

# ENABLING SUSTAINABLE AGRICULTURAL MECHANIZATION DEVELOPMENT IN ASIA AND THE PACIFIC THROUGH REGIONAL COORDINATION AND STANDARDIZATION

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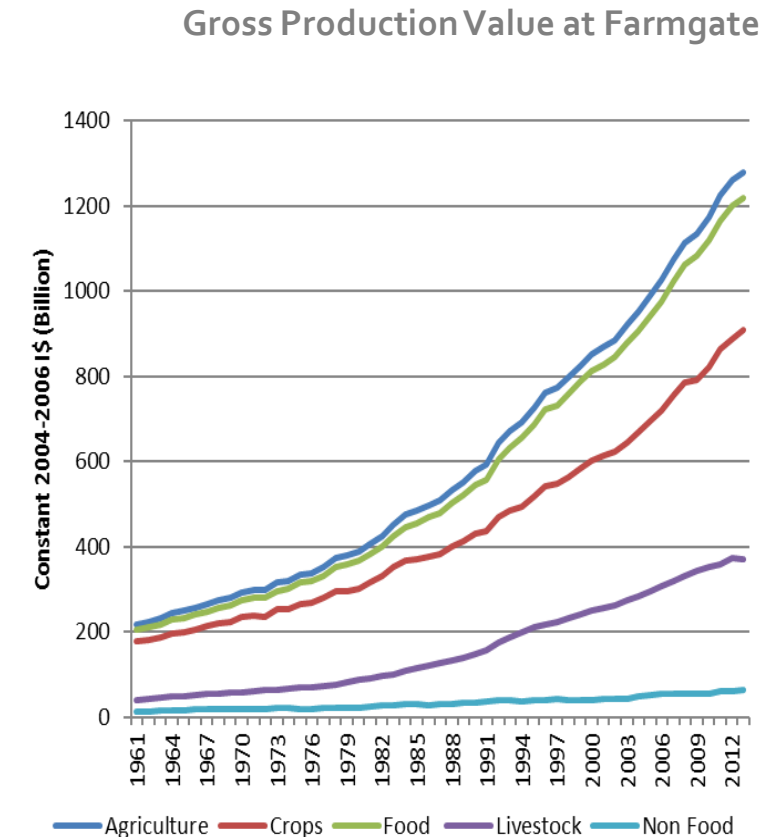
United Nations-Economic and Social Commission for Asia and the Pacific (UN-ESCAP)

# Outline

- I. Agricultural mechanization in the Asia-Pacific region
- II. Importance of regional cooperation
- III. CSAM as a regional coordination platform for agricultural mechanization

# I. Agricultural mechanization in the Asia- Pacific region

- Three waves of agricultural mechanization:
  - North East Asia – after WWII
  - South Asia – 1960s
  - South East Asia – from 1980s onwards
- Rapid rise of total agricultural production since 1960s
- Both total and per capita
- Ongoing diversification of the sector towards high value commodities



Source: FAOSTAT, 2016

## Asia- Pacific: a dynamic agricultural sector

- **4-Wheel tractors** with two axles are mainly produced in China, India, Japan, Korea and Pakistan.
- **2-Wheel tractors** with a single axle, are produced in China, India, Japan, Korea, Thailand, Philippines, Indonesia, and Vietnam.
- Japan, China, Korea and India are producing **combine harvesters** in large numbers. Thailand also produces locally made track type combines.
- Most countries in the region are producing **engines** (petrol/diesel) and **electric motors** with the exception of Laos, Cambodia, Nepal, Fiji and Papua New Guinea.
- Several countries are producing **implements and equipment** powered by 4W and 2W tractors and water pumps and threshers. However some countries still rely on imports from China, India, Thailand, Japan, Korea and a few countries outside the region.
- **India** has been a tractor exporting country since 1980s and now about 10% of its tractors are exported.
- **China** produced over 2 million tractors and 1 million harvesting machinery in 2012.

## Unevenly distributed growth

- While the **mechanization rate** of rice production has reached **99%** and **97%** respectively in Japan and South Korea in 1998, mechanized rice harvesting is still uncommon in countries such as Indonesia.
- Imbalance exists among **different districts/provinces** within the same country. eg. in India: the power availability in Orissa was only 0.60 kw/ha in 2001, compared with 3.5 kw/ha in Punjab.
- Big gaps exist among **different crops**, for example wheat harvesting in China was 91% mechanized while that of cotton only 8.3% in 2012.
- Among different **stages of production**, for example close to 71% of rice was harvested by machines in 2012 in China while the mechanization rate of rice planting was only 31.7% in the same year.

