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Global markets, local value chains, production systems, and livelihoods of cassava farmers in Lao PDR: Understanding the incentives for sustainable cassava partnerships

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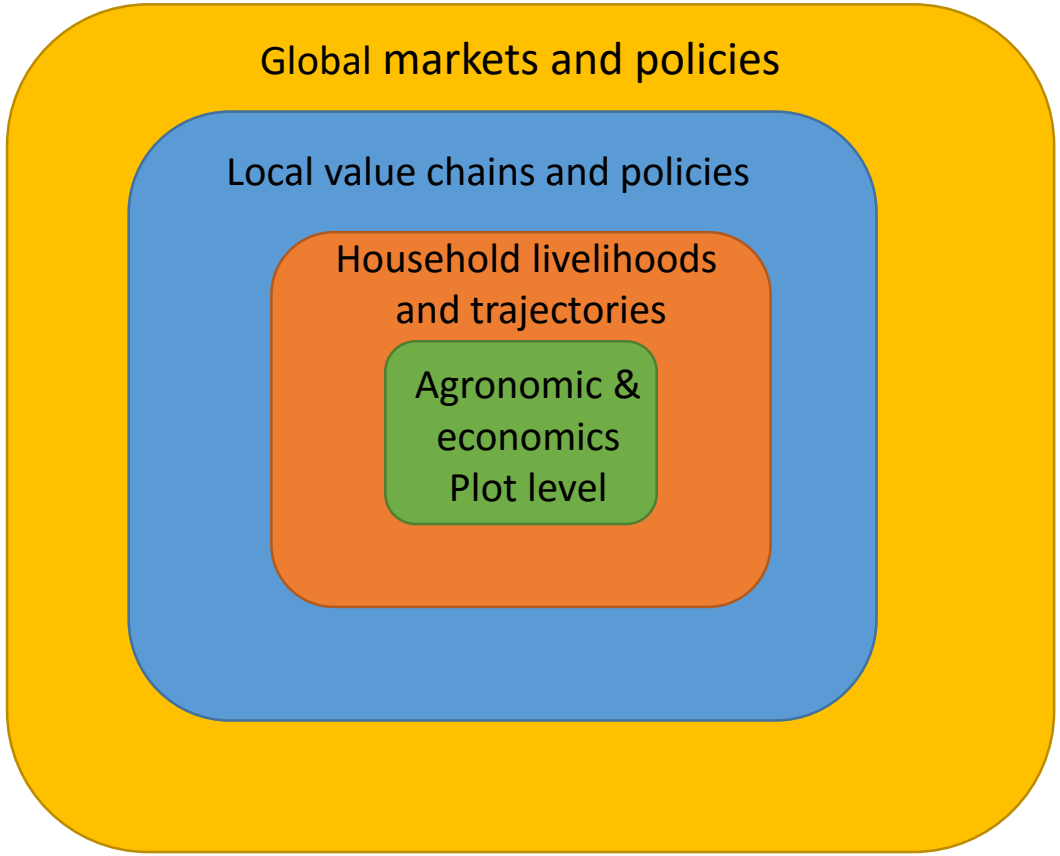
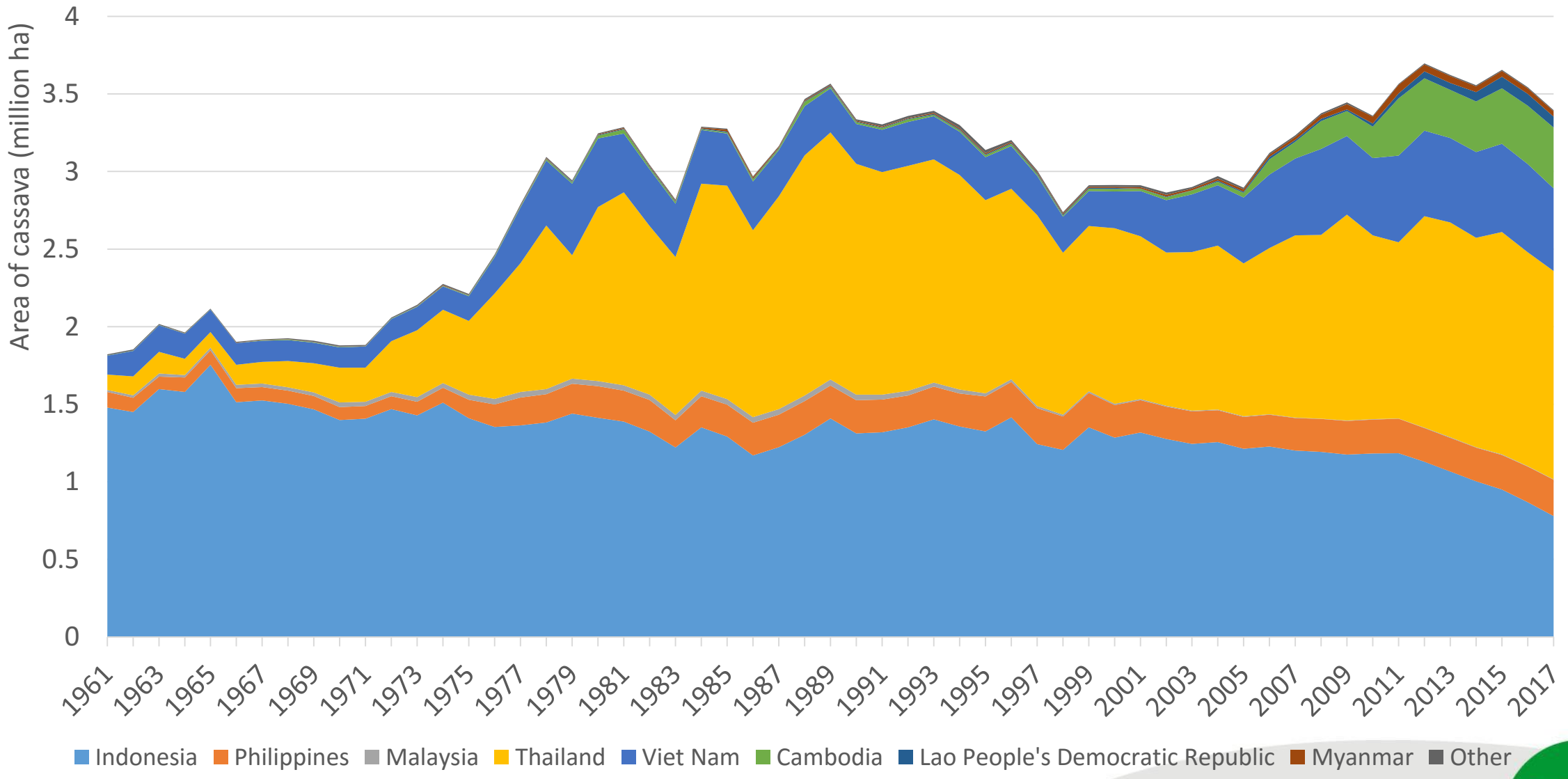
Outline

1. Global markets and external polices
2. Local value chains and domestic policies
3. Household livelihoods and trajectories
4. Field level agronomic and economic results
5. Implications for scaling strategies for sustainable production systems
6. Future challenges and priorities



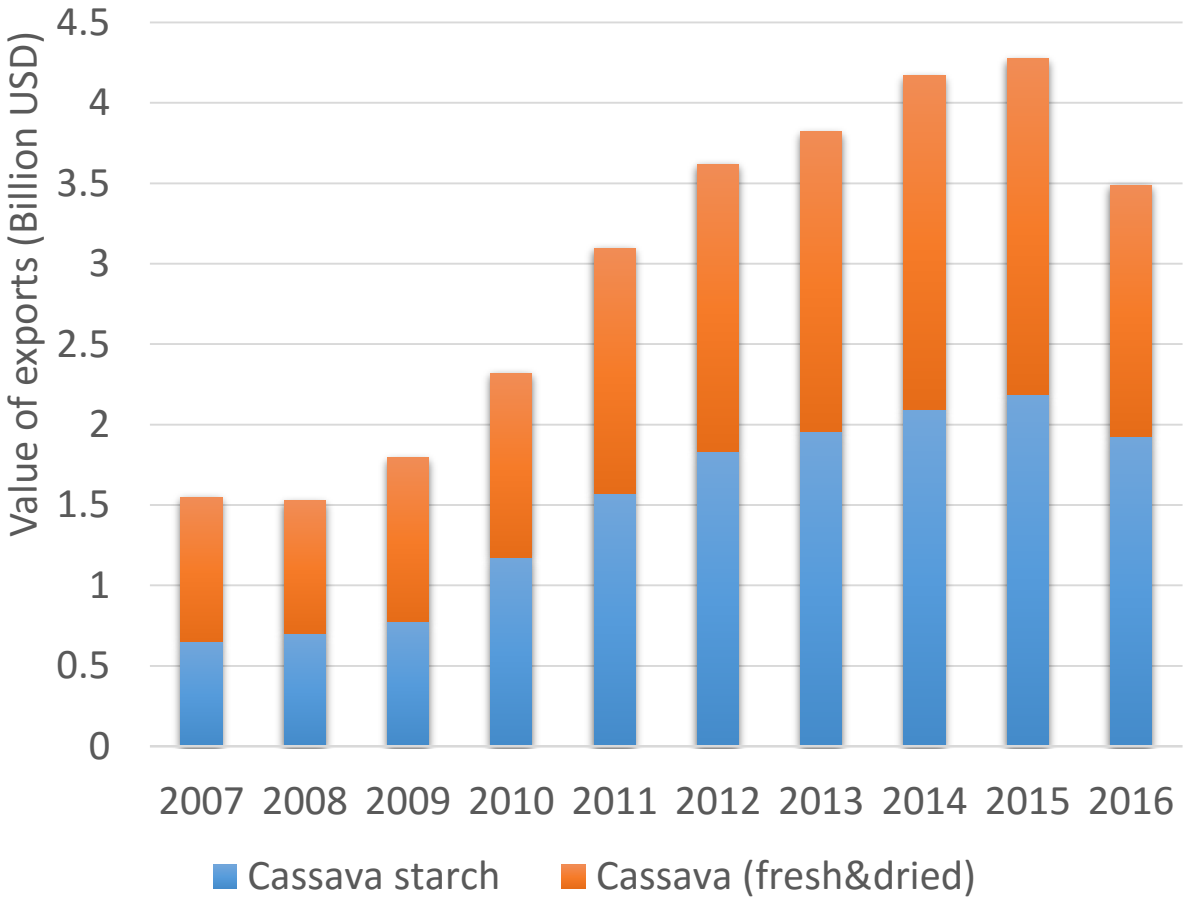
Cassava production in Lao PDR is part of a large global market

