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Centre for Sustainable
Agricultural Mechanization



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10th Regional Forum on Sustainable Agricultural Mechanization in Asia and the Pacific

Gender Mainstreaming in Sustainable Agricultural Mechanization

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Designing Gender-responsive Technologies and Empowering Women Engineers in Pakistan

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Pakistan Agriculture Sector

Agriculture contributes **23%** to the Gross Domestic Product (GDP) of Pakistan*

2/3rd population out of **241.5 million** depends on agriculture for livelihood*

Agriculture sector employs **37%** of labour force

67% Agriculture labour force is female

Agriculture sector growth rate is unable to meet the requirement of national economy

State of Agricultural Mechanization

Low Mechanization Level resulting in Poor Agriculture Productivity

Current Horsepower/acre **0.9** instead of **1.4** required*

Currently **25%** of sowing and **40%** of harvesting is mechanized*

* Government of Pakistan, Ministry of Finance. *Pakistan Economic Survey 2022-23*. Islamabad.

A Case Study of Female Enrollment in Agricultural Engineering

- No Nationwide Data on Female Agricultural Engineers
- At University of Agriculture, Faisalabad, only **16%** women enrolled in Agricultural Engineering*
- Compared to **47%** Female enrollment in all of UAF
- Before **2019** only 10% Females allowed to enrol in Agricultural Engineering
- Ratio now increasing as restriction on enrollment removed
- Underserved area for women with greater potential for future growth
- Application of new technologies attracting female students
- Need industry assistance in experience and placements

*UAF Data as of September 2023

Key Challenges and Opportunities for Women in Agricultural Engineering*

Challenges

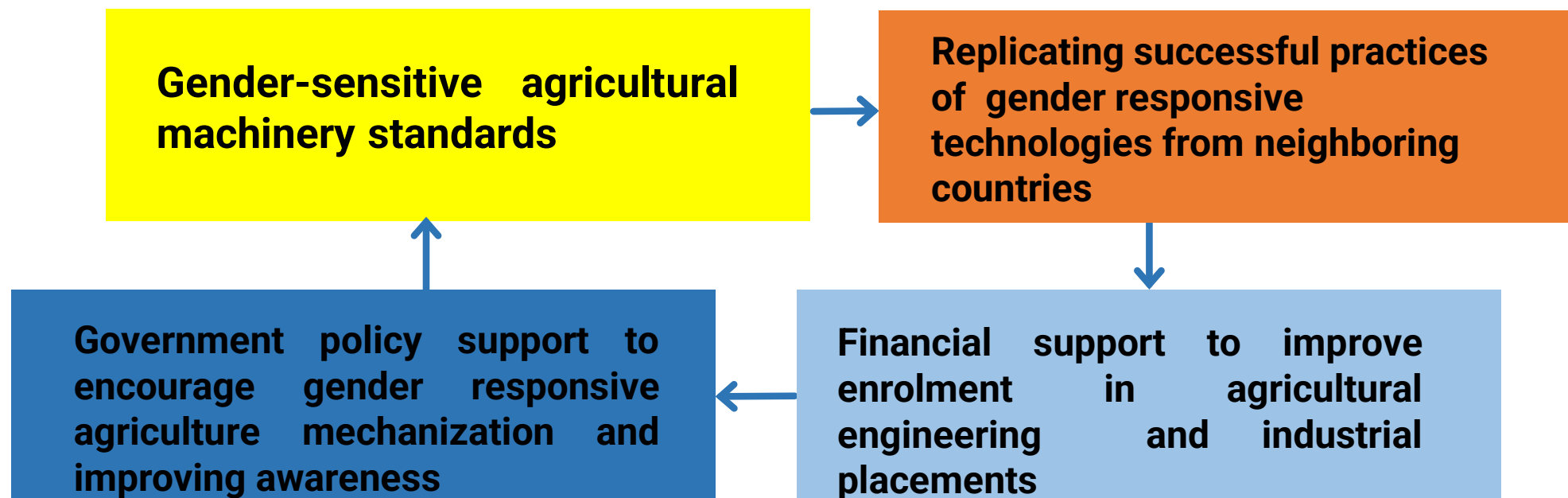
- Involvement of intensive field work compared with laboratory-based work
- Limited employment opportunities in market
- Perception of hardship in agriculture
- Cultural preferences

