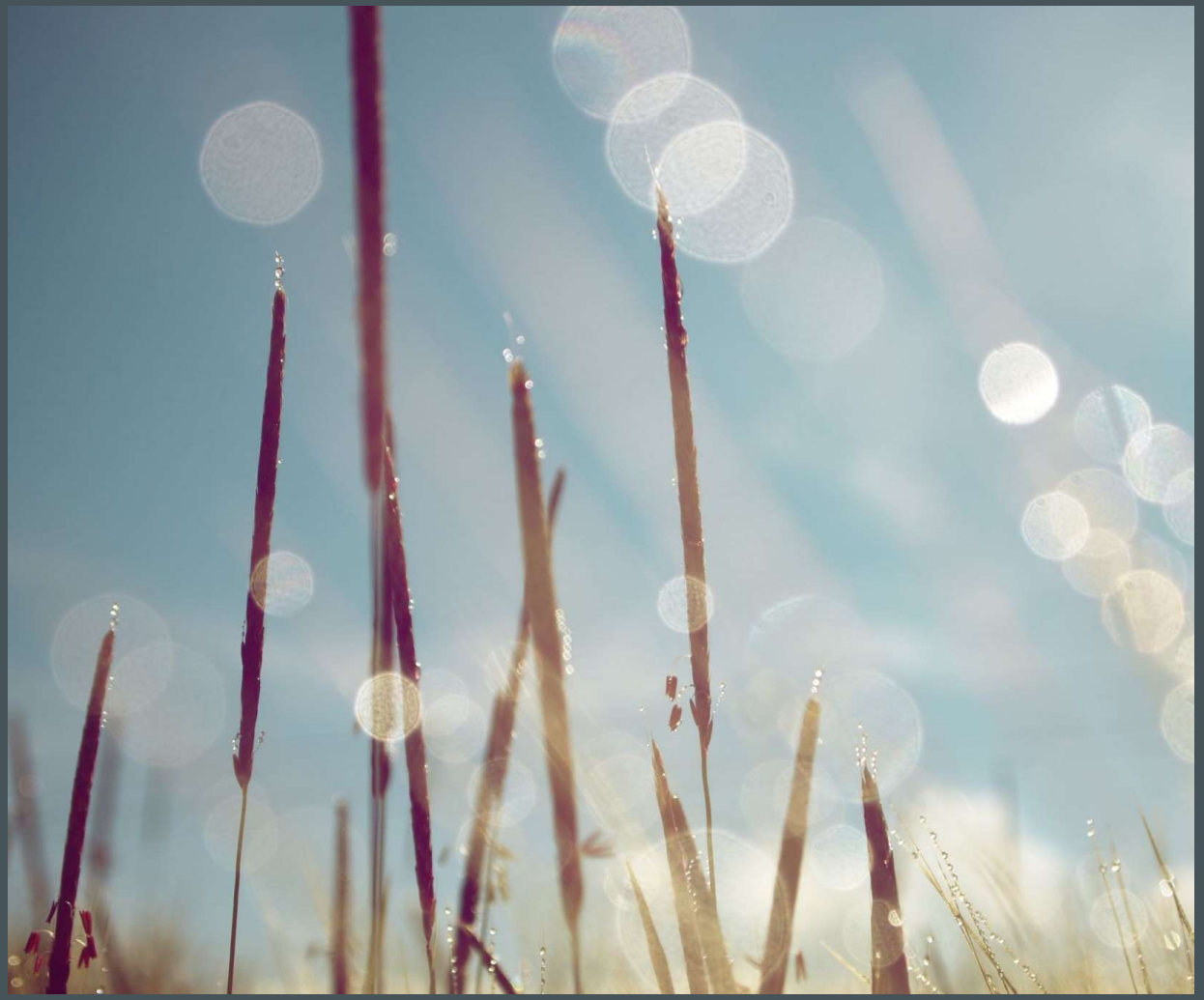
MECHANIZATION OF AGRICULTURE

MARKET DYNAMICS:

