

## Land Tenure and Management: An Analytical Appraisal

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### 1. INTRODUCTION

The total area of Pakistan is 796101 sq. km (310,400 sq. miles) of which 414659 sq. km (160100 sq. miles) comprises mountainous terrain, narrow valleys and foot hills. The remaining 381442 sq. km (150300 sq. miles) consists of sand, deserts and flat gradational plains, the most important feature of which is Indus River Basin Plain with an area of about 311771 sq. km (123400 sq. miles). The area of principal hydrologic units is given in Table 1.

Table 1

*Area of Hydrological Units [Source: Ahmed (1993)]*

Unit	Mountain (sq. km)	Plains (sq. km)	Total (sq. km)
Indus River Basin	241647	311771	553418
Closed Basin of Kharan Desert	87542	32634	120176
Makran Coastal Basin	85470	37037	122507
<b>Total</b>	<b>414659</b>	<b>381442</b>	<b>796101</b>

### 2. INVENTORY OF AGRICULTURAL LAND RESOURCES

The total culturable land area existing within Indus Basin Plain and Balochistan is 33.85 Mha (83.61 Mac) as given in Table 2. It indicates that cultivated area has been increased over the years due to increase in water availability.

Table 2

*Inventory of Land Resources of Agriculture in Mha [Source: Pakistan (2004-05)]*

Year	Forest	Culturable Waste	Cultivated Area	Irrigated Area			
				Canals	Tubewells	Canal + TW	Others
1978-79	2.81	10.92	20.12	10.95	2.84	4.70	0.57
1986-87	3.06	9.51	20.69	7.96	2.20	5.16	0.78
1996-97	3.58	9.06	21.98	7.81	2.90	6.61	0.22
2004-05	4.01	9.00	22.15	7.00	3.46	7.70	0.24

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According to census of Agriculture 2000, the numbers of private farms in the country are 6620057 having an area of 20.41 Mha. Province wise detail of owners, tenants and cultivators is given in Table 3. Sindh has lowest percentage of owner cultivators (66 percent) and has highest percentage of tenant cultivators (30 percent). It is also reflected in water management practices of the province.

Due to increase in population agriculture land per capita is decreasing with the passage of time in Pakistan (Figure 1). Similarly available fresh water per capita is also decreasing overtime. Therefore productivity per unit of land and water needs to be increased to meet the ever growing requirements of food and fibre of the country.

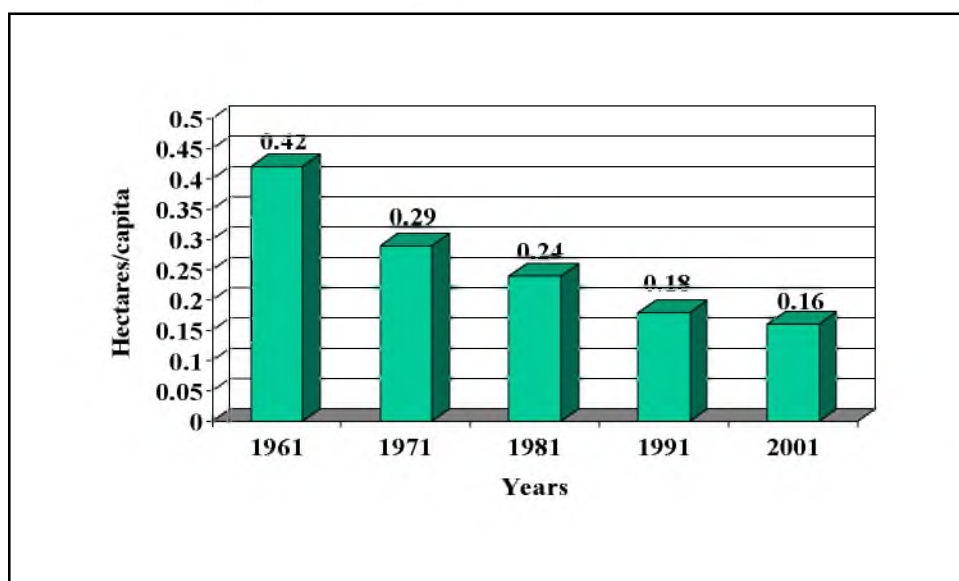
The geographical area of Balochistan is 34.7 ha (85.76 Mac), representing 43.6 percent of the country. Thus, it is the largest province of Pakistan. The ratio of cultivated area to the geographical area in Balochistan is 6 percent compared to the country's ratio (percent cultivated area to the geographic area) of 28 percent. In other provinces, the percent of cultivated area to geographical area is 61, 41 and 18 for Punjab, Sindh and NWFP, respectively. Thus, the Balochistan province is having the lowest cultivated area in relation to the geographical area. This is mainly due to scarcity of water in the province.

