Development and Management of Land Resources

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Introduction

Land and water are the basic resources affecting growth in agricultural production. Land is a vital non-renewable resource. Pattern and management of land use affect the quantity and quality of production and employment associated with land both directly and indirectly, the degree of pollution and degradation of not only land but also water and the integrity of the biological systems which are the major determent of human life. In Pakistan, the land man ratio is low and declining rapidly due to high rate of population growth. The low land-man ratio has emerged as a major constraint to a higher rate of agricultural development. In fact, high population pressure may already be a factor in over exploitation of forest and arable land. Increasing fragmentation of land holdings is undermining agricultural productivity. The proportion of marginal holdings is also increasing. The total area of degraded land is on the rise. It seems that the ecosystem is suffering from intensive use of scarce land, forest and water resources by rapidly increasing population.

In Pakistan, scope for increasing cultivated area is not promising. There is loss of agricultural land to non-agricultural uses in rural as well as urban areas. The obvious consequence of this is that future increases in agricultural production would need to come from increased land productivity based on higher yields as well as higher cropping intensities. Both sources of agricultural growth would need large quantity of water. In turn, it would require an efficient use of water along with rational use of land and water resources and improved agronomic practices

There are three important aspects of the land question that have a bearing on the prospects of agricultural growth. These questions pertains to development of land resources including reclamation of degraded land, land reforms and land management. Being a non-renewable resource land requires a sustainable use pattern. If used otherwise, it degrades in quality and ultimately becomes unsuitable for cultivation. There are various forms of degradation like water logging, salinity and sodicity, soil erosion, deforestation and desertification. Water logging refers to the soil condition when the soil is saturated with water to the extent that plants fail to grow or their yields are adversely affected due to the poor aeration of the root zone. The salinity problem has arisen mainly in the wake of rising underground water table in irrigated areas. It should be noted that while most forms of land and water degradation occur due to inappropriate infrastructure built or not built by the government, it is the lack of requisite attention by farmers themselves that has led to unsustainable use of land and water resources. In reclamation of most resources both government and farmers have a joint responsibility. The government has to provide resources and technology while the farmers have to engage in appropriate on-farm activity to reclaim salt-affected and water logged land. It needs to be noted that opening of land in irrigated areas was led by the government by building a network of barrages, canals and its

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distributaries and by a policy of land allotment to settlers. The farmers had also invested both their capital and labour to open the previously uncultivated land frontier. In the same vein, the restoration of land to its previous high productivity has to be a joint undertaking of government and farmers.

Land reforms is defined as a modification of changes in the prevailing agrarian relations among different people connected with land. The common form of land reforms introduced in Pakistan are attempts at providing greater tenurial rights to share-croppers, imposing a ceiling on landownership and distributing land among landless and poor cultivators. However, policy debate over agrarian land reform currently is much different than in the 1960s and 1970s when land reforms were introduced in Pakistan. Large scale redistributive land reforms are no longer on the policy agenda. There are arguments in favour of market-based land reforms that would not drastically affect the GINI co-efficient of land distribution but would result in increased access for land to efficient producers who are often medium and large commercial farmers.

The case for market-based land reforms has re-emphasized the need for appropriate policies in the area of land administration and management. There is no precise definition of land management. It is generally agreed, however, that land administration policy is a continuing process and comprises all aspects by which land resources are managed. The major themes of land management are (i) process relating to land titling such as preparation and updating of land records, registration of land transfers and land mutation (ii) land-based disputes and their resolution (iii) management of state land and government intervention in land use through regulation, consolidation of holdings and land acquisition for development purposes and (iv) people's participation in land management through local government and / or involvement of NGOs in managing common lands.

It should be noted that land development, land reforms and land management issues are interconnected with each other. The preparation of a fairly accurate set of records specifying ownership, possession and use and their regular updating are pre-condition for market-oriented reform. Closely related to land records is the process of land mutation i.e. official authentication of transfer of land through partition or sale and registration of land sale deeds. Unless these processes are handled efficiently, there is no possibility of development for a land market. Land acquisition by government for development has also emerged as a major concern of donors as well as general public issues. Issues in this regard range from adequate compensation to appropriate resettlement of affected people. The limited empirical evidence suggests that there are high social returns to investmenting in modernizing land administration systems. This is not only for land titling but more generally it pertains to enforcement, information system and disputes resolution, land sales and purchases and land rental markets.

This paper provides a brief discussion of some of the major land issues impinging on efficient use of land resulting in high pro-poor agricultural growth. In addition to providing information on the changing profile of land ownership and land operational holdings, an attempt is made to assess problems faced by people in registering and recording transactions in land. Secure titles to land and prompt dispute resolutions in land litigation helps in easier collateralization of land for obtaining credit. It also helps in improving incentives to invest in agriculture for accelerated agricultural growth. As there is a close interaction between use of land and water resources, a discussion is also provided as to how these two types of resources need to be managed for optimal utilization and sustainability of the resources use.

The paper is divided in eight sections. After the introductory section, changes in pattern of land use, ownership and operational holdings are analysed in section II. The issues of land degradation are the subject of discussion in section III. The rationale and nature of land reforms introduced in Pakistan are analysed in section IV. The land administration policies in all its dimensions are analysed in section V. The method of resolution of land disputes which have seriously dented the investment climate in rural areas and is sapping the energies of farmers in remaining engaged in unproductive litigation are analysed in section VI. The strategic priorities and a policy road map for addressing land issues are presented in section VII. The last section provides a summary of main findings and presents general conclusions. Appendix 1 provides a brief description of the system of land records currently in use in Pakistan.

II. Land Use, Ownership and Operational Pattern of Land Holdings

There are three distinct concepts of access to land in a society. First, the land availability in overall or per capita terms measures the land base for different agricultural uses. Of the total reported area, a part of land is under forests, a considerable proportion is not available for cultivation while the remaining area is the cultivated area. The cultivated area multiplied by an index of cropping intensity gives the measure of total cropped area. Changes in cropped area adjusted by yields per acre provides a measure of changes in agricultural production.

With nearly two-third of rural population dependent on agriculture for employment and income, the distribution of land among the various sections acquires immense importance. The land holding structure not only determines the way in which the rural workers make their livelihoods but also influences the production organization of agriculture. Two concepts of distributions of land holdings need to be clarified. Distribution of land ownership compares land ownership in acres with number of ownership holdings in different sized farms Land owners can cultivate their own land or rent out part or all of the owned land to tenants. Land owners can also rent in land from other owners for cultivation purposes. If one compares the distribution of ownership and operational holdings in Pakistan, one can find diverging trends in the two distributions. Infact, tenants who do not own land but operate land leased in from land owners, have access to land for cultivation despite having no ownership rights to the land they cultivate. In this section, we provide information on both distributions of ownership and operational holdings.

II.1 Land Use

Since independence, cultivated area in Pakistan has increased by about 41 percent. Table 1 presents statistics on land use. Between 1990/91 and 2006-07, the cultivated area has increased from 20.96 million hectares in 1990/91 to 22.05 million hectares in 2006-07. The factors responsible for the increase in cultivated area are increasing population and increased water supply. Increase in production outpaces increase in the cultivated area as cropping intensities have increased over time. Cultivated area per capita has declared over time due to rapid growth in population.

II.2 Changes in the Pattern of Land Ownership

Land ownership in Pakistan is highly skewed. The inequality in land ownership has increased over time. Table 2 presents an average measure of land inequality i.e. the GINI coefficient of ownership holdings for four years i.e. 1972, 1980, 1990 and 2000 for Pakistan and its four provinces.