CHINA, INDIA, SRI LANKA

&

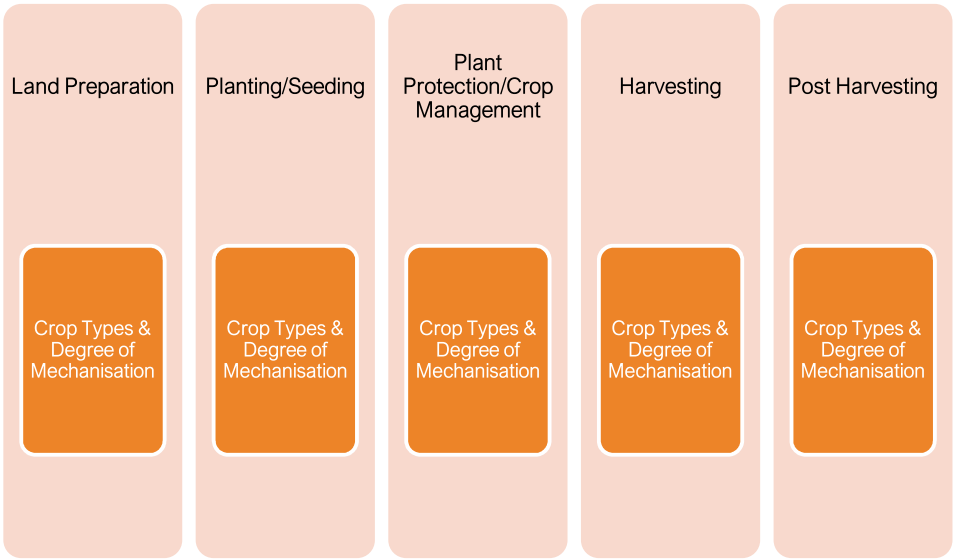
THAILAND



STUDY

- Purpose
  - To gain rich insights into market dynamics of the selected countries, that will benefit members in producing/sourcing appropriate machinery primarily
- Objectives
  - Analyse the structure and dynamics of the market
  - Assess the current demand for farm machinery by application
  - evaluate the unmet demand and future trends

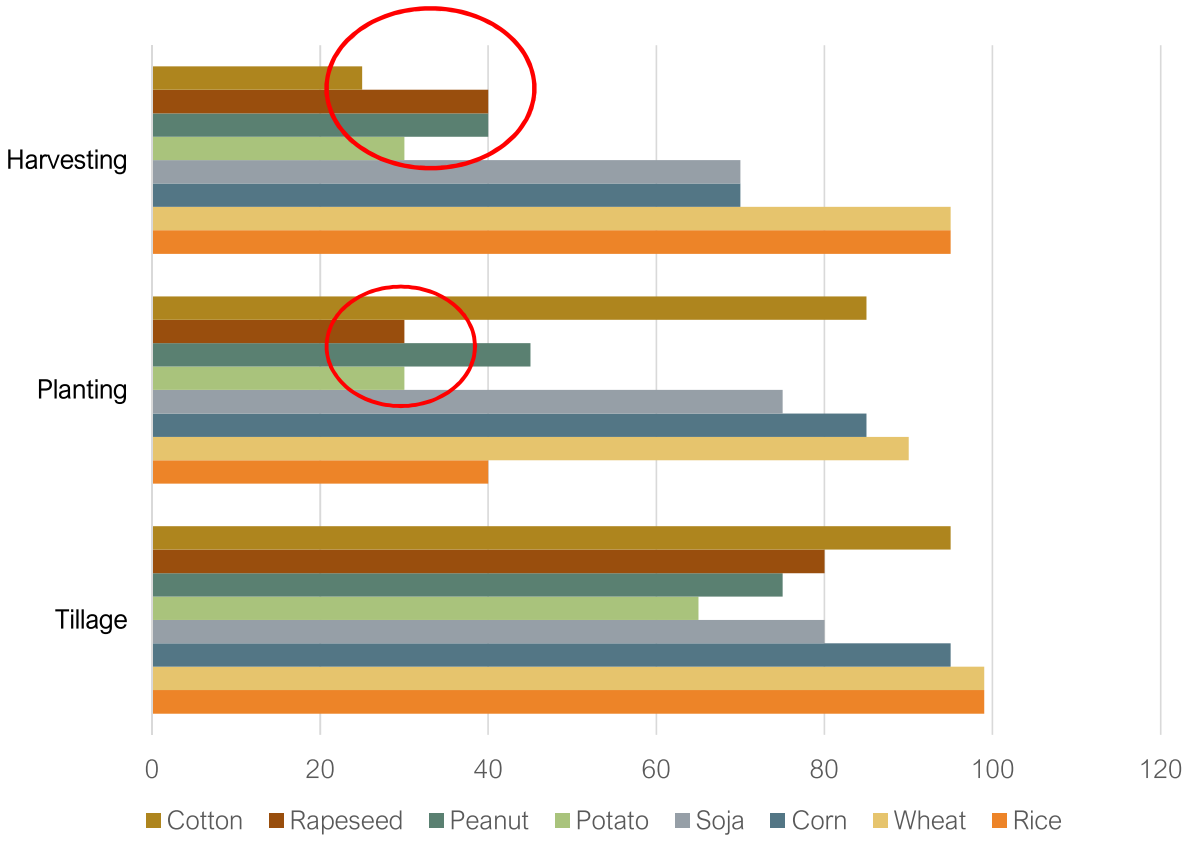
SCOPE OF THE STUDY



CHINA

- GDP in Agriculture US$ 1 trillion
- Major producer of Agriculture machinery
- Comprehensive mechanization rate achieved in tillage, planting and harvesting of main crops- 68%
- Major crops: Wheat, Paddy, Corn, Cotton, Soja, Rapeseed, Potato and Peanut

