CSAM
Centre for Sustainable Agricultural Mechanization
ESCAP

CONCEPT NOTE

Regional Workshop on Integrated Straw Management in Asia and the Pacific

Mechanization solutions for sustainable and climate-smart agriculture

19-20 June, 2024, Qingdao, China

I. Background and Rationale

In many parts of the Asia-Pacific region, farmers typically practice two or three agricultural seasons. This drive for productivity has fueled a remarkable rise in modern agricultural practices, including widespread mechanization. However, this success story has a hidden consequence: a growing mass of crop residue, a byproduct generated with each harvest. In many countries, burning straw residue after harvesting staple crops like rice is a common practice among farmers. This straw, often seen as having minimal value and hindering subsequent plantings, needs to be cleared from the fields. Resource-constrained smallholder farmers, facing tight timelines for the next seeding cycle, often resort to residue burning as the most expedient and affordable option. However, this practice has significant environmental drawbacks.

Straw burning has a severe impact on both agriculture and the environment. It directly harms the soil, depleting essential nutrients like phosphorus and reducing organic matter that is crucial for moisture retention. This degradation weakens the soil's ability to support healthy crops. Additionally, burning releases a cocktail of harmful greenhouse gases, including carbon dioxide, methane, and nitrous oxide, accelerators of climate change. The resulting air pollution is not only an environmental concern; it significantly affects human health, causing respiratory problems and disrupting daily life. This pollution can cripple transportation, force closures of schools and businesses, and even travel long distances, impacting air quality across borders.

Shifting away from burning requires providing farmers with the right tools and knowledge. Appropriate farm machinery can enable them to reuse straw residue for fertilizer, cattle feed, or even as a base for growing mushrooms. However, a one-size-fits-all approach is not applicable. We need to test and promote integrated models tailored to specific regions and farm sizes. This is especially crucial for resource-constrained smallholder farmers in Asia, who typically manage

plots of just 1 hectare. Many lack access to suitable machinery, often relying on outdated equipment unfit for small fields or crops commonly grown by these farmers.

To tackle straw burning, the Centre for Sustainable Agricultural Mechanization (CSAM) of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) is implementing a *'Regional Initiative on Mechanization Solutions for Integrated Management of Straw Residue in Asia and the Pacific'* to identify, test and promote an integrated model of straw management using agricultural machinery which encourages farmers to refrain from burning the residue. The initiative has seen early successes. The Pilot Projects in China and Viet Nam have demonstrated the viability of using straw residue as animal feed, fertilizer, and mushroom cultivation material. Building on this momentum, CSAM secured funding from the China-ESCAP Cooperation Programme and expanded the initiative to Cambodia, Indonesia, and Nepal in 2021-2023. During 2021-2023, these pilots have tested and demonstrated mechanization-based solutions for integrated management of straw residue in the three target countries, and have enhanced stakeholder capacities in order to promote sustainable and climate-smart agriculture and contribute to progress towards the related SDGs. In collaboration with the ESCAP Environment and Development Division, a research paper on "Air Pollution and Greenhouse Gas Emissions from the Agricultural Sector in South and Southeast Asia" was developed, as well as several policy briefs. In 2024, CSAM secured funding from the 2030 Agenda for Sustainable Development Sub-Fund of the United Nations Peace and Development Trust Fund, to execute a phase II pilot project in Cambodia, Indonesia and Nepal.

The CSAM Regional Initiative, which has contributed to identifying and sharing innovative technological solutions, learnings and good practices among member States, was recognized as a 'Best Poverty Reduction Practice' by a consortium of government and international partners including the International Poverty Reduction Center in China in 2021. It has also been cited as a good practice in South-South and Triangular Cooperation by the United Nations Office for South-South Cooperation in 2022.

The Regional Initiative directly supports Sustainable Development Goal 2 (Zero Hunger), Goal 1 (No Poverty), Goal 12 (Responsible Consumption and Production), and SDG 13 (Climate Action), while indirectly supporting Goal 17 (Partnerships for the Goals).

II. Objectives

The objectives of the "Regional Workshop on Integrated Straw Management in Asia and the Pacific are to:

- collect and share good practices from countries in the region on mechanization solutions to address crop residue burning.

- foster knowledge exchange among the policy makers, researchers, extension practitioners, entrepreneurs, and farmers leading to more effective policies, creation of innovative solutions, and wider adoption of integrated straw management practices via mechanization solutions.
- cultivate regional collaborations among all the pertinent stakeholders on integrated straw management via mechanization solutions for sustainable and climate-smart agriculture.

III. Organization and Participation

The Centre for Sustainable Agricultural Mechanization (CSAM) is a regional institution of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), with a focus on promoting sustainable agricultural mechanization across the region. Its vision is to achieve production gains, improved rural livelihood and poverty alleviation through sustainable agricultural mechanization for a more resilient, inclusive and sustainable Asia-Pacific region.

The "Regional Workshop on Integrated Straw Management in Asia and the Pacific" will be co-organized by CSAM; ESCAP's Environment and Development Division, Subregional Office for South and South-West Asia and Subregional Office for South-East Asia; as well as China Agricultural University with the support of related agencies in Qingdao, China.

Around 80 participants from maximum 20 countries are expected to attend including representatives of policymaking entities, financial institutions, farmers' organizations, non-profit organizations, and the private sector, as well as staff from relevant international and regional organizations.