The GINI coefficient increases from 0.66 in 1972 to 0.75 in 2000 for overall Pakistan. A sharp increase in inequality is found for the two provinces of Punjab and NWFP. In the case of Sindh and Balochistan, the GINI coefficient decreases slightly. However, it should be noted that the extent of inequality in land ownership in all provinces and Pakistan is quite high. There is also a difference in the pattern of change in land distribution over time. The GINI coefficient for Pakistan remains constant till 1990 and then increases sharply in 2000. In Sindh and Balochistan, a decline in the coefficient is observed throughout the period.

The GINI coefficient, as already pointed out, is an average measure of land distribution. A disaggregated picture of land ownership is presented in Table 3 for the census years of 1990 and 2000. The share of small holdings i.e. < 5 acres holdings in total number of holdings increases from 54% in 1990 to 62% in 2000. However, their share in owned areas does not increase by that proportion. In farms of above 50 acres, the share in the number of holdings falls from 2 percent in 1990 to 1 percent in 2000 but the share in land owned decreases from 17 percent in 1990 to 15 percent in 2000.

Table 1: Land Use in Pakistan

(million hectares)

Fiscal Year	Population (million)	Total Area	Reported Area	Forest Area	Not Available for Cultivation	Cultivated Area				Area Sown More Than Once	Total Cropped Area (9+11)	Cultivated Area per Person (hectares)
						Culturable Waste	Current Fallow	Net Area Sown	Total Area Cultivated (8+9)			
1	2	3	4	5	6	7	8	9	10	11	12	13
1990-91	112.61	79.61	57.61	3.46	24.34	8.85	4.85	16.11	20.96	5.71	21.82	0.19
1991-92	115.54	79.61	57.87	3.47	24.48	8.86	4.87	16.19	21.06	5.53	21.72	0.18
1992-93	118.50	79.61	58.06	3.48	24.35	8.83	4.95	16.45	21.40	5.99	22.44	0.18
1993-94	121.48	79.61	58.13	3.45	24.43	8.74	5.29	16.22	21.51	5.65	21.87	0.18
1994-95	124.49	79.61	58.50	3.60	24.44	8.91	5.42	16.13	21.55	6.01	22.14	0.17
1995-96	127.51	79.61	58.51	3.61	24.35	8.87	5.18	16.49	21.67	6.10	22.59	0.17
1996-97	130.56	79.61	59.23	3.58	24.61	9.06	5.48	16.50	21.98	6.23	22.73	0.17
1997-98	133.48	79.61	59.32	3.60	24.61	9.15	5.48	16.48	21.96	6.56	23.04	0.16
1998-99	136.69	79.61	59.27	3.60	24.52	9.23	5.35	16.58	21.93	6.28	22.86	0.16
1999-00	139.76	79.61	59.28	3.78	24.45	9.09	5.67	16.29	21.96	6.45	22.74	0.16
2000-01	142.86	79.61	59.44	3.77	24.37	9.17	6.73	15.40	22.13	6.64	22.04	0.15
2001-02	145.96	79.61	59.33	3.80	24.31	8.95	6.60	15.67	22.27	6.45	22.12	0.15
2002-03	149.03	79.61	59.45	4.04	24.25	8.95	6.61	15.60	22.21	6.25	21.85	0.15
2003-04	151.09	79.61	59.46	4.01	24.23	9.10	6.23	15.89	22.12	7.05	22.94	0.15
2004-05	153.96	79.61	59.48	4.02	24.39	8.94	6.86	15.27	22.13	7.51	22.78	0.14
2005-06	156.77	79.61	57.07	4.02	22.88	8.94	6.47	15.58	22.05	7.55	23.13	0.14
2006-07	159.63	79.61	57.07	4.02	22.88	8.12	6.47	15.58	22.05	7.55	23.13	0.14

Notes and sources:

1) TOTAL AREA REPORTED is the total physical area of the villages/deh, tehsils r districts etc.
2) 2) FOREST AREA is the area of any land administered as forest under any legal enactment dealin with forest. Any cultivated area which may exist within such forests is shown under heading cultivated area
3) AREA NOT AVAILABLE FOR CULTIVATION is that uncultivated area of the farm which is under farm homesteads, farm roads and other connected purposes and not available for cultivation.
4) CULTURABLE WASTE is that uncultivated area which is fit for cultivation but was not cropped under the year of reference nor in the year before that.
5) CURRENT FALLOW (ploughed but un-cropped) is that area which is vacant during the year under reference but was sown at least once during the previous year.
6) CULTIVATED AREA is that area which was sown at least during the year under reference or the previous year. Cultivated Area= Net Area Sown+ Current Fallow
7) NET AREA SOWN is that areas which is sown at least once (Kharif and Rabi) the year under reference.
8) AREA SOWN MORE THAN ONCE is the difference between the total cropped area and the net area sown.
9) TOTAL CROPPED AREA means the aggregate area of crops raised in a farm during the year under reference including the area under fruit trees.
10) P denotes figure is provisional.
11) Source of data:
Government of Pakistan, Ministry of Food, Agriculture and Livestock, as reported in Pakistan Economics Survery, 2006-07.

Table 2: Gini Coefficient for Ownership Holdings

YEAR	1972	1980	1990	2000
Pakistan	0.66	0.65	0.66	0.75
Punjab	0.63	0.62	0.62	0.71
NWFP	0.68	0.69	0.65	0.86
Sindh	0.69	0.63	0.63	0.67
Balochistan	0.69	0.68	0.70	0.68
Source: Government of Pakistan, Agriculture Census Reports, Various Issues				

Table 3. Percentage Distribution of Land Ownership in Pakistan

	Percentage of Holdings		Percentage Distribution of Owned Area	
Farm Size (Acres)	1990	2000	1990	2000
5< (Acres)	54	62	12	15
5-<12.5	28	25	21	24
12.5-<25	11	8	18	16
25-<50	5	4	15	16
50-<150	2	1	17	15
>150	*	*	17	15

Source: Census of Agriculture, Government of Pakistan (various issues)

It should also be noted that the per capita availability of land has shown a falling trend as increase in population has outpaced the increase in cultivated area. In view of the increasing preponderance of small holdings, the size of small holdings has fallen drastically. It should be further noted that the menace of water-logging and salinity[2] has reduced the quality of cultivated area per capita.

Decreasing access to owned land has an important implication for poverty alleviation. Ownership of land allows the poor to use land as a collateral. It further assures the poor land owners of the future flow of returns from investment attached to their land. As a result of increasingly reduced access to land, the small landowners are under increasing threat of being forced into poverty unless land augmentation and yield increasing technologies are introduced by the Research Organizations. It should be noted, however, that access to land is only one of the factors impacting on the poverty status. The effectiveness with which non-land resources are deployed in the agricultural sector is also crucial for the poverty outcomes. A host of other factors like access to employment opportunities within the rural areas and/or in urban areas are perhaps more important in moving rural people out of poverty. The importance of remittances from outside agriculture to the rural households for poverty reduction is evident in the

[2] Data on incidence of water-logging and salinity are presented in section III of the paper.

case of rainfed areas where average productivity of land is lower and the dominance of small and marginal holdings is higher compared with irrigated areas. It is interesting to note that poverty head-count rates in the rainfed areas are lower than in irrigated areas. Larger remittances received by households in rainfed areas explain lower poverty rates.

II.3 Changing Trends in Operated Area by Tenure and Farm Size

The GINI coefficients shown in Table 4 show a high degree of inequality in the distribution of operational holdings. However, it is interesting to note that the concentration in access to land use is less concentrated than is the case for land ownership. For all tenurial classes taken together, the distribution in the NWFP and Balochistan is more unequal than that in Sindh, Punjab and overall Pakistan. The distribution of operational holdings has worsened considerably over the 1972-2000 period as the GINI coefficients have increased over time for each tenure type. Among the different tenurial classes, the distribution of farm area has been relatively more unequal in the case of owner-operated farms.

