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SPATIAL ANALYSIS OF INDUSTRY GROUPS IN THE PUNJAB

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ABSTRACT

Dominant economic activity of an area reflects its social, economic and geographical characteristics as well as its history of development. Through classification of regions on the bases of their dominant economic activities we can distinguish areas in terms of their economic potential. Thus some regions may be prominent in agricultural activity while others in manufacturing, mining or service industry etc. On the bases of such classifications one can have an idea of the region's social and economic personality and its importance on the economic landscape of the country. On account of its importance, since long Geographers have shown special interest in the classification town and areas on the bases of their dominant functions. In that regard classification of towns on the bases of their functions have particularly been a popular theme of geographical research. Names of Chauncy Harris, Victor Jones and H.J. Nelson, are more prominent among those who based their classification of town on employment percentages in different activity groups.

Classification of areas on such bases has not been that common. Economic Geographers have been, interested in the classification of areas using different quantitative and non-quantitative techniques. David Smith (Smith: 1975) discusses various quantitative techniques of classifying contiguous and non-contiguous areas in his work 'Pattern in Human Geography'. Factor Analysis is a popular technique in making such classification. In the present paper however, a method quite close to the one employed by Nelson in the service classification of American Cities (Nelson:1955) is used to classify districts of the Punjab on the bases of the concentration of activities. Though Nelson used that method in the analysis of cities here it proved to be equally applicable in the classification of areas also.

METHOD

Basic data for this research was derived from the District Census Reports of the Punjab, 1998. Table 24 in these reports provides information regarding the number of employees in 10 major industry groups. First, the number of employees in each industry in individual districts was converted in to percentage of the district's total employees. Then out of the total employees in all industry groups in the Punjab percentages of employees in each industry group were calculated. Resultant percentages represent the provincial average for industrial group and were taken as the standard for the province as whole. These percentages were interpreted as the proportion of employees out of the total employees required carrying out that economic activity. If in a district proportion of employees in a particular industry was more than the proportion of employees in that industry in the province as a whole that indicated a concentration of the industry in question in that district.. In making functional classes both alphabetical and numerical codes were used. In census data industries are divided in to 10 major groups. In the analysis each group was assigned an alphabetical code as given below¹:

Sr.No. Code Activities

I.	A	Agriculture, forestry, hunting and fishing;
II.	Mi	Mining and quarrying;
III.	Mf	Manufacturing;
IV.	U	Electricity, gas and water;
V.	C	Construction;
VI.	T	Wholesale and retail trade and restaurants and hotels;
VII.	Tr	Transport storage and communication;
VIII.	F	Finance, insurance, real estate and business services;
IX.	S	Community, social and personal services;
X.		Activities not adequately defined.

It was decided that for a district a simple higher percentage than provincial average in an industry was not enough to qualify for a particular class. To qualify for a particular functional class a district was required to have percentage employment in that activity at least one standard deviation² above than that of the provincial average. Degree of concentration of a particular activity in a district was indicated by including a numeral associated with the Industry code equal to the number of standard

¹ Details of these groups are given in annexure G in District Census Reports.

² Standard Deviation was calculated for each industry group for the whole province.

deviation units that district has higher percentage of employees in that Industry than the provincial average³. Thus for example Mf2 would mean functional class of manufacturing with district having percentage employment in manufacturing 2 standard deviation units more than the provincial average in manufacturing. In the same way all the 34 districts of the province were assigned to a specific class. Districts with no industry having employment percentage equal or above provincial average plus one standard deviation were classified as districts with diversified functions (Of). Districts with percentage employment in the industry group "activities not adequately defined", equal to one or more standard deviation higher than the provincial average for that group were also included in the same class. Districts with their functional characteristics were then shown on the map.

To portray graphically the distribution of economic services among 34 districts of the Punjab frequency curves for each industry group were constructed. On these curves frequency of district were plotted against percentage groups. These nine curves helped in making a comparative analysis of 9 industry groups in terms of their distribution in the province.

RESULTS AND ANALYSES

Distribution of Industry Groups

Third row in table 1 shows the provincial average percentage of employees in each industry group. It is evident from the table that, as one expects, agriculture is a predominant industry in the province employing 37.06 percent of the total employees. This is because Punjab province is an agrarian region with a large labour force employed in agriculture. It is followed by construction industry with 26.13 percent employees. This is again understandable in the absence of large scale manufacturing industry and extensive service industry. Unskilled labour thus constitutes a large percentage of province's labour force. Heavy investment in real estate also explains this importance of construction industry in the province. Community, social, and personal services that also include public services and defense services shares 14.12 percent of the provincial employees. Wholesale trade, retail trade, restaurants and hotels employ above 8 percent of province's employees. Other activities have little share in labour market.

³ To keep the class code short numeral 1 for one standard deviation above average was not included in coding. Thus industry code with no associated numeral means one standard deviation above average.

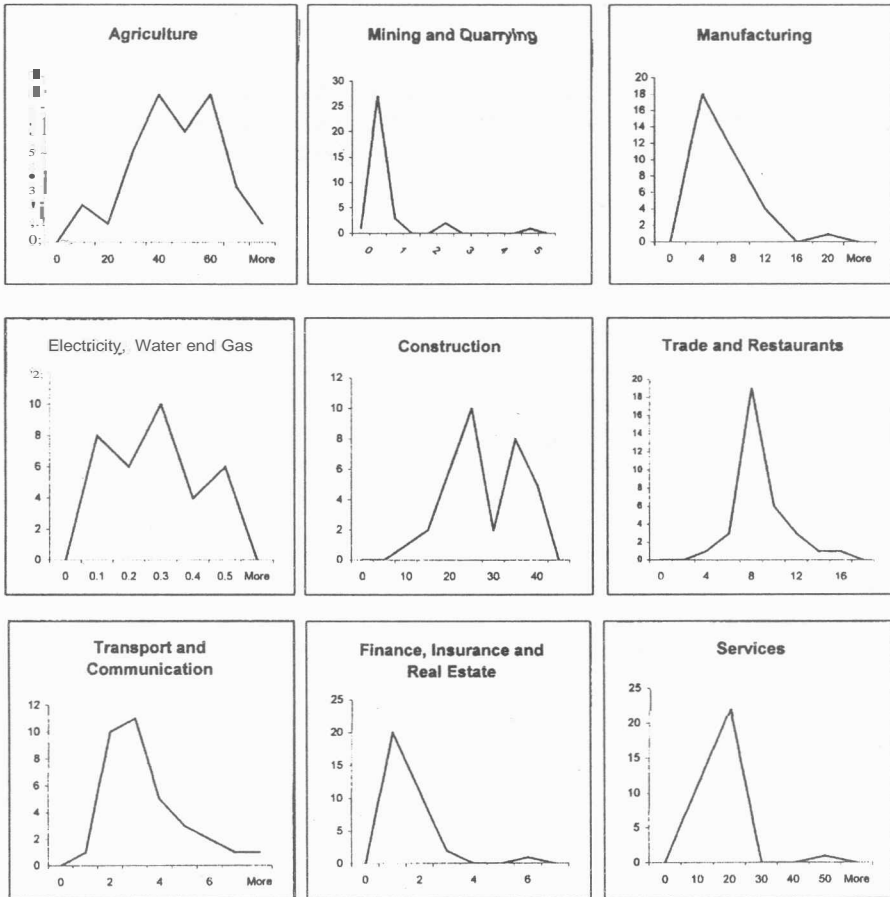
Table 1: Proportion of Employment in Industry Groups

Industry Groups	I	II	III	IV	V	VI	VII	VIII	IX	X
Industry Codes	A	Mi	Mf	U	C	T	Tr	F	S	
Provincial Average	37.06	0.30	5.70	0.27	26.13	8.64	2.99	1.18	14.12	3.62
Attock	32.33	0.53	4.89	0.22	17.17	6.13	3.75	0.35	18.62	16.01
Rawalpindi	8.42	0.08	5.29	0.44	10.26	11.73	2.82	0.24	45.34	15.37
Jhelum	27.23	0.61	5.71	0.26	20.19	11.52	5.98	0.55	19.42	8.53
Chakwal	42.43	2.20	3.61	0.36	20.30	7.80	5.77	2.59	11.46	3.48
Sargodha	30.99	0.88	4.16	0.48	35.80	7.82	3.11	0.78	9.32	6.67
Bhakar	53.73	0.00	1.66	0.04	25.83	3.93	2.04	0.39	6.55	5.82
Khusab	45.20	4.61	3.66	0.35	23.16	6.15	4.07	1.21	9.52	2.08
Mianwali	35.07	0.16	2.47	0.31	30.62	6.15	7.25	1.36	13.73	2.89
Faisalabad	25.17	0.02	11.05	0.47	32.21	9.47	4.44	2.26	12.53	2.38
Jhang	44.35	0.02	3.45	0.26	33.54	5.75	2.02	1.43	8.29	0.88
Toba Tek Singh	36.16	0.01	6.62	0.42	31.12	8.46	2.76	1.55	10.69	2.22
Gujranwala	17.01	0.03	7.92	0.29	34.55	7.86	3.50	0.47	16.93	11.43
Hafizabad	39.61	0.00	6.52	0.22	34.59	7.18	2.12	1.00	7.93	0.81
Gujrat	29.54	0.01	8.18	0.28	30.80	10.06	4.04	1.92	12.62	2.56
Mandi Bahudin	40.34	0.00	3.59	0.23	36.54	6.15	2.16	1.20	8.31	1.48
Sialkot	20.30	2.23	18.86	0.44	24.88	8.97	3.67	1.93	17.57	1.15
Narowal	40.33	0.02	4.80	0.23	31.74	7.43	2.95	0.77	9.31	2.41
Lahore	5.72	0.04	9.57	0.46	29.92	15.62	6.75	5.38	17.13	9.41
Kasur	31.90	0.01	7.55	0.28	39.06	8.34	2.07	1.03	7.33	2.43
Okara	33.98	0.01	3.72	0.24	36.29	6.30	2.09	1.44	15.16	0.79
Sheikupura	29.64	0.05	9.51	0.40	37.48	6.65	3.19	1.02	7.97	4.10
Vehari	51.62	0.24	4.41	0.16	22.31	7.67	1.89	0.18	10.57	0.89
Sahiwal	56.73	0.37	2.18	0.07	16.98	8.18	1.71	0.23	13.46	0.09
Pakpattan	60.61	0.25	2.14	0.17	16.86	6.86	1.89	0.19	10.75	0.27
Mulata	33.56	0.21	4.91	0.20	23.82	13.79	2.08	0.29	18.26	2.90
Lothran	61.87	0.30	1.05	0.08	21.60	5.47	1.42	0.12	8.09	0.01
Khanewal	51.08	0.06	2.23	0.06	23.72	7.11	1.71	0.17	13.78	0.09
D.G. Khan	67.36	0.01	1.52	0.06	11.30	6.86	1.16	0.20	11.12	0.41
Aajampur	76.67	0.11	0.61	0.14	9.01	4.93	0.55	0.08	7.62	0.28
Layyah	52.18	0.05	2.45	0.08	20.45	7.52	2.15	0.21	14.91	0.00
Muzaffargarh	49.76	0.14	3.20	0.03	24.59	7.06	1.82	0.09	13.29	0.02
Bahawalpur	58.70	0.33	1.58	0.12	16.47	8.10	1.57	0.17	12.10	0.85
Bahawalnagar	58.87	0.33	2.20	0.10	15.56	7.37	1.87	0.12	13.58	0.00
Rahim Var Khan	56.27	0.39	1.75	0.12	17.56	7.60	1.84	1.21	14.20	0.04