## II. Importance of regional cooperation in agricultural mechanization

- Facilitate exchange of knowledge and best practices
- Address cross-border issues
- Optimum use of scarce resources
- Enable adoption of common priorities and positions in international negotiations

# Facilitate exchange of knowledge and best practices

- Popularization of best practices
  - Several Asia Pacific countries are experimenting with different strategies to promote sustainable mechanization.
    - Eg. climate smart agricultural practices, low-carbon technologies, conservation agriculture, biochar, direct rice seeding and straw management.
  - It is necessary to enhance regional cooperation to support knowledge sharing and build on existing regional expertise.
- Institutional capacity building
  - Capacity gaps are constraining development of agricultural mechanization strategies.
  - Where skills are inadequate, cooperation on institutional capacity building at a regional level can help plug the gaps.

# Address cross-border issues

- **Fragmented market regulations**
  - Expensive and lengthy procedures for imports of equipment limit the number of players in each market and increase price for end users.
  - Restrains controls over quality of traded machineries.
- **Weaknesses in policy environment**
  - Lack of enabling policy environment to unleash the full potential of mechanization in the region.
  - Policies are formulated in isolation without considering the overall context and potential benefits of enhanced integration.



## Optimum use of scarce resources

- **Scarce Resources**
  - Asia-Pacific is a very diverse region with varied needs, yet natural, financial and material resources are limited.
  - Surplus and deficiency of resources often co-exist.
- **Coordinated partnerships**
  - Use of the resources within shared ecosystems must be coordinated for optimum collective benefit.
  - Partnerships required across countries as well as across stakeholders for addressing gaps.
  - For instance, many countries in the region have limited R&D capacity for agricultural equipment and machinery – need to share research results and expertise to avoid duplication.

## Enable adoption of common priorities and positions in international negotiations

- Common positions
  - Countries in the region frequently share common circumstances, needs and concerns.
  - Avoidance of conflicting priorities and adoption of synergistic positions can strengthen leverage of the region in international negotiations.
  - For instance, region can benefit from coordinated approach to negotiations related to climate smart technologies, and trade and investment of agricultural machinery.

### III. CSAM as a regional coordination platform for agricultural mechanization



# Enabling policy dialogue

- **Regional Forum on Sustainable Agricultural Mechanization**
  - Strategic annual event of CSAM.
  - Aims to facilitate regional cooperation and high-level policy dialogue.
  - Promotes a demand driven approach to addressing shared concerns such as:
    - Burning of straw residue
    - Cooperation mechanism for human resource development.
    - Sustainable agricultural mechanization strategies

# Knowledge-sharing through database development & research

- Regional Database of Agricultural Mechanization in Asia and the Pacific
  - Provision of reliable and comparable data to support decision-makers, researchers and practitioners.
- Sharing of research results
  - Case studies:
    - Policies, Institutions and Processes to Support Agricultural Mechanization Development in Myanmar's Dry Zone.
    - Mapping of Stakeholders for Custom Hiring of Agricultural Machines in Myanmar's Dry Zone
  - Research papers:
    - Trade and Investment Policies of Agricultural Machinery in Selected Countries