Table 5 further supports the conclusion of increasing inequality in distribution of operational holdings reached on the basis of average measures of GINI coefficient. The smaller sized farms have witnessed relatively sharper deterioration in access to farm area if measured relative to their share in the number of farms-holdings. The mean farm area for small holdings of less than 5 acres falls from 5.5 acres in 1990 to 5.4 acres in 2000.

Table 4: GINI Coefficients for Operated Area by Mode of Tenancy

Type of Tenancy	Total Operated Area	Owner- Operated	Owner-Tenant Operated	Tenant Operated
1972				
PAKISTAN	0.52	0.61	0.47	0.40
PUNJAB	0.49	0.58	0.43	0.40
NWFP	0.64	0.62	0.58	0.61
SINDH	0.43	0.57	0.46	0.32
BALOCHISTAN	0.64	0.68	0.61	0.47
1980				
PAKISTAN	0.53	0.60	0.47	0.40
PUNJAB	0.51	0.58	0.44	0.40
NWFP	0.64	0.65	0.61	0.53
SINDH	0.47	0.54	0.47	0.33
BALOCHISTAN	0.62	0.65	0.55	0.42
1990				
PAKISTAN	0.61	0.62	0.49	0.44
PUNJAB	0.55	0.59	0.47	0.44
NWFP	0.61	0.62	0.55	0.5
SINDH	0.51	0.57	0.51	0.34
BALOCHISTAN	0.63	0.66	0.52	0.44
2000				
PAKISTAN	0.61	0.61	0.46	0.47
PUNJAB	0.57	0.58	0.47	0.49
NWFP	0.63	0.63	0.57	0.48
SINDH	0.56	0.59	0.56	0.46
BALOCHISTAN	0.65	0.67	0.63	0.46

Table 5: Percentage Distribution of Farm Operated Area for Pakistan

	No. of farm (%)		Farm Area (%)		Mean Farm Area (Acres)	
Size of farm	1990	2000	1990	2000	1990	2000
< 5 (Acres)	47	58	11	16	2.2	2.1
5-<12.5	34	28	27	28	7.1	7.6
12.5-<25	12	9	22	19	16.4	16.6
25-<50	5	4	16	16	31.5	31.5
50-<150	2	1	14	13	70.4	70.3
>150	*	*	10	8	311.8	296.1
Total	100	100	100	100	9.3	7.6

Source: Agricultural Census Reports for 1990 and 2000, Government of Pakistan

III. Status and Trends in Land Degradation

Agricultural land in the Pakistan is seriously under threat as it is being degraded from several natural and man-made factors. There are various manifestations of the phenomenon of land degradation such as deforestation, desertification, salinity and sodicity, soil erosion, water-logging, depletion of soil fertility and negative nutrients balances. Whatever is the cause of land degradation, the land becomes unproductive if it is not restored to its original condition by policy and institutional corrections. The care and management of land resources requires lot of resources to arrest severe forms of land degradation. Agricultural production is severely impacted directly from the degraded quality of land. Diversion of resources from other uses to restore land back to its original quality hurts agricultural growth as resources for the purpose of arresting land degradation need to be diverted from other productive uses.

Data on the quantity of land eroded each year and/or cumulatively are not easily available. Information on extent of land degradation by different sources of degradation is presented in this section. A brief discussion of possible areas of policy interventions to arrest severe forms of land degradation is also provided. The discussion is organized by sources of degradation. It should, however, be noted that factors in degradation of land quality act together in many inter-connected ways. An example of these overlaps is that while salization many result from misuse of water resources, it leads to worsening of quality of land resources. Forests and their continued forest coverage reflects joint use of water, land and many living organism. Deforestation on a large scale increases the land availability for agriculture. However, it reduces biodiversity and leads to deterioration in water quality downstream. It may also result in increased sedimentation and flooding. Due to overlapping nature of these manifold resources, it is important to take a holistic view of land resources and other resources like water and forest cover.

III.1 Salinity and Sodicity

Various data sources have reported different estimates of area affected by salinity and sodicity. This discrepancy is due to different criteria and methodology used by various reporting agencies. The extent of area affected by salinity and sodicity is presented in Table.6 In majority of the soils of plains in Punjab, the rainfall is usually low and the evapo-transpiration is higher than the annual precipitation resulting in build up of salts in the soil profile and their accumulation on the soil surface. In Punjab, 2.67 million ha of area is affected with salinity and sodicity (WAPDA, 1981). The majority of salt-affected soils are saline-sodic in nature. The salt affected soils are causing large reduction in yield.

Table 6: Soils affected by various types of salinity and sodicity *(in million hectares)*

Type of Soil	Punjab	Pakistan
Soils with surface/patchy salinity and sodicity		
Irrigated	0.472	*0.598*
Un-irrigated	-	-
Gypsiferous saline/saline-sodic soils		
Irrigated	0.152	*0.972*
Un-irrigated	*0.124*	*0.820*
Porous saline sodic soils		
Irrigated	0.790	*1.103*
Un-irrigated	0.501	*1.023*
Dense saline sodic soils		
Irrigated	0.0977	*0.130*
Un-irrigated	0.530	*1.633*
Total:	*2.667*	6.281

Source: S&R Directorate, SCARP Monitoring Organization, WAPDA Lahore, 2001-03

Different measures have been undertaken by various agencies to combat this problem. Significant works undertaken by WAPDA include installation of tube wells for vertical drainage, surface drainage and to some extent tile drainage. The Punjab Irrigation Department has been allocating additional canal water supplies to the farmers to meet leaching requirements of saline soils. Similarly, gypsum was supplied at a subsidized rate for the reclamation of sodic soils in the province of Punjab. Scientists of various organizations like Pakistan Agricultural Research Council (PARC), University of Agriculture, Faislabad and NIAB have developed innovative approaches of Saline Agriculture in which the salt affected lands are put under suitable salt tolerant vegetation. The increased economic returns in the form of biomass coupled with the associated soil improvement is the key feature of this approach as farmers are persuaded to adopt saline agriculture. It may be, however, noted that there is a need to upscale the use of saline agriculture in the affected area.

III.2 Water Logging

During the 1970s and 1980s, the problem of water logging especially in Punjab province was quite extensive in canal irrigated areas. The relevant data pertaining to late Eighties are presented in Table 7. Some reports presently indicate the waterlogged area in Punjab is less than 0.05 mha. It appears that problem of water logging may not be as serious now as it was in the past. The problem of water logging has been reduced due to prolonged drought in late 1990s and excessive mining of ground water.

Table 7: Extent of waterlogged area

(in million hectare)

Water table depth	*Punjab*	*Pakistan*
a) Cultivated area	*0.686*	*1.427*
100 to 150 cm	*0.239*	*0.318*
50 to 100 cm	*0.078*	*0.292*
Less than 50 cm	*0.368*	*0.816*
b)Uncultivated area (less than 150 cm)	*0.010*	*0.142*
Total:	*0.695*	*1.569*

Source: SCARP Monitoring Organization, WAPDA, Lahore.

III.3 Deforestation and Desertification

The area under forest in Punjab province is 0.48 million hectares. Due to severe arid and semi-arid climatic conditions, the uncultivated area is practically devoid of any vegetation.. The bare soil is exposed to harsh climatic factors accelerating the pace of desertification. Large scale de-forestation for the purpose of timber and fuel wood also results in enhanced land degradation. Due to increase in population, the consumption of household firewood is increasing at a high rate. Woody biomass may be totally consumed unless correctives steps are taken with some urgency. The lopping of trees for commercial purposes has also greatly accelerated forest depletion. Unrestricted livestock grazing is also a severe threat. The statistics on afforestation and regeneration are given in Table 8.