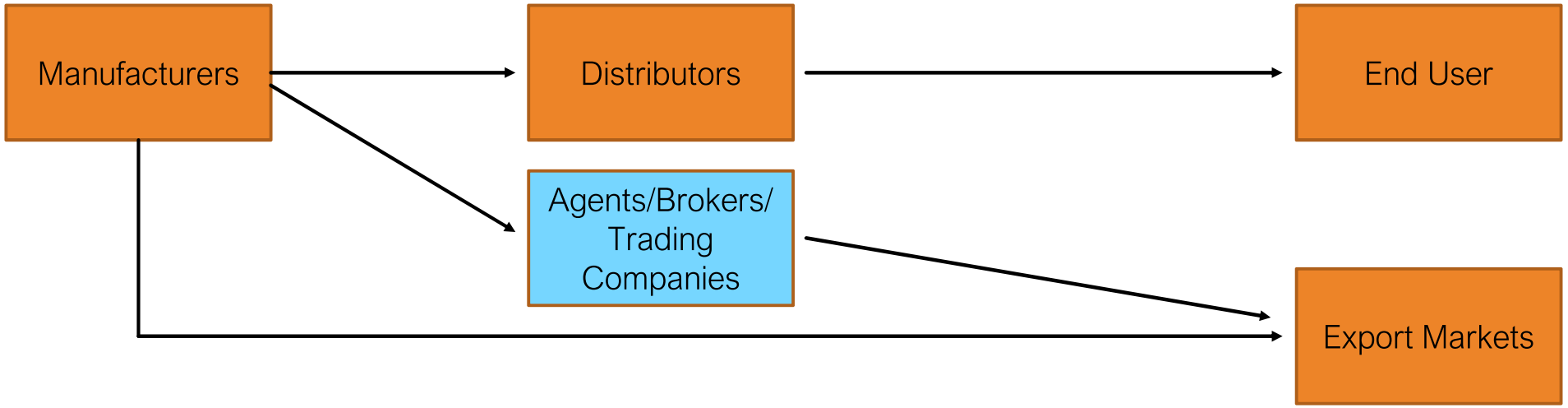
MAJOR CROPS & MECHANISATION



DEMAND INFLUENCERS

- Growth in sown extents for most crops
- Central Government Subsidy policy for mechanization
- Shortage of labour caused by migration
- Need to improve productivity

SUPPLY CHAIN



MAJOR CONSTRAINTS

- Fragmented and marginalized land
- Funding/ Cost of financing

OTHER CONSIDERATIONS

- Government support for agriculture
- Importance of adaptability and reliability
- Back up services
- Training and Technical support for farmers

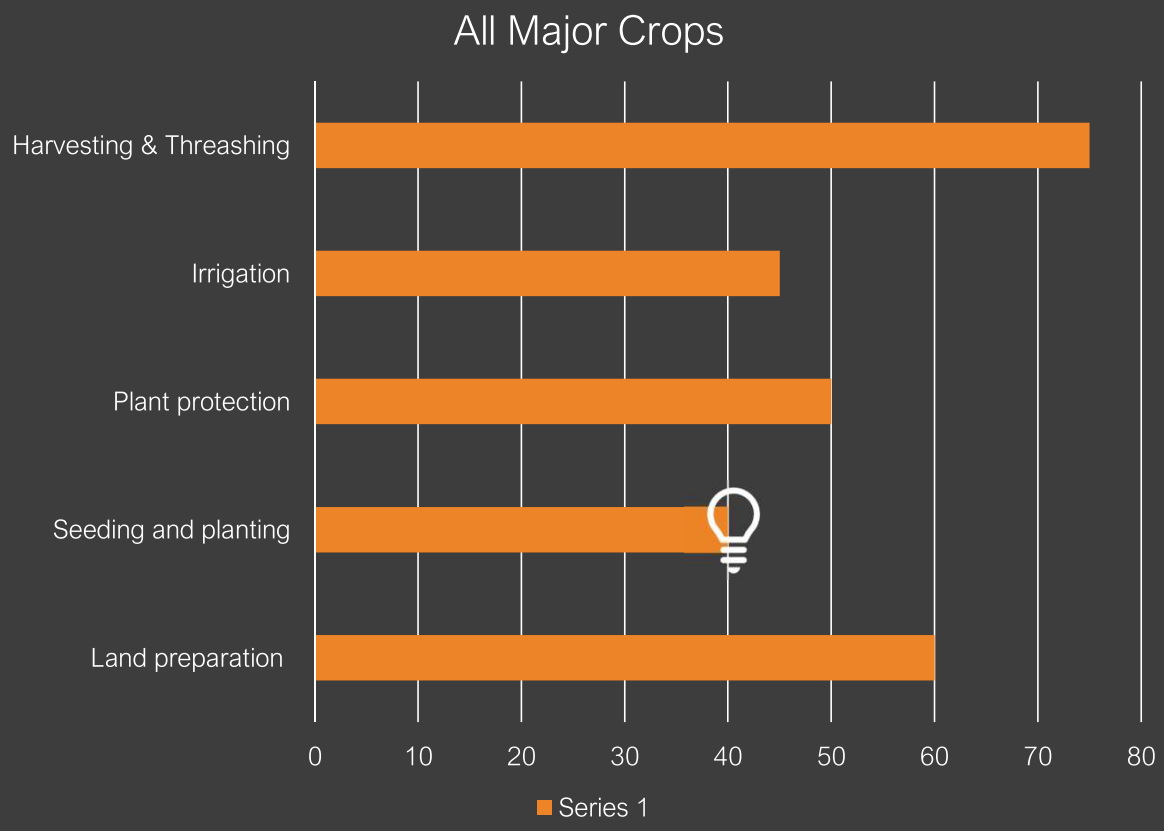
CHINA IS A GOOD DESTINATION TO SOURCE A DIVERSE RANGE OF MACHINERIES AND IMPLEMENTS OF ALL SORTS