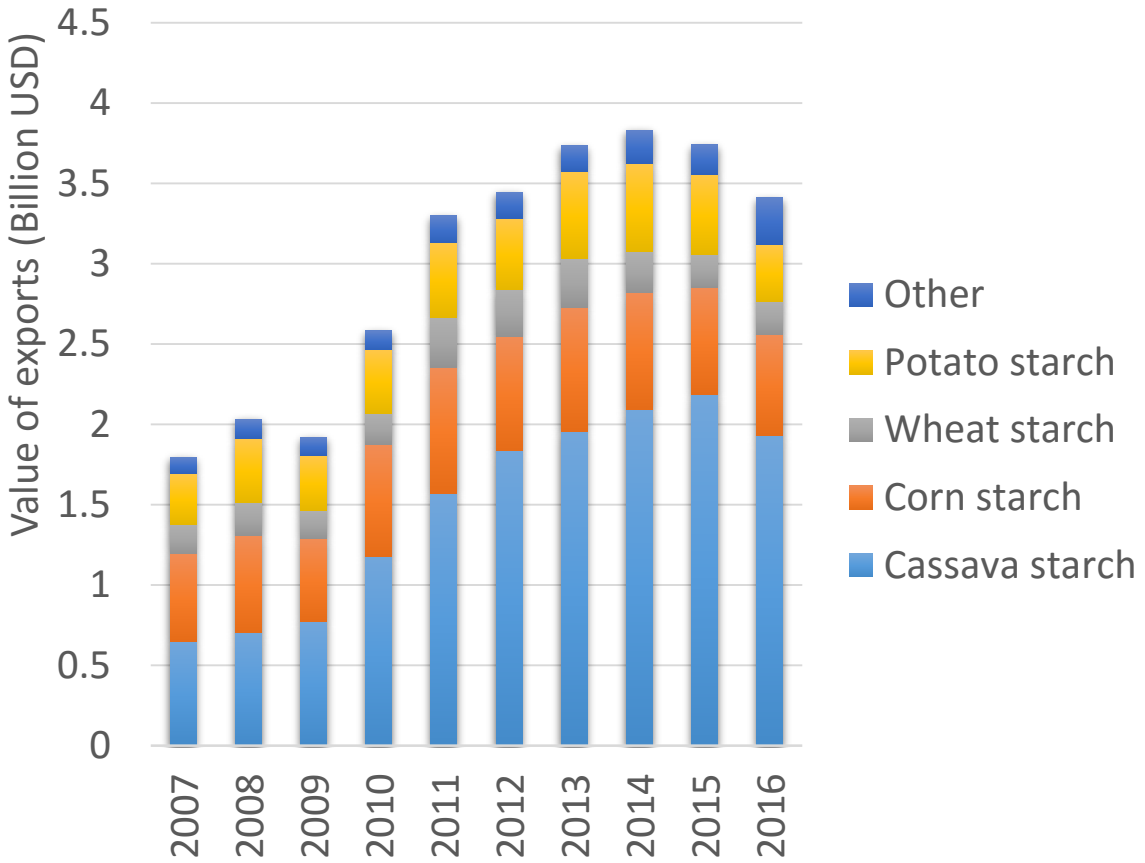


FAO Stats

Value of cassava trade and relative importance of cassava starch in global trade

Global trade largely is Southeast Asia exporting to East Asia and Southeast Asia





Source: Comtrade

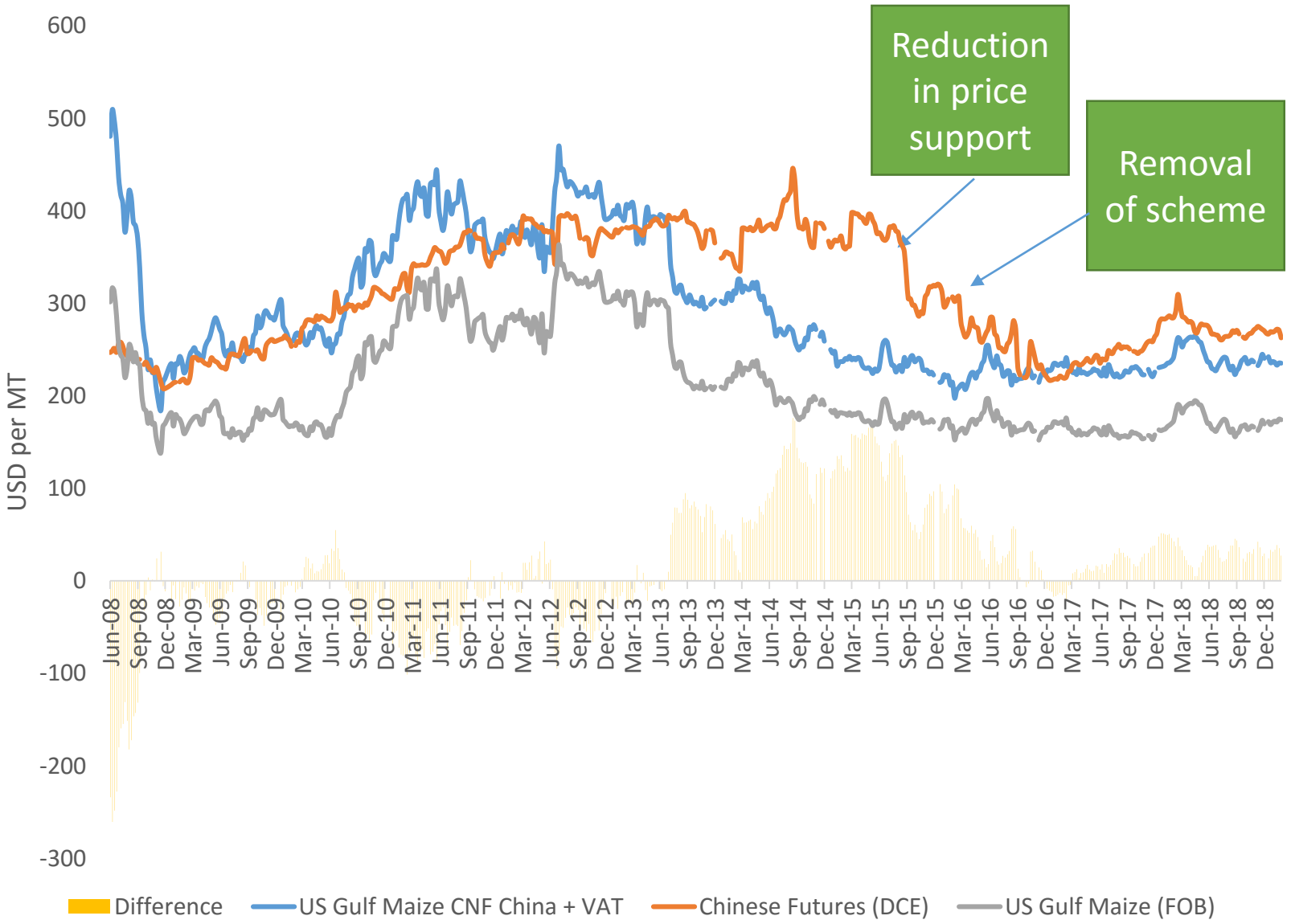
On the demand side – the market outlook for cassava in Asia needs to be considered in the context of substitutes in different applications

1. 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.**
2. Markets where cassava starch competes largely on price with substitutes such as **maize** and **potato** starch, **sugarcane**.
3. Markets where the functional properties of the starch are desired. Consumer preferences, clean label segment, gluten free etc.

And on the supply side – the relative competitiveness against other land use in the context of different trends and shocks

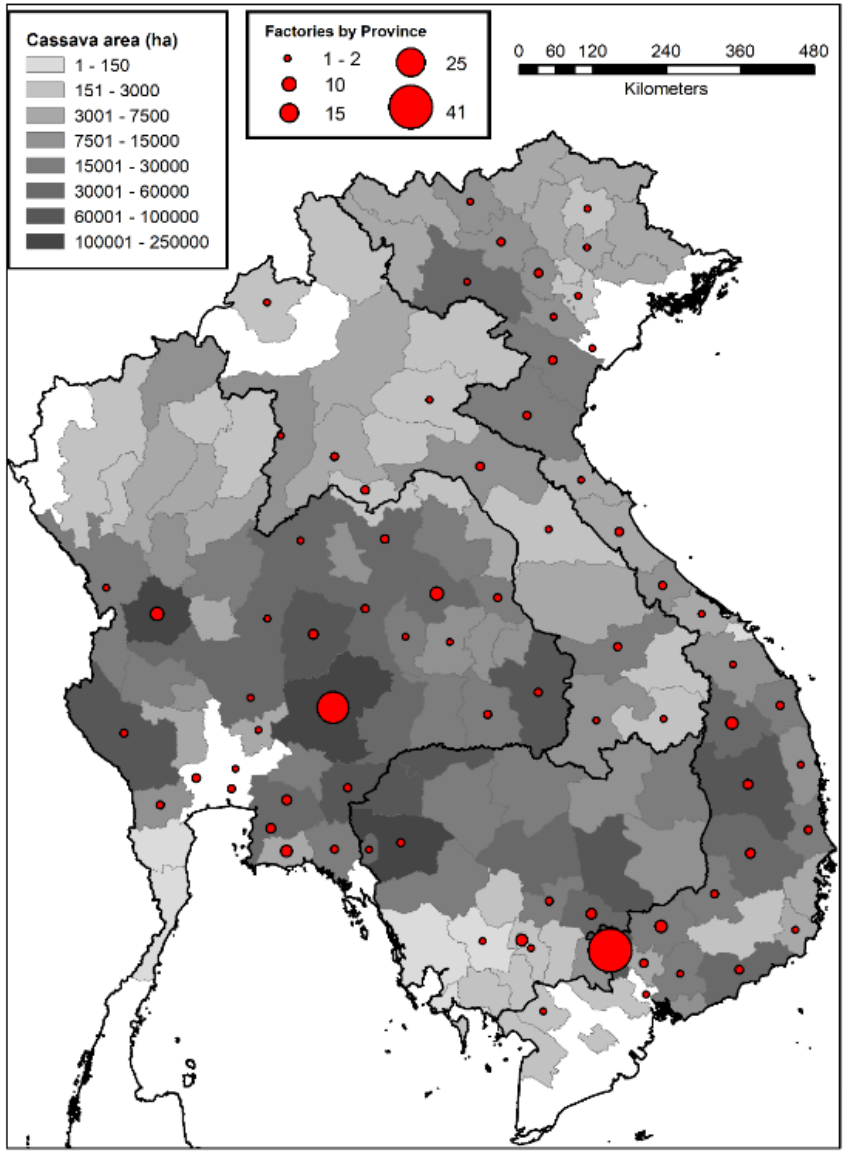
- Own price and relative prices to other commodities that can be produced in agro-ecological zones
- Changes in costs of production
  - Changing labour costs and ease of mechanization
- Long term climate trends
- Floods and droughts
- Changes in land suitability and land degradation
- **IMPACT OF PEST AND DISEASE**

