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An Analysis of Rural Poverty Trends in Sindh Province of Pakistan

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Abstract: The economy of rural Sindh depends upon agriculture sector. About 65% populations are engaged in this sector. Irrigation is the main component for the agriculture sector. Therefore, Sindh is dependent on the Indus Basis Irrigation System. Any shortage in the requirement of irrigation for Sindh Province will affect the rural economy. The increasing trends of poverty were observed during 1990's in rural Sindh due to shortage of irrigation water. The allocated share of water was 33.51 MAF for Kharif and 13.23 MAF for Rabi seasons. Besides, 10 MAF was allowed to down stream Kotri for the survival of Indus Delta. The outflow down stream Kotri continuously decreased to 0.28 MAF during 2008-09 which affected Indus Delta as well as about 1.5 million acres fertile agricultural land of districts Thatta and Badin came under sea water. The 3.5 lac people of both districts shifted in other areas of the country in search of their livelihood. In addition to, the other factors like increasing land degradation, water logging and salinity, deforestation, soil erosion, uneconomic holding and drought were responsible for increasing trends of poverty in Sindh province.

Key words:

INTRODUCTION

Rural population of Pakistan depends upon agriculture and agriculture is dependent upon availability of water resources. Sindh becomes the insecure in water availability, means lackness of all the steps to administer and preserve water resources. "This is imperative for ensuring the continuity of life and economic development to the province. Fact is that in 1947, the per capita water, availability in Pakistan was 5000 cubic meters which decreased to about 1200 cubic meters in 2002. In Sindh, it is even less". (Dawn, 2005)

"The share of Sindh in irrigation was cut down by 6% in Kharif and 17% in 1999-2000. In the year 2000-01, the province received 25% less than its share of water in kharif and 43% in rabi. In the year 2001-02 the release of water was cut down by 28%, in the kharif and 54% in the rabi "(Ghausi Sabihuddin 2002).

"The water of the Indus River System is finite and Sindh's share has been fixed around 49 million Acre Feet (MAF) per annum (33.94 MAF in Kharif and 14.82 MAF in Rabi) in the prevailing" Water Accord in 1991.

Sindh is entirely dependent on the Indus Basin Irrigation System (IBIS). Any interruption in the flow of water in the (IBIS) badly affects the agriculture, economy, ecology and drinking water supply in the province. Thus, a sustainable supply of the required volume of water in the IBIS is important for the survival and economic growth of the province. Any shortage in requirement of irrigation for Sindh province will affect the agricultural sector and increase the poverty in rural areas.

Reasons of Increasing Rural Poverty:

According to the study of the Asian Development Bank (2002) that 82% population in five districts out of 20 of the Sindh Province, live on less than one dollar a day income. Over all 15 million people are living below poverty level. In this regard, the following reasons are discussed as under.

I. Increasing and Degradation:

Land degradation reduces biological and economic productivity of rain-fed cropland," irrigated cropland, pasture, forest and woodlands resulting from land uses or from a combination of processes, including the processes arising from human activities and habitation pattern"(Stefeno, 1998, P. 2).s, such as "(i) soil erosion caused by wind and / or water; (ii) deterioration of the physical, chemical and biological or economic properties of soil; and (iii) long-term loss of natural vegetation". (Stefeno, 1998, P. 2).

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Sindh has geographical area of 34. 8 million acres, out of which only 14.3 million acres are cultivated. The agricultural land in the province is rapidly degrading, resulting in decline in agriculture produce. It is estimated that about 75,000 acres of land is being degraded annually. (Shaikh, 2001, p. 35). Land degradation affects rural economy. Degradation has also created disguise unemployment in the rural sector. Due to degradation of the land resource, the land owners, or growers are compelled to cultivate crops on the reduced acreage of land. In such a situation, the work force already available with the family becomes idle having no more land to work on. In some cases, growers end up in cultivating single crop especially due to water logging and salinity which results in decrease in the overall income of growers.