AGRICULTURAL MACHINERY EXPORTS TOTALLED USD 29.751BN

INDIA

- Agricultural GDP equivalent to US$401 bn
- Overall cropping intensity is on the rise
- Major crops include; rice, wheat, maize, millet, bajra, ragi, pulses. Cotton, jute, sugarcane, oilseeds
- Leading global producer of Tractors
  - Mahindra & Mahindra, TAFE, Escort, Sonalika and John Deere control almost 90% of total production
- Producers other types of machineries and implements
- Farm equipment size, est US$ 8.8bn

CROP MECHANISATION



Less than 25% for paddy

CUSTOMER PROFILE

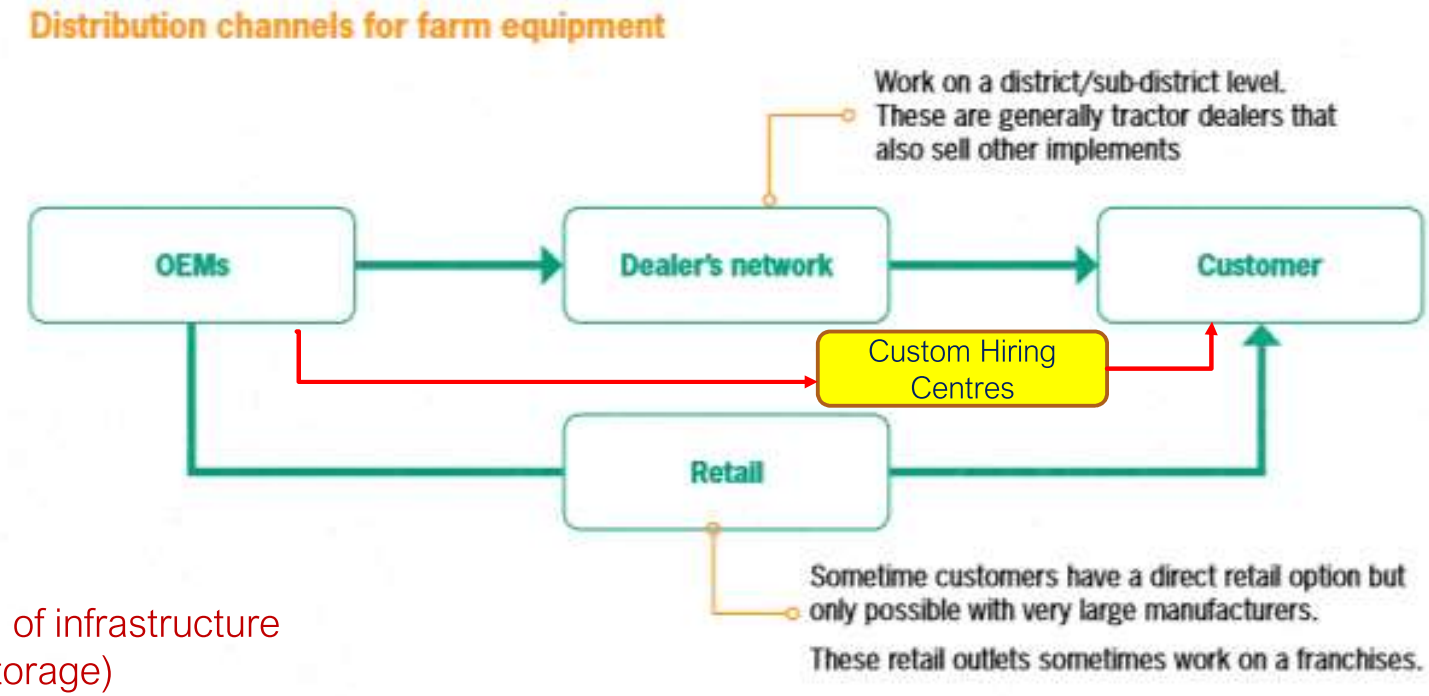
- Small size farmers <2 hec
- Medium scale farmers 2 to 10 hec
- Large 10 hec >

Majority

DEMAND INFLUENCERS

- Availability and accessibility of low-cost credit, adequate and timely
- Central Government subsidy for mechanisation
- Availability of parts & services throughout the country
- Crop prices & climatic conditions

SUPPLY CHAIN



Key issue: Level of infrastructure development (storage)

GAPS / OPPORTUNITIES

- Cotton picking
- Seeding, planting & harvesting of horticultural crops
- Rice transplanting
- Straw and crop residual utilization; viz., bailing, silage making etc
- Postharvest technology

