Roles of Agricultural Cooperatives in Enhancing Supply Chains: Examples from Asia and Africa

NEDAC Workshop on Cooperatives
and Global Supply Chain Logistics

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Agenda

1. Brief Introduction
2. Supply Chain Improvement.
3. Roles of Cooperatives in Global Supply Chains
4. Case Studies:
   Malawi, Zambia, Philippines, Thailand
5. Summary

Speaker's Profile

- Ph.D in Development Economics

  Dissertation subject in Agricultural Technologies and Climate in India & Africa

- Research subjects: Agricultural Economics, Natural Resource Economics, Technology Adoption for Poverty Reduction, Ex-post Impact Assessment, Spatial Econometrics, Survey Methods, Gender in Smallholder Agriculture.

- Research locations: Philippines, India, Myanmar, Thailand, Cambodia, Nepal, Sri Lanka, China, Malawi, Zambia, Zimbabwe, Ethiopia, Tanzania, Mozambique, etc.

- ~5 years in the private sector (US, France); ~18 years in the public sector

1999-

2002-

2007-

Work Experience

2011-

2013-

2018-

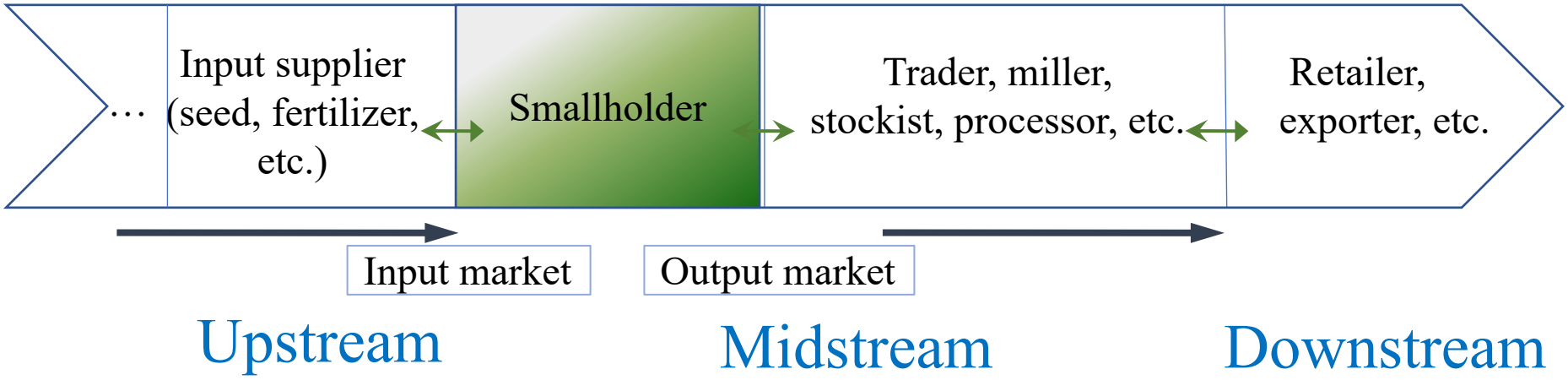
IRRI and Indian PM SN Modi (Nov 2017)

"The Resilient Rice Field Laboratory" develops new, high-yielding, stress-tolerant rice varieties through its Centre of Excellence at the IRRI South Asia Regional Centre in Varanasi, Uttar Pradesh.

Supply Chain Improvement

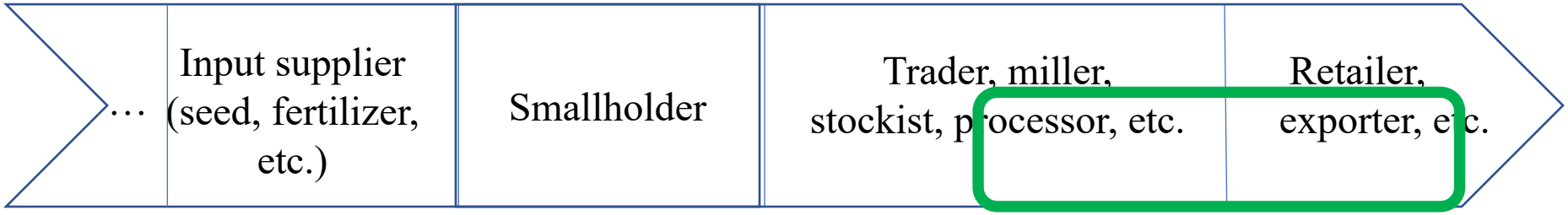
Improvement can occur at upstream, midstream, and downstream of agricultural supply chains.

