3rd Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific
3rd ASEAN Conference on Agricultural and Biosystems Engineering
Co-located with the 12th Engineering Research and Development for Technology in Agriculture
9-11 December 2015, Manila, the Philippines
Introduction

• Despite remarkable progress in reducing the prevalence of undernourishment in the Asia-Pacific during the cycle of MDGs, in 2015 the region is still home to two thirds of the world’s hungry people.

• The efforts and ability of the region to provide sufficient food for all and eliminate rural poverty sustainably are further complicated by socioeconomic dynamics, such as:
  - Population growth
  - Urbanization and industrialization
  - Climate change
  - Resource and environment constraints such as water scarcity, land degradation and pollution
• Role of Agricultural Mechanization (AM) Technologies is crucial for Sustainable Intensification of:
- Agricultural production
- Improved rural income and livelihoods
- Sustainable and efficient use, and stewardship of natural resources
- Protection of environment and resilience to climate change

• Sustainable AM – A Precursor to Sustainable and Inclusive Agricultural Development by:
- Increasing productivity and production
- Reducing human drudgery
- Optimizing resource and input use
- Addressing rural labour shortfalls, cutting food loss and waste
- Providing employment and business opportunities and,
- Creating efficient food value chains
Agriculture for Equitable Growth

- One $ generated through Agriculture is more effective in eradication of poverty than 2 – 3 $ earned from other sectors

- When the rural area’s income increases by 5%, the income of urban areas automatically increased by 8%
UNESCAP through CSAM is making every effort to promote sustainable agricultural mechanization across the region in support of:
- Sustainable agriculture and rural development, especially among the member countries

Centre’s mandate has been re-strategized to serve UNESCAP members by facilitating:
- Knowledge management and information sharing
- Promoting capacity building and
- Fostering regional cooperation and networking in the field of agricultural engineering
Member States : 53
Associate Members : 9
Region Population : 4.1 billion people or two thirds of the world’s population
Geographical Spread : Turkey in the west, Kiribati in the east, Russian Federation in the north and New Zealand in the south
Employment in Agriculture Sector in the Asia-Pacific Region

HRD in the Asia-Pacific Region
Vocational Education
• Professional Diploma Courses (1–3 years duration)
• Certificate Courses (1–3 months)

Higher Education
• Asian Institute of Technology, Bangkok – Thailand
• Agricultural Universities/Colleges of the region
  - Undergraduate degree programs (Bachelors of Agricultural Engineering, Food Engineering, and Post-Harvest Technology)
  - Postgraduate degree programs (M.Phil., PhD) and Post-Doc
Future Focus

- Precision Agriculture
- Post-harvest Technologies and Value Addition in Fruits, Vegetables & Medicinal Herbs
- Food Processing (grading, packaging etc.)
- Milk and Meat Processing
- Livestock/Dairy Mechanization
- Aquaculture Mechanization
- Standardization of Agricultural Machinery
Boosting of Agricultural Mechanization in the Asia-Pacific Region

R&D in Private Sector

R&D in Public Sector

Sustainable Agricultural Mechanization

Agri. Machinery Distributions and Traders Associations

Agri. Machinery Manufacturers Associations

Farmers Associations

Mechanization Services Providers

HRD

Slide #11
Public Sector Institutions

- Professional Development
  - Technical
  - Managerial
  - Financial
- Development Professionals Networking
- Patent Development and Registration
- Standardization of Agricultural Machinery
Private Sector Institutions

• Quality Improvement of Products
  - Material Selection
  - Pattern Designing
  - Jigs & Fixtures
  - Foundry
  - Material Testing
  - Design & development
  - Fabrication (cutting, welding, milling, forging etc..)
  - Heat Treatment
  - Machinery Testing

• Marketing and Distribution System
• After Sale Services
Create awareness among end-users about their products through:

- Profiles and Product Catalogues (English and Regional Languages)
- Operator Manuals
- Online Information
- Product Displaying and Machinery Exhibitions
Access to information:

- R&D Institutions
- Manufacturers Websites
- Machinery Distributors and Traders Websites
The Capacity Building through:

- Training of existing Technical Staff
- Raw material bank
- Foundry establishment
- Heat treatment facility
- Awareness about machinery Standards
- Production of machinery and equipment as per standards
- Development of leaflets, brochures, and operator manuals
- Website development, and
- End-users access to the information about products and their technical specs
Mechanization Services Providers

- Facilitation for establishment of rental service centres
- Awareness and management of potential business avenues
- Development of entrepreneurs skills
- Service providers Networking (National & Regional)
- Capacity building of field staff
**Recommendations/Suggestions**

- Facilitation for establishment of rental service centres
- Production of machinery and equipment as per standards
- Establishment of raw material bank
- Facilitation for displaying the new mechanized technologies in machinery exhibitions (National and Regional)
- Financial and consultation facilitation for the establishment of machinery testing centres
- Establishment of professional institutional linkages (National and Regional)
- Donors participation in boosting up the sustainable agricultural mechanization
Thanks
<table>
<thead>
<tr>
<th>Country</th>
<th>Percent GDP</th>
<th>Percent Employment</th>
<th>Value Added per Person, $</th>
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<td>Services</td>
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<tr>
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Table 3 - GDP, Employment and Value Added per Person in Agriculture, Industry and Service Sectors of Selected Countries. 
<table>
<thead>
<tr>
<th>Country</th>
<th>4W Tractors (000's)</th>
<th>2W Tractors (000's)</th>
<th>Irrigation pumps (000's)</th>
<th>Combine harvesters (Units)</th>
<th>Power kW/ha</th>
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<tbody>
<tr>
<td>Bangladesh</td>
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<td>60</td>
<td>10</td>
<td>700</td>
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<td>Cambodia</td>
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<tr>
<td>China</td>
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<td>5270</td>
<td>6981</td>
<td>17523</td>
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<td>5430</td>
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<td>380</td>
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**Table 5**: Number of 4W Tractors, 2W Tractors, Irrigation Pumps and Combine Harvesters and Power Available in Selected Countries. Source: Participants to Regional Meetings organized by CSAM-UNESCAP.
Boosting of Agricultural Mechanization in the Asia-Pacific Region

- Private Sector Institutions
- Public Sector Institutions
- Mechanization Services Providers
- Agri. Machinery Manufacturers Associations
- Farmers Associations
- Distributors and Traders

Sustainable Agricultural Mechanization