Table 3

*Number and Area of Private Farms by Tenure, 2000*

Tenure	Farms		Farms Area	
	Number	%	Hectares	%
<b>Pakistan</b>				
Owner Cultivator	5134504	78	14961275	73
Owner-cum-tenant	558991	8	2963441	15
Tenant	926562	14	2482061	12
Total	6620057	100	20406777	100
<b>Punjab</b>				
Owner Cultivator	3037134	79	7789800	69
Owner-cum-tenant	423508	11	2185628	20
Tenant	403438	10	1259729	11
Total	3864080	100	11235157	100
<b>Sindh</b>				
Owner cultivator	703514	66	3283113	76
Owner-cum-tenant	43015	4	297905	7
Tenant	323345	30	743768	17
Total	1069874	100	4324786	100
<b>NWFP</b>				
Owner Cultivator	1124025	83	1717016	76
Owner-cum-tenant	83742	6	325916	14
Tenant	148470	11	218939	10
Total	1356237	100	2261871	100
<b>Balochistan</b>				
Owner Cultivator	269831	83	2171346	84
Owner-cum-tenant	8726	3	153992	6
Tenant	51309	15	259625	10
Total	329866	100	2584963	100

Source: Census of Agriculture (2000).

**Fig. 1. Dwindling Land Resources in Pakistan**

According to Agriculture Census 2000, the total farm area in Balochistan is 2.58 Mha and 3,29,866 farms (Table 4). The farm size distribution data indicated that 26 percent farm area is owned by 1 percent of farm holders, 33 percent farm area is owned by 2 percent farm holders, and 74 percent farm area is owned by 7 percent farm holders. The farm size distribution is highly skewed as almost half of the farm area is owned by only 7 percent large-holders.

Table 4

*Distribution of Number, Area and Average Size of Farms in Balochistan (after Ahmed 2006)*

Farm Size (ha)	Number of Farms		Farm Area		Average Farm Size (ha)
	Number	%	(ha)	(%)	
< 0.506	21275	7	6766	—	0.324
0.506-1.01	30553	9	24393	1	0.81
1.01-2.02	41932	13	60534	2	1.48
2.02-3.03	43173	13	99297	4	2.31
3.03-5.06	70078	21	277197	11	3.97
5.06-10.1	65863	20	463796	18	7.04
10.1-20.2	34109	10	450379	17	13.2
20.2-40.5	14790	5	372787	14	25.2
40.5-60.7	3896	1	171593	7	44.05
> 60.7	4197	1	65913	26	156.8
Total	329866	100	2584963	100	7.85

For comparative analysis, the farm size distribution was characterised in three sizes of land-holders—small-, medium- and large-holders. The distribution indicated that 64 percent farm area is owned by 17 percent of large-holders (Table 5). The high skewed distribution indicated that average farm size for large-holders is around 29 ha (72 acres), which is very large considering the average and holding of 0.97 and 4.7 ha for small- and medium-holders in the province of Balochistan.

The 17 percent large-holders represent around 56992 households owning average land holding of around 29 ha and constituting around 1.65 Mha (4.08 million acres).