A Typical Agricultural Supply Chain



Supply Chain Improvement

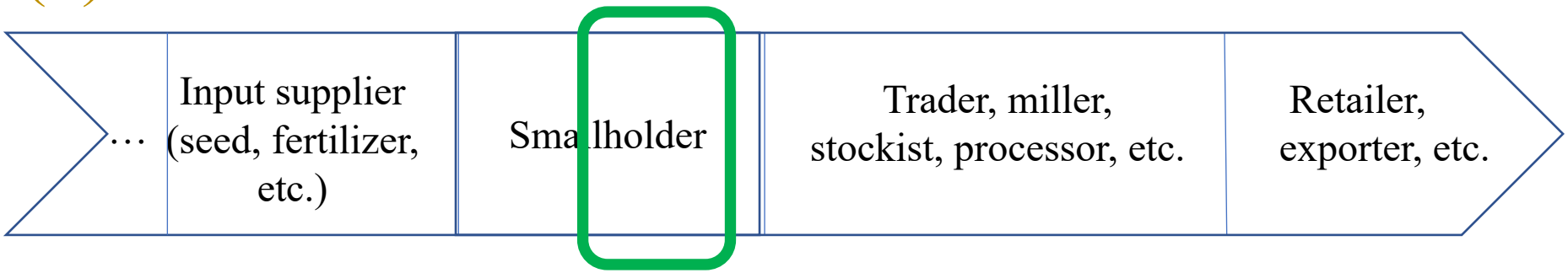
(1) Vertical integration/coordination



- M&A
- Contracting
- Coordination
- Market linkage (vendors and buyers)
- Information systems
- Value addition (zero sum)
- etc.

Supply Chain Improvement

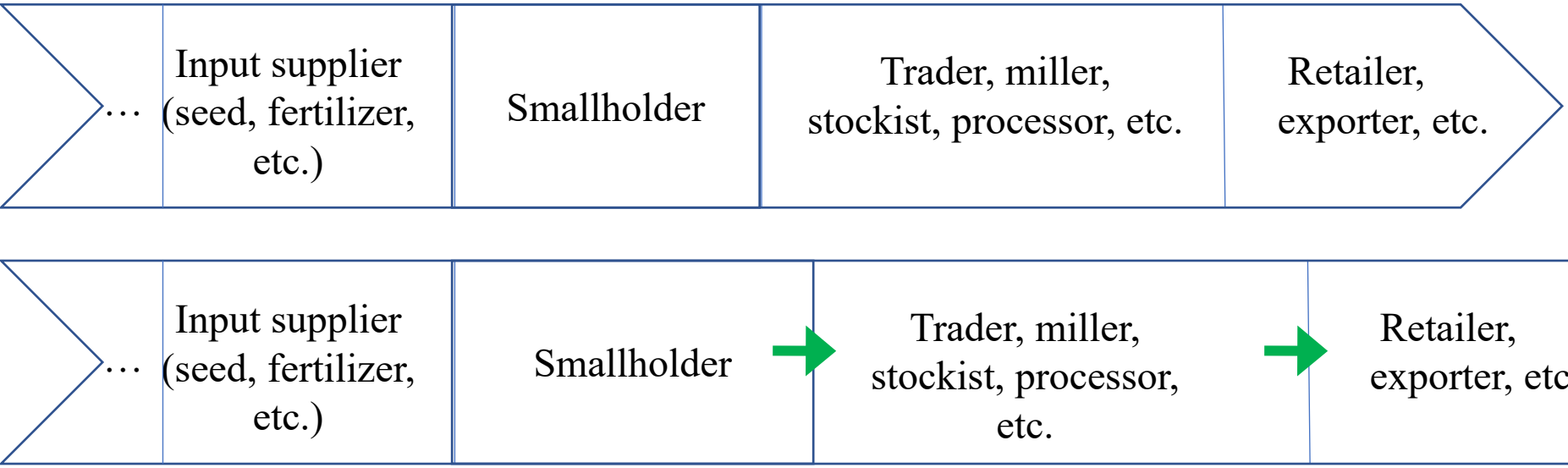
(2) Horizontal coordination



- Community-level collective action
- Forming a farmer group
- Agricultural cooperatives
- Trade associations
- M&A
- Partnership
- etc.

