

**SUSTAINABLE MECHANIZATION FOR
SMALLHOLDER FARMERS IN PAKISTAN IN
SUPPORT OF THE SUSTAINABLE
DEVELOPMENT GOALS**

By

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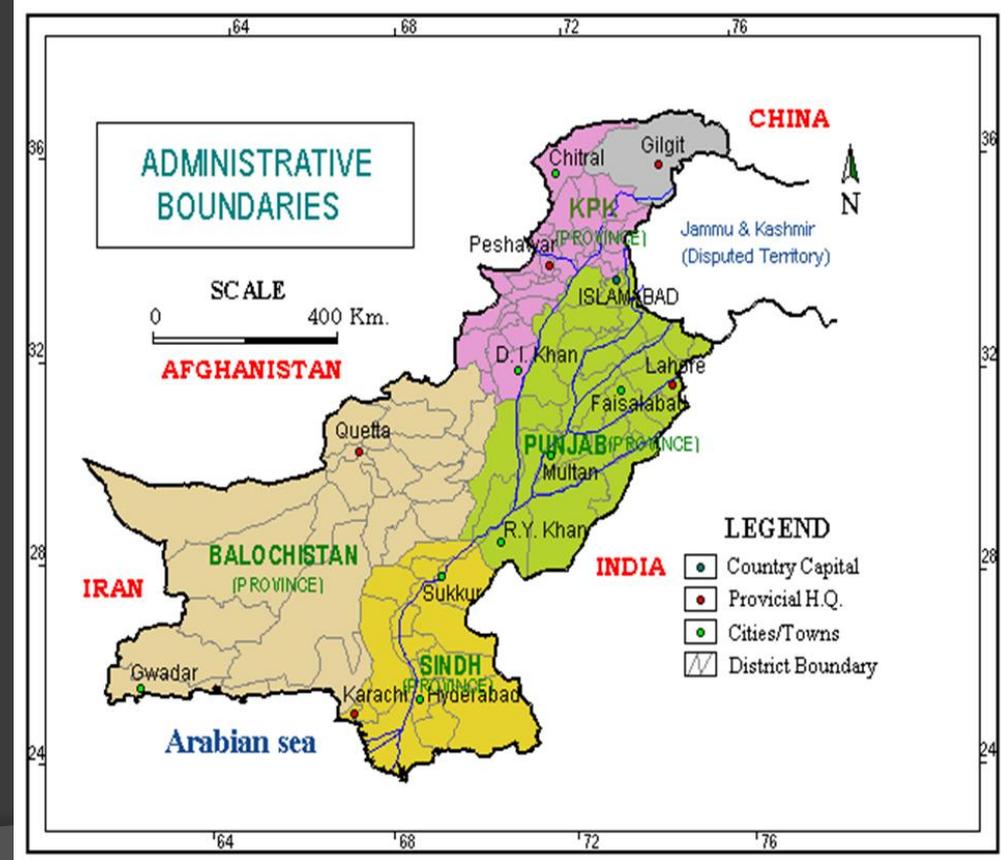
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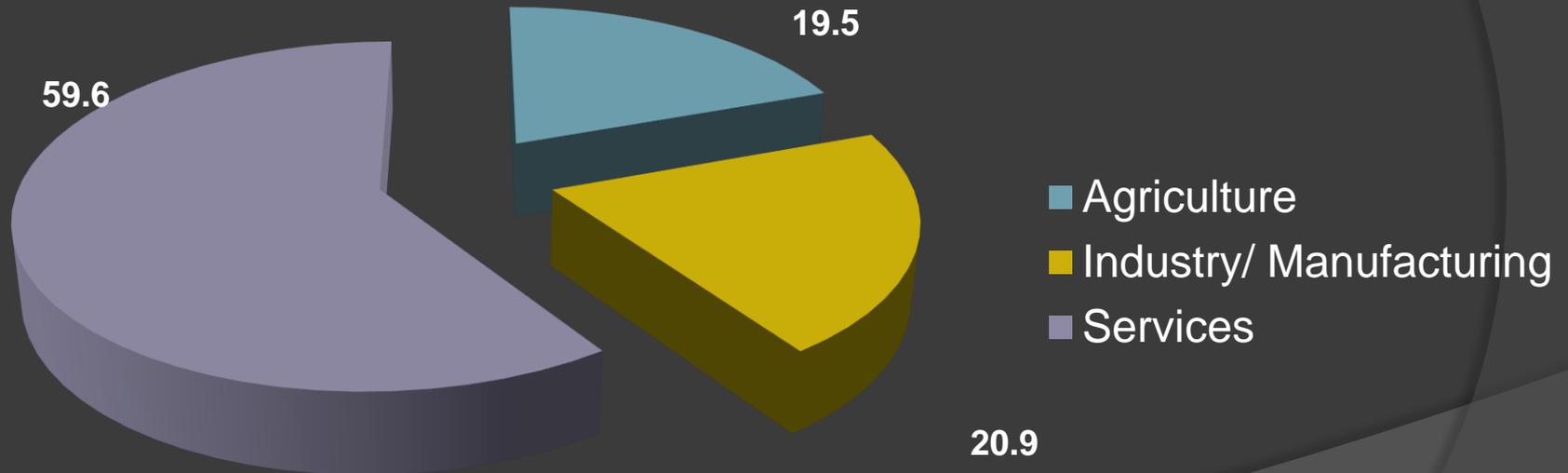
Basic Information of Pakistan