Table 5

*Distribution of Number, Area and Average Size of Farms for Three Categories of Landholdings in Balochistan (after Ahmed 2006)*

Category	Farm Size (ha)	Farms		Farm Area		Average Farm Size (ha)
		Number	%	(ha)	(%)	
Small	< 2.02	93760	29	91693	3	0.97
Medium	2.02-10.1	179114	54	840290	33	4.7
Large	> 10.1	56992	17	1652980	64	29
Total		329866	100	2584963	100	7.85

### 3. FARMS AND CROPPING INTENSITY

A study of cropping intensity by tenure shows that average cropping intensity was the highest in Sindh particularly on tenants' farms where it was 134 percent (Table 6). Actually in all tenant farms the average cropping intensity is comparatively high as shown in Table 6. The main reason is availability of sufficient labour for cultivation and growing crops.

Cropping intensities are also affected with the size of irrigated farm. It is the highest for farms of smaller size (Table 7). It may be seen that with farms of less than 2.02 ha (5 acres) the cropping intensity is 142 percent whereas for 20.2 ha (50 acres) farms it is reduced to 101 percent.

Table 6

*Cropping Intensity (%) by Tenure [Source: Pak. Agri Census (1980)]*

Unit	All Farm	Owner	Owner-cum-tenant	
			Owner-cum-tenant	Tenant
NWFP	121	124	108	130
Punjab	124	124	121	126
Sindh	130	128	124	134
Balochistan	78	74	74	96
Pakistan	122	120	120	127
Average	115	114	109.4	122.6

Table 7

*Variation of Cropping Intensity with Farm Size [Source: Ahmed (1993)]*

Farm Size (ha)	Cropping Intensity (%)
<2.02	142
2.02-5.06	131
5.06-10.1	120
10.1-20.2	114
>20.2	101
All Farm	116

#### 4. FRAGMENTATION OF FARMS AND AGRARIAN REFORMS

A serious drawback in agriculture production is the fragmentation of farms into two or more separated holdings. Fragmentation is a result of social laws of inheritance and acquisition through marriage. Fragmentation inhibits the farming operations. Very often fragments are far apart so that the movement of personal, work animals, agricultural equipment and even the irrigation operation becomes difficult. The position in 1961 of fragmented farms was as under:

Total number of farms	=	4.86 million
Number of farms not fragmented	=	1.92 million
Number of farms fragmented	=	2.94 million

The fragmented small farms were 45 percent, medium size farms were 74 percent and big size farms were 87 percent fragmented. In 1972 Census of Agriculture found the fragments of different order in the four provinces (Table 8). The highest order of fragmented farms was in existence in NWFP followed by Balochistan, the Punjab and Sindh in turn. The area consolidated during different periods is given in Table 9.

Table 8

*No. of Fragmented Farms (percent)*

Province	Not Fragmented	Fragmented				
		Total	2-3 Frag	4-5 Frag	6-9 Frag	10 and above Frag
NWFP	23	77	40	19	12	6
Punjab	38	62	39	12	7	4
Sindh	48	52	41	8	2	1
Balochistan	28	72	39	16	9	9
Total	38	62	39	12	7	4

Table 9  
*Area Consolidated*

Period	Area (000 ha)
Upto 1975	7663
1975-78	959
1978-83	1499
1983-88	1085
1988-95	982
Total	12188

Agrarian reforms were introduced to provide opportunities of land ownership and for social security to farm workers; to regulate tenancies and apportionment of produce between the land-lords and the tenants. Laws are made to consolidate holdings and prohibit further fragmentation of lands. Land reforms are introduced to have positive effect on agricultural produce and the socio-economic structure of the rural society. Land reforms have been enacted twice in Pakistan. At the time of first martial law in 1958, land reforms commission was appointed. The commission brought out the following important points:

- The extent of cultivated land was limited and there was little prospect of increase in near future.
- The ownership of land was inequitable and unique.
- The small holdings have been fragmented due to laws of inheritance.
- There was no security to tenants and illegal extraction existed almost every where.

Based upon the recommendations, the then government enacted reforms which limited the sealing on agricultural holdings. The maximum land that an individual could hold was fixed at 202 ha (500 ac) of irrigated and 405 ha (1000 ac) of un-irrigated lands. The extent of law was, however, fixed on the basis of produce index units which was the average production value of matured 0.404 ha (acre). Land in excess of sealing in each holding was resumed by government on payment of compensation. The resumed area was to be given to the sitting tenants or to other landless people in the village. A subsistence holding of 5 ha (12.5 ac) in the Punjab and 6.5 ha (16 ac) in NWFP was fixed. The extent of economic holding was fixed at 20 ha (50 ac) in the Punjab and NWFP and 26 ha (64 ac) elsewhere.

