Mountain agriculture and changing gender dynamics in the HKH

The challenge of food and nutrition security in the Hindu Kush Himalaya (HKH) has become increasingly complicated due to rapid socioeconomic, demographic, and environmental change, including migration and climate change. Increasing climate variability and extreme events, coupled with limited investment in mountain agriculture and rural development, have resulted in low productivity and lack of off-farm employment options, pushing men into seeking alternative livelihoods elsewhere. Women have therefore been compelled to take on tasks formerly done by men, especially in land preparation, harvest, and post-harvest operations, and marketing of produce, adding to their burden of household and off-farm work. This increasing feminization of mountain labour has emerged as one of the most pressing issues in recent decades.

Rationale

Mountain agriculture is physically demanding and time consuming. Rural women, who mostly work as subsistence farmers while also performing domestic work and communal activities, often face a poverty trap, undermining their well-being. Despite increasing labour participation in this sector, women remain invisible as active players and agents of change.

A range of new and inexpensive agriculture machinery, adapted to local conditions, could potentially enhance labour productivity, reduce work burden and drudgery, and enable women to gain new skills and knowledge that can transform rural gender relations and reduce inequalities. It could also allow them to shift from subsistence to more market-oriented farming. However, the extent to which these technologies are available, suitably introduced (by individual use or via extension services) or adopted by women farmers in the HKH is still not clear.

Sustainable agricultural mechanization in HKH must be tailored to the diversity of mountain contexts and user needs, especially of women. To gain better understanding of the current context and explore the opportunities and barriers to introducing customized technologies for women farmers in the HKH, the Resilient Mountain Solutions (RMS) Initiative of ICIMOD organized a regional consultation on 15 November 2019. The consultation revealed that while there is some degree of mechanization in mountain agriculture, the process is uneven, understudied, and lacks documentation. It also highlighted...
the need to address gender-related concerns in agricultural mechanization, its effects on women farmers and the need to disseminate these concerns to a wider policy audience. Some of the challenges to accessing and adopting these technologies based on the presentations made during the regional consultation are described in Box 1.

Given this background, ICIMOD’s RMS Initiative and the Food and Agriculture Organization (FAO) of the United Nations have come together to organize a series of country-specific and regional webinars on sustainable mechanization for improving lives and livelihoods of women farmers in the HKH as part of their commitment to improving women’s active participation in agriculture.

RMS is committed to scaling out gender responsive and mountain specific resilient solutions that are simple, affordable, replicable, sustainable as well as appropriate and relevant to the needs of stakeholders at different levels. FAO is committed to addressing the gender-related technology adoption constraints by promoting the dissemination of equipment, machines and tools that are sustainable and can address the drudgery women face. As part of this effort, FAO is also supporting women to be entrepreneurs as mechanization hire service providers.

The webinar series

Through the webinar series, ICIMOD and FAO expect to create awareness and action around current mechanization gaps and help identify good practices and possible solutions for empowering women farmers in the region. The webinar series will discuss strategies contributing to the process of mainstreaming and institutionalizing successful efforts of agricultural mechanization for improving productivity while also reducing drudgery for women farmers.

Objectives

- Share lessons learned from projects, programmes, and policies focusing on agricultural mechanization for women in the HKH
- Showcase successful examples and solutions of agricultural mechanization used in the HKH
- Identify key actionable solutions and approaches to promote agricultural mechanization in the HKH

Each webinar will conclude with a call for action to align policy with practice to leverage technology to address the constraints and solutions that women farmers face for sustainable, efficient, and profitable farming.

The first webinar of this series, Episode I: The Nepal Chapter was organized on 5 March 2021 followed by Episode II: The Bhutan Chapter organized on 7 May 2021.
**The role of private sector in agri-mechanization**

The mechanization pathway adopted by developing countries mainly focused on promoting industrial agriculture using power-operated heavy machines based on transfer of technology from developed countries. This approach favoured the flatlands and neglected the needs of the small holder farms in the hills and mountains. The Nepal and the Bhutan episodes of the webinar series highlighted the emerging socially responsible and innovative import, marketing and supply sectors in both the countries that could address this neglect.

The third webinar of the series aims to critically discuss alternative pathways to agricultural mechanization innovation, powered by local manufacturers and entrepreneurs, and the development of scale-appropriate machines and tools suitable for sustainable development of hill and mountain farming systems. In this context, the webinar will focus on two key areas where the private sector can play a major role in agricultural mechanization. These are (i) supporting sustainable markets for manufacturing, supplying and importing of machine, equipment and spare parts; (ii) provision of mechanization hire services.