Supply Chain Improvement

(3) Product improvement

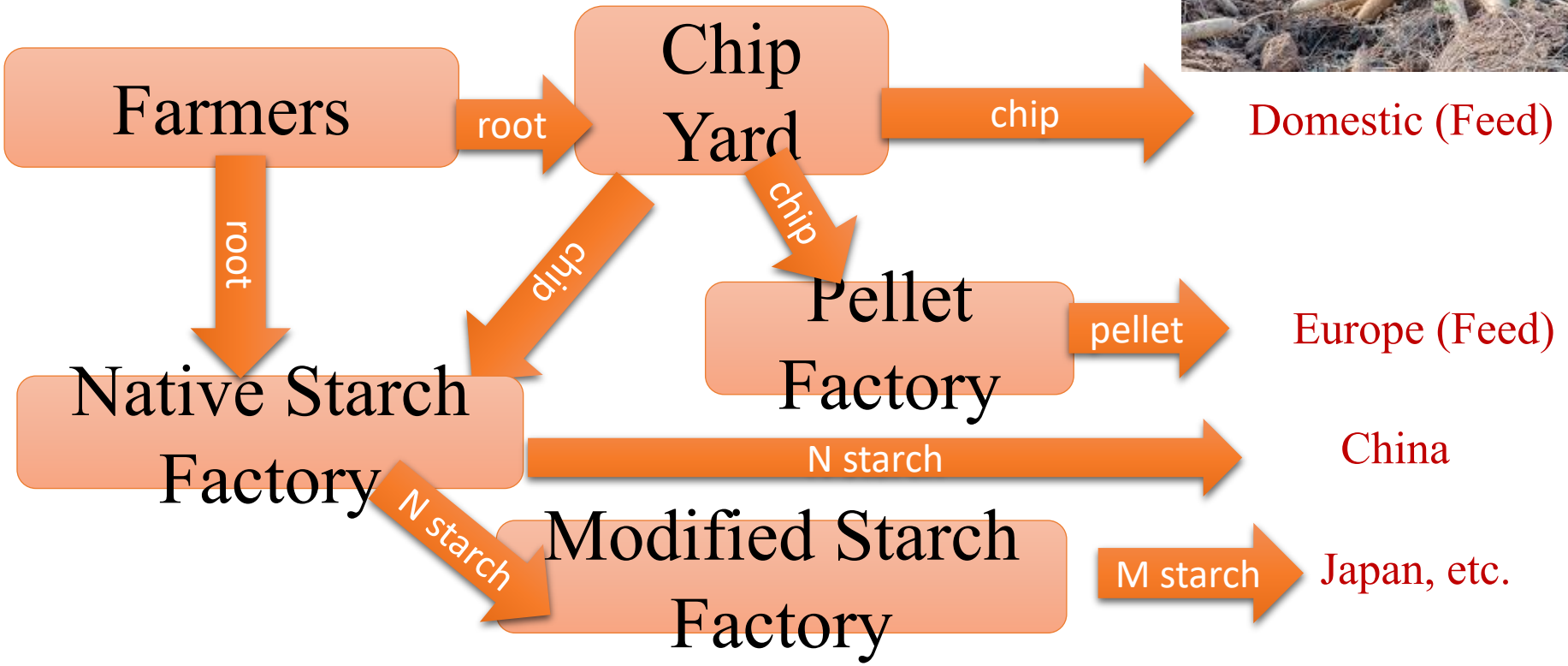


- This refers to value addition with improved products/services benefiting the end users/consumers. i.e., The total value of the chain increases.

Supply Chain Improvement

One crop has several final products.

Example: cassava supply chain in Thailand



- Supply chain improvement tends to entail complexity.

Supply Chain Improvement

There can be separate supply chains for different products.

Example: groundnut

Seed	Breeder	Farm Multiplication	Post-harvest	Assembly/ Transport	Packaging	Wholesale	Retail
Snack	Input Supply	Farm Production	Harvest/ On-farm Post-harvest	Assembly/ Trading	Wholesale/ Transport	Retail	
Peanut butter	Input Supply	Farm Production	Marketing	Transport	Storage	Processing	Retail
Peanut oil	Input Supply	Farm Production	Assembly/ Transport	Processing	Retail		

- Supply chain improvement tends to entail complexity.

Requirements by Global Supply Chains

Requirements by Global Supply Chains (vs. non-Global Supply Chains)

1. High-value crops
   e.g., horticultural crops, premium varieties, etc.
2. Higher product quality/standard.
   e.g., GMP, GAP, organic, PGS, famous brands, etc.
3. Stable supply.
   e.g., stress-tolerant varieties, CSA, irrigation, storage, etc.
4. Cost efficiency.