Table 8: Area afforested and regenerated during 1997-98 to 2001-02

(million hectares)

Year	***Punjab***		***Pakistan***	
	Area Afforested	*Area regenerated*	*Area Afforested*	*Area regenerated*
1997-98	*0.003*	*0.003*	*0.021*	*(16.5)*
1998-99	*0.005*	*0.003*	*21.1*	*(17.0)*
1999-00	*0.008*	*0.002*	*25.6*	*(14.0)*
2000-01	*0.007*	*0.005*	*25.8*	*(14.2)*
2001-02	*0.007*	*0.004*	*25.3*	*(13.2)*

Source: Agricultural Statistics of Pakistan, 2004-05

The above mentioned data indicate that only a modest effort is being made for increasing the area under forests. This practice needs to be up-scaled for arresting land degradation. This recommendation is perhaps more relevant for NWFP and Baluchistan where deforestration is a more serious problem.

III.4 Soil Erosion

Soil erosion implies loss or removal of surface soil material through the action of moving water, wind or ice. The extent of the area affected by water and wind erosion are given in Tables- 9 and 10 respectively. About 1.904 million hectares of area is affected by water erosion and about 3.804 million hectares is affected by wind erosion in Punjab

province alone. Soil erosion is taking place at an alarming rate and is mainly due to deforestation. Water erosion is prominent on steep slopes such as the Potohar track and surrounding areas, an area which is extensively used for cultivation. The highest recorded rate of erosion is estimated to be 150-165 tonnes/hectare/year. The Indus River carried the fifth largest load of sediment (4.49t/h) in the world in 1990. According to some estimates the Indus is adding 500,000 tonnes of sediment to the Tarbela Reservoir every day, reducing the life of the dam by 22% and the capacity of reservoir by 16%.

Wind erosion has a relatively lower impact than water erosion. However, the combination of the two is devastating. This reduces the productivity of the land by 1.5-7.5% per year. This affects almost one-fifth of the area in Punjab alone.

Table 9: Area affected by water erosion (in million hectares)

Degree of erosion	***Punjab***	***Pakistan***
Slight (sheet & rill erosion)	*0.061*	*0.328*
Moderate (sheet & rill erosion)	*0.896*	*3.635*
Severe (rill, gully and/or stream bank erosion)	*0.588*	*5.640*
Very severe (gully, pipe & pinnacle erosion)	*0.357*	*3.446*
Total:	*1.904*	*13.050*

Source: Directorate of Soil Conservation, Punjab, Lahore

Table 10: Area affected by wind erosion *(in million hectares)*

Degree of erosion	***Punjab***	***Pakistan***
Slight	*2.251*	*2.595*
Moderate	*0.279*	*0.469*
Severe to very severe	*1.274*	*3.081*
Total*:*	*3.804*	*6.173*

Source: Directorate of Soil Conservation, Punjab, Lahore

III.5 Depletion of Soil Nutrients

Due to very low organic matter content (usually around 0.5 %), the Punjab soils are inherently of poor fertility. Almost all agricultural soils are deficient in nitrogen and phosphorus. The same is also true in the case of other provinces.

Potassium deficiency in Punjab soils, which was not a major soil fertility problem earlier, is increasing rapidly due to the in- discriminate use of nitrogenous and phosphatic fertilizers. Various public and private organizations are reporting a soil potassium deficiency in the range of 20-40%. For that reason, NPK formulations for various crops have also been introduced in the province. Among micronutrients, significant field scale deficiencies prevail in case of zinc, boron, and iron.

Presently more than 2.5 million nutrient tons of fertilizers are being used out of which more than 75% is nitrogenous fertilizer. This situation results in highly imbalanced fertilizer application to soils resulting in the mining of several plant nutrients. The nutrient balance sheet of Punjab and Pakistan soils is represented in Table 11 which reflects a severe mining trend. Punjab province shows a negative nitrogen

balance, although over time in Punjab the deficit is declining. Over the decade, negative phosphorus balances did not change significantly in Punjab. In 1985-86, the level of deficit was highest in Punjab. However, in 1995-96 they were all fairly similar. Potash balances have deteriorated over the decade.

Table 11: Nutrient balance Sheet in Pakistan (1985-86 and 1995-96)

Province	N (kg/ha)		P2O5 (kg/ha)		K2O (kg/ha)	
	1985-86	*1995-96*	*1985-86*	*1995-96*	*1985-86*	*1995-96*
Punjab	*-19.2*	*-8.6*	*-10.5*	*-10.7*	*-23.7*	*-27.3*
Pakistan	*-15.6*	*-9.4*	*-9.8*	*-10.9*	*-20.0*	*-25.8*

Source: National Fertilzer Development Centre, Islamabad, Pakistan

In summary, the use of land resources in Pakistan in the past has affected adversely both its quality and quantity. Land has been mined and its quality has degraded over time. Past practices in land use have adversely affected agricultural sustainability due to increased land degradation.

IV. Land Reforms

The role of government in land policy has changed a lot over time. The British thought their primary responsibility in British India in land matters as establishment of rules and regulations regarding sale, purchase and use of land resources and the collection of land tax. After independence in 1947, land reforms emerged as an important issue for the government both for promoting equity and efficient use of land resources. Only a brief history of the major land policy measures introduced by the government is given.

IV.1 History of Land Inequality in British India

During the period of political instability immediately before the extension of British rule to Punjab, persons of influence acquired large estates in the rural areas. The British officials recognized their proprietary rights. The situation regarding existence of big landlords in Punjab was aggravated as the British had also granted large rent-free *jagirs* to individuals who had helped them in conquering the areas. The landlords and *jagirdars* had rented out land to the tenants on a sharecropping basis. In the eastern part of the Punjab, the Mahalwari system took shape. In this system, the peasants of a village were responsible collectively and individually for the payment of land revenue to the British. The village comprised small owner peasants as a general rule. High land inequality seems ultimately to be a historical question. It was deliberately increased by British when they took over Punjab.

The emergence of occupancy tenants and tenants-at-will was a consequence of rise of absentee landlordism. Under the occupancy tenure, the occupants have the right of cultivation on payment of small rent. They are not the owners of land but their right of cultivation is heritable and irrevocable. The tenants-at-will are hired by the landlords and have no occupancy rights. The tenants were given about 12-1/2 acres generally on a sharing cropping basis. This size of operational holding was determined on the basis of maximum land that a pair of bullocks could conveniently till. Access to land for

cultivation purposes was consequently more equal than the land ownerships. With the introduction of agricultural machinery, the distribution of operational holdings started becoming more unequal as tenants were evicted and land was managed by large landholders through self-cultivation. The trend towards mechanization appeared on the scene in mid 1960s when tractors were introduced for tillage.

IV.2 Rationale and Nature of Land Reforms in Pakistan since 1947

The land reforms introduced in Pakistan were generally redistributive in nature and were premised on a presumed inverse relationship between total factor productivity and the farm size. It was argued that both equity and efficiency considerations would be advanced by the distribution of land from large land owners to smallholders. Empirical evidence in Pakistan is mixed as some studies find the inverse relationship while others find that large farms are more productive. The mixed evidence[3] is due to the increasing importance of capital and increased risk in the present day agriculture. Larger farms are well placed to access capital and manage the risks. In the earlier period, the small farmers had higher productivity due to abundant supply of family labour. The gains from access to land by the small holders would accrue only when small land holders are helped by a broad set of rural development policies that help the small farmers in both input and output markets. The provision of security of tenure to tenants was considered important to provide incentives to tenants to invest in land. If tenure rights are not well defined, the tenants do not have incentives to improve land as benefits to tenants from land improvements could be lost in case tenants are evicted from the a piece of land cultivated by them.