**Private sector and manufacturing of agri-machine and equipment**

A responsible, innovative, and organized private sector can offer competitively priced and scale-appropriate machine and equipment that aids in the national mechanization process and meets the needs of farmers (including women farmers) in the HKH region. While there is an emerging private sector in the agricultural mechanization business in the region, particularly in imports, marketing and supply, the manufacturing of machines and equipment has been predominantly led by India and China. China’s manufacturing sector supplies the bulk of the machinery (mini-tillers, electric powered maize shellers, and rice-flour-feed mills) that are both light and affordable for widespread use in the hill and mountain areas of the region.

**Private sector and mechanization hire services**

Mechanization hire services are an important mechanism through which most smallholder farmers can access machinery appropriate to their needs and scale of operations. The majority of these services (particularly for machines like tractors, threshers, irrigation pump sets) come from individual owners who rent them out. Renting of such machinery by individual farmers is in itself a micro-enterprise, which is often under recognized. This process not only provides renting households with additional and significant income but also improves access to agricultural machinery to many other farmers, who are otherwise unable to afford them. Mechanization hiring services can be formally recognized and organised as custom hiring centres where individuals or farmers’ associations and women’s groups can manage such services for their members and earn income through hiring and operating scale-appropriate machinery.
## Agenda

Moderator: **Mayling Flores Rojas**, Agricultural Mechanization Systems Officer, FAO

<table>
<thead>
<tr>
<th>Time (NPT)</th>
<th>Programme</th>
<th>Speakers</th>
</tr>
</thead>
</table>
| 14:30–14:40 | Introduction | Mayling Flores Rojas  
Agricultural Mechanization Systems Officer, FAO |
| 14:40–14:50 | Welcome remarks | Takayuki Hagiwara  
Regional Programme Leader, FAO Regional Office for Asia and the Pacific |
| 14:50–15:05 | Spread of agricultural machinery among women farmers in the hills of Nepal:  
The role and experience of NAMEA | Sunita Nhempahuki  
Board Member, Nepal Agricultural Machinery Entrepreneurs Association (NAMEA), Nepal |
| 15:05–15:20 | Development of scale appropriate machinery for mountainous areas:  
The role and experience of CAAMM | Youji Li  
Chairman of the Board of Supervisors, China Association of Agricultural Machinery Manufacturers (CAAMM), China |
| 15:20–15:30 | Q & A session | Mayling Flores Rojas  
Agricultural Mechanization Systems Officer, FAO |
| 15:30–15:45 | Experiences of the informal sector service providers in China | Yanyu Li  
Independent Entrepreneur, China |
| 15:45–16:00 | Agri-mechanization for women farmers:  
Lessons from India | Sachin Kawade  
Rohitkrishi Industries, India |
| 16:00–16:10 | Q & A session | Mayling Flores Rojas  
Agricultural Mechanization Systems Officer, FAO |
| 16:10–16:30 | Way forward | Mayling Flores Rojas  
Agricultural Mechanization Systems Officer, FAO |
| 16:30–16:45 | Closing remarks | Pema Gyamtsho  
Director General, ICIMOD |

**Register here**

---

**Co-organized by**  
International Centre for Integrated Mountain Development (ICIMOD) and the Food and Agriculture Organization of the United Nations (FAO)

---

**For further information**

**ICIMOD**
- Suman Bisht: suman.bisht@icimod.org
- Sabina Uprety: sabina.uprety@icimod.org
- Barsha Rani Gurung: barsha.gurung@icimod.org

**Plant Production and Protection Division - Natural Resources and Sustainable Production, FAO, Rome, Italy**
- Sustainable-Mechanization@fao.org

**PHOTOS: CHIME WANGMO, AGRICULTURAL MACHINERY CENTRE, DEPARTMENT OF AGRICULTURE, MINISTRY OF AGRICULTURE AND FORESTS, BHUTAN**

**ICIMOD gratefully acknowledges the support of its core donors:** the Governments of Afghanistan, Australia, Austria, Bangladesh, Bhutan, China, India, Myanmar, Nepal, Norway, Pakistan, Sweden, and Switzerland.

© ICIMOD and FAO 2021  
International Centre for Integrated Mountain Development  
T +977 1 5275222  |  E info@icimod.org  |  www.icimod.org