Strategizing Mechanized Agriculture in Pakistan

Presented by

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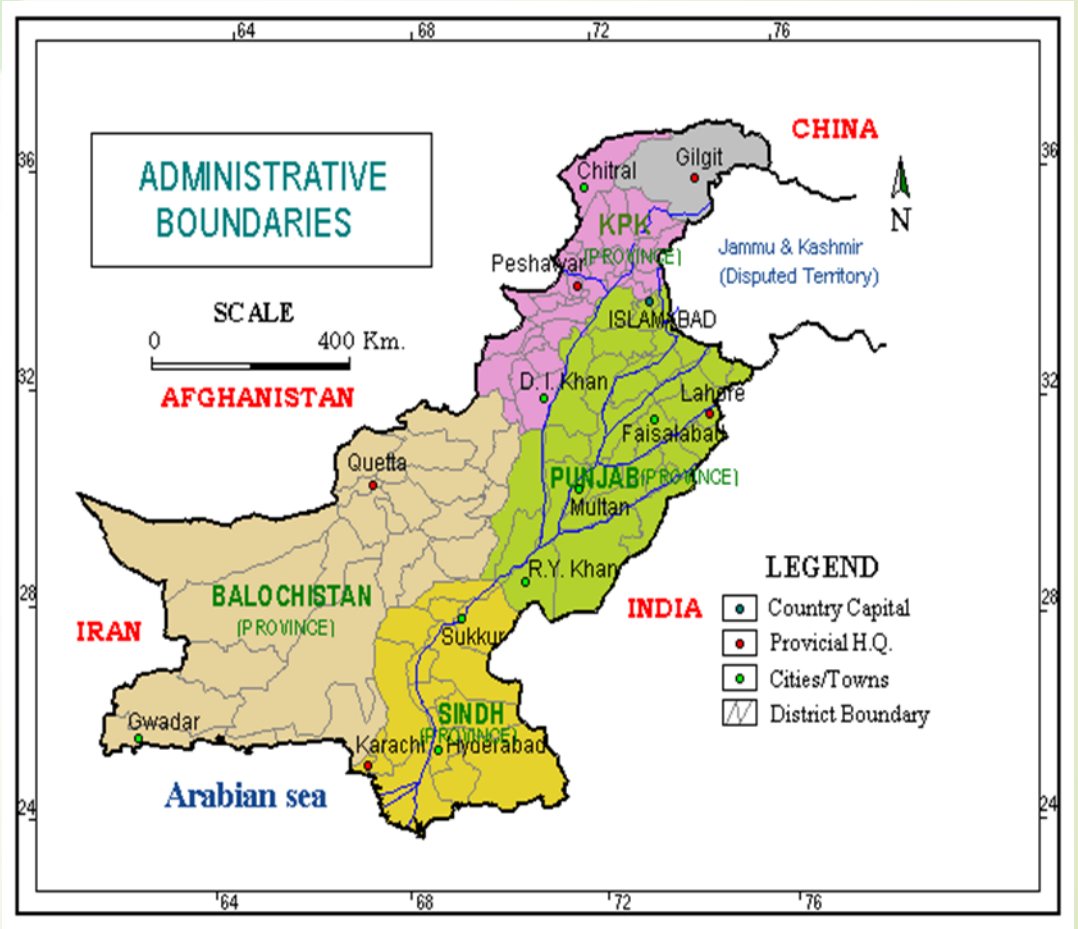
Basic Information

Geographical Area	79.61 million ha
Cultivated Area	22.08 million ha
Irrigated	87.3 %
Rainfed	12.7 %
Population	199.71 million
Rural Population	60 %
Rainfall (mm)	127 ~ 1250



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Agriculture in National Economy

Gross Domestic Product	:	19.53%
Employment	:	42.3%
Food Crops (export share)	:	17.5 %
Agro-based Industry	:	60 %

Area, Production and Yield of Major Crops, 2016-2017(P)

Crop	Area ('000' ha)	Production ('000' tonnes)	Yield (kg/ha)
Wheat	9,052	25,750	2,845
Cotton	2,489	10,671*	730**
Rice	2,724	6,849	2,514
Sugarcane	1,217	73,607	60,428