Roles of Cooperatives in Global Supply Chains

Cooperatives can help with:

1. Access to Better Buyers: Cooperatives act as **aggregators**.
2. Access to Better Suppliers: Cooperatives can purchase inputs in **bulk**.
3. Bargaining Power: By acting collectively, cooperatives strengthen the negotiating position of farmers.
4. Credit Access: Cooperatives can provide their members with access to **credit**, helping to purchase high-quality inputs like improved seeds or investing in improved practices and infrastructure for storage, processing, and transportation.
5. Knowledge and Training: Cooperatives organize training programs to keep their members updated with the latest agricultural practices, technology, and markets.

etc.

Case Studies

Malawi, Zambia, Philippines, Thailand

Malawi

1. Cooperative: NASFAM

2. Case:

The project on "Peanut Post-harvest Improvement Project"

Central Malawi and Eastern Tanzania

Donors: McKnight Foundation, USAID, IFPRI

Malawi

The post-harvest handling of peanut is:

- Labor intensive (especially for women)
- Inefficient (time-consuming)

Malawi: Time of Harvest

Malawi: On-farm post-harvest

Malawi: Interventions

Scale-appropriate mechanization

Small-scale equipment

For

- Lifting (Harvesting)
- Stripping
- Shelling

Malawi: Key Players

1: Bountifield International (formerly CTI)

Equipment design

2: C2C Engineering (in Lilongwe)

Manufacturing of equipment

3: NASFAM (Cooperative)

Providing credit, Mobilizing farmers, training farmers, knowledge hubs, etc.

INNOVATIVE DESIGNS

Tailor-made for smallholders

Manual Threshing
16 days*

CTI Stripper
5 days

*Per Hectare

STRIPPER

SHELLS 1 HECTARE OF GROUNDNUT

3X FASTER

PROFIT PERCENTAGE IN ONE SEASON:

824% - 1,747%

Harvesting with hand hoe
10 days*

CTI Lifter
2.5 days

*Per Hectare

LIFTER

HARVESTS 1 HECTARE OF GROUNDNUT

4X FASTER

PROFIT PERCENTAGE IN ONE SEASON:

166% - 432%

Hand Shelling
80.5 days*

CTI Stripper
4.5 days

*Per Hectare

SHELLER

SHELLS 1 HECTARE OF GROUNDNUT

18X FASTER

PROFIT PERCENTAGE IN ONE SEASON:

55% - 210%

Analysis of adoption and impact of this intervention. Publications with NASFAM.

Socioeconomics
Discussion Paper Series

Series Paper Number 44

Ex-ante Assessment of Adoption of Small-scale Post-harvest Mechanization: The Case of Groundnut Producers in Malawi

Taku W Tsusaka, Gift H Twanje, Harry W Msere, Bupe M Mwakasungula, Lorent K Gondwe, Oswin Madzonga, Kelvin Dambuleni, Patrick Okori,

ICRISAT, Lilongwe

FARMER BUSINESS MODELS

Lead farmers can manage profitable businesses by purchasing the equipment and providing processing services for other farmers. Individual smallholders can also earn money through the increased production and sale of high-quality nuts.

In just one season, business owners can earn between $1,217 and $3,099 with the suite of groundnut tools.

http://oar.icrisat.org/10232/

Zambia

1. Cooperative: EPFC (Eastern Province Farmers' Cooperatives)

epfc
growing innovation

2. Case:

Project "Seed Production and Food Safety Program"

Eastern Zambia

Donors: USAID Feed-the-Future

Zambia: seed production

EPFC produces high-quality groundnut seeds.
e.g., MGV6, MGV7, MRI514

Zambia: ELISA

EPFC conducts aflatoxin contamination in crops (maize and groundnut) using ELISA Laboratory at EPFC Office in Chipata.

Zambia: Impacts

- Increased crop yields.
- Increased selling prices.
- Increased export to South Africa (the regional market).

- EPFC **stopped** operating when the UK funding dried up.

Philippines

1. AC: United Coconut Associations of the Philippines (UCAP)

2. Case:

Project: Coconut Export Development Program (CEDP)

To enhance the competitiveness of Philippine coconut products in international markets.

Philippines

UCAP conducts:

- Market Research: Assesses consumer preferences and trends.
- Export Promotion: Organizes trade fairs, participation in buyer-seller meetings, and promotional campaigns to showcase Philippine coconut products.
- Quality Assurance: Assisting in complying with quality standards, certifications, and regulatory requirements of target export markets.
- Capacity Building: Export procedures, documentation, logistics management.