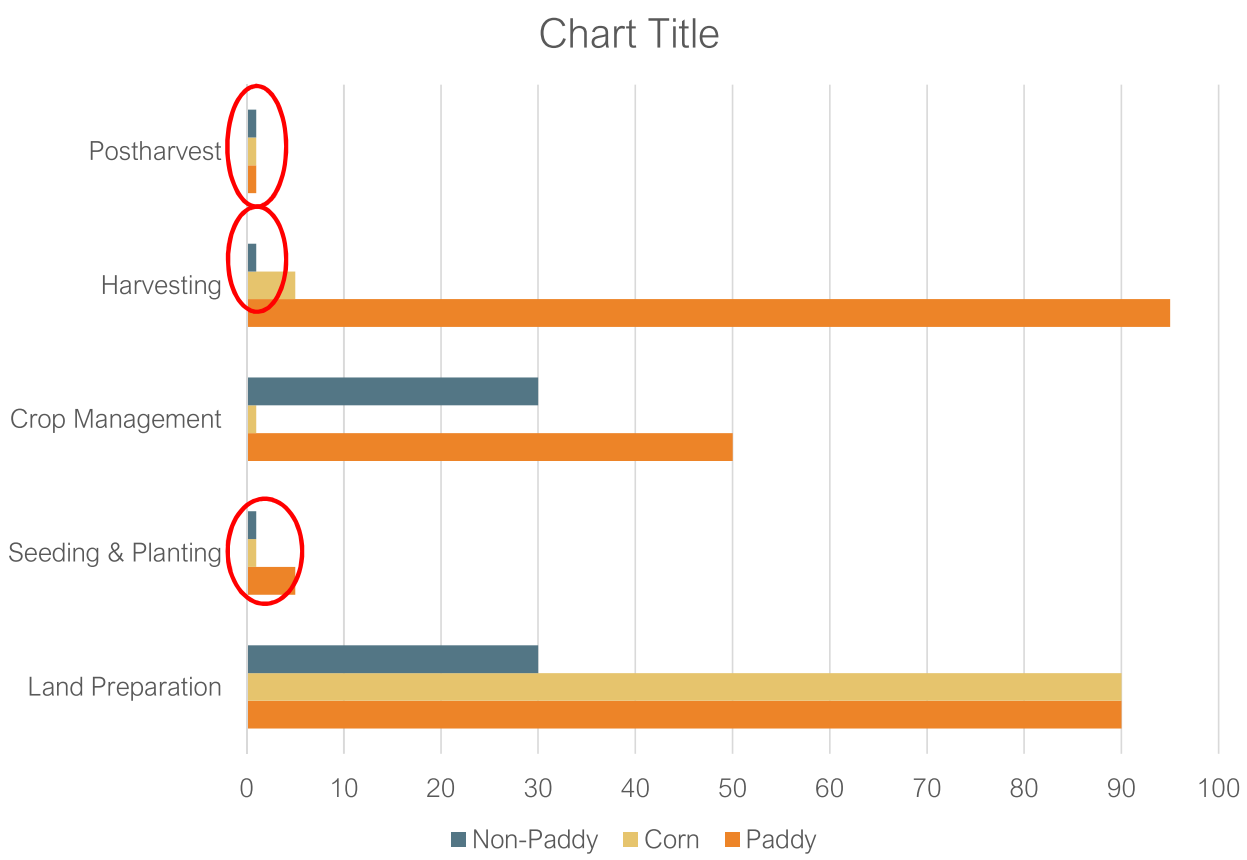
CONSTRAINTS

- Fragmented and marginalizing farmlands
- Cost of financing

SRI LANKA

- Agriculture GDP valued at US$).875 bn
- Does not manufacture agriculture machinery of any sort, except for a few accessories such as nine tine tiller, ploughs, trailers, water pumps and stainless-steel sprayers
- All major machinery are imported from China, India, Japan, Thailand
- 25.5% employed in rural agriculture
- Major crops are paddy, corn, pulses & seeds, Yams

CROP MECHANISATION



DEMAND INFLUENCERS

- Youth moving away from agriculture/ Shortage of labour
- Changing weather and rain fall patterns
  - Shorter windows of opportunity; Hence speed matters
- Availability of financing options
- Disposable income levels, crop prices

