

Mechanization for Sustainable and Climate Resilient Agriculture

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ESCAP-CSAM

- Regional institution of the United Nations Economic and Social Commission for Asia and the Pacific.
- Hub for **South-to-South and Triangular Cooperation** 62 ESCAP member States and associate members.
- **Sustainable Development Goal (SDG) 2 (Zero Hunger), SDG 1 (no poverty), SDG 13 (Climate Action), SDG 17 (Partnerships for the Goals).**

Areas of Work

REGIONAL HUB FOR MECHANIZATION

- **Thematic Regional platforms:** Policy Forum; Standard setting; Machinery association council; Data collection etc.

CAPACITY BUILDING

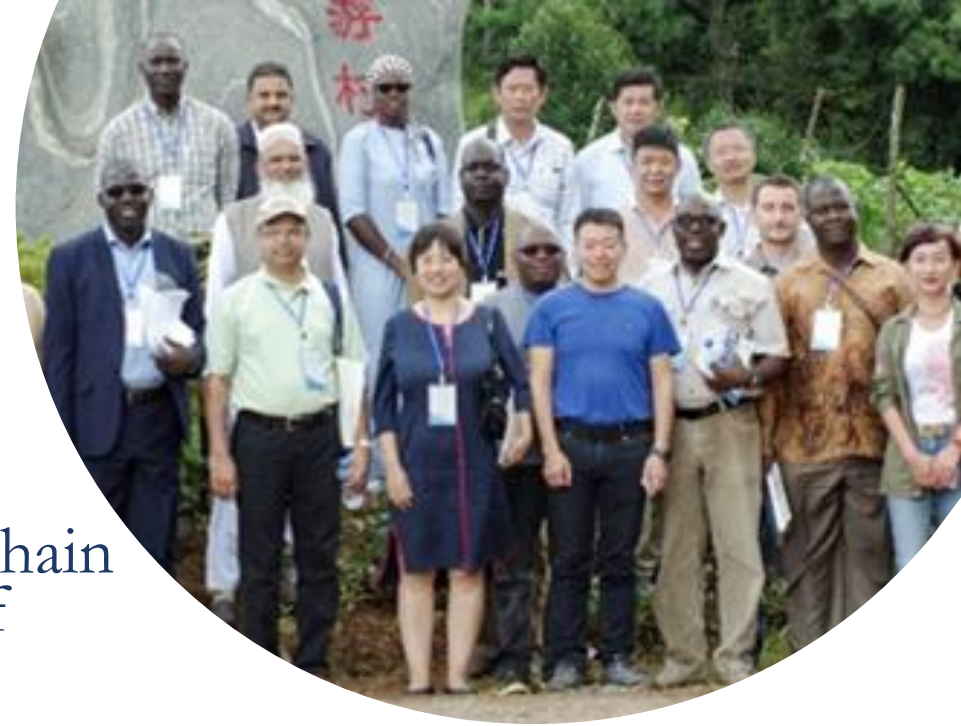
- Provide trainings on sustainable agricultural mechanization, private sector development; standard setting and use of new technologies

ADVISORY SERVICES

- Sustainable Agricultural Machinery policy development and standard setting development

OUR WORK IN CLIMATE RESILIENT AGRICULTURE

- Seminar on **Building Smallholder Farmers' Resilience** under Climate Change through Value Chain Management in cooperation with WFP, Ministry of Agriculture of China and Yunnan Provincial Government-45 participants.
 - Key outcome: common constraints and challenges were discussed and priority areas for partnership and collaboration were identified including supporting the development and dissemination of environmentally friendly agricultural machinery.



Building Smallholders' Resilience to Climate Change Through South-South Cooperation - A Side Event for China Pavilion at the 23rd session of the Conference of the Parties (COP 23) in Bonn, Germany, in cooperation with the Ministry of Agriculture of China WFP, FAO, IFAD

Key Outcome: **Communique on Joint Action** was adopted by ESCAP-CSAM, FAO, IFAD and WFP on:

- i. Strengthening resilience to climate change impacts through improved climate risk management, climate resilience and sustainable agricultural development;
- ii. Promotion of Green development;
- iii. Climate proofing Infrastructure development.



Integrated Straw Management

The 4th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific on 23-25 November 2016 in Hanoi, Viet Nam found that straw burning is the shared issue across the region.