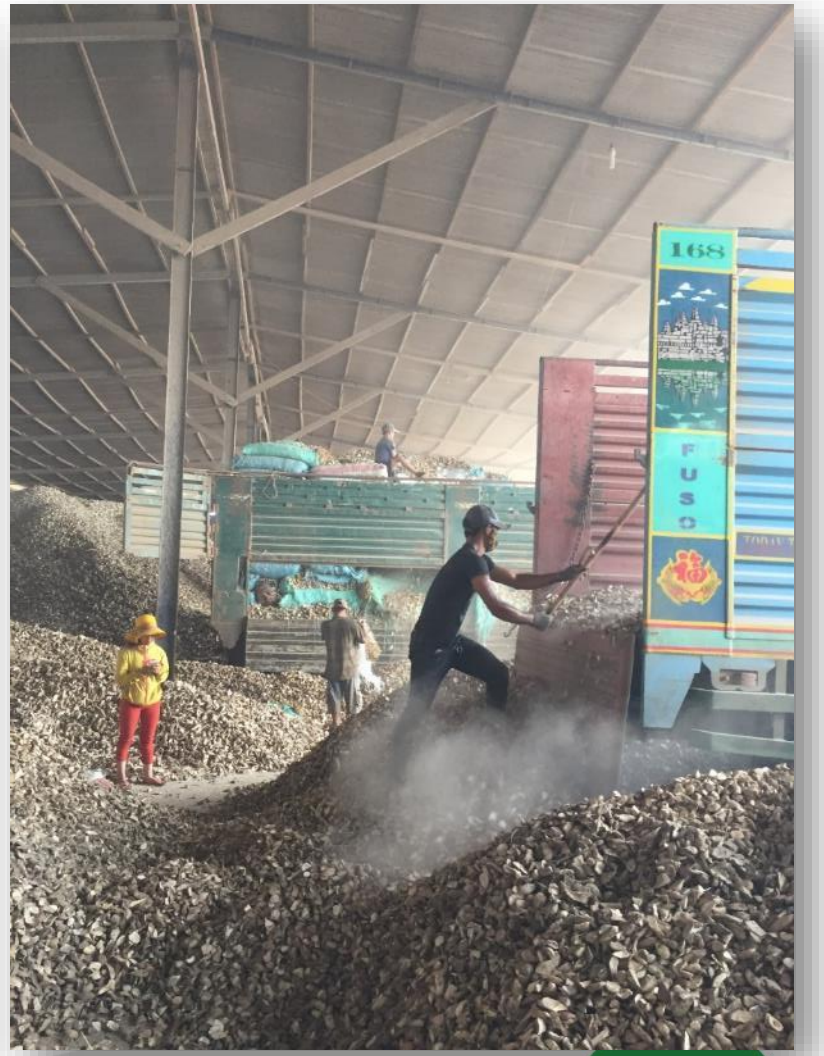
Smallholders cassava farmers part of a larger global carbohydrate market



Large stockpile remains:
Allowed to be used for biofuel

The regional value chain for cassava products involves large amounts of cross border trade





Building a sustainable future

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Trade and quarantine policy changes

Cassava is one of Laos' main agricultural exports to Thailand.

Cassava exports to be checked for mosaic virus

Times Reporters

All Lao cassava exports to Thailand will be strictly checked at borders to prevent the spread of the Cassava Mosaic Virus which impacts various plant species.

The Department of Foreign Trade of Thailand's Ministry of Commerce of Thailand has designated 10 border checkpoints for the purpose.

Checks will take place at Pakxan port in Borikhamxay province linking to Buengkan district in Buengkan province; the Fourth Friendship Bridge in Bokeo province linking to Chiang Rai province; Nam Heuang Friendship Bridge in Xayaboury province linking to Loei province; the Second Friendship Bridge linking Savanakhet province and Mukdahan province; the Second Friendship Bridge in Khammuan province and the Third Friendship Bridge in Nakhon Phanom province.

Checks will also be made at the Nam Ngeun border crossing in Xayaboury province to Ban Huai Kon in Nan province; First Friendship Bridge linking Vientiane and Nong Khai province; Pangmone border checkpoint in Xayaboury province to Ban Huag in Phayao province; Vangtao in Champassak province to Chongmek in Ubon Ratchathani province; and Phakeo in Xayaboury province to Phu Doo in Uttaradit province.

Cassava must be imported through the border checkpoints as mentioned in the list above in order to ensure the safety of humans, animals, plants and the environment.

The Cabinet in its order of February 26, 2019, detailed the steps to be taken for exporting cassava and preventing the spread of the Cassava Mosaic Virus into the Kingdom of Thailand.

With these measures in place, the border checkpoints for cassava imports into Thailand enable authorities including Customs and Plant Quarantine Stations to inspect cassava prior to arrival in the country.

"On behalf of the Department of Foreign Trade, I would like to notify Your Excellency regarding the list of border checkpoints for cassava imports into the Kingdom of Thailand as attached," the statement reads.

"Estimated to be effected within March 2019, cassava imports into the country must be imported through the border checkpoints as presented in the list. We would like to underline that this measure, a preventive measure for the spread of the Cassava Mosaic Virus, is not a trade barrier, but rather to protect plant life and health, which is in accordance with the practice of international trade agreements."

"In this connection, we would greatly appreciate it if Your Excellency would convey the grounds and the necessities of the aforesaid measure to all related parties, such as cassava farmers and cross-border entrepreneurs."

"We are confident that your cooperation and assistance will further strengthen the relations between the Kingdom of Thailand and the Lao People's Democratic Republic," the statement concluded.

DPRK successes made in

Shocks in the derived demand

A Vicious, Untreatable Killer Leaves China Guessing

African swine fever, which harms pigs but not humans, has swept across the country, the world's largest pork producer. And the government knows about only some of the cases.

The Wangaofa Animal Husbandry Development Company had to cull thousands of pigs this year after an outbreak of African swine fever. The facility now sits empty, its hallways splattered white with disinfecting lime. Raymond Zhong/The New York Times