Table 1 and fig. 1 reveal different pattern of frequency distributions for different industry groups. Some industry groups have skewed distribution and some near to normal. Industry groups which are widely distributed are agriculture, electricity, gas and water, construction and to some extent transport and communication groups. These are the activities which are either required everywhere or the resource base of such industry is more or less ubiquitous - like that of agriculture. Electricity, water, gas; construction and transport and communication are activities that are supported by population and therefore exist in size proportionate to the districts' population. Therefore, these activities have broad top curves indicating near to equal frequencies in each percentage group. Similar

shaped curve for agriculture is because of the fact that agricultural labour force is expected to be proportional to the size of the district. Thus as the districts greatly varies in their sizes they are found in each percentage category of this activity and are not grouped in one or two percentage ranges.

Frequency Distribution of Industry Groups



Percentage of employment in Industry is shown on horizontal axis and frequency of percentages on vertical axis

Fig. 1

Trade, including hotels and restaurants, are quite close to normal distribution curve. A given size of such activity is found in every district to

meet the requirements of the population. There are, however, some districts which have concentration of this activity.

Manufacturing, service and finance have almost similar frequency curves with positive skewness. Most districts fall in low percentage categories but one or two districts dominate in concentration of such activities. In manufacturing Sialkot, Faisalabad and Gujrat dominate. In service industry Rawalpindi is on the top with more than 45 % of its labour force employed in that industry. In finance and real estate Lahore Faisalabad and Chakwal are important districts.

Mining and quarrying activity is a special case with high degree of skewness. Mining is an activity that, for obvious reasons, can not exist every where or any where. It is a highly localized industry and therefore a large number of districts have highly limited such activity whereas it has high concentration in few districts.

Classification of Districts

Using the procedure stated above each of the 34 districts of the province was assigned to a specific functional group. Table 2 indicates the class to which each district is assigned. Cell entries indicate the deviation of percentages in each industry group from the provincial average in standard deviation units. Classification of districts in last column is also shown graphically on map in fig. 2.

Table 2 and fig. 2 reveal that 9 of the 34 districts have diversified functions. These districts performs a number of activities but do not have extra ordinary concentration of anyone industry to be classified in that.. These districts are Gujranwala, Vehari, Narowal, Attock, Khanewal, Gujrat, Muzaffargarh, Jhang, and Layyah. 17 districts have single function concentration. Out of these, 9 are agricultural districts. These are Sahiwal, Bahawalpur, D.G.Khan, Bhakkar, Rajanpur, Pakpattan, Lodhran, R.Y.Khan and Bahawalnagar. These are the districts where other activities are not so important and that make the agriculture more prominent. Most of these districts, located in the south western part of the province, are backward and have experienced little economic development.

Construction activity is the second most important among single function districts. Okara, Hafizabad Mandi Bahauddin and Kasur are important in this industry. Demand of labour in irrigation and road construction work along with lack of other non-farm activities and existence of large unskilled labour in these districts explain the concentration of construction industry in these districts and in other districts where this activity is shared with other functions.

Table 2: Classification of Districts Based on Predominant Activities

(Standard Deviations More or less than the Provincial Average)

Industry Groups	I	II	III	IV	V	VI	VII	VIII	IX	X	Classification
Industry Codes	A	Mi	Mf	U	C	T	Tr	F	S		of District
Attock	-0.29	0.26	-0.22	-0.37	-1.06	-1.05	0.48	-0.79	0.67	2.90	Df
Rawalpindl	-1.74	-0.24	-0.11	1.26	-1.87	1.30	-0.10	-0.89	4.64	2.75	S4TU
Jehlum	-0.60	0.35	0.00	-0.08	-0.70		1.87	-0.60	0.79	1.15	TrT
Chakwal	0.33	2.09	-0.58	0.67	-0.69	-0.35	1.74	1.34	-0.39	-0.03	Mi2TrF
Sargodha	-0.37	0.64	-0.42	1.55	1.14	-0.34	0.08	-0.39	-0.71	0.71	UC
Bhakar	1.01	-0.32	-1.11	-1.59	-0.04	-1.98	-0.59	-0.75	-1.12	0.51	A
Khusab	0.49	4.74	-0.56	0.57	-0.35	-1.05	0.67	0.02	-0.68	-0.36	Mi4
Mianwali	-0.12	-0.15	-0.89	0.27	0.53	-1.05	2.66	0.17	-0.06	-0.17	Tr
Faisalabad	-0.72	-0.31	1.47		0.72		0.91	1.03	-0.24	-0.29	MfUF
Jhang	0.44	-0.31	-0.62	-0.09	0.87	-1.21	-0.61	0.23	-0.87	-0.64	U
Toba Tek Singh	-0.05	-0.32	0.25	1.13	0.59	-0.07	-0.14	0.35	-0.51	-0.33	U
Gujranwala	-1.22	-0.29	0.61	0.18	0.99	-0.33	0.32	-0.68	0.42	1.83	Of
Hafizabad	0.16	-0.32	0.23	-0.30	1.00	-0.61	-0.54	-0.17	-0.92	-0.66	C
Gujrat	-0.46	-0.31	0.68	0.06	0.55	0.60	0.66	0.70	-0.22	-0.25	Df
Mandl Bahudin	0.20	-0.33	-0.58	-0.24	1.23	-1.05	-0.52	0.02	-0.86	-0.50	C
Sialkot	-1.02	2.12	3.61	1.22	-0.15	-0.71			0.51	-0.58	Mf3Mi2U
Narowal	0.20	-0.30	-0.25	-0.24	0.66	-0.51	-0.02	-0.39	-0.71	-0.28	Of
Lahore	-1.90	-0.29	1.06	1.38		2.93	2.35	4.00	0.45	1.35	F4T2Tr2UMf
Kasur	-0.31	-0.32	0.51	0.06	1.53	-0.12	-0.58	-0.14	-1.01	-0.28	C
Okara	-0.19	-0.32	-0.54	-0.20		-0.98	-0.57	0.24	0.16	-0.66	C
Sheikupura	-0.45	-0.28	1.05	0.94	1.34	-0.83	0.12	-0.16	-0.91	0.11	MfC
Veharl	0.89	-0.06	0.36	0.73	-0.45	-0.41	-0.69	-0.95	-0.53	-0.64	Df
Sahiwal	1.20	0.08	-0.97	-1.41	-1.08	-0.19	-0.80	-0.91	-0.10	-0.83	A
Pakpatan	1.43	-0.05	-0.98	0.69		-0.74	-0.69	-0.94	-0.50	-0.78	A
Mullan	-0.21	-0.09	-0.22	0.51	-0.27	2.16	-0.57	-0.85	0.62	-0.17	T
Lodhran	1.51	0.00	-1.28	-1.36	-0.53	-1.33	-0.98	-1.01	-0.90	-0.85	A
Khanewal	0.85	-0.26			-0.28	-0.64	-0.80	-0.96	0.05	-0.83	Of
D. G. Khan	1.84	-0.31	-1.15	-1.46	-1.75	-0.75	-1.15	-0.93	-0.45	-0.75	A
Rajanpur	2.41	-0.21	-1.40	-0.92	-2.02	-1.56	-1.53	-1.05	-0.96	-0.78	A
Layyah	0.92	-0.27	-0.89	-1.36	-0.67	-0.47	-0.52	-0.93	0.12	-0.85	Df
Muzaffargarh	0.77	-0.17	-0.69	-1.70	-0.18	-0.66	-0.73	-1.04	-0.12	-0.84	Df
Bahawalpur	1.31	0.03	-1.13	-1.02	-1.14	-0.22	-0.88	-0.96	-0.30	-0.65	A
Bahawalnagar	1.33	0.04	-0.96	-1.21	-1.25	-0.53	-0.70	-1.01	-0.08	-0.85	A
Rahim Yar Khan	1.17	0.10	-1.08	-1.02	-1.01	-0.43	-0.72	-0.92	0.01	-0.84	A

PUNJAB

Functional Classification of Districts



Khushab has the largest concentration of mining industry (Mi4). People from this district are engaged in mining not only within the district but also mineral rich neighboring districts of Chakwal Jhelum and Sargodha. Absence of other non-farm activities also increases its importance in the district.

Remaining 8 districts belongs to multifunctional classes. Lahore has the largest concentration of activities. It is categorized as F4T2Tr2UMf which shows very high concentration of financial services (F4) trading activity (T2), transportation and communication services (Tr2), water, electricity and gas services (U) and a sizeable manufacturing activity (Mf). This multifunctionality of Lahore is true to its importance as the largest regional center in the province. It is a financial, trading and transportation center of the whole province.

Sialkot (Mf3Mi2U) has high concentration of manufacturing activity in the district. However concentration of mining and quarrying activity is somewhat intriguing here. Quarrying near two large stream in the district may perhaps explain the concentration of this activity.