P: Provisional * '000 bales ** Lint

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Agricultural Mechanization

Status of Crop Production Operations in Pakistan

Crop	Land Preparation	Sowing	Irrigation	Spraying	Inter-culture	Harvest-ing	Thresh-ing
Wheat	Highly	Low	Semi	Low	Nil	Semi	Highly
Cotton	Highly	Semi	Semi	Highly	Highly	Nil	-
Rice	Highly	Nil	Semi	Low	-	Semi	Semi
Sugarcane	Highly	Simi	Semi	Semi	Semi	Nil	-
Maize	Highly	Semi	Semi	Low	Semi	Low	Highly
Potato	Highly	Semi	Semi	Highly	Highly	Semi-	-
Pulses	Semi	Semi	Low	Low	Low	Low	Highly

Status of Tractor Industry in Pakistan

Sr. No.	Tractors	Capacity	2009-10	2010-11	2-11-12	2-12-13	2013-14	2014-15
1	Millat Tractors (Massey Ferguson)	40,000	40,177	42,188	32,003	32,003	21,600	28,105
2	Al-Ghazi (Fiat/CNH)	25,000	31,430	28,582	16,117	18,856	11,920	16,647
3	Universal	3,000	121	85	31	12	3	0
4	Hero Motors	3,000	772	1,017	538	792	409	0
5	Farm-All	3,000	14	0	166	140	74	-
6	Arzoo Tractors	3,000		0	0	0	40	0
7	PM Auto Industry	5,000	475	389	43	163	206	0
8	Orient Tractor	9,000				11	1,001	1,110
Total		**91,000**	**72,989**	**72,261**	**48,898**	**51,977**	**35,253**	**45,862**

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Tractor Population and Farm Power Availability

Tractor population Around 5,70,400

Implements commonly used with tractors:

Cultivators	92%	MB plough	30%
Disc plough	15%	Chisel plough	5%
Rotavator	15%	Disc harrow	25%
Ridger	5%	Seed drill	20%

Total Farm Power 1.11 kW/ha (excluding tube wells)

1.53 kW/ha (including tube wells)

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Challenges and Opportunities for Agricultural Mechanization

Challenges:

- Agricultural mechanization is mainly limited to crop production
- Wheat production substantially mechanized, however, production of rice, maize, cotton, sugarcane, vegetables and fruit remains partially mechanized
- Low farm power availability
- Underutilized tractor power due to non-availability of complete set of machinery
- Inadequate custom hiring services for farm machinery
- Harvest quality issues due to use of imported old combines
- Limited access of farmers to modern agricultural machinery
- High post-harvest losses and low level of value addition at community level

Challenges and Opportunities for Agricultural Mechanization

Opportunities:

- R&D Facilities:
  - Private sector R&D to meet obligation of product quality at competitive prices
  - Public sector R&D institutes should be upgraded and focus on market driven issues, and such institutes need to be established in each province
  - Central facilities for manufacturing of specialized/critical components
- Joint venture avenues for local production of specialized machinery
- Setting up of rental services centers
- The Long-Term Plan (2017-2030) CPEC - Comprehensive Framework for bilateral cooperation for Industrialization, Value-addition and Job creation

Agricultural Mechanization Strategy

- Policies are developed by governments to achieve specified objectives. Agricultural Mechanization Strategy (AMS) defines the way in which policies are to be implemented
- AMS formulation emphasizes the creation of enabling environment for adoption of appropriate farm tools, implements and machinery in most effective and efficient manner
- The output of AMS consists largely of policy and institutional recommendations and reforms, but may also include specific programs and projects

Agricultural Mechanization Strategy

Historical Perspective - Pakistan

1960 The Food and Agriculture Commission considered the scope of introducing mechanization in Pakistan but cautioned against the displacement of human labour by machinery

1968 Farm Mechanization Committee investigated various issues related with farm mechanization, analyzed the agricultural system and recommended programs for 5, 10 and 15 years

1983–1988 The role of farm mechanization in boosting agricultural production was recognized in the Sixth Five Year Plan

1986 National Commission on Agriculture also stressed the need of farm mechanization in its recommendations

1987 RNAM issued guidelines in formulating policies and strategies

1990 National Agricultural Policy of Pakistan placed due emphasis on farm mechanization

2014 FAO developed Sustainable Agricultural Mechanization Strategies for Asia-Pacific Region

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Agricultural Mechanization Strategy