Philippines

UCAP promotes value addition to coconut:

- Processing and Product Diversification: Going beyond traditional commodities like copra and coconut oil. e.g., Coconut water, coconut milk, coconut cream, coconut flour, coconut sugar, and coconut snacks.
- Quality Improvement: Improving harvesting practices, post-harvest handling, storage facilities, and processing technologies..
- Packaging & Branding: Attractive packaging designs that highlight the unique qualities and origins of Philippine coconut products.
- Certifications: Organic, fair trade, halal, kosher, or non-GMO certifications to appeal to specific market segments.

Philippines

- Traceability: Implementing traceability systems to provide transparency and assurance regarding the origins and production processes.

Philippines: Impacts

- Some improvement in supply chains, e.g., increased supply, improved product quality.
- Yet, lost the No. 1 position to Indonesia.

Thailand

1. AC: Thai Tapioca Starch Association (TTSA)
Cooperatives of processors

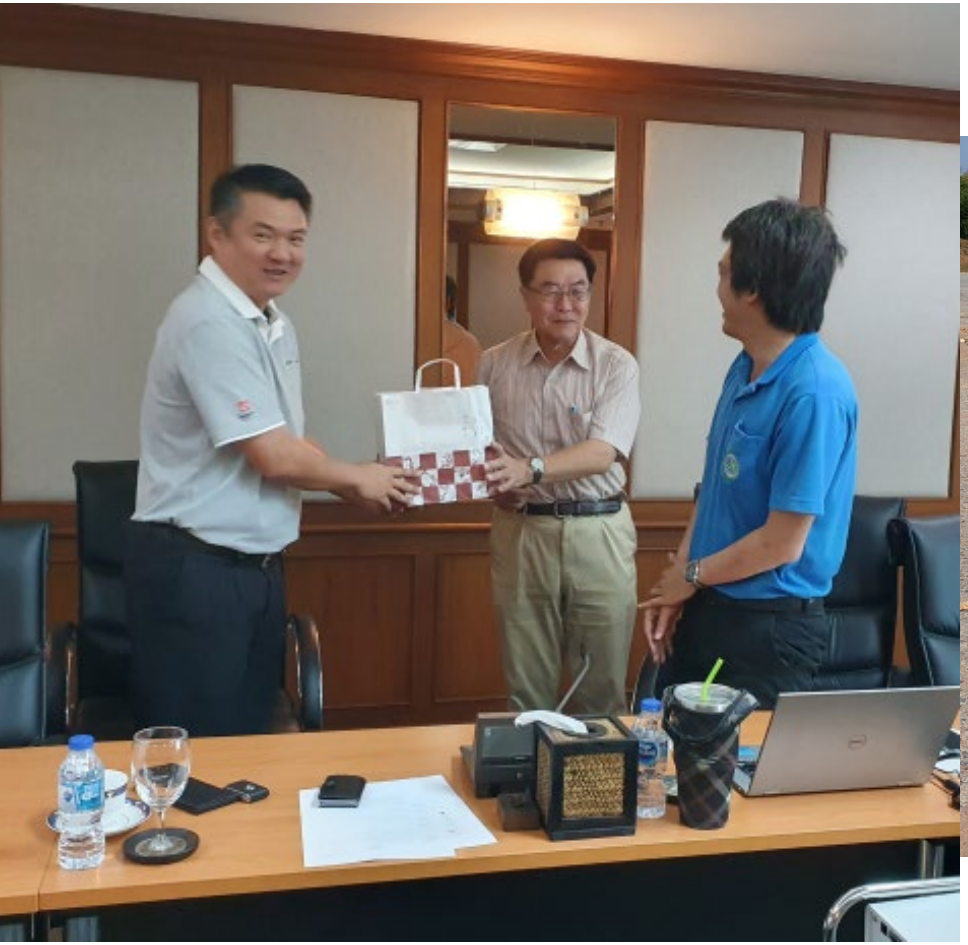
2. Case:
"Sustainable Cassava Farming"

Donor: Private sector

Cassava production in the world.

1. Nigeria → Subsistence Consumption
2. Thailand → Processed into Tapioca Starch
3. DR Congo → Subsistence Consumption

Thailand



Thailand

TTSA's contributions:

- Introduction of high-yield, disease-resistant cassava varieties. Recently, cassava mosaic disease is a major threat.
- Efficient logistics between farmers' fields to the nearest tapioca starch factories. Coordination to decide on factories' locations.
- Training programs for farmers on sustainable agricultural practices, and the implementation of a traceability system for export.
- Enhances farmers' income and a sustainable supply of cassava roots for both domestic and international markets of tapioca starch products.

Successes & Challenges

- Increased yields; increased supply to export markets; improved product quality.

- Limited resources to fund intended activities; Limited scaling-out of the success cases; Low-input farming tends to be unprofitable.

Thank you