Rawalpindi (S4TU) has the highest concentration of service industry (S4). More than 45 % of its labour force is employed in service industry only. This industry includes both public (private and government) services and military services. A large workforce living in Rawalpindi works in service sector in Islamabad. This increases the percentage of workers engaged in service industry. General Headquarters and a number of other defense establishments in Rawalpindi City, Wah, Taxila and Kahuta also employ a large labour force. Trade (T) is also an important function of the district as it serves a large tributary area in the north also. To serve a large population of the district service industry of water, electricity and gas (U) is also a large employer of labour force.

Chakwal, though small in population size, is important for mining activity (Mi2). Famous Khewra salt mines, and Dandot coal mines are located in this district. It is also important as a transportation center and financial/real estate center. Importance for transport activity is because of its location. It has direct road links with Rawalpindi, Talagang, Jhelum, Gujar Khan, Sargodha and Khushab. Remittances sent by its huge labour force working abroad or in other parts of Pakistan increases the importance of financial and real estate activities in the district.

Sheikhupura District is important for Manufacturing and construction activities. Existence of large number of industrial units in the district explains its importance as manufacturing district..

Faisalabad is also a multi functional district (MfUF). Concentration of manufacturing industry especially textile industry and with that the associated financial and real estate businesses make it an important district in these activities..

Jhelum has a concentration of transportation and trade activities. Its location on the GT road and a large tributary area in southern Azad Jammu and Kashmir are responsible for concentration of such activities here.

SUMMARY

Above analysis reveals that agriculture is by far the most important activity in the province followed by construction industry. Services, Trade and manufacturing industries follow these two leading industries. Size of some activities like electricity, water, gas; construction and to some extent transport and communication depends upon the size of population of the districts concerned. Trading activity of some size is found everywhere but a couple of districts are more prominent in such activity. This pattern of distribution results in frequency curve quite close to that of normal distribution. Manufacturing, finance and services have similar pattern of concentration in few districts. Majority of the districts have limited such activities. Mining is the most localized activity.

Half of the districts are single activity districts. Among them agriculture and construction are important activities. Lahore is the most multi-functional district with a concentration of five activities. Finance and real estate lead among these functions. Most multi-functional districts are those that contain large urban centers. A sizeable number of districts are found in diversified activities class with no function of extra ordinary importance.

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LEVELS OF URBANIZATION IN PAKISTAN: A DEMOGRAPHIC APPRAISAL

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ABSTRACT

The growth of urban population is subject of increasing concern among social scientists and government planners in Pakistan as elsewhere in the developing world. This has far-reaching implications for the demographic, socio-economic well as the political character of the nation since Independence in 1947. Keeping in view the gravity of the problem, the present work is an attempt to find out levels of urbanization in the country. There are many methods for measurement of urbanization. In present paper percentage distribution and urban density index have been used to analyze the levels of urbanization in Pakistan. The scope of this paper is limited to an examination of facts on urbanization for Pakistan at inter-district level. For this purpose, present research has relied wholly on the census data published by the Census Organization of Pakistan for 1981 and 1998.

INTRODUCTION

Urbanization is a cyclical process through which a nation normally passes as it evolves from an agrarian to an industrial society involving three important aspects. These three are behaviour, structure and demography, while as a demographic phenomenon, urbanization is interpreted as a process involving the absolute and relative growth of towns and cities within a defined area, usually (because of the reliance on census data) a country. Today urbanization is a worldwide phenomenon. Every nation, every city and probably every individual in the world is directly or indirectly involved in the continuing process of urbanization which is transforming the world rapidly. Urbanization refers to the process by which a section of people change from the way of agricultural operations in rural living to an urban sub-agricultural life with predominance in secondary and tertiary function. In Pakistan urbanization has come to occupy an important place in economic development of different administrative regions. Urban development is therefore is a direct and immediate concern to 32.5 percent of population who live in towns and cities. According to Trewartha (1969) the level of urbanization is the proportion of urban population to total

population residing in urban places. The level of urbanization in Pakistan has gone up from 17.8 per cent in 1951 to 32.5 percent in 1998, which recorded an increase of 14.7 percent since the first census after Independence. The current level of urbanization in Pakistan (32.5%) is not high by global standards. This level, however, is the highest among the SAARC countries.

LITERATURE REVIEW

Compared to other areas of population studies, literature in the field of urbanization in Pakistan is rather limited. For a detailed review of the relevant literature related to the present research one can refer to: for example Kazi S. Ahmed (1955) used 1951 census data and found that the movement towards the cities was because of the application of new methods of cultivation enabled a large production of food from small land, making a portion of the rural population surplus to go to towns to find opportunities for employment.. Similarly the growth of commerce and industry in the towns and cities offered better opportunities of employment and many people left the land even if they had to purchase their food. Kureshy K.U (1961) studied the age and sex composition of the urban localities of Pakistan (then W. Pakistan) using 1961 census data. For assessing the volume of rural urban migration he used the "town-country ratio" of working age groups (15-60 years) and found that the volume of rural-urban migration has been large in the past, but its rate is now declining. Kazi S.Ahmed (1966) has studied the trends of urbanization in Pakistan (then west Pakistan) and deduced that the principal urbanized areas are found to be located in Bari, Rechna and Chaj Doabs between the Sutlej and Jhelum, where impetus was afforded by the development of canals irrigation, colonization and the growth of *Mandi* towns. Similarly in the lower Indus plain the area commanded by the Sukkur Barrage was more urbanized in 1951, besides economic development, the exodus of Hindus and Sikhs and influx of Muslim refugees from India had a significant effect on the trends of urbanization. Towns near Indo-Pakistan border like Lahore, Bhawalnagar and Hyderabad showed accelerating growth on account of the settlement of Muslim immigration whereas those distantly placed like Peshawar or Larkana, slumped with the emigration to Hindus and Sikhs. From 1951 onwards the development plans started making greater impact on the urbanization trends. The emerging pattern in 1961 shows an appreciable departure from that of preceding decades. Rapid industrial and commercial expansion and integrated development of new areas under the command of new canals are the main factors behind this new trend, the chief features of which are the creation of new townships in new agricultural areas like Thai and the growth of old townships as a result of the policy of decentralization of industries as in the case of Bannu and Khairpur. On the other hand Kureshy, K.U (1966) studied urbanization of Pakistan (then west Pakistan) in relation to aridity and concluded that on

the basis of the remarkable improvement in the town size frequencies of West Pakistan notably the Indus plain with the advent of canal irrigation and its extension over the period 1901-1961, it can be safely argued that the future extension of irrigation in these plains will further accentuate the process of urbanization after practical elimination of the effect of aridity as a distorting factor. In another study Oazi S. Ahmed (1967) has studied the distribution pattern of urban centers in Pakistan and for the purpose of research all urban centers over 5,000 population were considered and "Nearest Neighborhood Analysis" were applied to the data and found that the forces influencing the distribution of cities are many and varied. Yet, the influence of transportation routes including river transport in the case of former East Pakistan appeared to be conspicuous in all the areas in which the distribution of towns is random. Similarly in another study Oazi S. Ahmad (1967) concluded that the analysis of city-size distribution demonstrate clearly that there exist wide gaps in city-size particularly in the inter-mediate size class. However in view of the rapid pace of urbanization and steady transformation of purely agrarian economy into an agrarian - cum industrial economy, it is expected that by the end of the century city-size distribution in Pakistan would approximate the rank-size linear relationship. He further emphasized a reappraisal of city-size distribution in Pakistan at regular time-interval, preferably at the end of each decennial census. Hameed.A (1973) has studied the process of urbanization in the upper Indus plain and remarked that on the degree of urbanization in the upper Indus plain two points can be considered as most important. Firstly, economic gains both in public and private sectors brought by the opening up of the vast lands, were enormous and with each new scheme one notices a comparable shift in the degree of urbanism. Secondly, establishment of new towns in the canal colonies led to the planning of settlement morphology of a better quality than what existed before. He has also analysed various economic factors leading to rapid urbanization and consequent patterns of urban growth in the area under study.

Afzal and Abbasi (1979) have roughly categorized the studies regarding urbanization as (1) broad based general studies which discuss urbanization and migration in the context of social, economic and political factors {see for example: Burki, S.J (1973) and Davis, K (1968)}(2) census-based studies which provide estimates of the extent of urbanization and the volume of internal migrating {(see for example: Afzal, M,(1967), Afzal, M, (1974), Helbock R.W (1975) & Khan M.R (1972)} Studies based upon sample surveys which look at the reasons of migration to a few large cities, namely Gujrawala, Peshawar, Ouetta, Karachi and Lyallpur (now Faislabad) are also available for review. Irfan *et. al*, (1979) studied the migration patterns in Pakistan on the basis of Population Labour Force and Migration Survey (PLM) 1979. Their study indicates that 10.8% of the population migrated during the 1972-79 period, and that internal migrating is becoming increasingly long distance and rural-urban in orientation. Using census

data, Ahmad and Abbasi (1981) concluded that there is negligible decline in the primacy of Karachi in 1961-72 but the "patterns of urbanization and migration in large cities did not show any significant change in the over all city size distribution or urban concentration in 1972 as compared to the situation in 1961. They suggested a need "to devise urbanization/migration policy by way of evaluating the major potential impacts of migration on national, regional and local development, and that the urbanization policy at the national level should center around the national development goal.

Another study by Shah (1986) focuses on the volume, patterns and characteristics of migrants, particularly females. It reports that 10 percent of the population of the urban areas consisted of those people who migrated there during the 1965-73 period. A finding from the study states that, "about half of all urban female migrants were in the three most urbanized districts viz, Karachi, Lahore and Rawalpindi and that recent female migrants i.e. who migrated during 1965-73 constituted 11.5 and 9.0 per cent of the female population of these cities respectively. Abbasi (1987); Rukanuddin (1989) and Butt (1996) have explored reasons for large variations in the tempo of urbanization during 1951-81. These studies attributed the rapid pace of urbanization during the 1950's primarily to the resettlement pattern of Muslim refugees from India and higher net in migration to the urban centers of the country. While the decline in the pace of urbanization in 1960's and rise during 1970's was attributed to rapid decline in the net in migration and relatively high natural increase as experienced by the urban population and the Middle East migration. Arif G.M and Ibrahim S. (1998) have examined the trends and patterns of urbanization in Pakistan by utilizing the provisional results of the 1998 population census and found that the tempo of urbanization has declined during 1981-98. they further argued that the policies adopted by the government of Pakistan seem to be in a right direction. The most recent research contribution in the study of urbanization in Pakistan has been made by Khan A. N and Rahman A. (2000). They have identified the various stages of urbanization in the country and have made a number of recommendations to reduce urban problems. Mostly the studies on urbanization cited, had explored the most proximate causes of rural-urban migration, and do not go into longitudinal context of the role played by the basic structural factors like infrastructure development and industrial investment patterns in the country.