IV.3 Tenancy Reforms

From 1950 to 1960, five Tenancy Acts were passed in the province of Punjab. Some of the important provisions of the Acts are as follows:

- A landlord holding more than 100 acres was to keep only 50 acres for cultivating land himself and the rest of the land owned by him was to be given to the tenants.
- The landlord's share of the produce was fixed at 40 percent and he was to pay government dues in the same proportion.
- All *Jagirs* were abolished except military *Jagirs* and those connected with religious and charitable institutions.
- Tenants could be ejected only if they failed to pay tax in time or did not cultivate the land or the landlord wanted the land for self cultivation.
- Occupancy tenancy was abolished and the creation of new tenants was prohibited

[3] The evidence in Pakistan on this issue is presented in Qureshi, S.K. (9)

These measures, however, failed on the ground because of the entrenched position of the landlords and the weak position of the tenants. The tenants continued to enjoy concessions on the government dues and the landlords threatened to withdraw the additional concessions that the tenants enjoyed such as a free plot of land for growing fodder and vegetables, supply of seeds, manure and credit by the landlord. The tenancy reforms in provinces other than Punjab had a similar evolution of tenancy reform.

IV.4 Land Reforms

In 1958, Martial Law was promulgated in Pakistan. In 1959, the Martial Law government under Ayub Khan had introduced the first major redistributive land reform. Its main provisions were as follow:

- Ceilings on holdings were fixed at 500 acres of irrigated land and 1000 acres of un-irrigated land.
- The tenants had the first claim to purchase the land resumed by the government.
- The landlords were given compensation through interest – bearing bonds.
- *Jagirs* of all types were abolished without compensation.
- Tenure of tenants was guaranteed.
- Division of land into uneconomic holdings was prohibited.
- A plan for consolidation of holdings was adopted.
- A comprehensive plan for land utilization was formulated.
- Credit facilities were envisaged for the new landowners.

In 1972, more radical land reforms under (MLR-115) were introduced. Some of the important features of MLR-115 were the following:

- The ceiling on land ownership was reduced from 500 acres of irrigated land to 150 acres and from 1000 acres of unirrigated land to 300 acres. Land owned by any person above the permissible limit was to be surrendered to the government without compensation.
- All the resumed land was to be distributed among the tillers of land free of cost.
- *Shikargahs* (hunting grounds), except those already owned by government, were to be resumed.
- Land over 100 acres acquired by a government servant during his term in office or two years after his retirement was to be confiscated.
- All state land was to be given to landless cultivators or those having smaller than subsistence holdings on easy installments.
- Tenants could be ejected only if they failed to give the crop share or the rent.
- The water rate and cost of seed was to be paid by the landlord.

The impact of land reforms on the distribution of ownership is difficult to measure in quantitative terms as other factors are always in play that change the pattern of land distribution. There is, however, a general consensus in Pakistan that the

implementation of land reforms measures in Pakistan was slow and partial. There is considerable literature that shows that only a small percentage of land that was to be acquired was actually acquired by the government for distribution among tenants.

It should be noted that the land reforms of the redistributive type introduced in 1959 and 1972 are no longer on the policy agenda in Pakistan. For one thing, regardless of economic merits based on efficiency of small farms, the introduction of further large-scale land reforms is weak because of the high costs of compensating owners for their land's values given inability of potential beneficious to pay for the land. Market-based land reform which include improvement in land rental markets also have a role to play in increasing agricultural productivity in Pakistan. Such reforms in the context of strengthened land administration have high social returns. Next section attempts to deal with these important issues

V. Land Administration Issues

We had noted the importance of addressing numerous issues in land management over and above the rapid implementation of land reforms as a source of improving the agricultural productivity. The most important issues in this context pertain to how well the land market is organized and what is its functioning like. The essential pre-requites of a well functioning land market are the availability of accurate information about interests of different people on a parcel of land, security of titles to land and easy and cheap system of registering and recording the land transactions. A well organized land market positions of agricultural sector for high growth through improved incentives to invest in land improvement.

In Punjab, the British had put in place an elaborate system of land administration. This system, inherited by Pakistan, has however decayed in many respects due to meager resource allocation for the routine land administration and the involvement of revenue officials in the development work by the government after independence in 1947. The changed role given to the Revenue Department in promotion of agricultural development and aiding civil bureaucracy in administration had resulted in the neglect of their normal work in the area of land administration.

Although there are many issues and themes in land management, discussion in this section is limited to the processes relating to titling procedures of agricultural land such as land records preparation and its updating, registration of land transfers, land mutation and the land use regulation. The intention is to describe the present situation and identify areas for policy improvement. Appendix 1 describes at some length the type of records kept and the institutional setup that collects this information. While the discussion of system of land records is based on the situation prevailing in Punjab, this description is applicable to other provinces as well.

V.1 Status of Land Titling

The situation of agrarian laws in Punjab for providing titles to land as well as the factual position with respect to records-of-rights and their accuracy is currently not satisfactory. This state of affairs has arisen primarily from the weakness in the original intent of the agrarian laws which was to collect land revenue and not to provide conclusive titles to land. In other words, the records of rights in land are only revenue

record and not a title of land. The title to land was only incidental to keeping of land records.

The agrarian laws dealing with land administration are patterned on the laws prevailing during the British period. Under those laws, the king was the proprietor of all lands. The rights of any individual to have any kind of right in land were subject to payment by him of land revenue to the Crown.

The two foremost laws enacted during this period were the Bombay (Sind) Land Revenue Code, 1879, and the Punjab Land Revenue Act, 1887, which have been unified into one integrated law called the West Pakistan Land Revenue Act. 1967. Sections 42-45 of this unified Act enumerate the rights, the acquisition or loss of which gives rise to an alteration in the records-of-rights and the mutation procedure connected therewith. Section 52 of the Act attaches the presumption of correctness to the records-of-rights prepared at the time of the Settlement, as also to any entry made in the records-of-rights or in the periodical records in accordance with the provisions laid down in sections 42-45 and the rules thereunder.

V.2 A Revenue Record and not a Title

It should be noted, however, that the present law does not profess to provide for a State certificate of title to land under the aegis of a public authority. The records-of-rights and other documents based on the land records, by virtue of provisions in the land laws, are *presumed* to be accurate. These entries only provide *presumptive* status of rights under land laws. Many court rulings have also maintained that entries in the land records are not sacrosanct, and that the revenue records are not the documents of title and that it is permissible to challenge the entries for determining the title to land. This lacunae in law has been the basis of litigation in land matters. This unhappy position has arisen due to the fact that the agrarian laws were not framed with the objective of providing a state guarantee of title to land but were only evolved as tools to collect land revenue.

Establish Property Rights

Land markets cannot function without accurate, secure and universally accessible systems of registering and recording land transactions. In Pakistan, the records of rights in land specifies fiscal responsibility, i.e. the person in whose name the property is registered is responsible for paying tax on the property, and is presumed to be the owner. However, land title is incidental in this process. Since the State does not guarantee title, litigation on property ownership is common, particularly in rural areas. The same issue carries over to property registration, where the Registration Act lays down procedures for registration of a transaction but does not guarantee that the transaction is valid.

If land markets are to develop in Pakistan, and the burden of land related litigation in courts is to be reduced, it is imperative to develop a system of registration of titles, and to establish a centralized land registry system for urban land. Reform is also required to make the registration of property documents compulsory, and to reduce the system of multiple appeals in law courts in property cases, among other measures.

See: Kardar, S. 2007. Establishing Property Rights Through a Secure System of Land Title Management. PIDE Policy Viewpoint No. 3. March.

The registration of documents is compulsory in some cases and voluntary in others. It is compulsory where some provision in the Transfer of Property Act (for example, Section 543 in the case of an outright sale of an immovable property) or some provision in the Registration Act (for example, Section 17 dealing with various transactions concerning immovable property) provides for compulsory registration. In all other cases, unless provided by a special law, registration of documents is optional, particularly in the case of wills. The registering officer is not supposed to concern himself with the validity of the document. Since the Land Revenue Act was unified in 1967, the Land Revenue Acts in all provinces became identical. There are, however, minor variations in the administrative set-up of the provinces for land management. The ambiguity in laws has led to incessant litigation and clogging of the judicial machinery. The dispute settlement machinery is also not very efficient to settle the disputes in a speedy manner as would be seen from discussion in a separate section on land disputes.