By Raymond Zhong and Ailin Tang

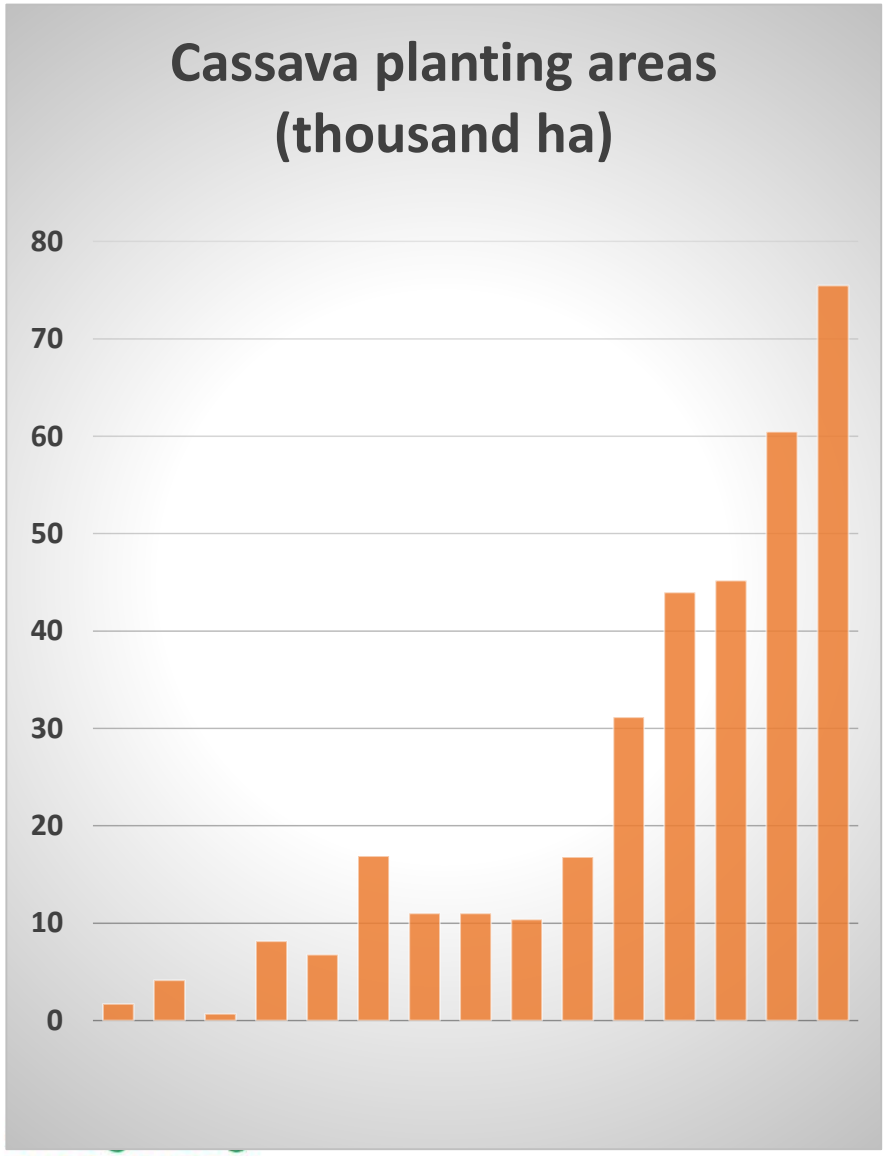
April 22, 2019

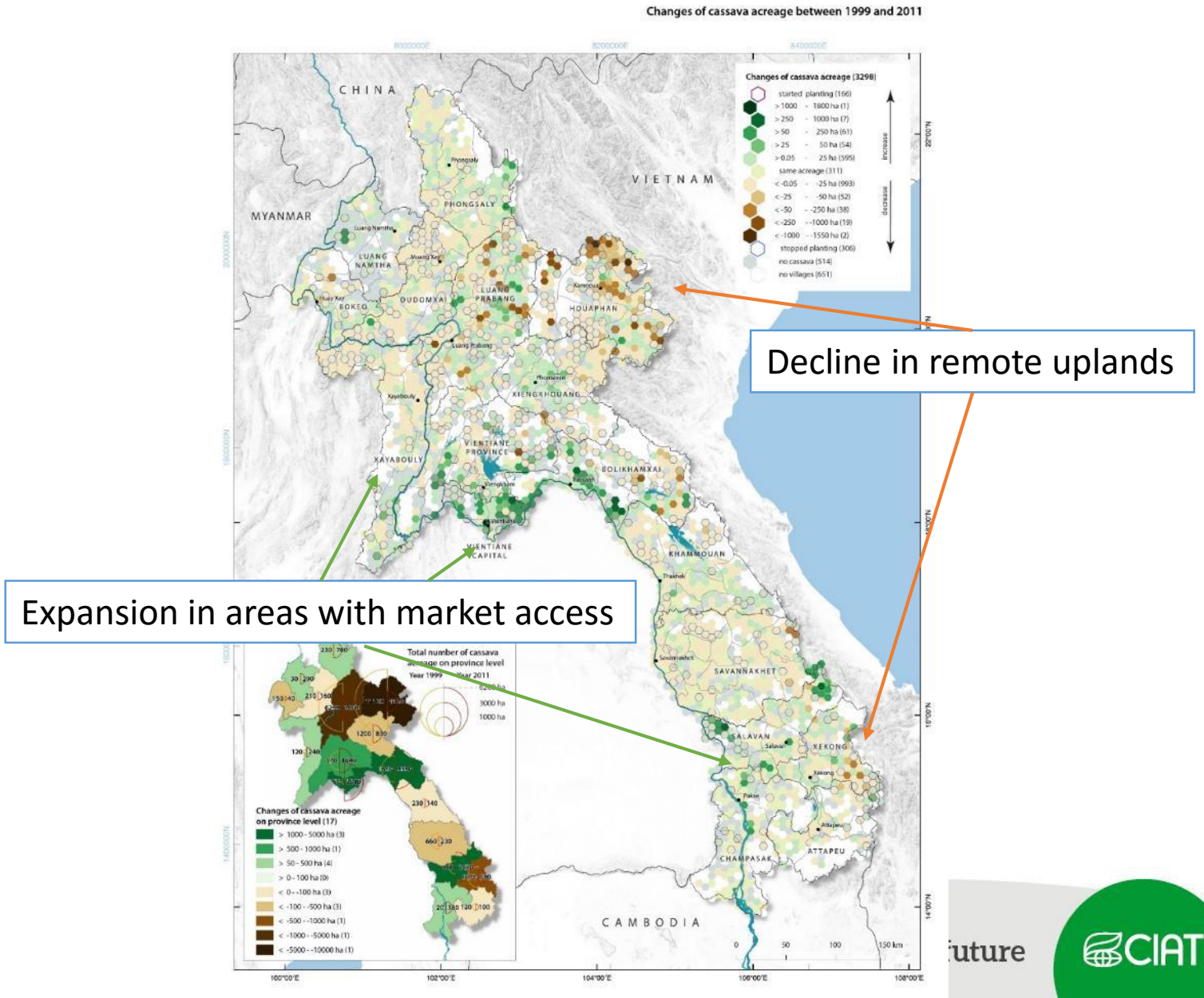
XIJIAHE, China — The plague's victims die gruesomely.

First, a high fever. The skin goes flushed, purplish. There is a discharge from the eyes and nose. Bloody diarrhea. And within days, death. The survival rate is near zero.

By China's official estimates, the present outbreak of African swine fever, which affects pigs but is harmless to humans, has already been catastrophic. More than a million pigs have been culled, according to the Chinese government. A billion-plus pork-loving people are facing much tighter supplies. The need to fill the gap is influencing meat markets worldwide.

From subsistence to commercially oriented systems





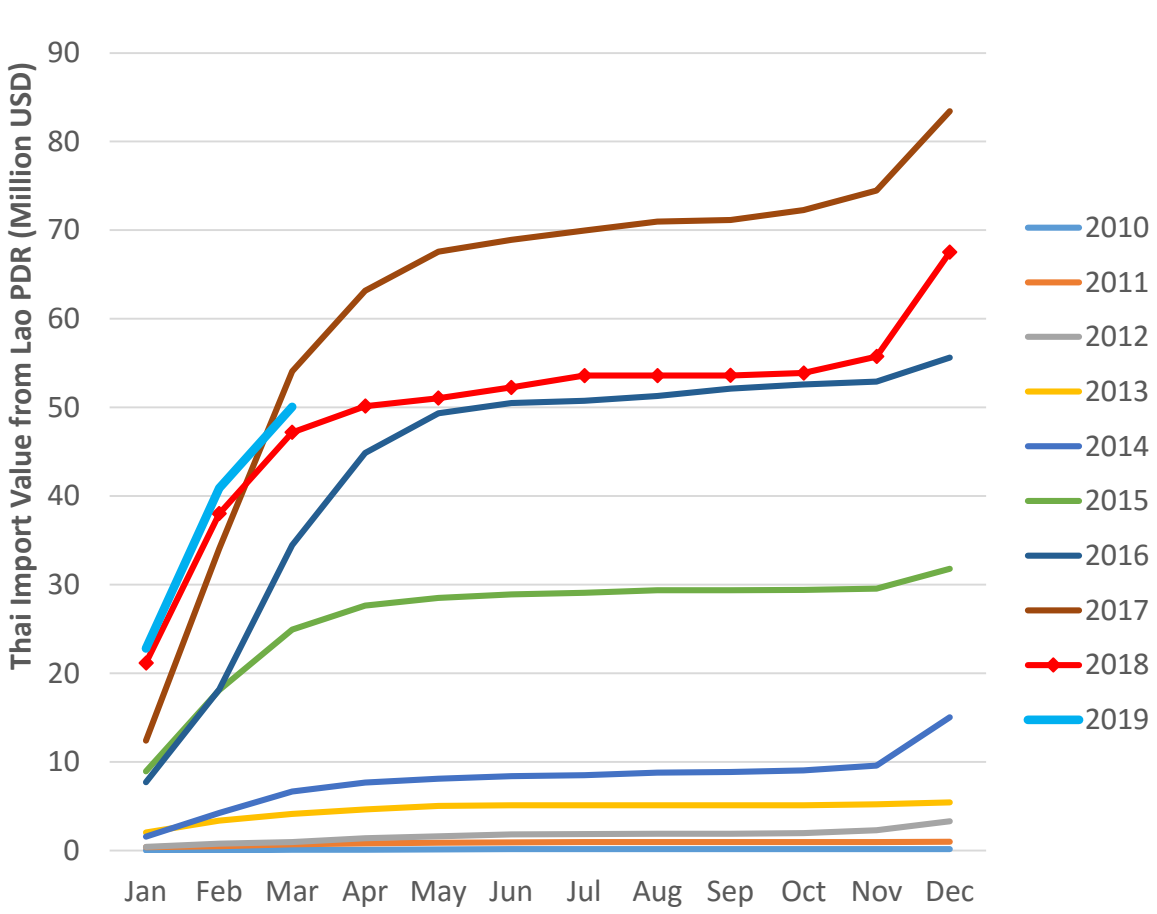
Cumulative monthly value of imports of cassava from Lao PDR

(fresh or dried)

Thailand

2017 = 83.4 million USD

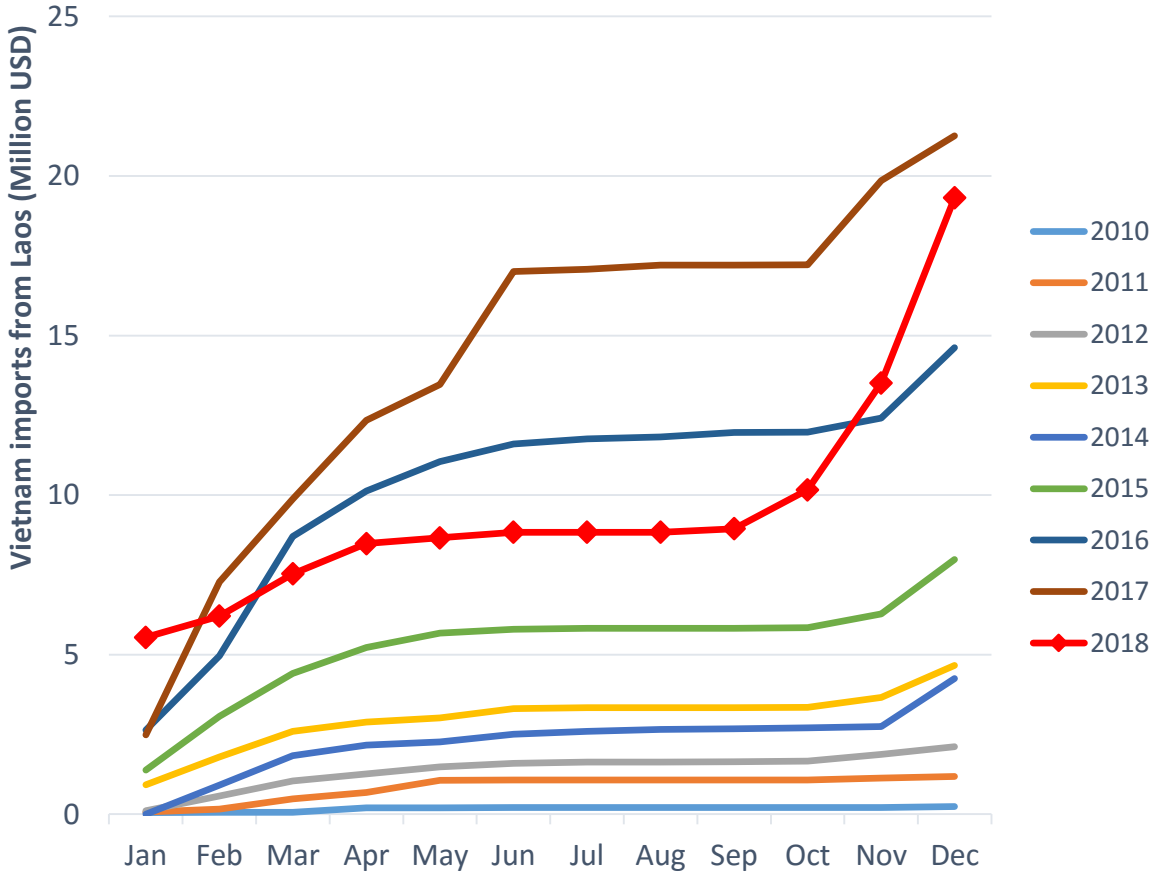
2018 = 67.6 million USD



Vietnam

2017 = 21.3 million USD

2018 = 19.3 million USD



Livelihood and value chain analysis help understand the incentives for stakeholders to bring technology to farmers in different contexts