ANALYSIS AND DISCUSSION

Data showing the total, urban population and urban density index at the province as well as district level are present in Table 1. F.C.T.I was the most urbanized administrative unit of the country in 1981 and it continued to be in that position till 1998 with an urban index ratio of 584.08. It is important to note that the urban proportion of population of Islamabad grew at the rate of 5.75 per cent per annum during the 1981-98. In 1998 Sindh was the most urbanized province with 48.9 percent of the total provincial population living in urban areas with an urban index ratio of 104.04 as against 110.54 of the Punjab. The least urbanized province with only 16.9 percent of the total population living in urban localities with urban index ratio of 39.89 was the NWFP. The percentages of urban population in Punjab and Balochistan were 31.3 and 23.3 percent respectively. Table-1 also reveals another important dimension of the levels of urbanization in Pakistan. Urban population of three provinces viz; Punjab, Sindh and NWFP grew at almost the same rate i.e., 3.31, 3.44 and 3.46 percent respectively between 1981 and 1998. There was also not much difference in the average annual growth of total population during the period under study, which was 2.55, 2.71 and 2.75 percent respectively for Punjab, Sindh and NWFP. Urban proportion of population of Balochistan grew at the fastest rate during 1981-98 (4.91 percent) among the four provinces of the country. This may be attributed due to major increase in public sector employment due to increase in provincial government expenditure during the 1980s. All the major administrative units of the country have registered an increase in urban proportion of the total population during 1981-98 (Table & Fig. 1) with the exception of Sialkot, Lahore, Tharparker, Karachi east, Bannu, Quetta, Pishin and Killa Abdullah. These districts have recorded slight decrease in their urban proportion of population in 1998 as against 1981. These changes might be due to the definitional changes of an urban locality. Some localities adjacent to large urban centers might have been considered as rural in the 1998 census compared to 1981 when they were treated urban due to up dating of delimitation of areas. In 1998 census for instances, the urban population of Lahore district was 82.5 percent of the total as against 84.3 percent in 1981. This may be because of the inclusion of some areas of Lahore district as urban in 1981 and were reclassified as rural in 1998. The average annual growth rate of urban population of 105 districts of Pakistan during 1981-98 varies from 9.06 percent (Jafarabad) a newly created district to 0.04 (Bannu). Out of the total 105, nine districts showed average annual growth rate of urban population more than 6 percent, whereas 26 are with less than 6 but more than 4 percent during the period under study. Remaining 63 districts have shown these rates less than 4 percent.. The higher growth rates in the newly created/settled districts of NWFP, Punjab and Balochistan give a misleading picture of the level of urbanization in the country because of a lower percentage of urban population in 1981.

In order to have a clear picture of urbanization in Pakistan as reported in 1998 census, urban density index of every administrative unit of the country has been calculated (Table & Fig. 2). This is a useful measure of the urbanization and is calculated by dividing the urban population of a region by its area. It is a fairly good indicator of urban concentration. Following is a brief review of this indicator: According to Fig. 2 Urban density index for 98 districts has been categorized into six groups, while 7 districts having no urban population have been excluded from the analysis. The group A comprised of the districts Karachi central (32450.69), Karachi east (19544.24), Karachi south (14138.64), Lahore (2894.59), Karachi west (2026.58), Peshawar (780.0) and FCTI (584'.08). All these are large multifunctional urban centers of the country and justified to be in-group a because of their importance in national economy. Both in the past and the present these administrative centers as a matter of fact have acted as an important urbanizing force. These districts proved to be important cultural centers and principal seats of learning over time. Gujranwala is the only district, which fall into group B, with an urban density index of 471.13. In group C, there are four districts viz; Rawalpindi, Faisalabad, Multan and Malir. All these are the major cities of the country having population more than 1 million. Sialkot, Larkana, Hyderabad and Quetta fall into group D in the order with urban density index ranging from 200.0 to 299.9. Quetta is the only major city of Balochistan as well as provincial headquarter with an urban density index 211.19. In the second last group 10 districts of Pakistan are included within urban density index 100.0 - 199.9. And finally 73 out of the total 98 analyzed fall into group F with urban density index ratio below 99.9.

Total and Proportion of Urban Population in Pakistan 1981-98

Unit	1981		1998		Avg. Annual Gro-h Rate 1981-98		Urban Density Index
	Total	% of Urban Population	Total	% of Urban Population	Total	Urban	
PAKISTAN	84253644	28.3	132352279	32.5	2.69	3.45	54.05
Islamabad	340286	60.0	805235	65.7	5.19	5.75	584.08
FATA	2198547	0.0	3176331	2.7	2.19	-	3.14
PUNJAB	47292441	27.6	73621290	31.3	2.55	3.31	110.54
Atock	876667	14.5	12644565	20.6	2.18	4.29	38.03
RawalDindi	2121450	47.8	3351993	53.2	2.73	3.37	337.51
Jhelum	778778	24.6	1103904	26.7	2.07	2.57	82.23
Chakwal	775600	8.3	1059451	12.3	1.85	4.21	19.95
Sargodha	1911849	26.1	2653346	28.1	1.95	2.4	127.34
Bhakkar	665884	14.6	1043586	16	2.68	3.26	20.52
Khushab	641366	22.7	888194	25.2	1.93	2.57	34.45
Mianwali	711529	19.6	1037240	28.8	2.24	2.59	36.89
Faisalabad	3561909	35	5340771	42.7	2.41	3.62	389.4
Jhana	1970944	22.5	2804397	23.4	2.09	2.32	74.39
T.T Singh	1134572	16.4	1589740	18.8	2	2.84	91.91
Gujranwala	2108365	44	3374311	50.6	2.8	3.65	471.13

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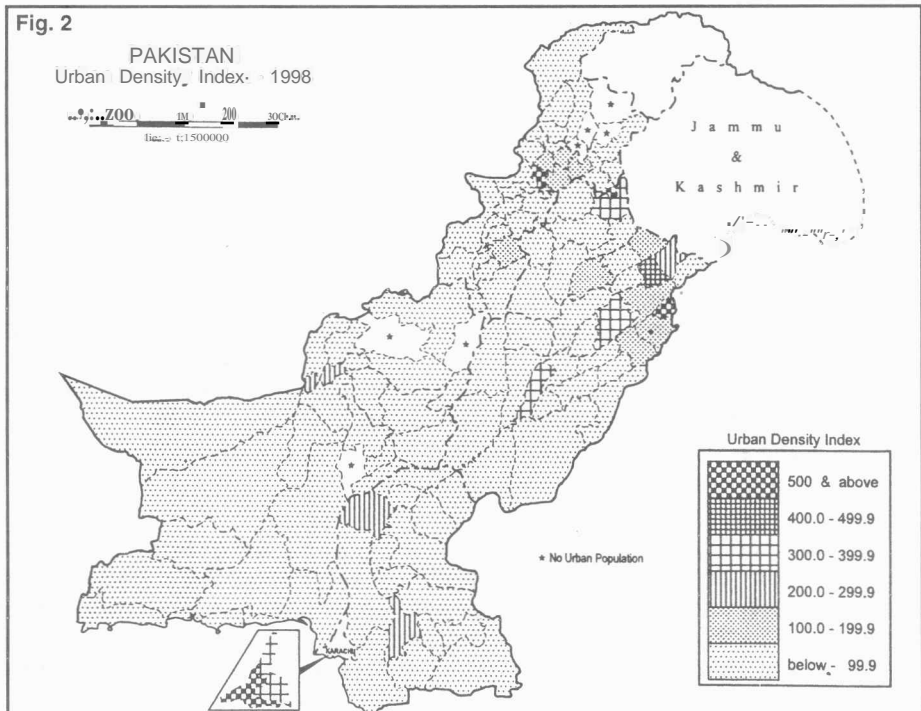
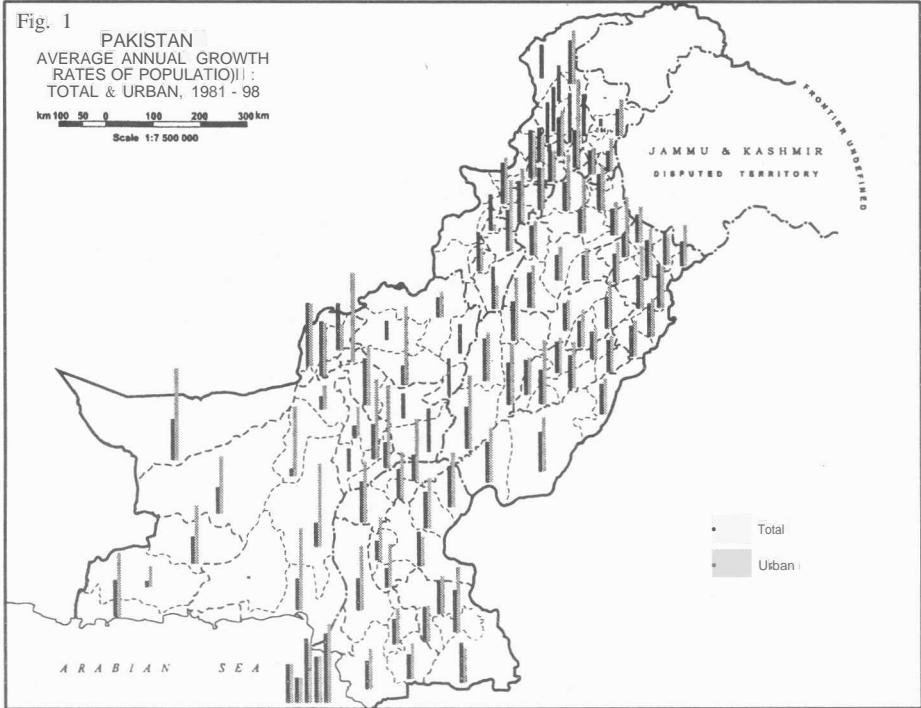
LEVELS OF URBANIZATION IN PAKISTAN