In the Unarpur area of District Dadu, the degradation of water and land resources brought poverty and resulted in worst-ever deforestation in the area, as the trees standing on 10,000 acres of land were completely removed by the community to clear the katcha forestland for cultivation. This land was irrigated through increase in the Indus flow. Same situation rose in Rahuki Minor area of Hyderabad district some years back. The growers facing complete degradation of their land, due to worst ever water shortage, started cutting trees in the area as to sell them in the urban market for ensuring livelihood for them. (Shaikh 2001, p.36)

II. Water Logging and Salinity:

A substantial amount of irrigation water seeps underground from the canals, watercourses, and fields. This seeping water having no natural means of escape goes on accumulating underground and the water table continues to rise until it reaches the ground surface. This creates water logged conditions. At the same time water from the shallow water starts to move up through evaporation and evapotranspiration. With the movement of water, salts also come up and deposit at the root zone, and render the soil unproductive causing salinization of the plant root zone. (Bhatti & Soomro 1996. P.14)

In Sindh huge areas of croplands were engulfed with water-logging and salinity menace. Raised irrigation water enhanced the intensity of crop from 78% to 200% in the areas of abundant water supply. Farmers started applying higher doses of water to their fields, “that disturbed the natural balance resulting in the rise of sub-soil water table. Indus Basin has flat topography, porous soil, and semi arid climate with high evaporation. In such environment irrigation system without drainage system for a long time eventually led to rising water table and salinity.” (Brohi, 1998).

The water table in the Sukkur Barrage command area has now come up to the average level of 5 feet depth due to unavailability of the proper drainage facility. The two remaining barrage systems also lacked proper drainage facility, which further aggravated the problem of water logging. The water-logging menace is higher in Sindh than all other provinces of Pakistan as described in Tables 1 and 2.

Table 1: Extent of Water Logging and Salinity (000 Hectares) ‘0’ to ‘5’ Feet or 152 cm Water Table Depth

Province	1998		1999		2000		2001		2002		2003	
	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct
Punjab	594	912	619	403	227	280	114	211	114	184	310	-
Sindh	1743	3796	2205	3796	285	2789	45	2528	1268	1864	114	-
NWFP	29	60	32	57	32	51	15	20	19	25	31	-
Balochistan	92	175	79	175	-	20	-	95	0	399	266	-
Total	2458	4943	2935	4431	544	3140	174	2854	1401	2472	721	-

* = Not observed

Source: Government of Pakistan (2005), Agricultural Statistics of Pakistan 2003-04, Islamabad, P. 125

Table 2: Extent of Water Logging and Salinity (000 Hectares) ‘0’ to ‘10’ Feet or 305 cm Water Table Depth

Province	1998		1999		2000		2001		2002		2003	
	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct	Jun	Oct
Punjab	3175	3479	2511	2713	1721	1500	1062	1294	878	1186	1463	-
Sindh	4991	5198	5066	5198	454	4624	2881	4398	2601	3467	2748	-
NWFP	182	202	184	206	183	203	136	152	150	165	173	-
Balochistan	221	241	206	241	20	-	0	95	0	399	474	-
Total	8569	9120	7967	8358	2378	6327	4079	5939	3629	5217	4858	-

* = Not observed

Source: Government of Pakistan (2005), Agricultural Statistics of Pakistan 2003-04, Islamabad, P. 125

III. Seawater Intrusion:

The survival of Indus Delta depends upon Indus River outflow down stream Kotri to the sea. Its flow was about 80 MAF at the time of independence which started to reduce after the construction of more barrages, dams and canals. Later on 10 MAF was allowed to down stream Kotri for the survival of Indus Delta (Water Accord 1991). But the allocated quantity of 10 MAF again started to reduce to down stream Kotri as shown in the table 3.

Table 3: Reduction of Water Outflow Down stream Kotri against allocated 10 MAF

Year	Reduced outflow of water MAF
2000-01	0.74
2001-02	1.92
2002-03	2.15
2008-09	0.28

Source: Government of Sindh (2009) Irrigation and Power Department, Kotri

Besides, Sindh province was allocated the share 33.51 MAF for Kharif and 13.23 MAF for Rabi seasons for agriculture sector (water Accord 1991). But the allocated share was not supplied to Sindh province since 1991 with the result the cultivated land diminished which affected the income of the growers.

Due to decreasing outflow down stream Kotri. There has been continuous seawater intrusion towards fertile agricultural land in districts Thatta and Badin. In this way, about 1.5 million acres fertile land has come under the seawater intrusion. Besides, mangroves forest in the Indus delta which originally occupied an area of about 2600 sq km has started to diminish upto 260 sq km (Government of Sindh Board of Revenue). Such situation has escated unemployment in both districts of Sindh province and about 3.5 lac people have been shifted to other areas of the country in search of livelihood.

IV. Deforestation:

The forests of Sindh are only 2.5% of total land area and this area is decreasing day by day due to the following reasons:

- Low Floods,
- Shortage of irrigation water,
- Arid climatic conditions and,
- Illegal cutting of forests.