Results from Implementation

- Decreased tariff (custom & excise duties) on the import of agricultural machinery from 30% to 9% in budget 2015-16 for boosting mechanization in the country
- Allowed import of specified agricultural machinery and equipment with reduced custom duties ranging from 0% to 5% to create healthy competition among local agricultural machinery manufacturing industry
- **List of agricultural machinery included:**
  - Tractors, combine harvesters,
  - Horticulture and floriculture machinery,
  - Irrigation draining equipment, high efficiency irrigation and drainage equipment
  - Green house farming equipment,
  - Land leveling, bulldozers, angle dozers, laser land levelers, land planers, seeding and planting machinery, pneumatic planters, transplanters, vegetable seedling transplanters.
  - Dairy, livestock and poultry machinery etc.

Agricultural Mechanization Strategy

Lessons Learnt and Good Practices

- 15 farm machinery manufacturers in 1959, as a result of liberal government policies their number increased to around 600.
- The growth of tractor industry substantially increased due to relief in government taxes and duties
- Renting of tractors with tillage implements, sprayers and wheat threshers by individual farmers to their neighbors increased
- Renting of combine harvesters by custom hiring companies also enhanced
- Set up Model Farm Service Centers at district level in Khyber Pakhtunkhwa
- Subsidies on farm machinery to selected farmers: Sindh and Punjab

Lessons Learnt and Good Practices

Provision of Farm Machinery to Farmers on 50% Subsidy by Government of Punjab

S. No.	Year	Machinery	Amount (PKR*Million)
1.	2015-17	Rotavator, Disc Harrow, Chisel Plough, Seed Drill and Sugarcane Ridger	1145
2.	2010-11	Wheat Straw Chopper-cum-blower	31.5
3.	2008-10	Rotavator, Disc Harrow, Chisel Plough, M.B. Plough, Coulter Drill, Rota Drill, Groundnut Digger, Reaper-windrower, Potato Planter, Potato Digger, Sugarcane Planter, Sugarcane Ridger, Vegetable Ridger, Maize Sheller, Citrus Sprayer and Dogger Cutter	459

* **Exchange Rate: Pak Rs. 106/US$**

Lessons Learnt and Good Practices

- Establishment of Hi-Tech Mechanization Service Centers (HMSCs) in 31 districts of Punjab with a total cost of PKR 3,830.205 million. These centers will be operated by the private sector.
- Credits facilities to Small and Medium Farmers. Five major banks as a group have disbursed PKR 236.6 billion or 69.6 percent of its annual target, ZTBL disbursed PKR 57.5 billion or 56.1 percent of its annual target.
- 37,634 locally manufactured tractors during 2016-17 compared to the production of 21,229 during the same period last year, witnessing a significant increase: 77.3% due to decrease in GST from 10% to 5% that has increased the demand of tractors.
- The import of agricultural machinery has witnessed a significant growth of 25.6% due to relief in tariff (0% to 5%).

Formulation of National Food Security Policy

The policy measures suggested related to mechanization include:

- Reduction in duties and taxes on import of farm machinery
- Reduction in GST on sale of farm machinery
- Develop efficient farm mechanization and processing technologies to reduce cost of production, enhance timeliness of operations, add value to crops and reduce post-harvest losses at farm level
- Promotion of climate-smart precision agriculture for profitable production
- Incentives for import of machinery for hay/silage making, milking, dairy and meat products

Formulation of National Food Security Policy

- Aquaculture mechanization for intensive production, processing and maintaining cold chain
- Establishment of ‘Pakistan Agricultural Machinery Testing and Evaluation Centre (PAMTEC) with regional satellites
- Development of a National Network of Agricultural Mechanization to coordinate agricultural mechanization R&D in the country
- Harnessing & efficient utilization of alternate energy sources at farm level
- Establishment of machinery pools as farm-services centers by provinces in private sector

Suggestions for Regional Cooperation Among Countries

- A sub-network of CSAM Member Countries in need of developing their agricultural mechanization strategies (AMSs) be developed

- The Policy Advisory Services needed by these member countries for formulation of their AMSs be provided by CSAM