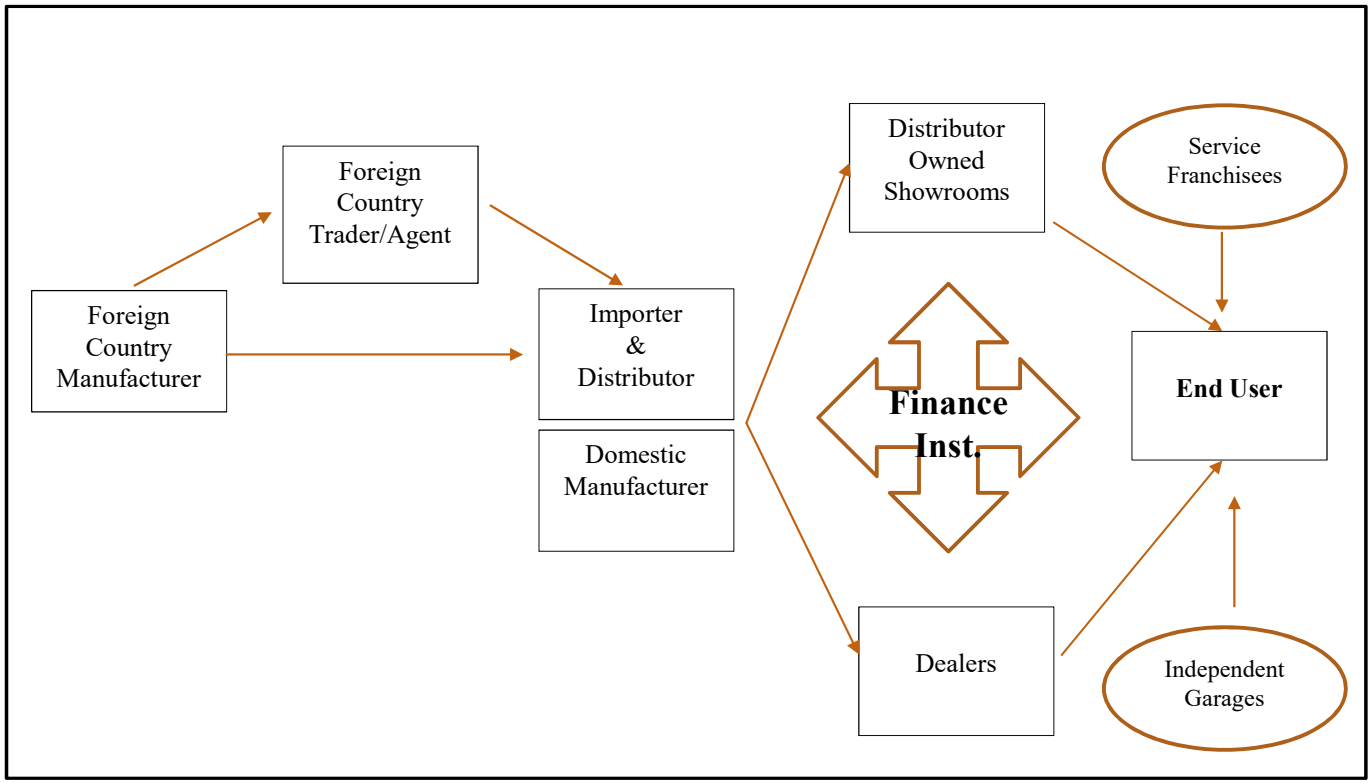
END-USER PROFILE

- Small: Farmers holding on average 2 hectares
  - Mostly settlements with major irrigation facilities

Majority

- Medium: those holding 8 to 20 hectares
- Large: > 20 hectares
  - Mostly commercial scale farmers
- Plantation companies: more than 200 hectares

SUPPLY CHAIN



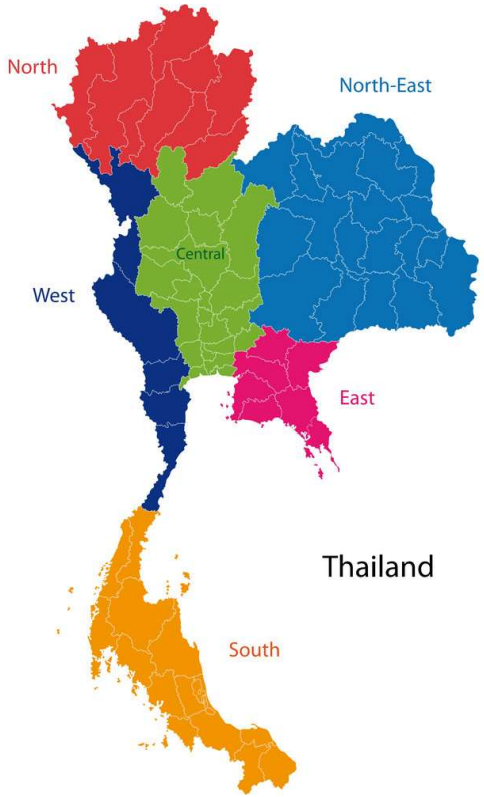
GAPS IN MECHANISATION

- Bed making, Land levelling and bund preparation
- Seeding & Planting
- Crop management
- Harvesting
- Postharvest