In Sindh, since last two and half years, growth of inland (irrigated) trees/forests has also been badly affected because the province is receiving less water than its share, the water availability to the forest ranges has also drastically reduces. Similarly, large tracks of land are not being cultivated due to water shortages. Consequently, the trees standing on the same land receive no water for long time, which makes their growth stunt.

Unchecked cutting of trees has caused tangible ecological threats such as land degradation. It was observed that large number of Timber Mafia belonging to NWFP have settled in various forests of Sindh. They are involved in cutting trees and supplying wood in the whole Pakistan.

Generally Main Impact of Deforestation on the Land Include:

Soil depletion, loss soil fertility, increased run-off leading to heavy flooding and sometimes flash flooding, reducing recharge of aquifer, diminishing moisture retention capacity of soil, enhanced sedimentation, decreased infiltration of water in the soil, degradation of watershed, imbalanced fragile ecology and lowering of water table. In Sindh also majority of the effects of deforestation are visible.

Soil Erosion:

Soil erosion caused by, from one place to another water, wind, ice or other agents transport soil. Soil erosion is one of the serious threats to agricultural sustainability. The main problems caused by erosion are:

- Removal of the most productive soil parts, i.e clays and organic matter, with their associated plant nutrients;
- Reduction of the top soil layer, restricting rooting depth;
- Reduced water infiltration;
- Clogging of irrigation systems, waterways and reservoirs by eroded materials;
- Silt deposits lowering the capacity of reservoirs;
- Possible damage to aquatic systems by silt deposits covering up fish breeding areas"; (Agricultural Statistics of Pakistan 2003-2004).

The factors which contribute towards wind erosion include:

The wind erosion results in a great damage to the soil. Some of the negative impacts of the wind erosion are: Loss of fertile soil cover, textural changes, loss of nutrients, and abrasion losses by flying soil particles, air pollution, and sedimentation. Wind erosion becomes more potent in regions where vegetation cover is minimal. The wind picks up the fine soil particles and leaves behind the infertile coarse sands. As this process continues the coarse sands convert into dunes. The Thar Desert of Sindh is most affected by wind erosion.

Longer dry spell is another reason of land degradation in Thar region. The loss of vegetation in the dry period exposed the topsoil's to wind erosion and sand shifting.

VI. Land Resources:

Pakistan is an agriculture country, about 68% of the population is living in rural areas. (Economic survey of Pakistan 2007-08). The rural people of Sindh derives its livelihood from agriculture. Sindh contributes significantly in Pakistan's agriculture, 41% of total rice, 21% cotton, 31% sugarcane and 14% of total wheat is produced in Sindh (Agricultural Statistics of Pakistan 2007-08). In addition, Sindh's share in fruits production is also high. Banana accounts for 71% of total Pakistan's Banana production, Dates 42% and Mangoes 34% of total production. Besides, 68% of total fish is produced in Sindh. However, poverty in Sindh also linked by lack of asset ownership and agricultural land in rural areas". (Agricultural Statistics of Pakistan 2007-2008).

Sindh had 16% of total farms that occupy 18% of total farm area of Pakistan. Distribution within Sindh shows that 33% farms can be classified as small farms (less than 2 hectares), 47% were medium farms (greater than 2 but less than 5 hectares), and 19% were large farms (greater than 5) hectares in 2008 (Agricultural Statistics of Pakistan 2007-08).

In order to examine the extent of rural poverty, it would be useful to look at the average land holdings by poverty status.

Table 4 shows that in Sindh, on average poor households own 0.6 hectares of land against the 2.8 hectares owned by non-poor households.

Table 4: Average Land Owned (Hectares) Per Household by Poverty Status (2003-04)

Status	Pakistan	Sindh
Poor	0.4	0.6
Non-poor	1.4	2.8
Total	1.1	2.1

Source: World Bank (2004), World Development Report, Washington D.C

Since a majority of the poor is either landless or small farm holder, it would be interesting to examine the dependence of the poor and non- poor households on a single agricultural activity or on both. SRDP (2000) reports that most poor households operate small farms which are unproductive due to lack of irrigation water, and prevalent water logging and salinity. Moreover, owner-operator households generally cultivate around 3 hectares on average while the cut-off point for staying above the poverty line is the income that would come from cultivating 5 hectares. This indicates, therefore, the need to depend on sources of income other than crops even for the average owner operators. Table 5 presents average acres per capita owned, dependence on agriculture, and the average number of crops cultivated by households depending only on crops. This Table reveals a large and significant difference between poor and non-poor in the amount of land per capita owned by the households. This Table confirms that most of non-poor are depending upon crops and poor depends on livestock. This shows that the poor not only tend to be landless or small landholders but also have difficulty in managing risks SRDP (2000).