V.4 Land Acquisition

The land acquisition by government is sometimes needed to promote public interest when land presesntly under some use is needed for some other use like irrigation, flood control or other projects benefiting sectors other than agriculture. Good land acquisition practices should ensure fair compensation and transparent procedures. The Land Acquisition Act of 1894, as amended from time to time, prescribes procedures to be adopted while acquiring land. Compensation provided is much lower than the market prices and the procedures of acquiring land are arbitrary and cumbersome. Generally, the small land- owners end up bearing the loss from land acquisition as they are the group whose land is acquired first. Low compensation rates for land acquisition has been the normal practice.

V.5 Registration of Land Sales

The registration of land sales by the buyers of land is subject to the provisions of Transfer of Property Act, the Stamp Act and the Registration Act. Registration by itself does not prove the title to land. It may not necessarily be consistent with a previously registered transaction. The registration documents are required to be sent to the land revenue officials for facilitating mutations. Land revenue officials do not have to send the mutation records to the registration officials. The Registrars, in collusion with deed writers, often indulge in corrupt practices and are a source of land disputes. The legal expenditure including Stamp Duty, Registration fee, Capital value tax and Local taxes are high. In the province of Punjab in 1995, such taxes amounted to 19% of the value of land sales. The illegal fees further add to the cost of sales. At least one week is required to register the sales deed in the Sub-registrar's office. The lengthy and costly procedure of registry land sales is a major impediment in the evolution of land market.

V.6 Land Use Regulation

At present there is no comprehensive policy on regulating land use in rural areas. There are no zoning regulations in Punjab or other provinces. Government land is leased for a specific use. In case land is used for any other purpose, the lease can be cancelled. Conversion of private agricultural land for other uses i.e. commercial, industrial or residential is taking place without examination of public interest issue. A government permission is required for any changes of land use and the revenue officials are required to ascertain objections from neighbors and its environmental consequences. In practice, permission by government is given in routine. The common land in the villages cannot be used by any person for his own personal benefit. Although there are detailed land use statistics in the revenue records, not much use is made of this

information for formulating plans for better use of land resources.

V.7 Consolidation of Land Holdings

The phenomenon of land fragmentation i.e. increasing number of fragments of land per holding is often a serious issue as it involves loss of considerable time in traveling between different fragments of land for tillage and other farm operations. The consolidation of holdings was included as an element of land reforms introduced in 1950s. The implementation of the reforms has been very slow. This has been due to the voluntary nature of the process as it could only be started if there was an agreement between the villagers to go through the process of consolidation of holdings. The experience in the districts that have implemented these reforms is also not very encouraging. The differences in the quality of land fragments is often the bone of contention between people who opt for consolidation of land.

It needs to be noted that links between land administration, rural activities and agricultural development are numerous. There is not sufficient understanding of these manifold links. There is a clear case for more research to be done on these manifold links.

The increasing population pressure and limited out-migration from land explain the increasing incidence of the problem of land fragmentation as shown in Table 12. Between 1980 and 2000, the average number of fragments per farm has increased from 3.7 in 1980 to 3.9 in 2000. The problem is seen to be observed in the case of all sizes of farms except the farms of over 150 acres which show a decline in the number of fragments per farm. It seems that very large farms seen to have consolidated their holdings through the process of mutual agreements between heirs of land.

Table 12: Status of Land Fragmentation by Size of Farm

Size of Farm (Acres)	Average number of fragments per farm in 1980	Average number of fragments per farm in 2000
2.5 to under 5.0	3.2	3.3
5.0 to under 25.0	3.6	4.0
25.0 to under 50.0	4.5	5.0
50.0 to under 150.0	6.1	7.6
150.0 to above	11.4	9.5
All Farms	41.54	3.9

Source: Government of Pakistan, Pakistan Census of Agriculture, 1980 and 2000.

VI. Land Disputes and Prospects of Agricultural Growth

Excessive litigation to resolve land disputes in rural areas has emerged as an important constraint for agricultural development. Land disputes imply a tremendous financial loss to the parties to the disputes. Precious time of cultivators is wasted in litigation. It also ties up scarce human capital of the government functionaries that have to be engaged in resolution of land disputes.

Land contract is a legally binding agreement between two parties to achieve certain mutually agreed upon objectives. The Punjab Land Revenue Act, 1967 and

Punjab Tenancy Act, 1887, govern the various contractual obligations between parties in the field of the Land Revenue Administration.

An important feature of Land Dispute adjudication is that the jurisdiction of the civil court is barred in revenue cases. However in cases of disputes regarding the title to land, the civil court is the proper forum. The disputes about contract enforcement in land matters may include recovery of rent, restoration of tenancy, incorporation of transfer of property by oral transactions, registration sale deeds, making entries on the basis of decree of the court in revenue record, ejectment of tenants, land leases and grants, particularly of land jointly owned of --, illegal possession of land by powerful people is becoming a common practice and it has become a major source of many disputes.

The land adjudication machinery is supervised by Board of Revenue in each Province. The revenue courts are included in the hierarchy of land administration.

Under the new system of devolution, there is not much change in the functioning of the Revenue courts. The work of Deputy Commissioner, Assistant Commissioner and Commissioner has been transferred to District Officer (DO) (Revenue), Deputy District Officer (DDO), (Revenue) and EDO (Revenue) under the new system of devolution. The Land Revenue Laws and jurisdiction of the revenue courts remain mostly same. People prefer to go to the revenue courts because, compared to the civil courts, these courts are more accessible, cheaper and less time – consuming. The rich and the powerful prefer going to the civil courts in order to perpetuate their hold through procrastination of the judicial process. The capacity in land administration departments and the quality of land records has deteriorated overtime. The devolution reforms in 2001 have further made the land matters worse. There is a large inter-district variation in the performance of Revenue officials. There is a dual command structure as Revenue Officials in a district have to report to Board of Revenue at the provincial headquarters as well as to District Coordinating Officer who, in turn, reports to elected district Nazim (i.e. district governor). The working of the dual control is still evolving. However, the capacity constraints in district administration are affecting the work of revenue officials. In general, a lower priority is given to the revenue work at the district and Tehsil level. This has further compounded the speeding resolution of land disputes.

VII Strategic Priorities for a Policy Road Map for Addressing Land Degradation, Land Reform and Land Management

The twin objectives of conservation of land resources for sustainable agricultural development and ensuring access of land to efficient operators of land can be achieved if appropriate policy and institutional steps are taken to address the factors that have been operative in the past and had resulted in land degradation and inefficient use of land. The policy choices are discussed separately for arresting land degradation and promoting efficient land markets.

VII.1 Action Plan for Addressing Land Degradation

There is large scope for numerous interventions to address the problem of land degradation. The required interventions under thematic framework of identifying

actors, their roles and types of interventions to be undertaken by different actors are presented below.

VII.1.1 Scientific Survey for Estimation of Profile of Land Degradation

As data are scanty and mostly dated on extent and sources of land degradation there is a need to conduct periodic surveys to identify the extent and nature of land degradation correctly. Currently, different departments present data on different aspects of land degradations. There are also many inconsistencies in data.

There is a need to set up a group of eminent researchers who should prepare detailed terms of reference for the survey of land degradation and wastelands in Pakistan. This group should be given a time line of no more then one year to prepare the methodology of survey. A National Remote sensing Agency should be established to conduct the scientific survey of land degradation every five or ten years. District-wise mapping of degraded and wastelands should be prepared. The data should be made available to all departments and researchers. It is important that common property resources like village common land, forests and rangelands should also be included for collection of pertinent data under the Survey. Based on the detailed data, actions for improved land use can be determined for rapid sustainable agriculture growth.