Hafizabad	567572	23.4	822103	27.1	2.2	3.09	94.08
Gujrat	1288819	25.8	1842281	28.5	2.12	2.7	164.38
Mandi Bahauddin	846114	9.5	1139333	15.2	1.76	4.59	64.82
Sialkot	1802505	26.3	2Ej88671	26.1	2.38	2.33	233.2
Narowal	908977	10	1248510	12.3	1.88	3.13	65.57
Lahore	3544942	84.3	6212715	82.5	3.35	3.23	2894.59
Kasur	1528002	21.7	2347020	23.1	2.56	2.92	135.47
Okara	1487261	18.3	2195698	23.2	2.32	3.75	116.54
Sheikhupura	2110153	18	3229998	26.2	2.53	4.8	141.83
Vehari	1328808	13.6	2047771	16.1	2.57	3.57	75.44
Sahiwal	1281526	15.7	1821143	16.5	2.09	2.38	93.73
Pakpattan	843623	13.4	1274253	14.1	2.45	2.76	66.14
Multan	1970075	40	3083021	41.8	2.67	2.86	346.28
Lodhran	739912	10	1161526	14.4	2.69	4.95	60.41
Khanweal	1369766	16.8	2040441	17.7	2.37	2.68	82.88
D.G.Khan	943663	12.9	1631595	13.9	3.27	3.7	18.97
Rajanpur	638921	9.7	1084907	14.5	3.16	5.64	12.78
Leiah	666517	9.4	1103866	12.7	3.01	4.82	22.22
Muzaffargarh	1497736	10.4	2581363	13	3.25	4.62	40.77
Bahawalpur	1453438	22.7	2410566	27.3	3.02	4.13	26.46
Bahawalnagar	1373747	17.8	2033782	19.1	2.33	2.74	43.66
Rahim Yar Khan	1841451	16.3	3073369	19.6	3.06	4.18	50.66
SINDH	19028666	43.3	29991161	48.9	2.71	3.44	104.04
Jacobabad	1011212	15.7	1400575	24.5	1.93	4.66	65.1
Shikarpur	596409	19.3	865893	23.9	2.22	3.52	82.43
Larkana	1138580	22.5	1903020	29.1	3.07	4.63	220.21
Sukkur	553848	43.7	877858	51.5	2.74	3.74	87.52
Ghotki	568823	13.5	952461	16	3.08	4.09	20.03
Khairpur	981190	25.25	1514768	23.7	2.59	2.22	22.58
Naushahro Feroze	829051	13.3	1064651	17.7	1.48	3.22	63.96
Nawab Shah	813534	19.2	1046986	26.2	1.49	3.36	60.84
Dadu	1081611	14	1631427	21.2	2.45	4.96	18.14
Hyderabad	2059026	44.2	2840653	51	1.91	2.76	262.35
Badin	776614	10.6	1108394	16.6	1.91	2.76	27.27
Thatta	761039	9.5	1099528	11.2	2.19	3.13	7.07
Sanghar	917863	21.5	1420022	22.6	2.6	2.9	29.98
Mirpur Khas	577879	31.9	899947	32.4	2.64	2.74	99.81
Umer Kot	383018	12.5	656124	16.7	3.21	4.98	19.57
Tharparkar	540985	4.6	906720	4.4	3.08	2.71	2.01
Malir	429570	60.4	1041029	67.8	5.34	6.06	311.18
Karachi East	1494786	98.8	2716789	100	3.57	3.65	19545.24
Karachi West	912698	95.4	2080303	90.5	4.96	4.64	2026.58
Karachi South	1243928	100	724915	100	1.94	1.94	14138.64
Karachi Central	1357002	100	2239098	100	2.99	2.99	32450.69
N.W.F.P	11061328	15.1	17554674	16.9	2.75	3.46	39.89
Chitral	208560	0	317198	9.4	2.5	0	2.01
Upper Dir	362565	0	572830	4.3	2.73	0	6.69
Lower Dir	404844	0	710677	6.2	3.36	0	27.67
Buner	265517	0	501143	0	3.8	0	No Urban Pop.
Swat	715938	12.3	249572	14	3.33	4.1	32.69
Shanqla	251546	0	429651	0	3.2	0	No Urban Pop.
Mala Kand P.A.	257797	0	431800	8.8	3.08	0	40.14
Kohistan	465237	0	469053	0	0.05	0	No Urban Pop.
Balagram	339119	0	304147	0	-0.64	0	No Urban Pop.

Continued

Mansehra	770235	4.9	1141573	5.6	2.34	3.18	13.92
Abbottabad	647635	15	875157	18	1.79	2.89	80.03
Haripur	479031	11.5	681469	11.9	2.09	2.32	47.07
Mardan	881465	18.9	1450469	20.2	2.97	3.4	179.99
Swabi	625035	9.3	1010691	17.4	2.87	6.72	114.3
Charsadda	630811	20.9	973194	19.2	2.58	2.07	187.43
Peshawar	1113303	50.9	2038629	48.5	3.62	3.33	780
Nowshera	537638	28.1	869166	25.9	2.86	2.38	128.89
Kohat	326617	26.9	558273	26.9	3.2	3.2	58.95
Hangu	182474	18.9	308298	20	3.13	3.49	56.23
Karak	249681	5.5	422761	6.4	3.14	4.08	8.01
Bannu	423018	10.2	672921	7	2.77	0.48	38.22
Lakki Marwat	287768	6.5	487371	9.5	3.15	5.49	147.1
D.I.Khan	494432	18.5	847224	14.5	3.22	1.76	16.82
Tank	141062	17.7	231407	14.7	2.95	1.81	20.2
BALUCHISTAN	4332376	15.5	6511358	23.3	2.42	4.91	4.36
Quetta	381566	74.9	759245	73.8	4.13	4.04	211.19
Pishin	202256	7.3	366163	5.6	3.55	1.96	2.61
Killa Abdullah	176341	16.9	390738	16.7	4.79	4.74	19.88
Chagai	120455	9.4	202562	17.6	3.1	7	0.7
Loralai	235038	5.9	300028	12.4	1.45	5.98	3.79
Musa Khel	91174	0	132411	0	2.22	0	No Urban Pop.
Barkhan	61686	0	99502	7.4	2.85	0	2.1
Killa Saifullah	148362	0	188729	0	1.42	0	No Urban Pop.
Zhob	213285	15	276495	16	1.54	1.94	2.18
Sibi	98482	9.2	178654	32.2	3.56	4.36	7.38
Ziarat	32196	0.6	32864	1.9	0.12	6.84	0.41
Kohlu	71269	0	97786	9.6	1.88	0	1.23
Dera Bugte	103821	0	180404	8.5	3.3	0	1.5
Jafarabad	265342	7.1	421082	19.5	2.75	9.06	33.52
Nasirabad	129112	7.1	242689	15.6	3.78	8.7	11.15
JhaJ Magsi	68092	0	103970	0	2.52	0	No Urban Pop.
Bolan	237123	9.6	288099	13.6	1.15	3.24	5.24
Kalat	209149	5.3	235758	14.3	0.71	6.77	5.07
Mastung	132044	12.5	163548	15	1.27	2.39	4.16
Khuzdar	276449	11.2	409164	28.7	2.33	8.16	3.31
Awaran	110353	0	114427	0	0.21	0	3.87
Kharan	128040	8.2	197418	13.2	2.58	5.5	0.54
Lasbela	188139	16.7	313405	37.5	3.05	8.07	7.75
Keeh	379467	13.8	409879	16.6	0.45	1.54	3.01
Gwadar	112385	38.5	178989	54	2.77	4.84	7.64
Panjar	160750	5.9	227349	8.7	2.06	4.42	1.17

Source: Census Reports of Pakistan 1981 & 1998.



CONCLUSION AND POLICY IMPLICATIONS

The present study was designed to investigate urban population growth and level of urbanization in the country using Census data for the period 1981-98. The study is primarily based on district level changes in urban population as well urban density index. So far as the urbanization from demographic point of view is concerned i.e., the proportion of population living in towns and cities, Pakistan is in the midst of gigantic urban increase. The growth of urbanization is an index of national development and it is most intimately related with industrialization and commercial development in the region. In conclusion, the rate of natural increase of total population has been lower than that of urban population in every district of Pakistan. The higher average annual rate of growth of urban population, therefore, largely the result of rural to urban migration particularly in Punjab.

To sum up with the effect that the urban population increasing at 3.54 percent per year, therefore, all urban services need to be increased at that rate as well to keep up with new demands. This means a growing need for new housing, transportation, electricity, water, sewerage, sanitation and police services. Some of these requirements may be provided by the private sector but others must be provided by government. In addition when families will be unable to afford urban amenities, squatter settlements will spring up in the major cities of the country.

All available indications point to the fact that urbanization and related issues have begun to receive increasing attention in Pakistan. In recent past there has been a realization in policy makers regarding the need for urban development and management. In the Ten Years Perspective Development Plan 2001-2011 and Three Years Development Programme 2001-2004 following strategies have been evolved.

- 1) Establishment of new urban centers, Industrial estates and satellite towns around major cities to disperse rural to urban migration.
- 2) Community participation along with administrative and financial empowerment of local Government.
- 3) Preparation and implementation of updated Master Plans of major cities.

In order to achieve the above, a countrywide programme shall be undertaken for development of satellite, intermediate/secondary and industrial towns and employment centers especially for rural population and to reduce further migration to urban centers. Incentive packages shall be prepared for local and international investors and developers to develop

these new urban settlements. Similarly to ensure integrated and cost effective urban development, all the metropolitan and major cities authorities shall update/prepare Master Plans, where as the towns and union councils would finalize their Development Plans to combat the problems caused by increasing urban population.

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STRUCTURAL CHANGES IN SCOTTISH AGRICULTURE, 1972 - 1988: A Case Study of South East Scotland

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ABSTRACT

Tremendous agricultural changes have occurred in UK after the implementation of Common Agricultural policy of European Community (EC) now European Union (EU) since 1973. These changes were noted in from structural reforms at farm level to major cropping pattern!.. livestock and dairy products. Structural reforms have been the major target of the CAP policies in order to achieve the goals of the CAP. This paper is an effort to examine the structural changes, which have occurred in Scottish agriculture at farm level during the period 1972-1988. The focus of this study is South East Scotland, which is the most fertile area of Scotland and, hence, represents the true picture of agricultural Scotland. Major components of farm structure which play an important role in reforming and re-shaping the farm size structure i.e. change in farm holdings, average farm size, land tenure patterns and farm labour have been examined at district and parish level. The study is also supported by a questionnaire survey to see the farmers' responses towards agricultural change.