# Enabling Public- Private- Partnerships

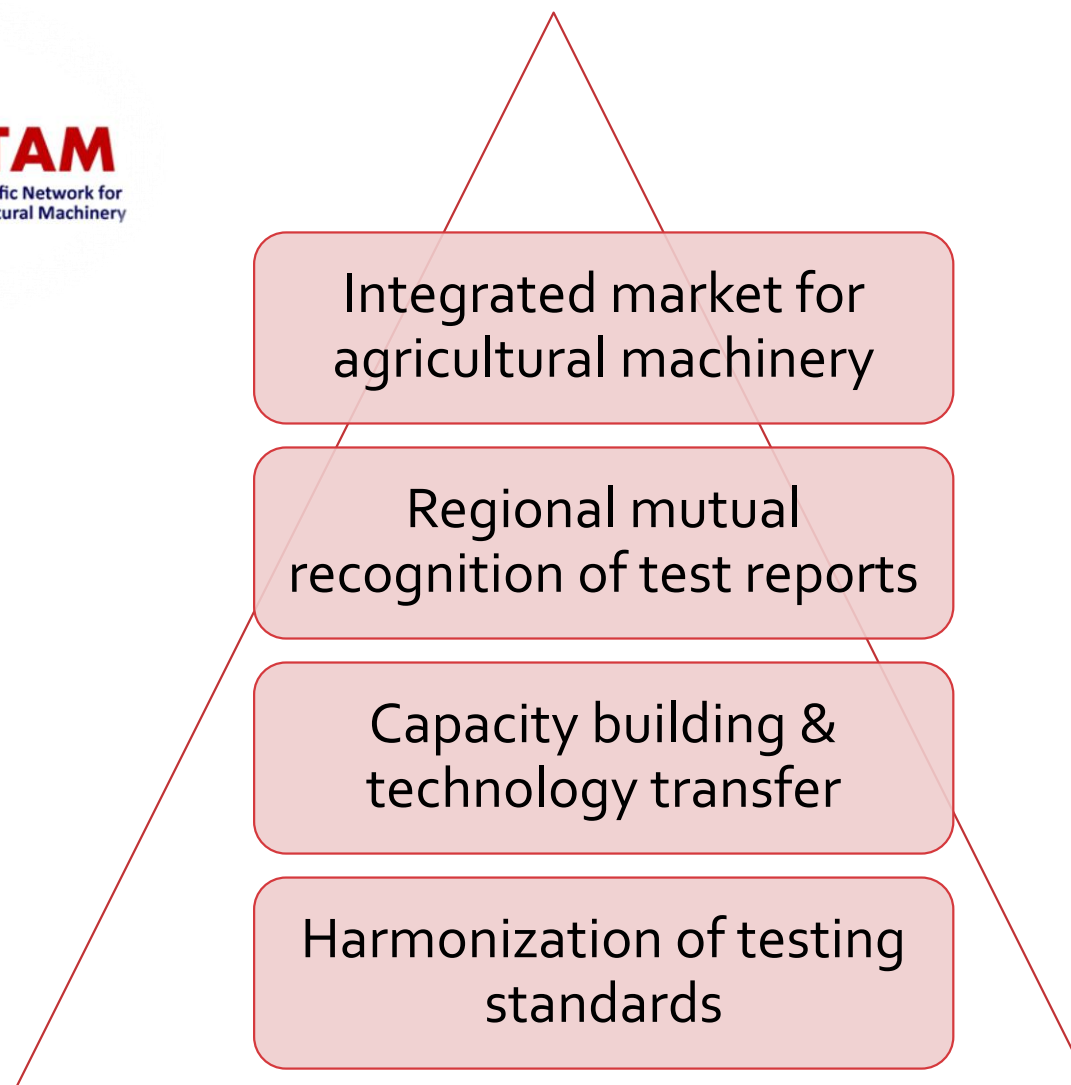
- Regional Council of Agricultural Machinery Associations (ReCAMA)
  - Promotes trade and investment, agro-enterprise development and public private partnerships in Asia Pacific region.
  - 18 Member associations from 13 countries.
- Aims to:
  - Strengthen capacity of national agricultural machinery associations, facilitate exchange of knowledge, provide coordination platform
- Resulting in:
  - Tangible enhancement of business collaboration amongst associations as well as with other stakeholders, strengthening of skills and capacities

# Promoting Standardization

- Asian and Pacific Network for Testing of Agricultural Machinery (ANTAM)
  - Aims to promote regional mutually recognized testing standards to enable use of safe, efficient & environmentally sound agricultural machinery.
  - Address constraints on expansion of mechanized agriculture:
    - Lack of a regional agreement on trade of agricultural machinery.
    - Need to conduct national tests before popularizing imported equipment.
    - Fragmented regulations on safety and use of chemicals which discourages use of relevant machinery as substitute.
    - Lack of recognized standards pertaining to safety and environmental footprint of machinery and equipment.



# ANTAM objectives





# ANTAM Codes

## ANTAM Code 001-2016 (Power Tillers):

- Refers to ISO and OECD and merged with China, India, Indonesia, Philippines, and Thailand standards to reflect unique local conditions.
- 9 tests: i. checking of specifications; ii. engine performance test; iii. rotary shaft performance; iv. vibration level; v. drawbar performance; vi. turning ability; vii. parking brake test; viii. noise level measurement; ix. water proof test.



## ANTAM Code 002-2016 (Misters-Cum-Dusters):

- Refers to ISO standards and merged with USA, China, India, and Vietnam standards.
- 8 tests: i. specification; ii. engine; iii. joints, tank, straps, hose and controls; iv. blower; v. discharge rate; vi. Misting /dusting range and width; vii noise; viii endurance.



ANTAM Code on Paddy Transplanters developed in 2017.

# Integrated Straw Management

- Initiative on Integrated Straw Management
  - Burning of straw residue cause of concern for environmental and public health in many countries of the region.
  - Survey involving 12 countries to collect proven practices/technologies of straw management in three sub-regions.
  - Regional Workshop on Integrated Straw Management held in Kathmandu, Nepal, on 13 November 2017.
  - Discussed results of research on status of straw management in three sub-regions: East Asia, South Asia, and Southeast Asia.
  - Outcome: Action plan for pilot interventions in China, India, Nepal and Vietnam.

# Way Forward for CSAM as a Regional Coordination Platform

1. Continue to promote regional cooperation, South-South and Triangular Cooperation by enabling:
  1. Multi-stakeholder dialogue, knowledge-sharing, capacity building, and evidence-based policy formulation.
2. Focus on 2030 Agenda for Sustainable Development.
3. Develop dynamic and demand-driven programmes based on evolving needs of member States
4. Focused communication and outreach to all relevant stakeholders.



*Thank you*

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