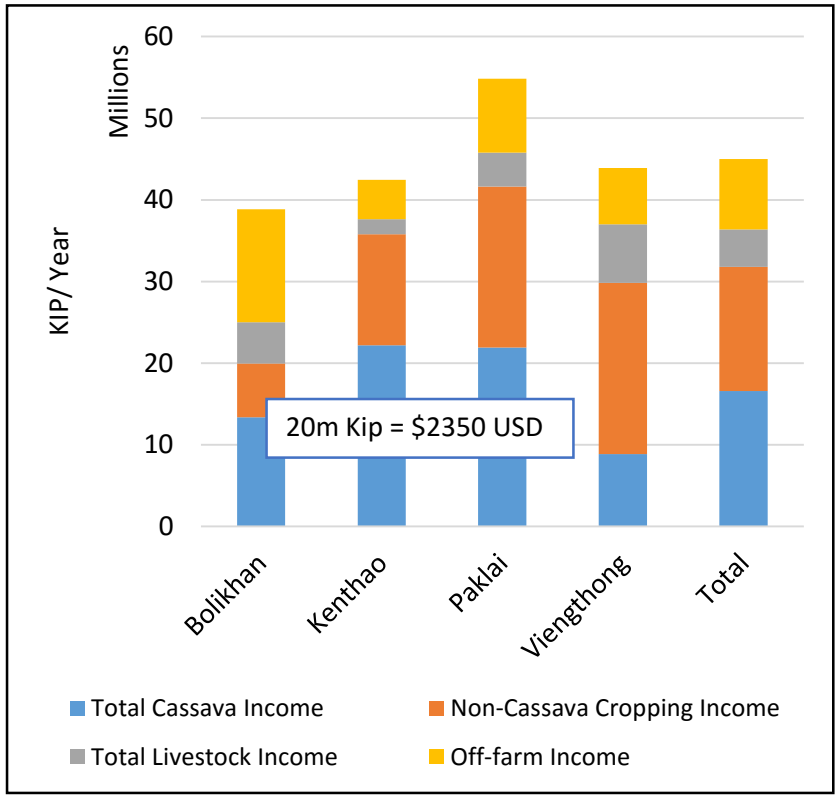




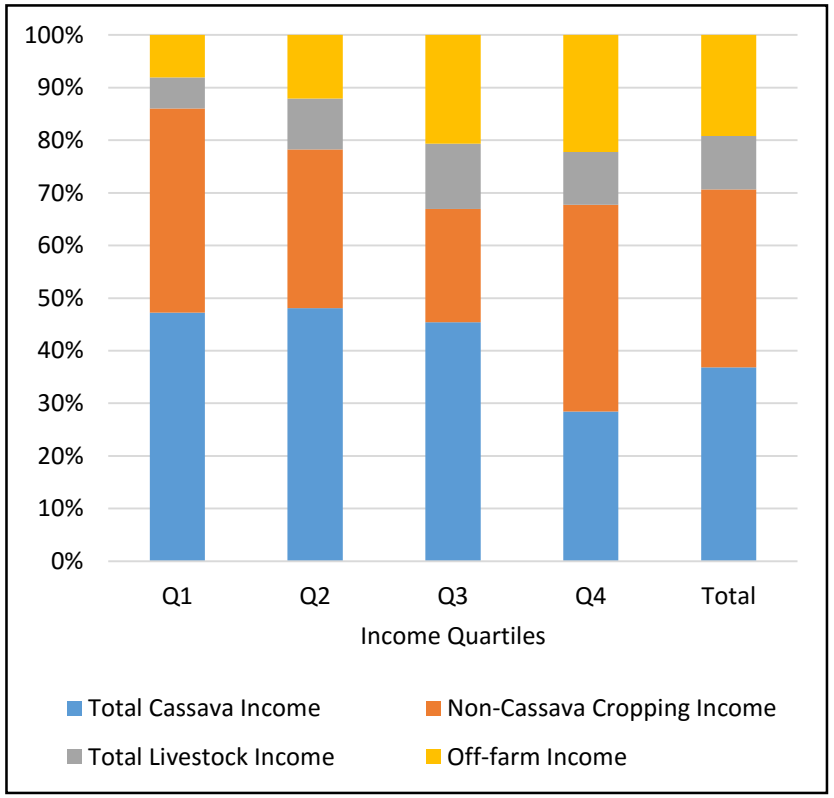



Grown by upland farmers to support livelihood security

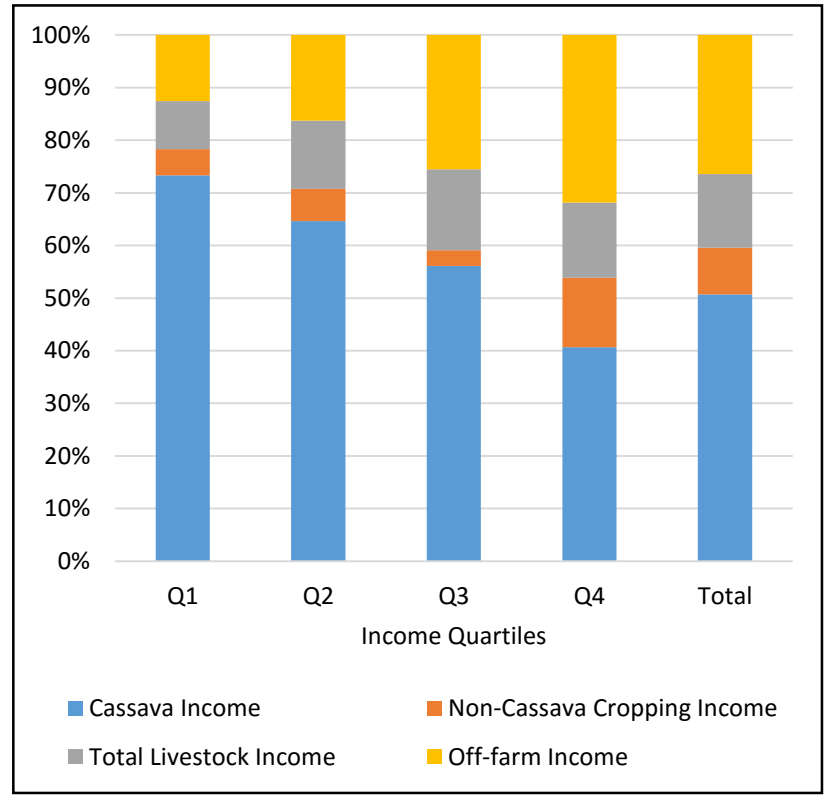
Gross total income



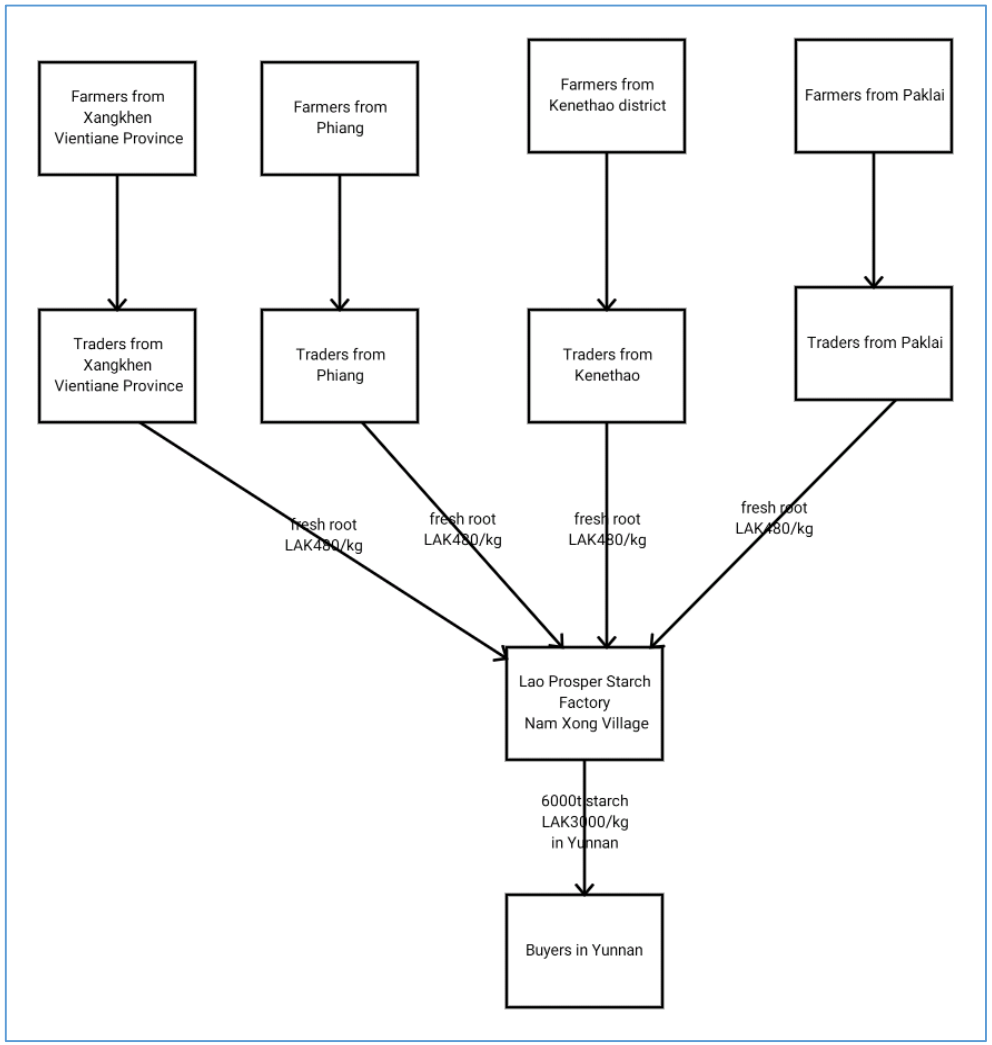
% share of total income



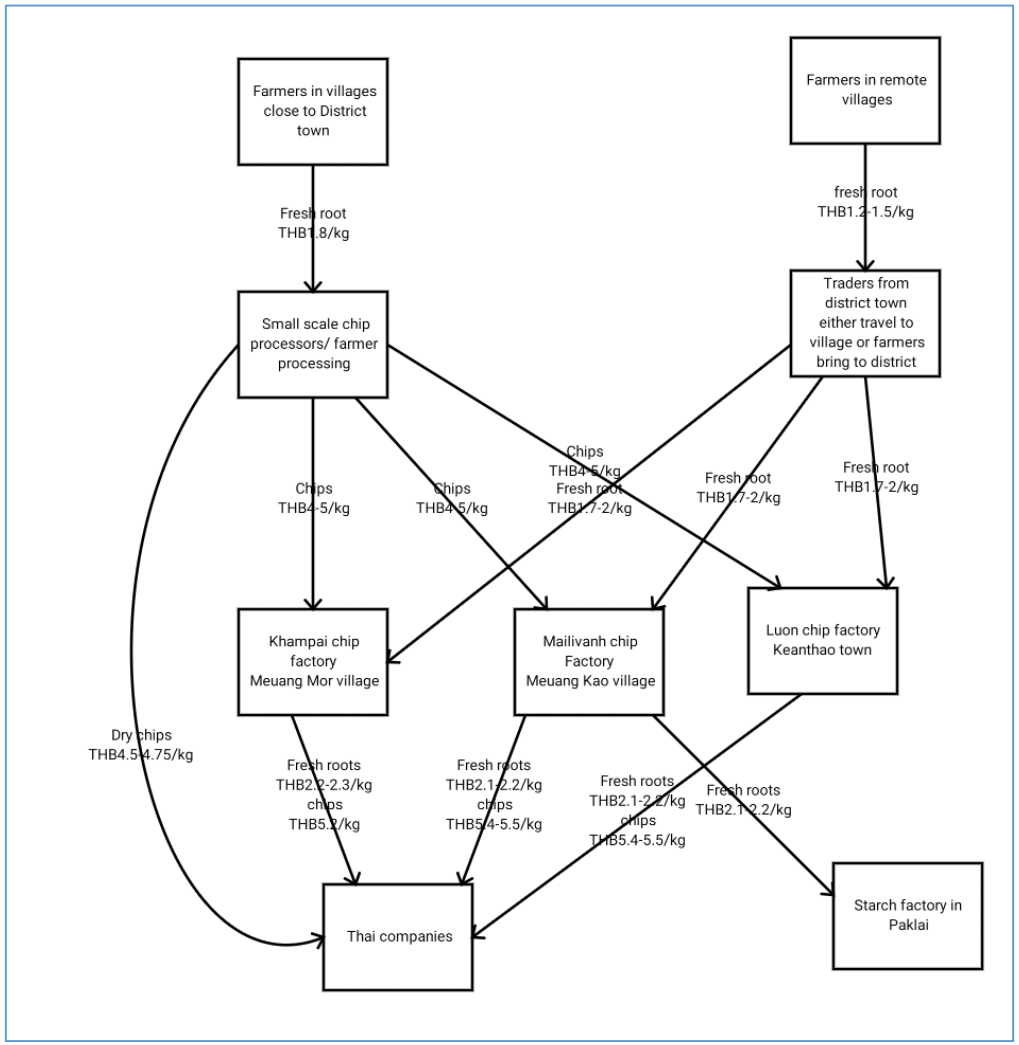
% share of cash income



Mapping local value chains together with stakeholders



Paklai, Xayabouli



Kenthao, Xayabouli

Agronomic results: what is the farm level economics?

Cassava witches broom disease in fertiliser trials and variety evaluations in Paklai, Xayabouli Province

Without fertiliser

KU50

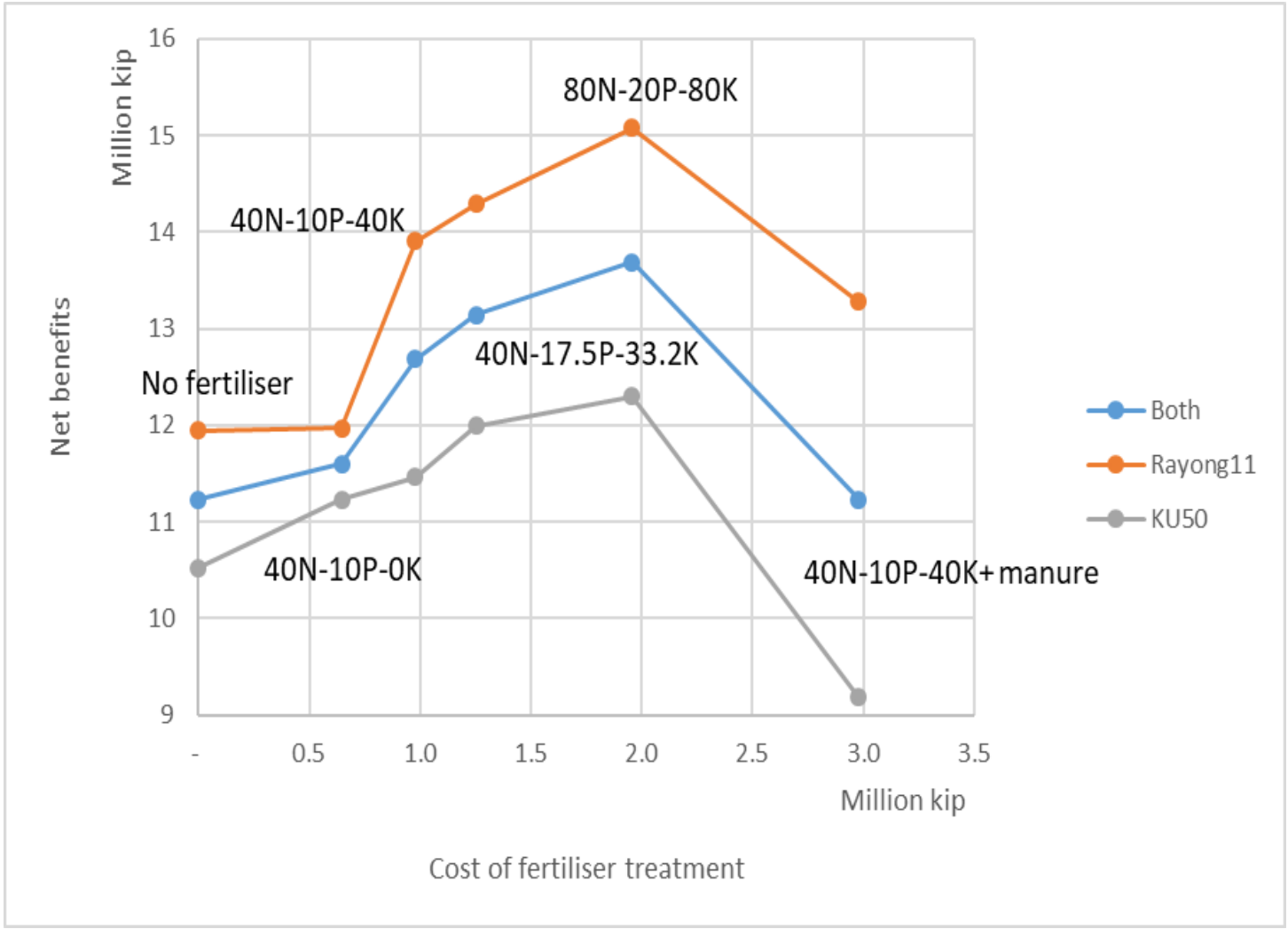
Rayong11

Cassava witches broom disease impact on starch yield

Table: Mean fresh root yield (t ha^{-1}) and Starch content (%) of all three districts. Values within a column followed by different letters are significantly different ($P < 0.05$)

	Fresh Root yield (t ha^{-1})	Starch content (% fresh root weight)	Starch yield (t ha^{-1})
Rayong 11	25.91_{a}	30.67_{a}	7.9_{a}
KM140	23.59_{ab}	23.54_{bcd}	5.5_{b}