All types of intermediaries and Jagirs were abolished without compensation. Security of tenancy was assured and the produce was to be divided into 60:40 between the tenant and the landlord. Consolidation of holdings was made compulsory. Several other recommendations were also carried out. Unfortunately the reforms did not fully attain the assumptions. The total farmers at the time of reform were 4.9 million but only 5904 farmers were affected by land reform. The number of people benefited from the reform was only 20000. The majority of big land lord gave up about 30 percent of the area but it was generally barren or uncultivable. The reform did not made real dent in the problem of tenancy.

Second land reforms were announced on March 11, 1972 again under Martial Law. These repeated the old land reforms of 1959 and laid down new terms. The limit of holdings was reduced to 20 ha (50 acres) Orchards and stud farms permitted to be retained in 1959 reforms were confiscated without paying any compensation. All lands in excess of prescribed area were resumed by the Government without paying any compensation. The land resumed by Government was to be given to sitting tenants free of charges. Every effort was made to give at least a subsistence holding fixed at 5 ha (12 acres) in the Punjab and NWFP, 6.5 ha (16 acres) in Sindh and 13 ha (32 acres) in Balochistan. This size of holdings was not to be partitioned under any circumstances. Security of tenants was assumed and they had been exempted from paying any portion of the cost of seed and land revenue, water rate and other tax. The landlord and the tenant were to share the produce in the ratio of 40:60.

Under 1972 reform the area resumed and the number of owners affected is given in Table 10. This shows that only 2,150 farmers were affected who surrendered only 355870 ha (879,000 acres) out of the total cultivated area of 19.4 Mha (48 million acres).

Table 10

*Statistics of Land Reforms of 1972*

	Unit	Punjab	Sindh	NWFP	Balochistan	Total
Owners Affected	No	998	687	227	238	2150
Area Owned	000 ha	264	217	114	201	796
Area Retained		164	116	60	102	440
Area Resumed		101	101	54	100	356
Area Distributed		65	44	51	21	181

In spite of these efforts self sufficiency in food and other agricultural produce is still marginal. In 1974-75 Pakistan imported 1.5 million tons of wheat. During the next two years 3.4 million tons of wheat was imported.

During the year 1979-1981 self sufficiency in wheat had attained. It was only marginal and mainly due to very favourable climatic conditions. The year 1981-82 again was uncertain due to weather conditions and excessive winter rains. The self sufficiency in wheat created problems with other crops, such as sugarcane, pulses etc.

It would appear that the population of Pakistan is increasing at the rate of 2.5 percent per annum. Raising the farming intensity to more than 150 percent appears to have some hope for some time and that too with the raising of high produce crops.

#### 4. IMPACT OF IRRIGATION WATER REFORMS ON SMALL LANDHOLDERS

Institutional reforms in irrigation water management are underway in Pakistan. These are being implemented in phased programmes and in Pilot Areas. Farmer

Organisations (FO) are being established at distributary level and Area Water Boards (AWB) are being established at canal command level. Research was conducted in one of the pilot area in Bahawalnagar District where reforms were initiated in 1994 [Alam and Saadia (2001)]. Two FO's namely Sirajwah and Kahra 4-R were studied. Majority of the farmers at both the distributaries were small farmers (76 percent at Sirajwah and 82 percent at Hakra 4-R) holding up to 5.06 ha (12.5 ac) of Land. In terms of representation Sirajwah FO, farms that are only 7 percent have 89 percent representation in the FO (Table 11). At Hakra 4-R, farmers up to 5.06 ha (12.5 ac) had no representation against 82 percent of their share in the total number of farms. However, farms of above 10.1 ha (25 ac) had disproportional representation i.e. 80 percent (Table 11). It was found that due to following socio-economic and political context small farmers depend upon large farmers in many ways:

- Take land on rent for share cropping;
- Get farm machinery;
- Obtain green fodder for live stock; and
- Support in police cases etc.