VII.1.2 Establish a National Policy on Land Resources Development and Management

At present there is only cursory mention of conservation of land resources in the plan documents prepared by Planning Commission as well as by different provincial agencies. There is a need to establish a national policy on land resources and development. The policy should recommend an institutional framework that would encourage productive utilization of land.

At present there are a variety of programs relating to conservation, development and management of land resources. These programs are handled by different Federal and/or Provincial governments departments and/or autonomous agencies. Water and Power Development Authority (WAPDA) has been the main organization entrusted with the work of the development of water resources. Activities of WAPDA have a bearing on the use of land resources. Similarly, provincial irrigation departments and water management departments have their own mandate of water use and management. There is a lack of co-ordination between different organization. This is especially so for organizations dealing with water resources development, water management, soil conservation departments and forest departments. There is a need for a forum to ensure holistic development and use of land and water resources.

In view of the dispersed mandate, there is a need to evolve an administrative mechanism to manage land and water resources in the country in a coordinated manner. In this effort, farmers and private actors need to be involved as well. The national policy on land resources should look carefully on the role of the co-ordianting mechanism for proper utilization of land, water and other physical resources in a holistic manner. The coordination mechanism should ascertain views of farmers and other beneficiaries regarding government programs of land and water resources development.

VII.1.3 Precision Land Leveling of Agricultural Fields

Currently, the government provides subsidized services of heavy machinery to level the farmers' land. Water management departments in the provinces oversee the deployment of the heavy machinery. Private sector needs to be given the incentives to move in this area and government should withdraw from renting out bulldozers to farmers. Farmers are a better judge of benefits of land leveling for conservation of moisture. Private market would charge competitive prices and would not lead to excessive use of heavy machinery due mainly to subsidized rates.

VII.1.4 Introduce Saline Agriculture on a Large Scale

In Pakistan, the water-logging and salinity problem have been addressed mainly by building drains and pumping out salt water. WAPDA has been involved in a major way, in this area. A companion paper on 'Water Resources by Dr. Faruqee and Dr. Khalid Riaz' deals in a comprehensive manner with this issue. We need not duplicate their efforts.

Pakistan has, however, missed out on an important opportunity of evolving and using large scale adoption of saline agriculture technology for economic utilization and improvements of salt affected lands. A specialized institute of saline agriculture established at Pindi Bhattian has done useful research work. Farmers have benefited from their research effort. There is a need to devote more research funds to this institute. There is also a need to establish similar institutes in other hot spot areas. However, it is important that extension departments are motivated to spread the message to farmers that saline agriculture technology can help farmers improve their land cost-effectively. Using organic and inorganic amendments for amelioration of brackish underground water and affected soils is also shown to be effective. Residue management as well as use of bio-fertilizers in conjunction with use of chemical fertilizers is often effective. WAPDA's efforts at fighting salinity need to be supplemented by the switch over to saline agriculture. This is important as soils are never free from salts no matter how large is the government investment for drainage of salty water. The two types of program operating together can be effective tools for reducing salinity. It should be noted that use of new practices and inputs should be left to the private sector. The role of public sector is to provide the knowledge to farmers through the extension department. In the same vein, cropping pattern adjustments to suit the soil conditions are required to be disseminated to farmers. If profitable, farmers would adopt the recommended cropping patterns and agronomic practices.

VII.1.5 Adopt Watershed Approach to Water Management and Development

Pakistan needs to give more attention to using watershed approach that follows water flowing from a ridge to a valley for water harvesting, water conservation and adoption of suitable water erosion control structures i.e. gully plugging, water diversion structures, cultivation of cover crops and provision of mulches. Todate, Pakistan has mainly concentrated on water resources development via large storage dams and major irrigation projects. This effort needs to be supplemented with watershed development programs for rainfed areas. Land erosion during the monsoon season can be tackled more effectively in this manner.

VII.1.6 Encourage Farm-Forestry and Agro-Forestry on Marginal Lands

Land and forest rehabilitation programs need also to be included in the planned efforts on a micro-watershed basis. Local communities involvement needs to be assured. The government's role is to provide information, incentives and advice. The execution of the programs needs to be entrusted to farmers, communities and local government.

In short, agricultural growth strategy in the future years needs to be based on sustainable use of natural resources. It should use resources efficiently and conserve nation's soil, and water and promote bio-diversity. Regarding the use of water, the government should give more attention to rainwater harvesting and switching to develope water resources using a watershed approach.

VII.2 Ensure Development of an Efficient Land Market

The interventionistic approach of land redistribution to small farmers adopted by Government of Pakistan seems not to have worked well. An alternative approach of using land market development for achieving pro-small farmers development is recommended. Main elements of the land market development are

VII.2.1 Update Land Records

As the land records have progressively deteriorated in accuracy, there is a need to not only update these records but to undertake a major exercise to ensure that these records become accurate as well. Following steps need to be undertaken.

First, each Board of Revenue in the provinces should set up a task force to suggest guidelines in terms of what information needs to be collected for each parcel of land.

Second, the Board of Revenue should assess the capacity constraints at the district level to update the land records. If there are any capacity constraints, the Board of Revenue should relax the constraints by way of training and/or recruitment of additional staff.

Third, there should be close supervision of the updation of land records by officials of Board of Revenues.

Fourth, once the records are updated, the records should be open to general public. If there are any disputes about any entries, a mechanism for correction of the disputed entries be provided.

VII.2.2 Computerize Land Records

The land records after updation should be computerized. There should be a built-in mechanism of updating the land records and its computerization. These records should be open to public access.

VII.2.3 Move Towards a System of Conferring Conclusive Titles to Land

As has been noted already, the names of people owning land in land records have only presumptive titles to land and do not have their titles backed by a state guarantee to land. There is a need to switch over to a system which provides conclusive titles to land. Provincial governments need to use the results of a special land Survey to confer conclusive titles to land on different land owners. The updated records-of-rights should be registered after a due process of extensive consultation with all stake-

holders in land matters. In case of any dispute, the courts should give their decision on whom titles should be bestowed. The introduction of this system should facilitate the sale and purchase of land and facilitate the development of land market. It may also be helpful to integrate land sales and land mutation processes in one administrative wing so that the work of both is facilitated. Land disputes would also become fewer after the titling procedures are reformed. This would be so if the titling mechanism is ensured to be transparent.

Modernized and updated land records are an essential pre-requisite for improving functioning of the land markets and moving towards more efficient, equitable and competitive farming structure. Once this proposed system is in place and functioning, the Provincial Governments may scrap the obsolete and dysfunctional system currently in place under the supervision of the revenue department.

The overriding objective of accurate land records with conclusive titles to land is to promote greater efficiency through faster information retrieval, transparency and reduction of transaction costs for the land owners. In this regards, the land administration system must ensure meeting several key performance criteria including giving security of title to each parcel of land, minimal possible transaction costs of land transfers and registration, financial sustainability and completing the cadastre in time and keeping the information on land updated always.

VII.3 Simplify Disputes Resolution Mechanism

Land disputes, a common occurrence in rural areas would also diminish as the system of secure titles takes hold. There is, however, a need to strengthen the revenue system by using modern methods of disputes resolution. Capacity constraints in revenue courts needs to be relaxed by the provincial governments. Following could be some of the remedial measures given the constraints of the system to improve the enforcement of contracts in the Land Administration.

On-the-spot inspections. There should be an on-spot inspection and summary method of disposal with adequate safeguards for reaching at the true situation. Long protracted litigation creates further complication in enforcement of contracts.

Rationalization. There should be reduction of tiers (for most revenue cases, the last court of appeal should be DDO (Revenue) and not Board of Revenue as is the case presently.

Bar jurisdiction of civil courts. Strengthening of the law by barring the jurisdiction of civil courts in revenue matters. Frequent intervention by the civil courts on the pretext of enforcing legal procedures(and determining legal rights of the contesting parties) is one of the major stumbling blocks in the way of an efficient and effective contracts enforcement.

