Vietnam export of cassava starch (cumulative monthly)
Thai export of cassava chips by volume and value (cumulative monthly)
Tapioca and maize starch prices

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Biofuel prices and root equivalent price

The new policies on the horizon that will influence the short-term and long term trajectory of the cassava sector and smallholder farmers

- Root cost in Ethanol (Indonesia)
- Root cost in Ethanol (Thai)
- CBOT Ethanol (USD/litre)

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Conclusion

• When deciding which crop to grow, farmers do not consider factors such as: the global price of oil, sugar, wheat, maize; changes in the demand for pork, or paper and cardboard; or whether a biofuel mandate is developed.

• Yet as a global commodity trade, understanding the connection between cassava and these markets in essential to understanding the outlook for the crop.

• An understanding of the global market context in which localised value chains (farmer-trader-processor) operate helps recognize the market risk that farmers and processors are exposed to.

• This can help develop informed scenarios regarding the potential for intensification and diversification strategies improve farmer livelihoods.
ACIAR Cassava Value Chain and Livelihood Program

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