INTRODUCTION

Farm size structure always influences the overall conditions of agriculture. The nature of land tenure, number of farm holdings, size of the farms and the type of farm labour have direct relationship with agricultural production as well as intensification and industrialization of agriculture. Therefore, governments always made their agricultural policies in order to improve and develop the agricultural sector to meet the food requirements of their countries. The United Kingdom (UK) had its own agricultural policy before 1973 to achieve the goals set out under the Agricultural Act 1947 (see Holderness, 1985 and Robinson, 1988). These objectives had been achieved through ploughing grants, investment grants to encourage field drainage and water supply, subsidies on the price of fertilisers and special grants to improve farm buildings in upland regions. However, since 1973, when the UK joined the European Community (EC) now European Union (EU), the Common Agricultural Policy (CAP) of the EC was implemented in the UK. At

that time the CAP was introducing structural reforms in the agricultural sector in order to improve agricultural conditions as well as agricultural production while reducing the farm labour by supporting mechanized farming. The focus of the CAP policies was to make structural changes in the Community's agriculture under the general objectives of the CAP as laid down in Article 39 of the Treaty of Rome. This was to be based on forming 'enterprises of adequate size' by reducing the size of the agricultural population. Efforts to improve farm structure under the 'Mansholt Plan' were made by two measures: firstly, help people to take up alternative occupations or to retire and, secondly, assist in modernising the farms. On the basis of these proposals, the Council adopted three basic directives on structural reforms in 1972. They were concerned with farm modernisation, improvement of farms, retirement from agriculture and training and advice to farmers.

Under structural measures, support for small farms providing direct income aids and an early retirement scheme were offered to encourage farmers to leave or to reduce farming practice. Comprehensive examination of the structure and policies of the CAP has been carried out by Bowler (1985), Fennel (1979); Hill (1984) and Marsh and Swanney (1980). Major agricultural changes were occurred in the UK since 1973 under the CAP (Robinson, 1988). These changes affected the full range of agricultural activities, from changes in cropping patterns and land use to farm size structures, the nature of agricultural production, and the socio-economic conditions of farmers. A range of work - Bowler (1976a, 1985, 1987); Bureau of Agricultural Economics (BAE) (1985); Downs (1991); Gaskell and Tanner (1991); Harvey (1990); Ilbery (1990); Jones (1989) and Wathern et al. (1988) - has discussed and evaluated agricultural conditions under the CAP, emphasising the trends and patterns of agricultural change. Blunden and Turner (1985: 25) focussed on the field size and its implications. They observed that the use of machines have prompted field enlargement and the removal of obstructions in the form of hedgerows and stone walls. In addition, there has been the introduction of new farm buildings for machinery, feed, animals and dairy farms.

The importance of economic forces as a major control over farmers' decision-making has been a feature in numerous studies of agricultural geography (Robinson, 1988). Ilbery (1986) argues that since farm structure is a major determinant of income, structural reform is the best solution to poor incomes. Many studies on this aspect have been carried out and examined by various authors (e.g. Bowler, 1983; King, 1977; King and Burton, 1983; Clout, 1968, 1975; and Naylor, 1982). A number of agricultural trends are associated with the variations in farm size can be found in Bowler, 1983; Lund and Hill, 1979; Found, 1971; Todd, 1979; and Clark, 1986. The transformation of farm size has thrown a number of social trends in rural areas into relief. Perhaps the most significant has been the

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intensification, in some rural regions, of the long term trend of outward migration of farm families and farm workers. There have been fears about the economic and social sustainability of farms (e.g. Bertreley and Todd, 1990; Hart, 1991; and Fuller et al., 1990). The changing size structure of farming has also had implications for social relations within rural communities (Gregor, 1982). This paper presents those structural changes that have been made under the structural reforms introduced in 1972 by the CAP. Focus of this paper is South East Scotland which is the best suitable land for agriculture in Scotland, UK.

STUDY AREA

The study area (South East Scotland) is consisted of Fife, Lothian and Borders regions comprising 11 administrative districts and 175 civil parishes. Figure 1 describes the topography and physical regions of South East Scotland. South East Scotland is divided into the Central Lowlands and Southern Uplands. The whole of Fife and major parts of Lothian region and Berwickshire district are below 150 metres above sea level. The eastern uplands near the coast are generally under 300 metres. Most parts of the uplands, except the central part, which is highly rugged between 600 to 750 metres, are moderately rugged having a height between of 300 to 600 metres. The landscape is extremely dissected, especially in the west, with low-lying valleys winding and interconnecting between steeply sloping often precipitous upland terrain. Drainage in Fife is carried out by the Eden and Ore rivers and their tributaries. In Lothian, the river Tyne and its tributary burns supply East Lothian's fertile arable land. The Tweed, Black Adder and White Adder, Gala Water and a number of burns drain the Southern Uplands.

Fife is bounded on the north by the Ochils. The south-western side is formed by the slopes of the Lomond Hills which curve to the south forming a tongue of lowland running between the Lomonds and the higher ground of the East Neuk. To the south of the Lomonds, west of the hills of the East Neuk, lies the central plain of Fife, the Howe of Fife. South-west Fife is mostly a plateau with a well-marked grain east-north-east to west-south-west. The Lowlands (all that part of Lothian not included under the headings 'Lammermuir and Moorloot Hills' and 'the Pentlands') includes the Bathgate Hills and the high bleak uplands of the West Calder and Whiteburn districts, both of which are around 300 metres above mean sea level. The elevated mass of the Pentland Hills extends for some 25 kms from north-east to south-west and 5 to 9 kms from north-west to south-east. The Lammermuir and Moorloot hills form the north eastern extremity of the Southern Uplands. To the north-west the hills are truncated by the southern upland fault while to the south and south-east they gradually merge into the Tweed region. In the north east the Dunbar-Oldhamstocks fault cuts off the Lammermuirs from the sea though the intervening lowlands are only 2 to 5 kms. in width.

Fig. 1: Topography and physical regions of South East Scotland



Tweedside is a region of hills and valley slopes. The northern side has a valley floor at about 360 to 400 metres above mean sea level which has been dissected to give a series of long spurs cut off by rising ground. To the south of Lammermuirs is the Merse lowland situated between the middle and lower Tweed. It includes some uplands. The Tweed basin, Lammermuir, and the Merse are the prominent features of the eastern Southern Uplands. Apart from these higher prominent features, the whole Borders region has a rugged relief with hills, valleys, streams, steep slopes and lower plateaux. The high plateaux of Manor Hartfell plateau, Ettrick-pen plateau, Culter Fells and Leithen plateau are formed by the deep dissection of an old mature surface surmounted by low and subdued residual eminencies and subsequent glacial modification of already deep valleys. The Upper Tweed is an area of glacially-modified valley summits. Ridges are long and continuous with undulating crests. The south-west portion offers some transition to the high plateau. The Upper Gala region is formed by fully matured dissection followed by incision of the Gala, Lugate, Heriot and Arnet Waters. Hills are rounded and subdued, with summits 366-472 m, and slopes above 305 m level are always gentle (Stamp, 1940, 1960; Watson, 1964). Lowland districts and parishes are the best suitable areas for agriculture because of its low elevation, gentle slopes and moderate climatic conditions due to coastal effects.

A postal questionnaire survey was carried out in 1993 parallels the assessment of agricultural change based on the Agricultural Returns. The questionnaire survey data were categorised into 12 farming types based on the farmers' responses and recognition of their farms' activity. The total area covered by the questionnaire data is 64,148 ha under 284 farms in the area. The farms are widely dispersed throughout Lothian and the major part of Fife. All parishes are predominantly arable and arable/stock-producing.

FARM SIZE CHANGE

Farm size change has been the major objective of the CAP during the period 1972-88. The average farm size has increased from 156 ha to 181 ha in South East Scotland. This reflects changes in the average farm size in the area (+15.98% increase) which is mainly due to the reductions in number of farm holdings from 4116 to 3368 (-18.17%) in the study area. Table 2 represents the changes in farm size structure at district level. There has been a decline in the numbers of farm holdings in all districts between 1972-1988. However, it is pertinent to note that major changes have occurred in East Lothian, West Lothian and North East Fife, which are located in Lowlands and are historically arable districts. The change in farm holdings has resulted in increase in average farm size in all districts. This change reflects the fact that the CAP's structural policies such as Farm Amalgamation Scheme (1973) and the Farm Structure (Payments to Out goers) Scheme (1976) have encouraged the farmers to opt to leave

agriculture by selling small farms or renting their farms to other farmers. Figure 2 presents the percentage changes in farm holdings at parish level in South East Scotland. The spatial patterns of change suggest a general decline in farm holdings (up to 62% decline) in most parishes. Another trend is an increase (up to +50%) of farm holdings in some parishes especially in Borders region. In sixty-six parishes, which are mainly arable, farm holdings have changed between -20 to -62% during 1972 and 1988. Another trend of major change is up to -20% occurring in 61 parishes. The change in farm holdings has resulted in a change of farm size in the area. There is a general trend of increase in average farm size at parish level. A decrease in average farm size has occurred only in a few parishes, which is probably due to an increase of farm holdings. However, almost all these parishes are producing livestock, and it can be assumed that the incentives available for livestock and milk & dairy products have encouraged the farmers to divide their farms into family members for maximum benefits. One of the major factor of farm size change has been the changes in field sizes in the area. Intensification of agriculture has promoted the removal of field boundaries and the enlargement of fields (Robinson 1988; Munton et al. 1992 and Ghaffar, A & Robinson, G. M., 1997). These changes have been made in order to facilitate the farm machinery and to reduce farm labour (Shoard 1985, 1988; Blunden and Curry 1985).