- Population: 200 million
- Geographical Area:
 - Total: 79.61 million ha
 - Cultivated: 22.05 million ha
 - Irrigated: 18.92 m ha (86%)
 - Rain-fed: 3.13 m ha (14%)
- Predominantly an arid and semi-arid country with 68 m ha (85%) where rainfall is less than 300 mm



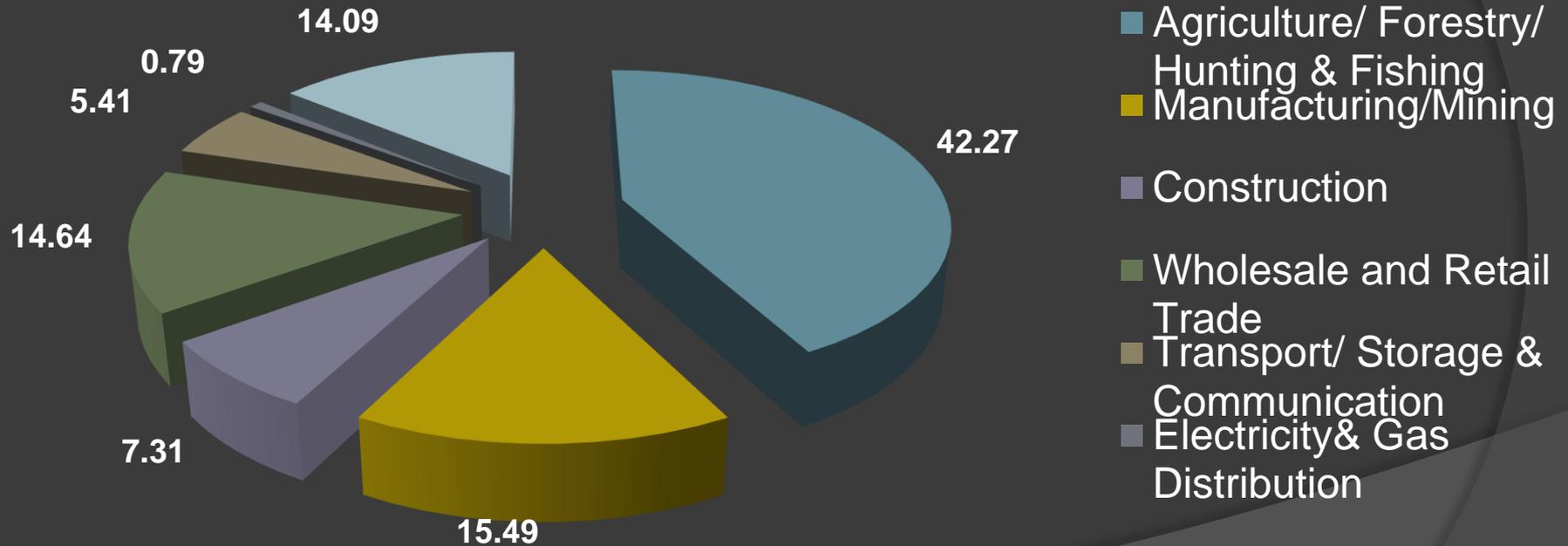
Agriculture: Contribution to GDP

GDP Share



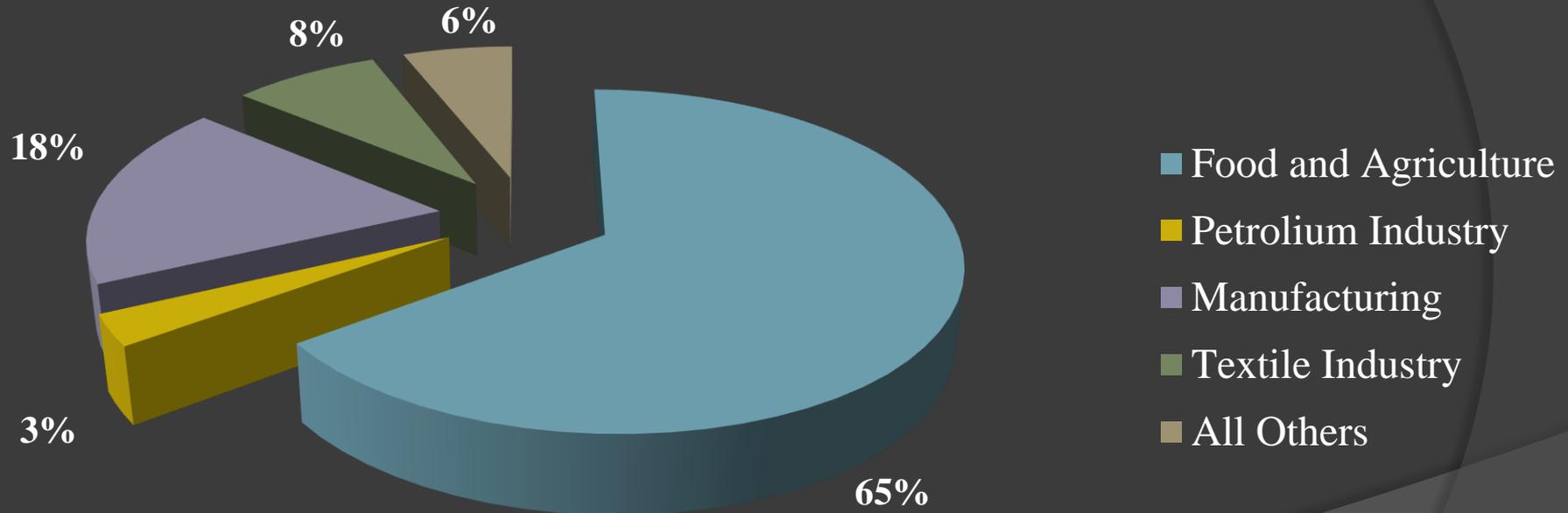
Contributes 19.5 percent to GDP

Agriculture: Employment Share



Employs 42.27% of the country's labour force and 60% of rural population depends upon this sector for livelihood

Agriculture: Exports Share



Contributes around 65% to exports of the country

Major Crops of Pakistan

Crop	Area (000 ha)	Production (000 tones)	Yield (kg/ha)
Wheat	8,734	25,492	2,919
Rice	2,899	7,442	2,567
Cotton	2,699	11,935*	752
Sugarcane	1,313	81,102	61,768

***000 bales**

Pakistan's Position in the World Agriculture

- Population --- Pakistan is 6th most populated country in the world
- Wheat --- 9th largest producer in the world, 14.4% value added and 3.0% of GDP
- Rice --- 5.9% value added and 1.3% GDP, edge for Basmati rice
- Cotton --- 4th largest producer in the world, 7.3% value added and 1.6% GDP, major export and agro-industrial crop, major source of employment in value chains, Nearly 80% total cotton production took place in Punjab
- Sugarcane --- 3.4% of value added and 0.7% in GDP