Therefore, they are unable to diversify their production. The last row of Table 5 indicates the degree of diversification among those households that depend only on crop. This data shows that poor households have less diversification than the non-poor. The average number of crops cultivated by the poor is 2.01 against 2.36 for the non-poor. This difference is statistically significant (FBS, 2001).

Table 5: A comparison of Poor and Non-Poor Farm Households Sindh (1998-99)

	Non-Poor	Poor
Per capita ownership of land (acres)	0.80	0.26
Households depending only on crops (%)	31.64	43.09
Households depending only on livestock (%)	3.77	2.40
Households depends on both crops and livestock (%)	8.92	5.78
Number of crops cultivated by households depending only on crops	2.36	2.01

Source: Government of Pakistan (2001) Federal Bureau of Statistics (2001), Finance Division, Islamabad, PP. 13-33.

Drought in Sindh:

The shortage of river and canal water has resulted in drop down of aquifers from 150 feet to 500 feet. This has resulted in a shortage of drinking water as well as a decline in areas under major crops due to less water for irrigation. This has adversely affected livestock, agriculture, and fishing. As a consequence of this natural disaster, people of this area became more vulnerable. Persistent drought conditions in recent years have added to miseries of the people. Table 6 gives an overall magnitude of the affected families and livestock in six districts of Sindh, which are entirely dependent on rains.

Table 6: Families and Livestock Affected by Drought in Districts Entirely Dependent on Rains

District	Villages#	Population (000'#)	Families (000' #)	Livestock 000' #)
Tharparker	1,895	900	138.2	3,000
Mirpurkhas	316	150	24.8	1,000
Sanghar	18	40	7.0	250
Dadu	453	260	18.8	1,150
Thatta	181	30	6.0	200
Ghotki	50	10	2.0	30
Total	2,913	1,390	196.8	5,630

Source: Government of Sindh, (2002), Federal Bureau of Statistics, Karachi.

Table 6 mentions that approx 1.4 million people and more than 5.6 million livestock have been adversely affected by drought conditions. Tharparker is the worst hit district, followed by Dadu and Mirpurkhas.

Loss of crop income in these districts has resulted in an increase in the vulnerability of poor households. In order to meet daily requirements they either take loans on high interest or sell livestock at prices much lower than the market value. As a result of loss of livelihood, around 0.3 million persons have moved towards the barrage areas of Sindh. The impact of drought on economic, social and environmental set up of affected areas can be summarized as:

- High cost of feed and unavailability of water for livestock,
- Reduced milk production,
- High livestock mortality rates,
- Scarcity of drinking water due to drying of wells and alarmingly low level of underground water,
- Deterioration of general health of human beings, for example, increase in the incidence of tuberculosis, night blindness and respiratory ailments,
- Loss of crop income due to less or no availability of irrigation water,
- Increased unemployment due to limited diversification in sources of income resulted in increase in unemployment.

Tharparker is one of the most underdeveloped and vulnerable districts of the province. It is highly dependent on rain water for sustenance and livelihood of the people. Drought has severely affected this district. Lack of rains resulted in a decline in the cultivable area of the region.

During the last 7 years the maximum cultivation took place during 1995-96. During 1999, there was no crop production in Tharparker and the situation has not improved since then. During 2002 monsoons, grass did not last for more than two weeks, which resulted in scarcity of fodder for livestock and most of the livestock owners migrated to greener pastures in adjoining districts.

After describing all the factors, the increasing poverty trends in Pakistan by province are analyzed in the Table 7 and Fig.1.

Table 7: Poverty Trends in Pakistan by Province (% of Poverty Trend)

Province	FY 93	FY 94	FY 97	FY 99	FY 04
Urban Areas	20.7	16.3	16.1	22.4	21.5
Punjab	22.0	18.1	16.9	25.5	24.4
Sindh	17.3	11.8	12.0	16.1	14.9
NWFP	25.3	26.9	27.2	29.2	29.6
Balochistan	31.8	16.8	23.0	24.3	21.8
Rural Areas	28.9	34.7	30.7	36.3	45.6
Punjab	26.5	33.9	28.3	36.0	44.2
Sindh	29.5	31.8	19.6	34.7	52.2
NWFP	37.0	40.0	43.4	44.9	45.2
Balochistan	28.1	37.9	42.5	22.5	36.6
Overall	26.6	29.3	26.3	32.2	38.5
Punjab	25.2	29.5	25.0	33.0	38.6
Sindh	24.1	22.6	15.7	26.6	36.7
NWFP	35.5	38.1	41.2	42.6	42.9
Balochistan	28.6	35.5	38.4	22.8	34.1

Source: Asian Development Bank (2000), Poverty in Pakistan: issues, Causes and Institutional Responses Estimates for FY 01 based on another calculations for the FBS Household Income and Expenditure Survey 2003-04.