According to the questionnaire survey data 79 farmers have increased and 36 farms decreased their area since 1973. The high number of field amalgamations (137) also reflects the fact that farmers in the area have removed their field boundaries in order to enlarge their fields. Most of these changes have occurred on the arable farms, a fact closely related to the intensification of tillage crops and oilseed rape. These farms are widely dispersed throughout Lothian and the major part of Fife. All parishes are predominantly arable and arable/stockproducing. Most of the farms in all the farming types are greater than 100 ha. The highest number of farms (63) are between 200 to 300 ha, most of them intensive arable farms. The largest farms, above 500 ha, are intensive livestock farms, a fact which reflects the intensification and specialisation of livestock. The questionnaires examined suggest that farmers have improved their field drainage system, via the Farm and Horticulture Capital Grants Scheme (1974), the Agriculture and Horticulture Development and Grant Scheme (1980) and the Agricultural Improvement Scheme (1985). These evidences and the participation of farmers in capital grant schemes for farm improvement strongly suggest the role of CAP policies in re-structuring the farms in Scottish agriculture.

Table 1: Patterns of farm structure in S.E. Scotland, 1972 – 88.

	1972	1976	1980	1984	1988	Change 1972-88	%Change 1972-88
Total Area of land	642,100	630,079	624,705	621,536	609,376	-32,724	-5.32
Farm holding	4,116	3,655	3,621	3,566	3,368	-748	-18.17
Average farm size	156	172	173	174	181	25	15.98
Area owned by farmers	355,784	336,706	319,776	318,562	321,719	-34,065	-9.57
Area rented from outside	226,568	223,136	214,602	202,084	195,347	-31,221	-13.78
Area rented from near rela	59,748	70,236	90,326	100,890	92,311	32,563	54.50
Total Farm Labour	12,144	11,448	10,903	9,289	8,119	-4,025	-33.14

* Area in hectares

Source: Computer from parish summary data

Table 2: Patterns of farm structure at district level in S.E. Scotland, 1972-88

District	Farm holdings					Change 1972-88	% Change 1972-88
	1972	1976	1980	1984	1988		
Berwick	463	402	413	405	395	-68	-14.69
Ettrick	436	395	387	394	394	-42	-9.63
Roxburgh	533	490	489	470	465	-68	-12.76
Tweeddale	229	209	210	219	211	-18	-7.86
East Lothian	499	441	426	418	390	-109	-21.84
Midlothian	247	209	213	209	196	-51	-20.65
City of Edinburgh	105	90	85	95	87	-18	-17.14
West Lothian	419	369	371	363	301	-118	-28.16
North East Fife	642	569	569	563	538	-104	-16.20
Dunfermline	293	249	244	235	203	-90	-30.72
Kirkcaldy	250	232	214	195	188	-62	-24.80
	Average farm size					Change 1972-88	% Change 1972-88
	1972	1976	1980	1984	1988		
Berwick	171.70	205.53	193.65	198.04	200.19	28.49	16.59
Ettrick	280.42	298.33	303.19	296.51	290.01	9.59	3.42
Roxburgh	241.91	253.66	249.41	255.32	253.22	11.31	4.68
Tweeddale	310.55	336.32	326.43	309.75	310.75	0.20	0.06
East Lothian	123.21	139.46	143.13	145.89	152.57	29.36	23.83
Midlothian	121.30	137.93	139.80	142.94	150.70	29.40	24.23
City of Edinburgh	129.31	151.14	185.51	159.89	177.16	47.85	37.01
West Lothian	66.18	67.16	66.79	67.83	79.19	13.01	19.66
North East Fife	97.10	108.42	109.59	112.38	115.81	18.70	19.26
Dunfermline	66.51	75.70	75.88	78.81	90.38	23.87	35.89
Kirkcaldy	102.83	111.12	115.49	124.15	126.50	23.67	23.02

* Area in hectares

Source: Computed from parish summary data

Fig. 2 : Farm holdings' change in South East Scotland

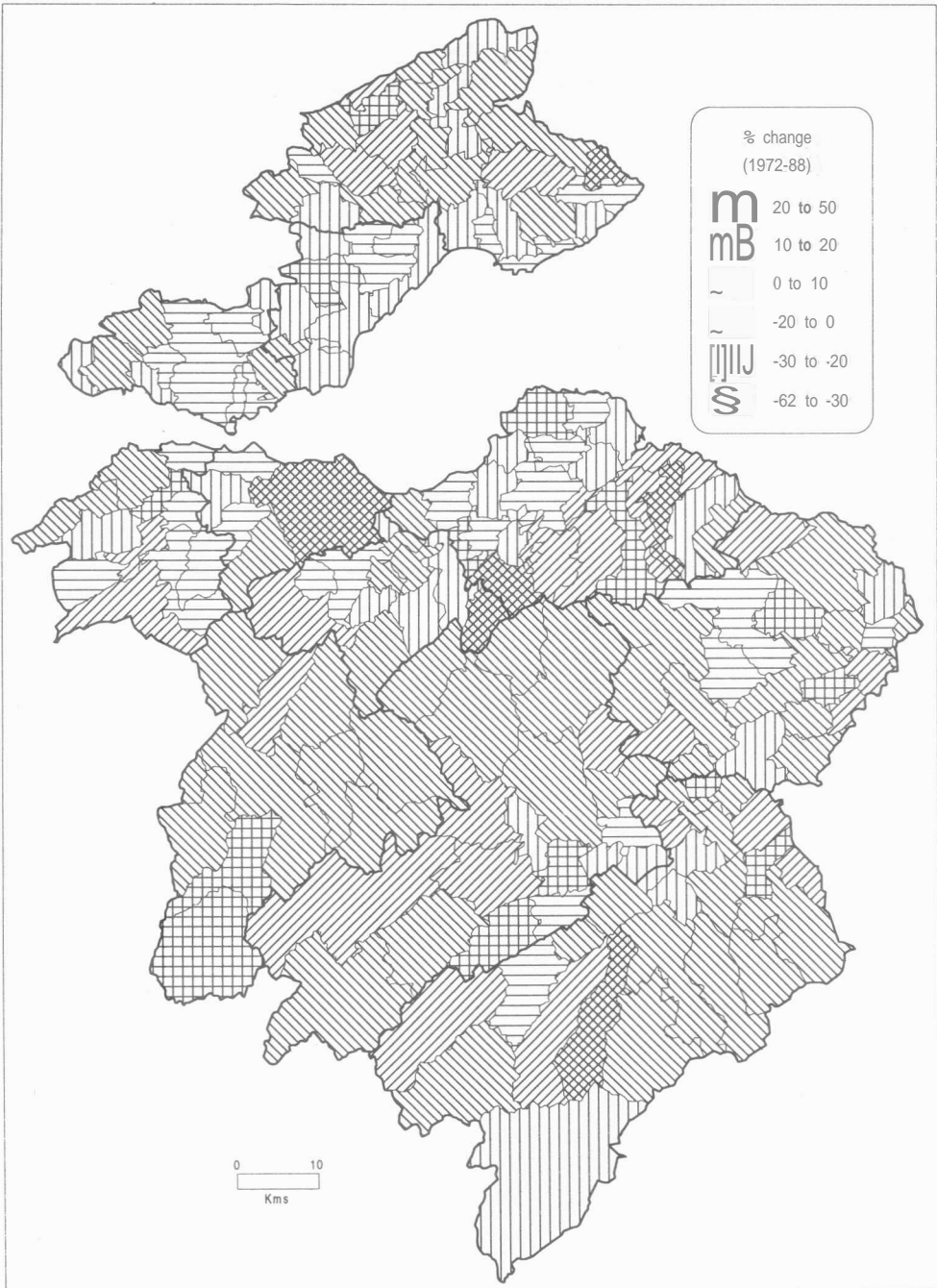
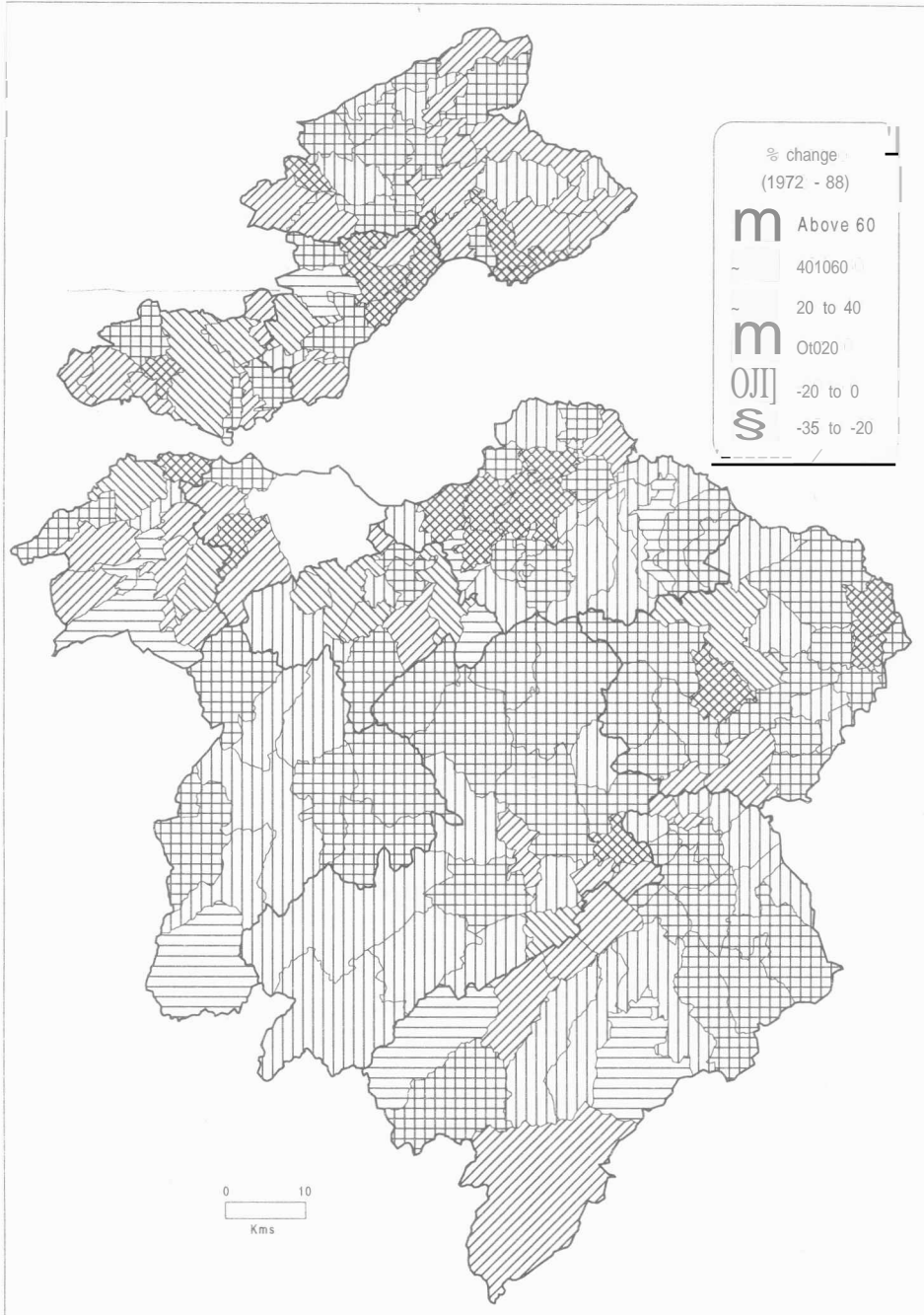


Fig.3 : Average farm size change in South East Scotland.