- Livestock --- Pakistan falls in the top 15 most livestock populous countries of the world. Pakistan ranks 2nd in buffalo population; 13th in cattle population; 10th in sheep
- Fruits --- Pakistan has comparative advantage in the production of many dry fruits and Kinnow production in citrus family

Role of Sustainable Agricultural Mechanization

- ⦿ Increased agricultural production`
- ⦿ Improved rural income and livelihoods
- ⦿ Sustainable and efficient use, and stewardship of natural resources
- ⦿ Protection of environment and resilience to climate change
- ⦿ Increasing productivity and production
- ⦿ Reducing human drudgery
- ⦿ Optimizing resource and input use
- ⦿ Addressing rural labour shortfalls, cutting food loss and waste
- ⦿ Providing employment and business opportunities
- ⦿ Creating efficient food value chains

Mechanization Extent of Crop Production Operations

Crop	Land Preparation	Sowing	Irrigation	Spraying	Inter-culture	Harvesting	Threshing
Wheat	Highly	Low	Semi	Low	-	Semi	Highly
Cotton	Highly	Semi	Semi	Highly	Highly	-	-
Rice	Highly	-	Semi	Low	-	Semi	Semi
Sugarcane	Highly	Simi	Semi	Semi	Semi-	-	-
Potato	Highly	Semi	Semi	Highly	Highly	Semi	-
Maize	Highly	Semi	Semi	Low	Semi	Low	Highly
Pulses	Semi	Semi	Low	Low	Low	Low	Highly

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 1.11kW/ha (excluding tube wells)
1.53kW/ha (including tube wells)

Prices and Production of Locally Manufactured Tractors(2017-2018)