Fix time limits for decisions. Fixing time limits for each category of land dispute and imposing a law on the postponement of hearing by revenue courts on administrative grounds should help expedite the settlement of dispute.

Social Engineering. The land-related disputes are due to both the poor quality of land records, ambiguous laws and sociological and economic factors that encourage litigation by land-owners. The need is not only to improve basic land records but also to engage in social engineering.

Establish open courts. Open courts and Grievance hearing days by senior officials can reduce the transaction costs of obtaining legal redress.

VII.4 Preventing Land Fragmentation

An important benefit of an efficient land market and conclusive titles to land is that it will also facilitate the transfer of land through land sales to enable farmers to augment their holdings to viable size units. Owners of unviable units would be able to sell their tiny holdings and use the money to start another business and/or engage in some other career outside agriculture.

VIII. A Brief Recap of Main Findings and General Conclusions

The analysis so far has dealt with the issue of land degradation and the two related issues in the land market that have a bearing on efficiency and equity aspects of land utilization. The land reforms of the redistributive type and the provision of tenure security to the tenants was attempted by the government mainly because the private land market was not achieving a socially desirable outcome for the tenants and small farmers. The land reforms by and large did not achieve the objectives on the implementation stage for political economy and administrative reasons. The implementation of land reforms was entrusted to Federal and Provincial Land Commissions which were separate entities and were not part of the land revenue administration. The legal processes of resumption of land beyond the fixed ceilings were complicated and subject to judicial determination. The slow pace of the land resumption was a direct outcome of the procedures adopted for implementation of land reforms.

The land records and the procedures adopted for its updating were designed by the British mainly for the collection of land revenue. An elaborate system of preparation of land records with respect to land ownership, operation, transfer through sales and inheritance was prescribed. A hierarchy of the administrative machinery was set up for the preparation of records and supervision of the work of junior officials. A dispute settlement mechanism was also put in place. This system has been continued by different governments after the creation of Pakistan. Due to the involvement of revenue officials in the development work, the land record system has deteriorated over time.

The basic flaw in the land management system is that it was not designed to give the title of land to the owners of land in a conclusive manner. The titles were presumptive titles and did not provide a state guarantee to land for owners of land shown in land records. It was further found that the land resources were used in an unsustainable manner. Salinity and sodicity of soil, water-logging, deforestation, desertification, soil erosion and depletion of soil nutrients happened on a large scale due to the unsustainable pattern of resource use by the farmers.

In spite of numerous attempts to reform the systems of land titling and property registration by provincial governments, as well as attempts to make systems of tenure more efficient, the land market remains imperfect. The government has made some attempts to make rural land administration systems more transparent, but during implementation has repeatedly run into resistance from powerful vested interests.

Nevertheless, reform of land administration especially with conferment of conclusive titles to land is a crucial element in the promotion of an appropriate business environment for farmers to diversify in favor of high value crops. A well functioning system of land markets can increase the access of land owners to credit markets and help the farmers to more effectively participate in different elements of the value chain. The reduced incidence of land degradation will result in an additional source of rapid rural growth as it will reduce the transaction cost of farmers in moving between different parcels of land.

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Appendix - 1

The Land Records System

There are three interrelated aspects of the land records system i.e. preparation, maintenance and updating of basic land records. The administrative machinery comprises of a Board of Revenue at each of the provincial headquarters, Directorate of Land Records and the field staff at district and sub-district level. The Central Survey and Settlement Organizations and the Directorates of land Records are a small setup with the main mandate of conducting training and providing technical advice to field officials and providing support to the Board of Revenue. The field-level land management officials under the administrative control of the District Coordination Officer (DCO) are responsible for both maintenance and continuous updating of land records. The Board of Revenue is responsible for policy matters. It is also the ultimate forum for the final appeal of all land disputes. The Board also organizes full-scale settlement operations for the periodic updating of land records.

The basic land records at the field level are:

1- The record of rights/periodical record (along with the pedigree table of the owners)

2- The Register of Mutations

3- The Register of Crop Inspections (*Register Girdawari*)

4- The Cadastral Map *(Shajra Kishtwar*).

The most important document in the record of rights/periodical records is the (***Register Haqdaran Zamin***) which contains information on:

- Persons who are landowners, tenants, or who are entitled to receive any of the rent, profits or produce of the estate or to occupy land;
- Nature and extent of the interests of those persons, and the conditions and liabilities attached thereto; and
- Rent, rates, cesses or other payments due from and to each of those persons and to the government.

The Register *Haqdaran Zamin* is appended a 'genealogical tree' of all the owners, and below the name of each owner is an index to his holdings. This Register is prepared in duplicate; the office copy remains with the *Patwari* and the original copy is consigned to the District Record Room within a fortnight after *Rabi Girdawari* ends. For obtaining a copy of the record of rights, members of the public have to pay an official fee per *khata*, and the time required is one day to a week. It is issued by the *Patwari* without any reference to higher authorities. The difficulty, however, is that the *Patwari* is not easily accessible and often demands a bribe for giving a copy to owners of land.

Register of Mutations

Mutations means alteration of any entry in the revenue records with the object of bringing it up-to-date. Mutation work is one of the most important branches of land

management. The presumption of truth is attached to the record of rights under the 1967 West Pakistan land revenue Act.

All changes in ownership, by sale, mortgage, gift, inheritance, etc., recorded upto the 30th of June of the year are incorporated in the register titled *Haqdaran Zamin.*

Register of Crop Inspection (Register Girdawari)

After a field to field survey, each field is serially registered along with its area, the crop sown on it, the name of the tenant and the rent paid by him to the owner of land. This information is then incorporated in the Register Haqdaran Zamin. Entries in the Register of Crop Inspection are used for revenue assessment and for obtaining background information for deciding disputes between the owners and the tenants. The statistics generated in the process are important sources of data on land utilization. Unfortunately, this information is not collated at Tehsil or higher levels and is used only for the assessment of land tax.

The Cadastral Map

The Cadastral Map contains information from the topographical survey done by the Survey Department and the cadastral or field survey carried out by the Patwaris at the time of settlement. The limits of the 'estates' and of the fields are measured and written down in the map. Each field is given a serial number and its area is reported in the field book.

The Record of Rights is updated every 4 years when all the mutations are consolidated in the new Record of Rights. The Settlement Operations update records afresh as new measurements are carried out.

The litigation and disputes over land are frequent. Most disputes arise due to defective records and due to possession of land over and above the entitlement in joint holdings, wrong orders given by the revenue officials in mutations proceedings, and the errors committed by the Patwaris in the record of rights while incorporating changes from mutations.

Land Mutation

According to section 42 of the Punjab Land Revenue Act, 1967, any person acquiring by inheritance, purchase, mortgage, gift, or otherwise, any right in an estate as a landowner or a tenant for a fixed term exceeding one year, shall, within three months from the date of such acquisition, report his acquisition of right to the *Patwari* of the estate, who shall:

Record such a report in the *Roznamcha* (diary) to be maintained in the prescribed manner. The pattern is required to furnish a copy of the report so recorded, free of cost, to the person making the report. He is requested to send a copy of the report, within a week of its receipt, to the Town Committee or the Union Council within which the estate is situated.

The mutations are sanctioned after conducting on-the-spot enquiry within a revenue estate before the presence of the parties. However, field enquiry and presence of the parties are not required when the mutations are sanctioned in compliance with the decree of the civil court. In ordinary circumstances there cannot be any distortion or

forgery.

Despite many safeguards, the *Patwari*, in collusion with vested interests, uses forged documents and false evidence and deprives genuine land owners of the land. There are instances where frauds have been committed by the functionary in connivance with mischief-mongers who defraud the genuine parties/landowners using forged documents on landholdings and false evidence.