Rayong 72	23.19_{ab}	23.60_{bcd}	5.6_{ab}
Local	22.58_{ab}	25.57_{bc}	5.7_{ab}
Rayong 9	22.19_{ab}	26.70_{b}	6.3_{ab}
KU50	20.12_{ab}	21.65_{d}	4.7_{b}
KM21-12	19.16_{b}	22.76_{cd}	4.7_{b}

Large impact of disease the farm and processing economics



Typically 1000t roots = 250t starch

With disease

1000t roots = 140t starch

Processor in Cambodia

Demonstration of balance and NPK fertiliser recommendations

Commercially available NPK (15-5-30) 300 kg ha^{-1} was applied (45N-15P-72K)

District	Paklai	Kenthao	Bolikan	Viengthong
Yield without fertiliser (t/ha)	27.8	24.8	12.3	26.4
Yield with fertiliser (t/ha)	37.2	36.8	21.1	29.7
Difference (t/ha)	9.5	12.0	8.8	3.3
Current price (kip/kg)	540	540	540	500
Cost fertiliser (kip/ha)	1,320,000	1,320,000	1,320,000	1,320,000
Current cassava root price				
Marginal Net Benefits (kip/ha)	3,785,333	5,140,667	3,428,240	313,796
MRR (%)	286.8%	389.4%	259.7%	23.8%
Low cassava root price: 300 kip per ton				
Marginal Net Benefits (kip/ha)	1,516,296	2,269,259	1,317,911	- 339,722
MRR (%)	114.9%	171.9%	99.8%	-25.7%