Table 11

*Farm Size and Representation in Farmer Organisation*

Farm Size (ha)	Sirajwah		Hakra 4-R	
	Command Area (%)	Representation in FO (%)	Command area (%)	Representation in FO (%)
<2.02	40	0	56	0
2.02-5.06	36	11	26	0
5.06-10.1	17	0	12	20
>10.1	7	89	6	80

It is recommended that small farmers should be given equal representation in irrigation water management through FO and AWB.

### 5. DISTRIBUTION OF AREA AND NUMBER OF TUBEWELL-IRRIGATED FARMS IN BALOCHISTAN

A case study of Balochistan province has been presented in this section. The farm size distribution data of Agricultural Census of Pakistan, 2000 was used to evaluate the distribution of tubewell irrigated area and number of farms in relation to the farm size (Table 12).

The distribution of tubewell irrigated area and number of farms in relation to farm size indicated that farms greater than 5.06 ha (12.5 acres) in size are 31 percent of the total farms comprising around 75 percent of the irrigated area under tubewells. In addition 12 percent farms are over 10.1 ha (25 acres) in size and constitute around 52 percent of the tubewell irrigated area.

The distribution of number and area of farms under three categories of land-holders indicated that 52 percent of irrigated land is owned by 12 percent land-holders (Table 13).



Table 12

*Distribution of Area and Number of Tubewell Irrigated Farms in Balochistan*

Farm Size (ha)	Number of Farms		Farm Area	
	Number	%	(ha)	(%)
< 0.506	3016	9	754	—
0.506-1.01	3259	10	2444	1
1.01-2.02	3895	12	5842	3
2.02-3.03	4803	15	12008	6
3.03-5.06	7506	23	30023	15
5.06-10.1	6259	19	46946	23
10.1-20.2	2349	7	35236	17
20.2-40.5	915	3	27453	14
40.5-60.7	310	1	15508	8
> 60.7	261	1	26068	13
Total	32573	100	202283	100
> 5.06		31		75
> 10.1		12		52

Table 13

*Distribution of Number, Area and Average Size of Tubewell Irrigated Farms under Three Categories of Landholdings in Balochistan*

Category	Farm Size (ha)	Farms		Farm Area		Average Farm Size (ha)
		Number	%	(ha)	(%)	
Small	< 2.02	10170	31	9040	4	0.89
Medium	2.02-10.1	18568	57	88965	44	4.78
Large	> 10.1	3835	12	104266	52	27.2
Total		32573	100	202283	100	6.19

The survey conducted by the Irrigated Farming System Consultant under the TA Grant 4560 (PAK) indicated that the electric tubewell command area is normally over 5.06 ha (12.5 acres) in size (Table 14).

Table 14

*Estimation of Average Area Commanded by an Electric Tubewell in Balochistan (after Ahmed 2006)*

Particulars	
Total Number of Electric Tubewells as on 31 <sup>st</sup> January 2006	15,404
Total Area under Electric Tubewells	151212 ha
Total Number of Farms	10,094
Average Area Commanded by a Tubewell	10 ha

Considering the electric tubewell command area (farm size) of over 5.06 ha (12.5 acres), the distribution of tubewell irrigated area, number of farms and number of electric-operated tubewells is given in Table 15.

Table 15

*Distribution of Area and Number of Tubewell Irrigated Farms (Electric) in Balochistan*

Farm Size (ha)	Number of Farms		Tubewell Irrigated Area		No. of Electric Tubewells per Farm
	Number	%	(ha)	(%)	
5.06-10.1	6259	62	46946	31	1
10.1-20.2	2349	23	35236	24	1.5
20.2-40.5	915	9	27454	18	3
40.5-60.7	310	3	38305	10	5
> 60.7	261	3	26068	17	> 6
Total	10,094	100	151212	100	
> 10.1	3835	38		69	> 1
> 20.2	1486	15		46	> 2
> 40.5	571	6		28	> 4

The distribution of irrigated area indicated that 15 percent farms comprise of 46 percent of the tubewell irrigated area. Each of these 15 percent farm owners own more than two tubewells per farm, as the farm size is more than 20.2 ha (50 acres). The most interesting is that around 6 percent farms constitute around 28 percent of the irrigated area. These farms are more than 40.5 ha (100 acres) in size and own more than four tubewells per farm.