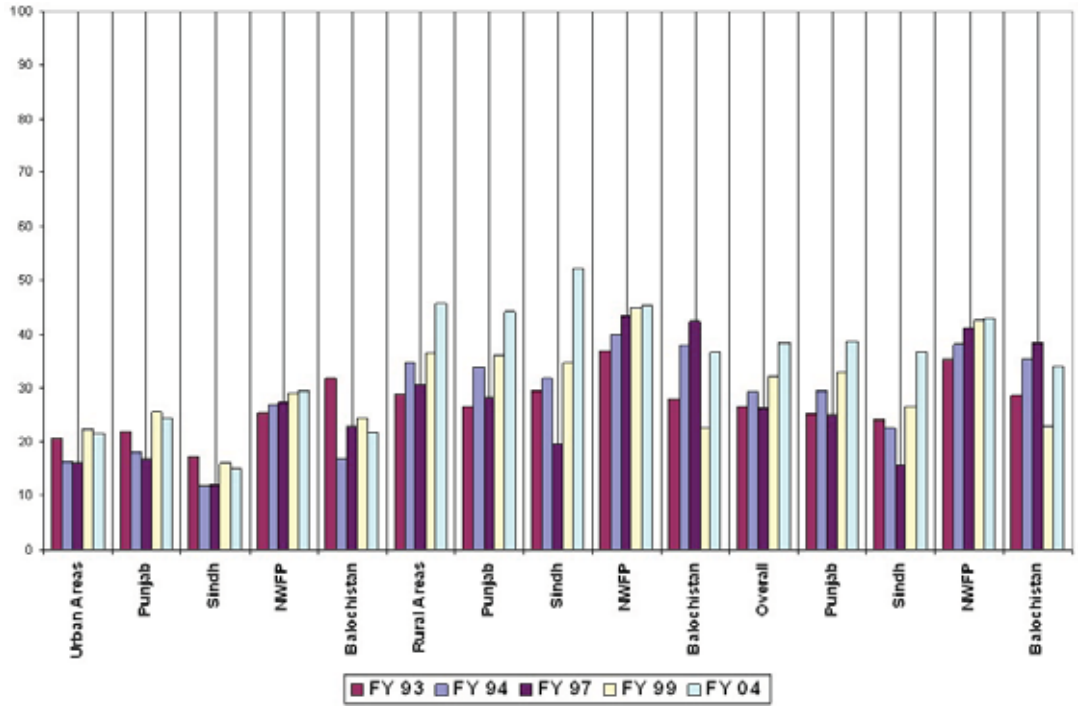

Fig. 1: Poverty Trends in Pakistan by Province (% of Poverty Trend)

Table 7 shows that there is a higher concentration of the poor in the rural areas of Pakistan as a whole. However, the rural urban gap is highest. The gap of over 18% in 1998-99 was the highest among all other provinces and had worsened to over 36% in 2004.

Poverty has worsened significantly overall and the gap between urban and rural Sindh has widened. It is further analyzed from table 7 based on the year 2004 that in rural Sindh out of two persons, one is living below the poverty line. This clearly indicates the extent of the poverty problem in Sindh.

Conclusion:

The economy of rural Sindh depends upon agriculture sector. About 65% people reside in villages and their main occupation is agriculture. About 80% growers possess small size of land holding. They plough their farms when they get timely irrigation water, any disturbance in the flow of water, adversely affects the rural economy of Sindh province. The rising trends of poverty were observed during 1990s due to shortage of irrigation water. The decreasing share of water has been continuing which affected the output of agriculture sector. The cultivated land decreased 8.65 lac acres and turned into barren land (agricultural statistics of Pakistan 2006). Besides, there has been continuous seawater intrusion towards fertile land which affected million 1.5 acres in districts Thatta and Badin. In addition to, there were other factors such as water logging and salinity, deforestation, soil erosion, uneconomic holding and drought. The mostly affected districts were districts Tharparker and Dadu. These districts were entirely depending on rains. The continuous drought in these districts destroyed the economy about 2324 villages. Due to these factors, currently 52% poverty exists in rural Sindh.

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