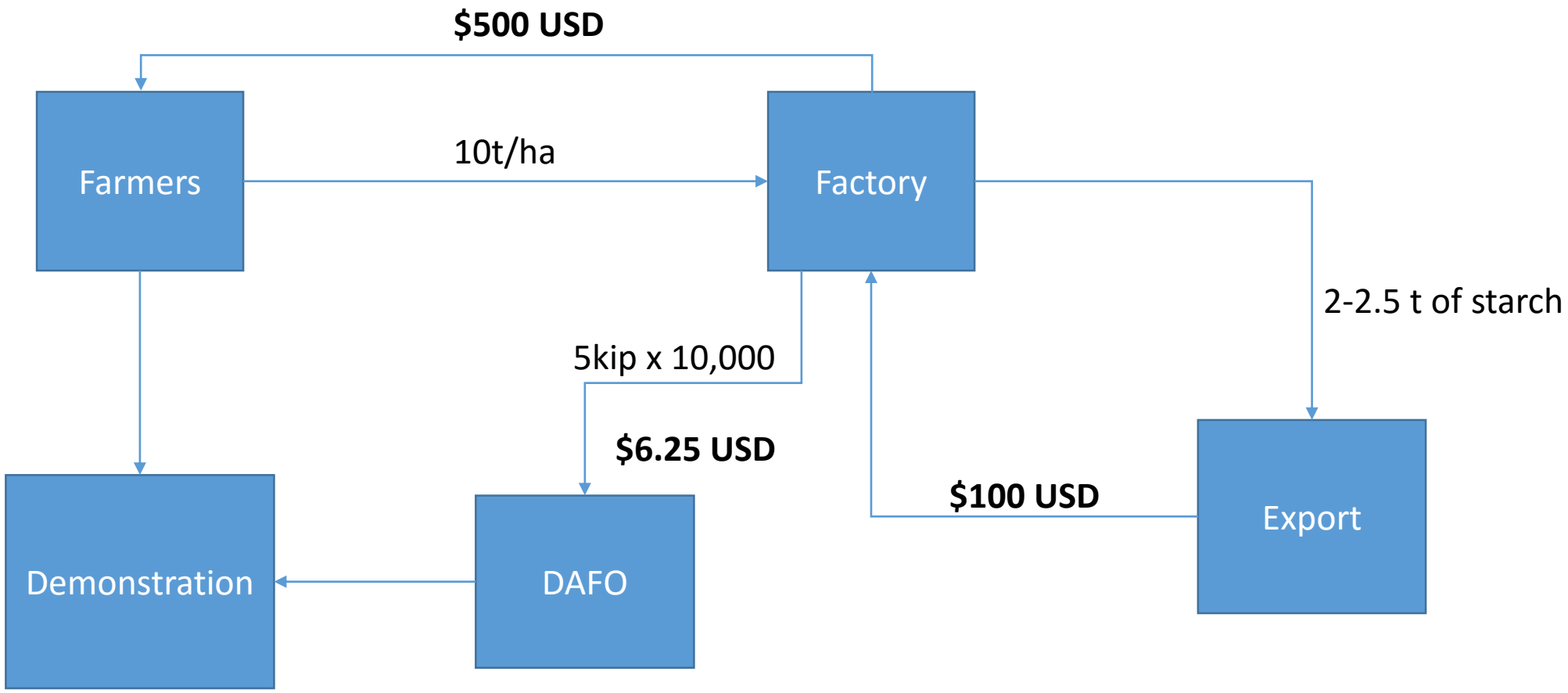
Impact on farmer incomes and returns to labour

	Without fertiliser	With fertiliser
Material costs (A)	1,600,000	2,920,000
Labour costs (B)	6,420,000	6,660,000
Total costs (A+B = C)	8,020,000	9,580,000
Revenue (D)	16,114,691	21,598,198
Net returns (D-C)	8,094,691	12,018,198
Net returns to household resource (D-A = E)	14,514,691	18,678,198
Labour days (F)	152	158
Net returns per labour day (E/F)	95,491	118,216
Low price scenario		
Revenue	8,335,185	11,171,481
Net returns	315,185	1,591,481
Net returns to household resource	6,735,185	8,251,481
Labour days	152	158
Net returns per labour day	44,310	52,225

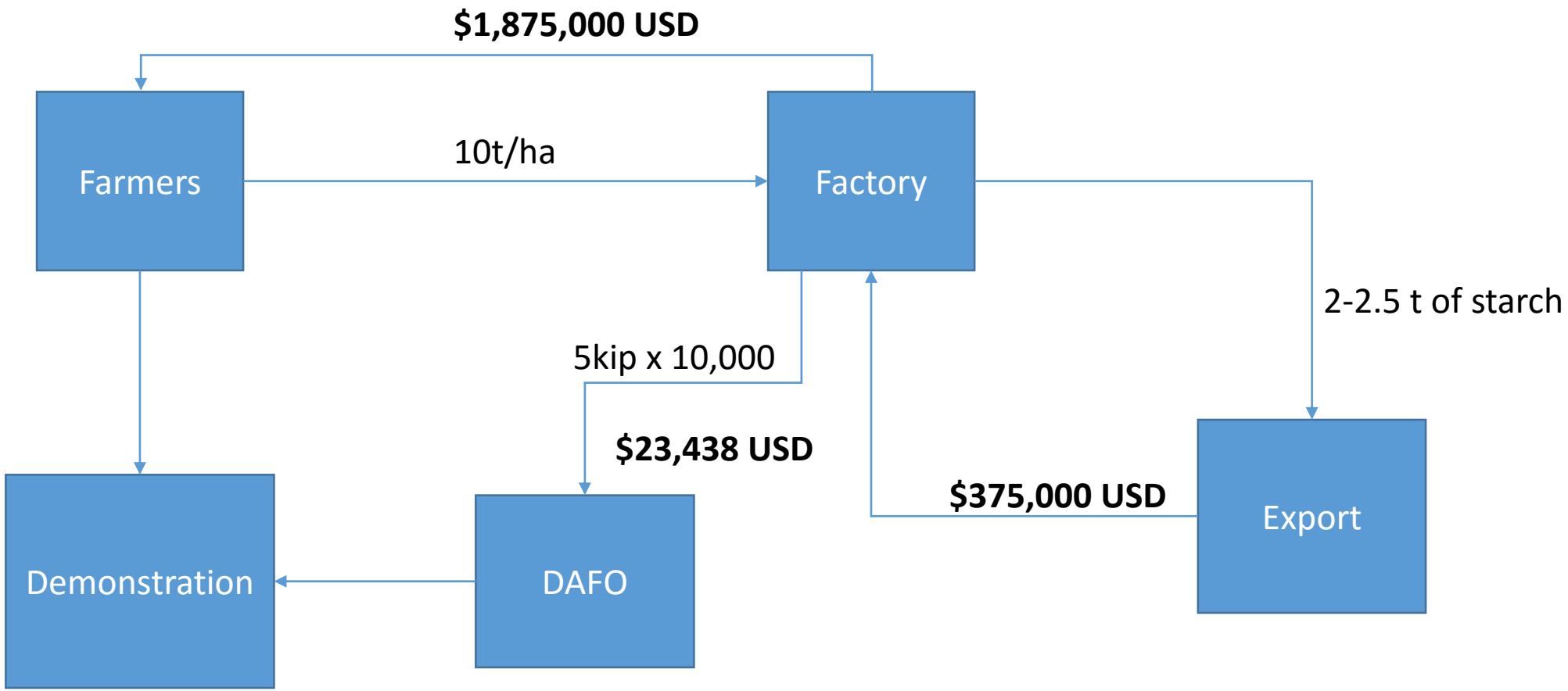
What does this mean for other stakeholders in the value chain?

Lead firm – monopsony working with DAFO (example from Paklai)

Lead firm – monopsony working with DAFO (example from Paklai)



There is 15,000 ha of cassava in Paklai…..even at 25% adoption



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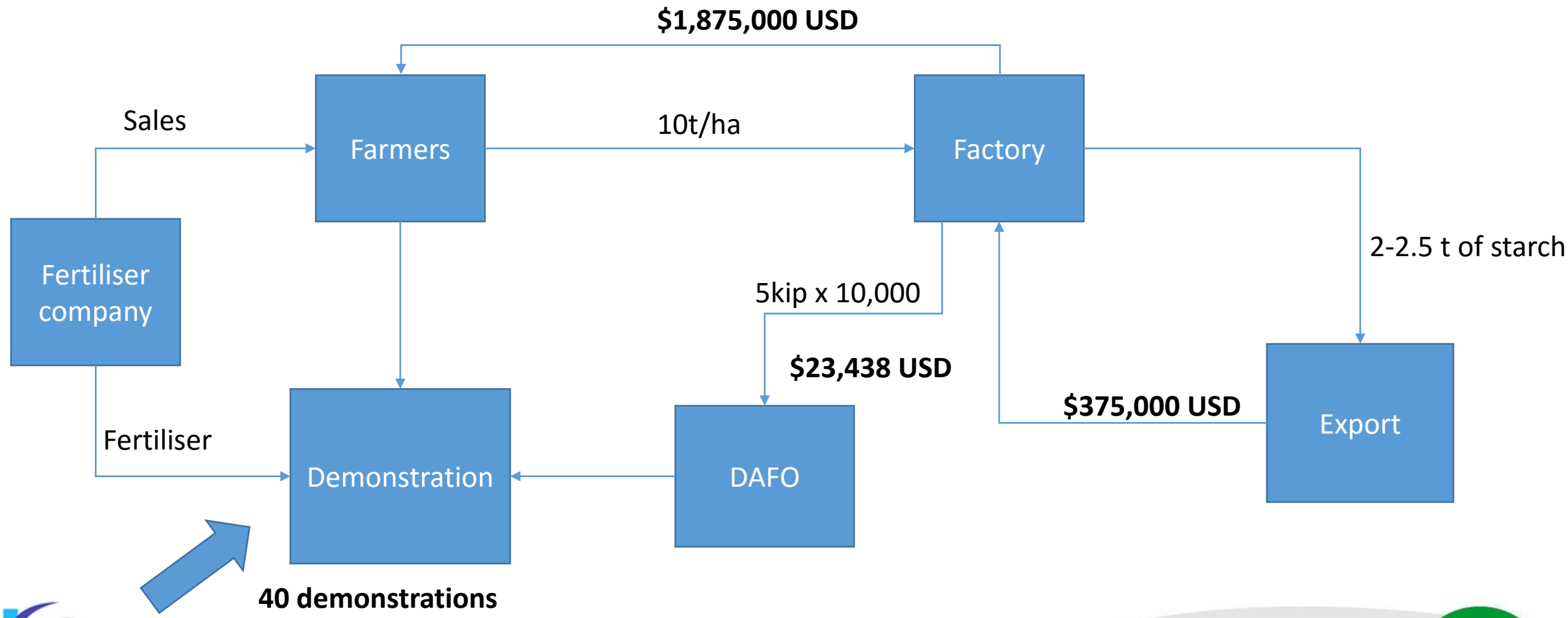