The most critical aspect is that 3 percent farms comprise of over 17 percent of the irrigated area and each of the farms is over 60.7 ha (150 acres) in size. Furthermore, each of these farmers owns more than 6 tubewells. This small proportion of farmers (around 300) takes over the major benefit of the tubewell subsidy.

The distribution of number and area of farms under three categories of electric-operated tubewell land-holders indicated that 46 percent farm area is owned by 15 percent landholders (Table 16). Thus the distribution trend is same for cultivated area, tubewell irrigated area and electric tubewell irrigated area. The fraction of 15 percent farmers owing electric tubewells is the most influential segment hindering the decision making process for rationalising the subsidy to make it more functional and targeted. Farmers of this category own more than four tubewells per household.

Table 16

*Distribution of Number, Area and Average Size of Tubewell Irrigated Farms (Electric) for Three Categories of Landholdings in Balochistan*

Category	Farm Size (ha)	Farms		Farm Area		Average Farm Size (ha)
		Number	%	(ha)	(%)	
Small	< 10.1	6259	62	46946	31	7.49
Medium	10.1-20.2	2349	23	35236	23	15.0
Large	> 20.2	1486	15	69029	46	46.4
Total		10,094	100	151212	100	15.0

## 6. EQUITY CONCERNS

### (i) Landholding and Subsidy on Agricultural Tubewells

The distribution of number and area of farms in the province of Balochistan indicated that almost half of the irrigated area under the command of the electric tubewells is owned by only 15 percent of the farmers or land-holders. Thus half of the subsidy on agricultural tubewells in monetary terms is utilised by 15 percent of the farmers within the framework of the current subsidy. This amounts to around Rs. 4.0 billion during 2005-06 (total subsidy covering federal and provincial shares), which was utilised by 15 percent farmers. Thus a smaller fraction of farmers is benefiting from the major portion of the subsidy. In addition, this influential fraction of the farming community is also hindering the decision making process for rationalising subsidy by making it functional and targeted.

The analysis also highlights the concern of distortion in the policy of poverty reduction, as the largest investment made by the federal and provincial governments per annum (subsidy for agricultural tubewells) is supporting the resource-rich farmers and widening the poverty gap in the province. Therefore, the need arises that benefits of subsidy should be fairly distributed to those who can not afford to install and operate an electric tubewell.

### (ii) On-farm Water Management Subsidy

Government is providing subsidy for on farm water management through:

- Lining of watercourses, and
- Precision land levelling etc.

Field data has indicated that these subsidies have been also targeted more towards big land-holders as compared to small farmers.

*The real question is that whether the benefits of the subsidy can be distributed more equitably among the farming community looking at the current low productivity of land and water conditions.*

## 6. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations related to land tenure and management are:

- (i) Cropping intensities for large farms are lower than small farms.
- (ii) Fragmentation of farms needs to be tackled for increasing agriculture productions.
- (iii) Small farmers have to be encouraged and involved in institutional reforms of irrigation water management. They should be represented in FOs and AWB.
- (iv) There is a need to precisely document the landholding and number of tubewells owned by consumers of electric tubewells in the province of Balochistan. This activity may be undertaken jointly by the IPD and QESCO to document the case for future planning of functional and targeted subsidy for agricultural tubewells in Balochistan.

- (v) The information regarding area, ownership of tubewell irrigated farms and number of tubewells owned by a household can help to target subsidy in a more equitable way. The Policy issue is that whether ownership and landholding of tubewell irrigated farms be registered under the Land Revenue Act or the PIDA Act.
- (vi) Analyse in depth the reasons why subsidy is provided to farmers owning more than one tubewells. There are 15 percent farmers owning on an average more than 3 tubewells. By restricting subsidy to one tubewell can reduce the overall subsidy by 30 percent or benefits of subsidy can be extended to additional 30 percent of the beneficiaries.
- (vii) How equitable distribution of subsidy can impact mining of groundwater and improving management of the scarce resources.
- (viii) Subsidy for on farm water management should be focused towards small farmers for eradication of poverty.

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