Tractors Model – Horse Power (HP)	Price/Unit Including GST (Rs)	Production (in Nos.)	Actual Sale (in Nos.)
M/s Al-Ghazi Tractors			
NH 480-S (55 HP)	739,200	4,707	4,695
NH 480-S-W.P (55 HP)	756,000	2,357	2,353
NH-Ghazi (65 HP)	830,550	7,251	7,226
NH-Ghazi WDB (65 HP)	840,000	177	177
NH- 640 (75 HP)	1,075,200	2,615	2,604
NH -640 WDB (75 HP)	1,081,500	158	156
NH -640-S (85 HP)	1,093,050	65	64
NH -640-S WDB (85 HP)	1,107,750	29	28
NH-70-56 (85 HP)	1,617,000	4	5
Dabung- (85-HP)	1,107,750	384	37
Total		17747	17345

Prices and Production of Locally Manufactured Tractors(2017-2018)

Tractors Model – Horse Power (HP)	Price/Unit Including GST (Rs)	Production (in Nos.)	Actual Sale (in Nos.)
M/s Millat Tractors			
MF-240 (50 HP)	738,150	7,221	7,210
MF-350 Plus (50 HP)	756,525	37	26
MF-260 (60 HP)	831,915	7,368	7,107
MF-360 (60 HP)	863,625	433	409
MF-375-S (75 HP)	1,099,350	3,333	2,766
MF-385 2WD (85 HP)	1,163,925	8,989	9,032
MF-385 4WD (85 HP)	1,728,090	197	223
Total		27578	26773

Pakistan Land Holding Statistics

- **5.35 million** farms cover less than 5 acre land which is 65% of the total farming community. These subsistence farmers occupy 10.18 million acres which is 19% of the total cultivated area.
- **2.05 million** farms cover 5-12.5 acre of land which is 25% of the total farming community. These subsistence farmers occupy 15.24 million acres which is 29% of the total cultivated area.
- **0.87 million** farms cover more than 12.5 acre land which is 10.31% of the total farming community. These medium to large farmers occupy 27.49 million acres which is 52% of the total cultivated area.

Future Focus

- ◎ Precision Agriculture
- ◎ Post-harvest Technologies and Value Addition in Fruits, Vegetables & Medicinal Herbs
- ◎ Food Processing (grading, packaging etc.)
- ◎ Milk and Meat Processing
- ◎ Livestock/Dairy Mechanization
- ◎ Aquaculture Mechanization
- ◎ Standardization of Agricultural Machinery
- ◎ Cotton harvesting machinery
- ◎ Sugarcane harvesting machinery
- ◎ Pulses harvesting and processing machinery

Issues and Challenges(Conti,)

- ❑ Under-utilization of tractor power
- ❑ Lack of machinery for value addition of farm produce and equipment for precision farming
- ❑ Use of old combine harvesters for wheat and rice, causing grain and quality losses
- ❑ Lack of machinery for livestock and dairy farming
- ❑ Increasing cost of inputs
- ❑ Limited availability of capital for machinery purchase
- ❑ Lack of standard and quality products

Issues and Challenges (Conti,)

- ❑ Inadequate custom hiring services
- ❑ Lack of coordination among researchers, machinery manufactures, extension workers and farmers
- ❑ Small land holdings and poor economic condition of farmers
- ❑ Lack of awareness of farmers
- ❑ High post-harvest losses and low level of value addition at community level
- ❑ Agricultural mechanization is mainly limited to crop production
- ❑ Limited access of farmers to modern agricultural machinery

Recommendations (Conti,)

- ⦿ Provision of machinery on cost sharing basis
- ⦿ Training and awareness to the farmers and end users
- ⦿ Banking loan facility
- ⦿ Tax rebates on agricultural machinery
- ⦿ Higher yield per acre incentive in terms of machinery
- ⦿ Contribution of NGO`s for promotion of machinery
- ⦿ Demonstration, exhibition of agricultural machinery to the farmers and manufacturers.

Recommendations (Conti,)

- Facilitation for establishment of rental service centers
- Production of machinery and equipment as per standards
- Establishment of raw material bank
- Facilitation for displaying the new mechanized technologies in machinery exhibitions (National and Regional)
- Financial and consultation facilitation for the establishment of machinery testing centers
- Establishment of professional institutional linkages (National and Regional)
- Donors participation in boosting up the sustainable agricultural mechanization

Conclusions

- ① There is need to train human resource in agricultural mechanization in fields such as precision agriculture, post harvest processing, on-farm value addition, and renewable energy resources.
- ② There is need to build Financial and consultation facilitation for the establishment of machinery testing centers.
- ③ There is need that an integrated approach may be adopted involving all machinery manufacturer, stakeholders and farmers community to conduct Demonstration, exhibition of agricultural machinery both at national and regional levels.

Thank You