CONSTRAINTS

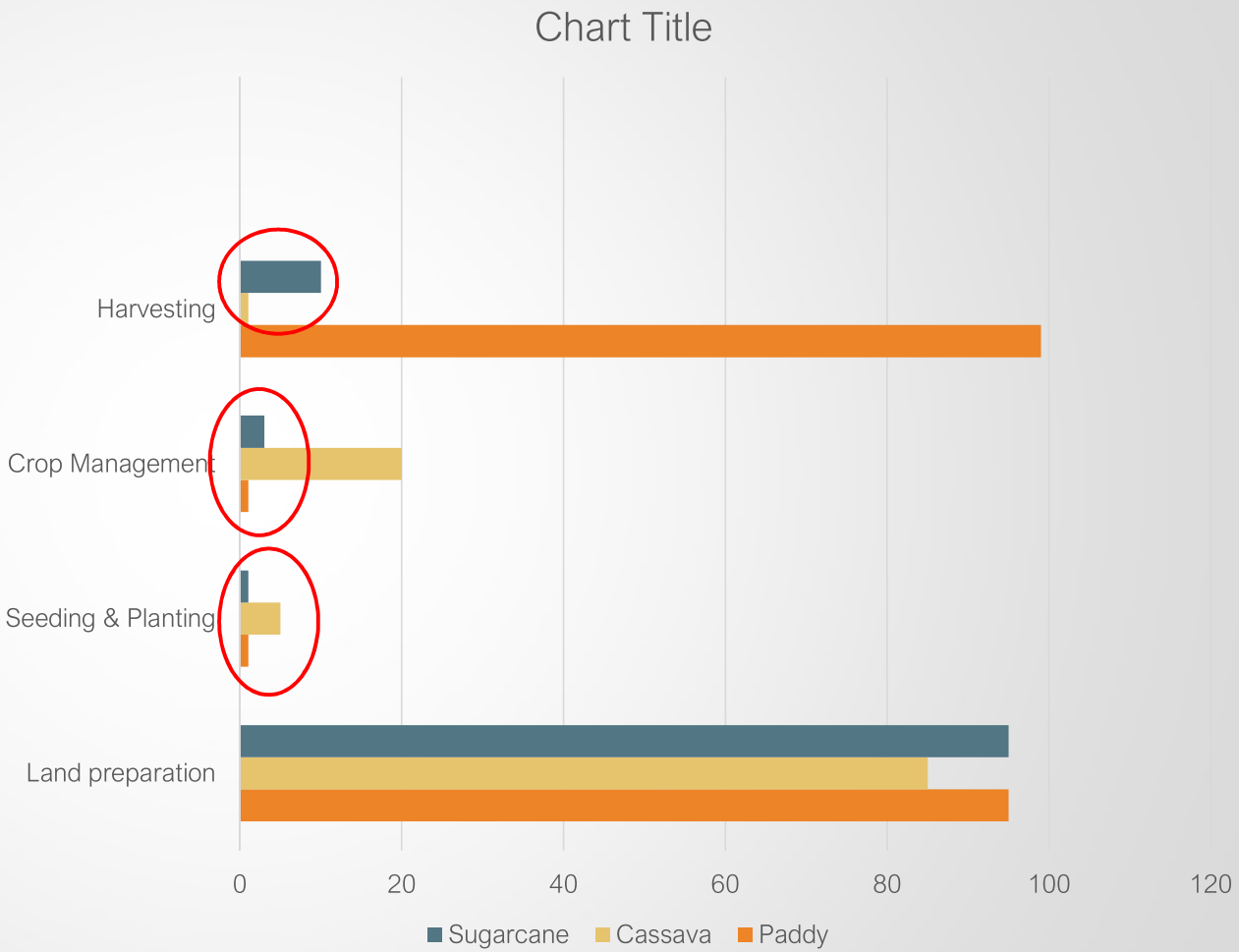
- Supply side constraints
  - Incompatibility of machines supplied vis-à-vis the crop
- Demand side constraints
  - Lack of knowledge/awareness of available technologies
  - Farmer attitudes towards adopting new technology (negative)
  - Cost of machinery and financing options

THAILAND



- Agriculture GDP valued at US$ 43.3 bn
- Major crops are Rubber, Paddy, Cassava, Sugar cane, fruits & vegetables
- Producer of agricultural machinery
  - Multinationals; Kubota, Yanmar, CNH, John Deere
  - Domestic manufacturers too
- Moving from traditional to ‘Smart agriculture’