IV. Tentative Programme

18 June, Tuesday	
Arrival	
19 June, Wednesday	
09:00-09:30	Registration
09:30-10:00	***Opening Ceremony*** • Xiaowei Liu, Deputy Director General, China Agricultural Machinery Centre (CAMC), Ministry of Agriculture and Rural Affairs of China • Sangmin Nam, Director, Environment and Development Division, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP-EDD) • Yutong Li, Head, Centre for Sustainable Agricultural Mechanization, United Nations Economic and Social Commission for Asia and the Pacific (ESCAP-CSAM) • Xingmo Cheng, Deputy DG-level Counsel, Qingdao Agriculture and Rural Affairs Administration
10:00-10:45	**Keynote Presentations** *Moderator: Yutong Li, Head, ESCAP-CSAM* • *China's Solutions for Crop Residue Burning* Hongwen Li, Professor and Dean, China Institute for Conservation Tillage, China Agricultural University • *CSAM Regional Initiative on Integrated Straw Management* Marco Silvestri, Deputy Head a.i., and Programme Management Officer, ESCAP-CSAM • *Experiences in Addressing Crop Reside Burning in Southeast Asia* Pham Quang Minh, Assistant Director, Sectoral Development Directorate, Head of Food, Agriculture and Forestry Division, Head of Tourism Unit, ASEAN Economic Community Department • *ADB Pakistan Programme on Straw Management* Babur Wasim Arif, Natural Resources and Agriculture Economist, Asian Development Bank
10:45-11:05	Group photo and tea break
11:05-12:30	**Country Presentations** *Moderator: Yuee Feng, Programme Coordinator, ESCAP-CSAM* • *Bangladesh* - Md. Golam Kibria Bhuiyan, Principal Scientific Officer, Bangladesh Rice Research Institute (BRRI); Mohammad Zahirul Hoque, Additional Deputy Director (Admin-1), Department of Agricultural Extension

	• *India* - Vinod Kumar Bhargav, Project Coordinator, AICRP on EAAI, Central Institute of Agricultural Engineering, Indian Council of Agricultural Research • *Pakistan* - Hafiz Sultan Mahmood, Director, Agricultural Engineering Institute, Pakistan Agricultural Research Council • *Sri Lanka* - Wasantha Lal Balasooriya, Engineer (Mechanical Research), Farm Mechanization Research Center, Department of Agriculture
12:30-13:30	Lunch
13:30-15:00	**Country Presentations** *Moderator: Karen Martinez, Programme Expert, ESCAP-CSAM* • *Lao PDR* - Vilaysack Xayasith, Deputy Director of Division, Department of Agricultural Extension and Cooperative • *Malaysia* – Mohd Shahmihaizan Mat Jusoh, Research Officer, Malaysian Agricultural Research and Development Institute • *Philippines* - Andres Jr. Tuates, Chief, Department of Agriculture - Philippine Center for Postharvest Development and Mechanization • *Thailand* - Anuchit Chamsing, Director, Post-harvest Engineering Research Group, Agricultural Engineering Research Institute, Department of Agriculture
15:00-15:20	Tea break
15:20-16:50	**Panel Discussion** on the insights and lessons leant from the countries that implemented pilot projects of the CSAM Regional Initiatives *Moderator: Marco Silvestri, Deputy Head a.i., and Programme Management Officer, ESCAP-CSAM* *Panelists*: • Sovandina Chea, Deputy Director, Department of Agricultural Engineering, General Directorate of Agriculture, Ministry of Agriculture, Forestry and Fisheries of Cambodia • Jin He, Professor and Deputy Dean, China Institute for Conservation Tillage, China Agricultural University • Agung Prabowo, Head, Indonesian Center for Agricultural Mechanization Standard Testing • Tanka Prasad Prasai, Province Secretary, Ministry of Agriculture and Land Management of Nepal • Thi Tam Dinh, Deputy Director General, Vietnam Institute of Agricultural Engineering & Post-harvest Technology
16:50-17:00	**Wrap up and Closure**

	Moderator: Marco Silvestri, Deputy Head a.i., and Programme Management Officer, ESCAP-CSAM • Yutong Li, Head, ESCAP-CSAM • Hongwen Li, Professor and Dean, China Institute for Conservation Tillage, China Agricultural University
20 June, Thursday - Field Trip	
08:00-09:30	Travel from Qingdao Huanghai Hotel to Qingdao Zhitao Agricultural Machinery Specialized Cooperative
09:30-10:30	Demonstration on Mechanization Solutions for Straw Management in Laixi, Qingdao Zhitao Agricultural Machinery Specialized Cooperative
10:30-11:30	Presentation on the Cooperative Operation and Management • Zhitao Wang, President, Qingdao Zhitao Agricultural Machinery Specialized Cooperative Q&A
12:00-13:20	Lunch
13:20-14:10	Visit Shandong Aize Fuji Biotechnology Co., Ltd.
14:10-15:10	Travel to Qingdao Hong Zhu Agricultural Machinery Co., Ltd
15:10-16:00	Visit Qingdao Hong Zhu Agricultural Machinery Co., Ltd
16:00-17:00	Travel to Qingdao Huanghai Hotel
21 June, Friday	
Departure	