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Building a sustainable future

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Multi-stakeholder engagement at local and national scale

Developing public – private funding models for research and extension

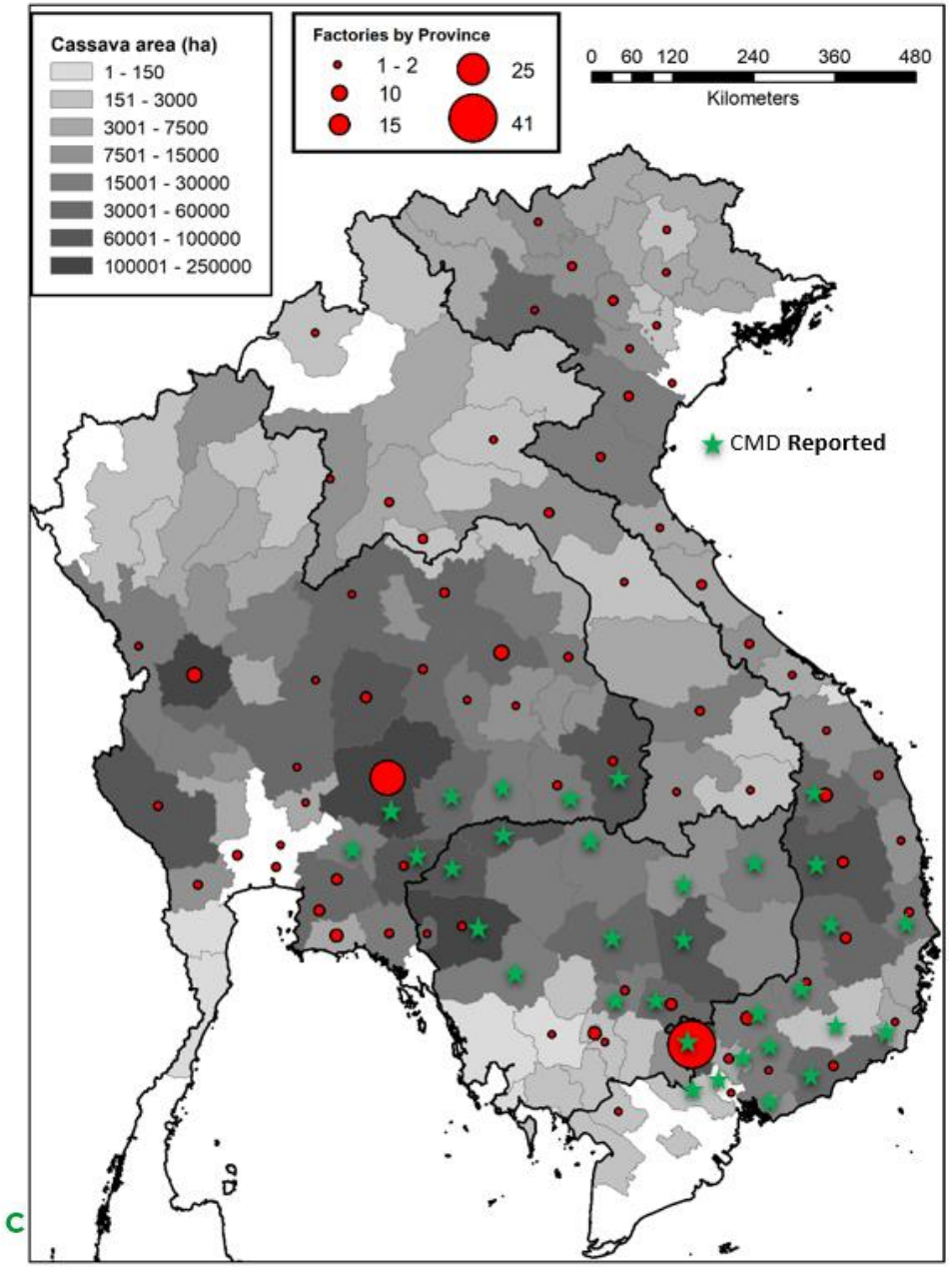
- We are in the process of developing business models and funding models in target districts and value chains.

- There are several activities that need to occur at a national scale to maintain the productivity of the Lao cassava sector that cannot be depend on projects.

1. Breeding and selection is a long-term activity requiring stable resources
2. Pest and disease monitoring and surveillance
3. Clean seed production
4. Market information and intelligence

Disease will add another level of production uncertainty that will significant impacts rural livelihoods, industry and national economies

Current official reported status of CMD in mainland SE Asia



Vietnam: **14 Provinces infected**
Current area 17,866 ha infected

Cambodia: **10 Provinces declared**
additional provinces with reported symptoms

Thailand: **7 Provinces** have had symptoms reported

Laos: **No symptoms reported** – planting material coming from Vietnam and Thailand

Myanmar: **No symptoms report** – planting material coming from outside

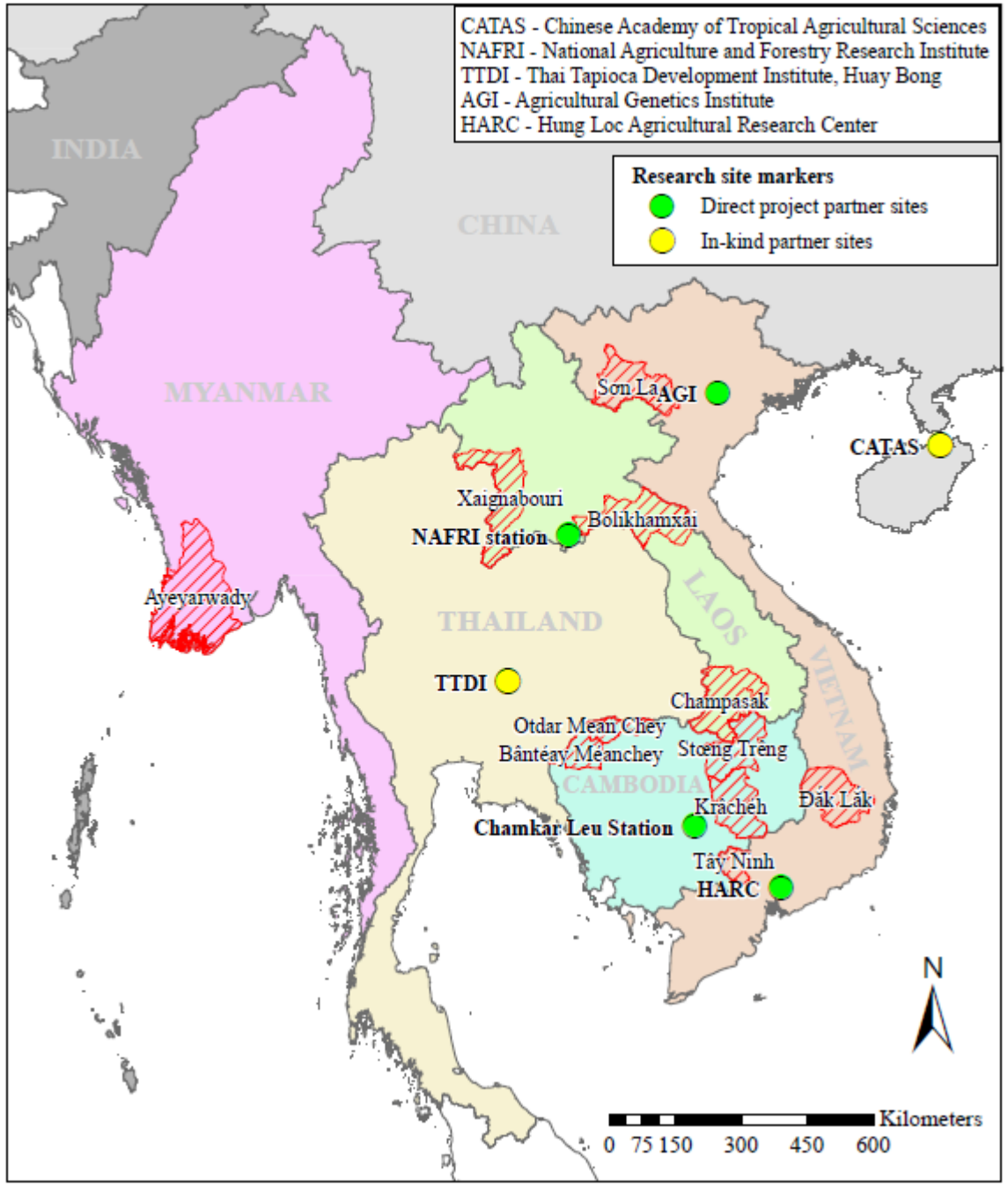
Short term

Evaluate which existing varieties are less susceptible

Speed of degeneration and yield loss

Develop clean ‘seed systems’ for production and distribution



Medium term

Evaluate varieties with resistance for performance in different agro-ecological regions

- How do these varieties compare to clean existing varieties over time?
- This work need to happen with public and private sector in these different agro-ecological zones

Longer term

Screening and breeding for resistance for SLCMD and CWBD

Conclusion

1. An understanding of the global market context in which localised cassava value chains operate (farmer-trader-processor) helps recognize the market risk that farmers and processors are exposed to – but timely information and decision support tools are necessary.
2. The local value chain context and the composition of livelihoods and trajectories will influence the incentives for different stakeholders to bring technologies to farmers.
3. There are practices that offer significant return on investments for farmers and provide additional revenue to other stakeholders.
4. There is a need for new public-private partnerships and funding models
5. The addition of disease pressure will impact the competitiveness of smallholder cassava farmers in the global carbohydrate market

ACIAR Cassava Value Chain and Livelihood Program

Join the conversation at : https://www.facebook.com/groups/1462662477369426/

Project website: http://cassavavaluechains.net/

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