CROP MECHANISATION



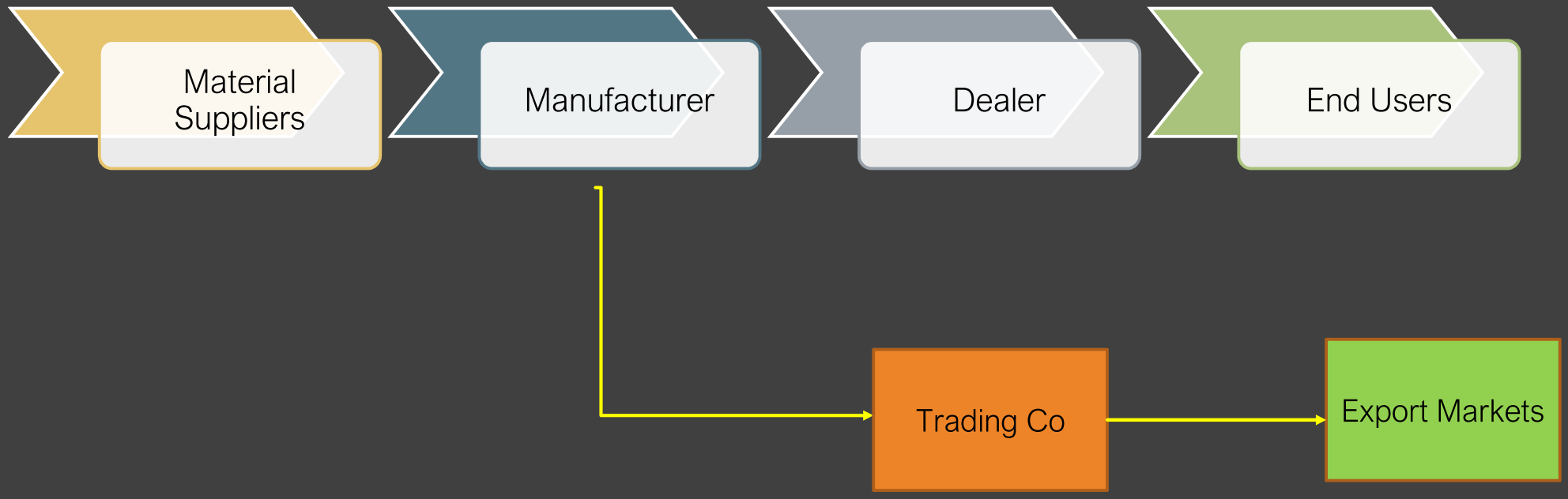
DEMAND INFLUENCERS

- Ageing labour
- Technology driven ‘smart farming’

END-USER PROFILE

- Majority are small to medium scale farmers who hold 1.6 to 3.2 hectares each
- About 10% holding 15 hectares and above
- Mostly small to medium size machineries dominate in the market

SUPPLY CHAIN

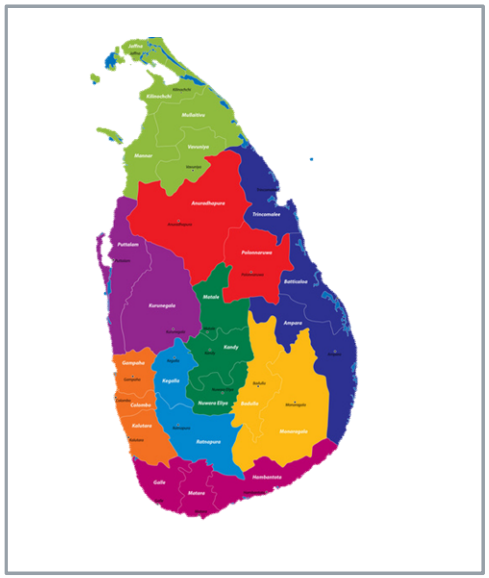


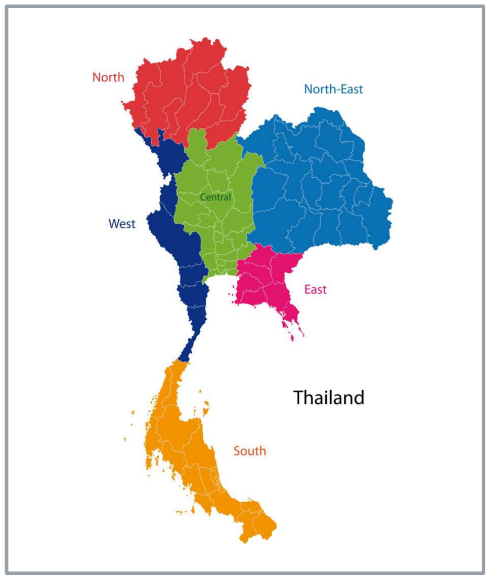
GAPS IN MECHANISATION

- Paddy transplanting
- Cassava planter
- Cassava harvester
- Rice chemical sprayer for health reasons
- Sugarcane billet planter to replace the use of traditional planting machinery
- Sugarcane Harvester

CONSTRAINTS

- Finance costs
- Fragmentation and marginalizing land holding
  - Cluster farming being introduced as a solution





OVERALL FINDINGS

OPPORTUNITIES

- Applications
  - Bed making, bund preparation, Land levelling
  - Seeding & Planting
  - Crop management
  - Harvesting
  - Post harvest: Drying, straw & residual treatment
- Crops
  - Paddy, Corn, Sugarcane, Cassava, Pulses & Seeds, Yams

DEMAND DRIVERS

- Growth in food production/agricultural activities
- Government initiatives
- New generation shying away from agriculture – promotes mechanisation
- Subsidies for mechanisation
  - Boon in China & India
  - Places the burden on the endues in Sri Lanka & Thailand
- Promotion of ‘Custom Hiring Centres’ – The Indian Government initiative

MARKET STRUCTURES

- Supply Chain network
  - Closer dialog between stakeholders
  - Deeper understanding of market dynamics and information flow
  - After-sales-service, reliability and adaptability

GENERAL CONCLUSIONS

- Two major constraints
  - Fragmented and marginalizing land holding
  - Cost of financing
- Other issues
  - Sustainability Issues
    - Environment friendly, emission issues
  - Gender friendly (Women)
    - Requires more attention

FUTURE

- SMART FARMING
- CLIMATE SMART FARMING

Machines with appropriate technology and that are geographically suitable

ACKNOWLEDGEMENTS

- Mr Ru Yi of CAMDA, China
- Dr Surnedra Singh of AMMA, India
- Mrs Dares Kittiyopas of Thai Society of Agricultural Engineering, Thailand
- Mr. Anshuman Varma, CSAM
- Ms Feng Yuee, CSAM
- Ms. Carter Cheng, CSAM

THANK YOU!

LASANTHA WICKREMESOORIYA –

LEAD CONSULTANT