Opportunities

- Government's affirmative actions for women employment
- Increase support for women empowerment
- Underrepresentation attracting interest
- Innovative applications of High-tech in engineering (e.g., artificial intelligence, robotics, big data science, designing, software)

*Based on interviews with UAF Faculty and Female Students November 2023

Recommendations for Designing Gender-responsive Technologies and Empowering Women Engineers



Punjab Agriculture Department is planning to establish Pakistan's 1st agricultural machinery testing centre with support of the Asia and Pacific Network for Testing of Agricultural Machinery (ANTAM) of the Centre for Sustainable Agriculture Mechanization (CSAM) in collaboration with Asian Development Bank



**Agriculture Engineers
from University
of Agriculture
Faisalabad**



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❑ Agriculture Sector of Pakistan-An overview

- In Pakistan agriculture sector with 23 percent contribution to the GDP is 2nd largest sector of country's economy after services sector.
- Agriculture sector accounts 37.4 percent of employed labour force and is also the largest source of foreign exchange earnings and significant for sustainable growth.
- However, from last couple of years, the climatic shocks have adversely affected agriculture sector as its productivity is highly sensitive to the frequency of adverse climatic events like flood and drought along with abnormal heat waves, rain, and glacial melt etc.
- The prolonged precipitation patterns increase river and inland water levels, resulting in flash and seasonal river and urban flooding commonly experienced in the recent past.
- Pakistan contributes not even 1 percent of global greenhouse gas emissions but is ranked among the top ten climate-affected countries.
- Farm mechanization is an important element to accelerate growth in agriculture sector.
- The number of operational tractors in the country is around 692,626 resulting in availability of around 0.9 horsepower (HP) per acre against the required power of 1.4 HP per acre.
- Women farmers in are lack access agricultural support including mechanization.

(Source: Pakistan Economic Survey 2022-23)

❑ Agriculture Sector of Pakistan- Performance during 2022-23

- During July 2022 to June 2023 overall growth of agriculture sector was 1.55 percent.
- Livestock having share of 62.68 percent in agriculture and 14.36 percent in GDP, grew at 3.78 percent.
- The details along with comparison with recent years is given in the following table.

Sector	2017-18	2018-19	2019-20	2020-21	2021-22(R)	2022-23(P)
Agriculture	3.88	0.94	3.91	3.52	4.27	1.55
1.Crops (i+ii+iii)	4.61	-4.38	6.32	5.83	8.19	-2.49
i) Important Crops	4.27	-8.59	5.24	5.82	5.41	-3.20
ii) Other Crops	4.65	3.62	9.21	7.95	11.93	0.23
iii) Cotton Ginning	8.27	-11.23	-4.06	-13.08	9.22	-23.01
2.Livestock	3.59	3.65	2.80	2.38	2.25	3.78
3.Forestry	2.24	7.22	3.36	3.35	4.07	3.93
4.Fishing	1.57	0.78	0.63	0.73	0.35	1.44

R: Revised P: Provisional
Source: Pakistan Bureau of Statistics

- The 2022 monsoon rains followed by devastating flooding affected 33 million people in 94 districts across Pakistan, took the lives of more than 1,700 people, displaced around 7.6 million people, and resulted in the loss of critical agricultural infrastructure, standing crops, grain storage, and livestock. Resultantly, domestic production remained below the required levels, raising the prices of all essential food items to historic high.
- To overcome flood losses during 2022 and uplift the agriculture sector, the government has taken various measures which would have positive impact on the sector during future. (Source: Pakistan Economic Survey 2022-23)

Gender-based share of employment in Pakistan (percentage)

Sectors	2018-19			2020-21		
	Total	Male	Female	Total	Male	Female
Agriculture	39.2	30.0	69.8	37.4	28.4	67.9
Industry	24.0	27.1	13.8	25.4	28.5	14.7
Services	36.8	42.9	16.4	37.2	43.0	17.4

Source: Pakistan Labour Force Survey, 2020-21, Pakistan Bureau of Statistics, Government of Pakistan

Thank you

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