Regional Workshop on **Integrated Straw Management** held in Kathmandu, Nepal, on 13 November 2017. Pilot interventions in China, India and Vietnam was agreed.

Pilots:

- Inception Workshop of the **China Pilot** was held in Sep. 2018
- The activities of the **Vietnam Pilot** was initiated in Sep. 2018; the Inception workshop will be held in mid Dec. 2018
- Indian partner will be involved through study tours and knowledge sharing.

Role of Mechanization in Strengthening Smallholders' Resilience through Conservation Agriculture in Asia and the Pacific, Phnom Penh, Cambodia, 18-20 April 2018

- Workshop co-organized by CSAM and Ministry of Agriculture, Forestry and Fisheries of Cambodia; inaugurated by Minister of Agriculture of Cambodia
- Around 30 participants from 14 countries and many international organizations

Key outcomes:

- Provided a platform to share best practices and innovations
- Identified key areas for regional cooperation among stakeholders

Agricultural Mechanization for Climate Resilient and Sustainable Agriculture

- Agricultural mechanization delivers farm power and increases the efficiency of agricultural labour. While it can have adverse effects on the environment there is a wide range of technologies and policies that can mitigate the negative effects:
 - **Sustainable Intensification of Crop Production:** Conservation Agriculture
 - Precision farming: pesticide application, increasing efficiency and reducing waste- i.e. fertilizer application, field traffic etc.
 - Standardization of Machinery Performance: noise levels, emissions etc.
 - Development of biofuels: lubricants and fuels based on biodegradable vegetable oils and the development of engine technologies which can be operated by biofuels, including biogas.

Best Practices in Climate Resilient Agriculture for Smallholder Farmers

- Conservation Agriculture is a core element of **Sustainable Intensification of Crop Production**
 - Builds resilience on ecosystem services (nutrient, water and carbon cycling),
 - Makes efficient use of inputs (seed, fertilizer, pesticides, water, labour, energy, time, machinery)
 - Conserves and enhances natural resources - reduced degradation and environmental pollution
 - Adaptable to different cropping and farming systems, geographic locations and scales

Promotion of Climate Resilient and Sustainable Agricultural Machinery

Even though the technology exists and contributes to productivity and brings environmental benefits, there is a relatively low application of sustainable technologies.

Incentive to farmers: i.e. reduction of waste and the direct saving of expensive agricultural inputs

Introduction scenarios:

1. Fully equipped mechanized farmer: the shift will bring a considerable additional investment accompanied by uncertainty about the success of the technology → **training and mentoring**
2. Non-mechanized (obsolete) farmer: significantly lower amount of capital tied up in farm machinery= **machinery more accessible.**

Challenges & Enabling Policies for Climate Resilient Sustainable Agricultural Mechanization

Availability and accessibility of machinery: low adoption vs the private sector demand driven approach

- **Market stimulation:** adjustment of import taxes on equipment and raw material to facilitate the import and national manufacture. Facilitation of building up dealership and service networks.
- Facilitate farmers' access to capital: directly subsidize the cost of the eco-friendly equipment to reduce the investment risk= **payment for environmental services**
- Obliging farmers to **phase out obsolete equipment** and to adopt environmentally friendly technologies- i.e. drift reduction or for avoiding pollution from handling of sprayers.

- **Mechanization policies**, especially in those countries which start from a low mechanization level, need to be coherent with policies addressing the **Sustainable Intensification of Crop Production**.
- Knowledge intensive= training and practical experience. Farmers need opportunity to test through supported programmes. Practical training is necessary in alternative mechanization technologies.
- Complex innovation process needs input supply markets= **stakeholder mobilization and cooperation**: key national extension, research and education institutions, government departments, development agencies, private sector including farmers and farm managers

ESCAP- CSAM future work in Climate Resilient Sustainable Mechanization

1. Promotion of **Stakeholders mobilization** through policy and technical dialogues in ESCAP-CSAM networks on: Regional Forum, Regional Machinery Council, Standard Setting and Human Resource Development;
2. **Provision of Trainings** based on member countries' requests and needs and in particular for human resource development, Public-Private-Partnerships and standard development;
3. **Project specific activities:**

Integrated Straw Management

The Pilot of Integrated Straw Management will last from 2018-2021; a Regional Workshop will be organized in 2021 at the end of pilot to circulate the outcomes and discuss way forward.



To know more visit:

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Thank you