LAND TENURE CHANGE

Land tenure has a broad relationship with farm size. Tenure also influences the complexity of decision-making for the farm business, and has consequences for capital investment on the farm and financial returns. Hill and Ray (1987) argue that tenants are not more efficient than owner-occupiers except in certain size groups (e.g. small specialist dairy farms), and large scale arable and mixed farming seem more efficient under owner occupation. Farm size and land tenure also have a differential influence on the internal relations of the farm business. Moreover, Bowler, 1992 also suggests that owner occupation or long leases give some sort of feeling of satisfaction or security and long-term planning benefits, and under these circumstances, farmers try their best to improve agricultural productivity of land. On the other hand, very short leases produce insecurity for farmers which, in turn, does not permit long-term planning or farm improvement.

Major changes have occurred in land tenure during this period. Table 1 represents the overall picture of change in South East Scotland. The area owned by farmers has decreased from 355,784 ha to 321,718 ha during the period 1972-88 (-9.57%) and the area rented from outside (non-family) concerns has declined from 226,568 ha to 195,346 ha (-13.78%), but the area rented from near relatives has increased enormously from 59,747 ha to 92,310 ha (+54.50%). Change in land tenure has occurred largely through a decline in number of farm holdings (748) and for reasons to do with family transfer, amalgamation of farms, and farmers leaving the industry. Patterns of change in land tenure in administrative districts can be seen in Table 3. Area owned by farmers has decreased in seven districts mainly in Uplands but has increased in four districts mainly in Lowlands. The area rented from outside concerns has decreased in almost all districts but area rented from a near relative has increased in almost all districts. Enormous changes have occurred in some districts especially those, which have mixed farming practices. The highest change can be seen in Roxburgh where 21,837 ha area has decreased in the area own by farmers and 13,142 ha has increased in the rented from near relatives. These patterns clearly reflect the impact of structural policies of the CAP. Farmers' have preferred to end their leases with the landlords and opted to get the new land from their relatives who opted to quit the farming under the CAP incentives. There have been great changes in land tenure patterns in all parishes. Parishes in Fife and Lothian regions have a general trend of increase in the area owned by farmers while Borders region, which mostly produces livestock, has a decrease in most parishes (Figure 4). The area owned by farmers has decreased in 83 parishes and increased in 92 parishes. Major changes are reflected in between the range from -25% to + 50%. The area rented from outside concerns has decreased in 125 parishes; only 50 parishes have increased their area. About 83 parishes have decreased up to - 50% while 43

parishes have decreased up to -100%. Spatial patterns of positive change are dispersed in the area. The highest percentage changes have occurred in the area rented from near relatives. The highest percentage changes (more than 100%) have occurred in a major part of the Borders region, Midlothian and in North-East Fife: areas best suited for farm livestock production. Some negative change has also occurred in lowland areas suitable for crop production which may be due to the factors that small farmers who were ploughing their near relatives' land decided to quit from agriculture under structural reforms. The positive change has occurred in 123 parishes. This change is quite contrasting the area rented from outside concerns where the area has decreased in 125 parishes. The land tenure change has two contrasting patterns: areas owned by the farmers have increased in crop-producing parishes while areas rented from near relatives have increased in livestock-producing parishes. These patterns suggest that most arable farmers have bought land from others willing to leave the agricultural practice (either because of the small area of their land or because landlords have been taking back their land from tenants to bring under their own management). This is also reflected through the decline in total number of farm holdings (746) in the parishes (-18.17%). On the other hand, in livestock-producing parishes, farmers preferred to rent their land to their relative instead of leaving the agricultural practice (Bowler, 1985). The areas rented from outside concerns increased in extent from 1972 in arable parishes. Areas rented by farmers from near relatives increased in livestock-producing areas (up to +500%), especially in sheep-producing parishes. Major changes occurred between 1980 and 1984, which may be linked with the milk quota system and other policies concerning livestock implemented after 1980. Questionnaire survey data reflects that most farms (172) are wholly owned by the farmers. Farms wholly rented by the farmers are in intensive arable or intensive livestock farming. Most of the part-owned/rented farms (40.8%) are in arable farming. A total of 263 out of the 284 farms are full time; of the part-time farms, most are arable. The analysis of data clearly suggests major changes in land tenure patterns. This fact is also supported by the questionnaire survey data.

Table 3: Patterns of land tenure change at district level in S.E. Scotland, 1972-88

District	Area owned by farmers [*]						Change 1972-88	% Change 1972-88
	1972	1976	1980	1984	1988			
	Berwick	44,277	44,235	38,236	40,892	42,784	-1,494	-3.37
Ettrick	64,016	61,217	52,798	53,602	55,350	-8,665	-13.54	
Roxburgh	63,089	53,976	48,673	43,146	41,251	-21,837	-34.61	
Tweeddale	47,081	44,570	43,521	42,170	38,922	-8,160	-17.33	
East Lothian	36,547	34,418	35,038	38,303	39,782	3,235	-8.85	
Midlothian	10,937	11,618	10,115	8,987	11,003	66	-0.60	
City of Edinburgh	8,467	8,277	10,237	10,007	10,219	1,752	20.70	
West Lothian	18,444	16,863	17,772	16,897	17,653	-791	-4.29	
North East Fife	36,086	34,842	35,654	38,433	38,743	2,657	7.36	
Dunfermline	12,760	12,468	12,205	12,314	12,570	-190	-1.49	
Kirkcaldy	14,082	14,222	15,527	13,813	13,442	-639	-4.54	
District	Area rented from outside concerns [*]						Change 1972-88	% Change 1972-88
	1972	1976	1980	1984	1988			
	Berwick	26,025	25,546	23,548	22,498	21,418	-4,607	-17.70
Ettrick	47,790	45,274	45,274	44,612	39,792	-7,998	-16.74	
Roxburgh	57,302	58,120	56,501	53,915	54,808	-1,494	-4.35	
Tweeddale	18,729	20,412	18,234	17,409	19,743	1,014	5.42	
East Lothian	12,678	13,414	12,601	10,637	9,351	-3,327	-26.24	
Midlothian	17,322	16,582	16,582	16,971	16,578	-745	-4.30	
City of Edinburgh	4,946	4,652	4,862	4,767	4,713	-233	-4.72	
West Lothian	8,346	7,135	5,902	5,018	3,890	-4,457	-53.40	
North East Fife	20,065	19,570	18,482	14,899	14,975	-5,090	-25.37	
Dunfermline	6,146	5,558	5,615	5,446	4,505	-1,641	-26.70	
Kirkcaldy	7,219	7,205	6,740	5,913	5,575	-1,644	-22.77	
District	Area rented from near relatives [*]						Change 1972-88	% Change 1972-88
	1972	1976	1980	1984	1988			
	Berwick	9,195	12,842	18,194	16,816	14,874	5,679	61.76
Ettrick	10,459	11,349	18,998	18,612	19,122	8,663	82.83	
Roxburgh	8,546	12,196	16,790	22,940	21,688	13,142	153.77	
Tweeddale	5,306	5,310	6,795	8,256	6,904	1,598	30.12	
East Lothian	12,256	13,668	13,333	12,044	10,368	-1,888	-15.40	
Midlothian	1,702	959	3,080	3,917	1,956	254	14.92	
City of Edinburgh	165	674	670	416	481	317	192.05	
West Lothian	941	785	1,107	2,708	2,294	1,353	143.85	
North East Fife	6,190	7,278	8,218	9,936	8,586	2,397	38.72	
Dunfermline	582	823	695	760	1,272	690	118.59	
Kirkcaldy	4,406	4,353	2,449	4,484	4,765	359	8.14	

* Area in hectares

Source: Computed from parish summary data

parishes have decreased up to -100%. Spatial patterns of positive change are dispersed in the area. The highest percentage changes have occurred in the area rented from near relatives. The highest percentage changes (more than 100%) have occurred in a major part of the Borders region, Midlothian and in North-East Fife: areas best suited for farm livestock production. Some negative change has also occurred in lowland areas suitable for crop production which may be due to the factors that small farmers who were ploughing their near relatives' land decided to quit from agriculture under structural reforms. The positive change has occurred in 123 parishes. This change is quite contrasting the area rented from outside concerns where the area has decreased in 125 parishes. The land tenure change has two contrasting patterns: areas owned by the farmers have increased in crop-producing parishes while areas rented from near relatives have increased in livestock-producing parishes. These patterns suggest that most arable farmers have bought land from others willing to leave the agricultural practice (either because of the small area of their land or because landlords have been taking back their land from tenants to bring under their own management). This is also reflected through the decline in total number of farm holdings (746) in the parishes (-18.17%). On the other hand, in livestock-producing parishes, farmers preferred to rent their land to their relative instead of leaving the agricultural practice (Bowler, 1985). The areas rented from outside concerns increased in extent from 1972 in arable parishes, Areas rented by farmers from near relatives increased in livestock-producing areas (up to +500%), especially in sheep-producing parishes. Major changes occurred between 1980 and 1984, which may be linked with the milk quota system and other policies concerning livestock implemented after 1980. Questionnaire survey data reflects that most farms (172) are wholly owned by the farmers. Farms wholly rented by the farmers are in intensive arable or intensive livestock farming. Most of the part-owned/rented farms (40.8%) are in arable farming. A total of 263 out of the 284 farms are full time; of the part-time farms, most are arable. The analysis of data clearly suggests major changes in land tenure patterns. This fact is also supported by the questionnaire survey data.

Fig. 4 : Change in area owned by farmers in South East Scotland

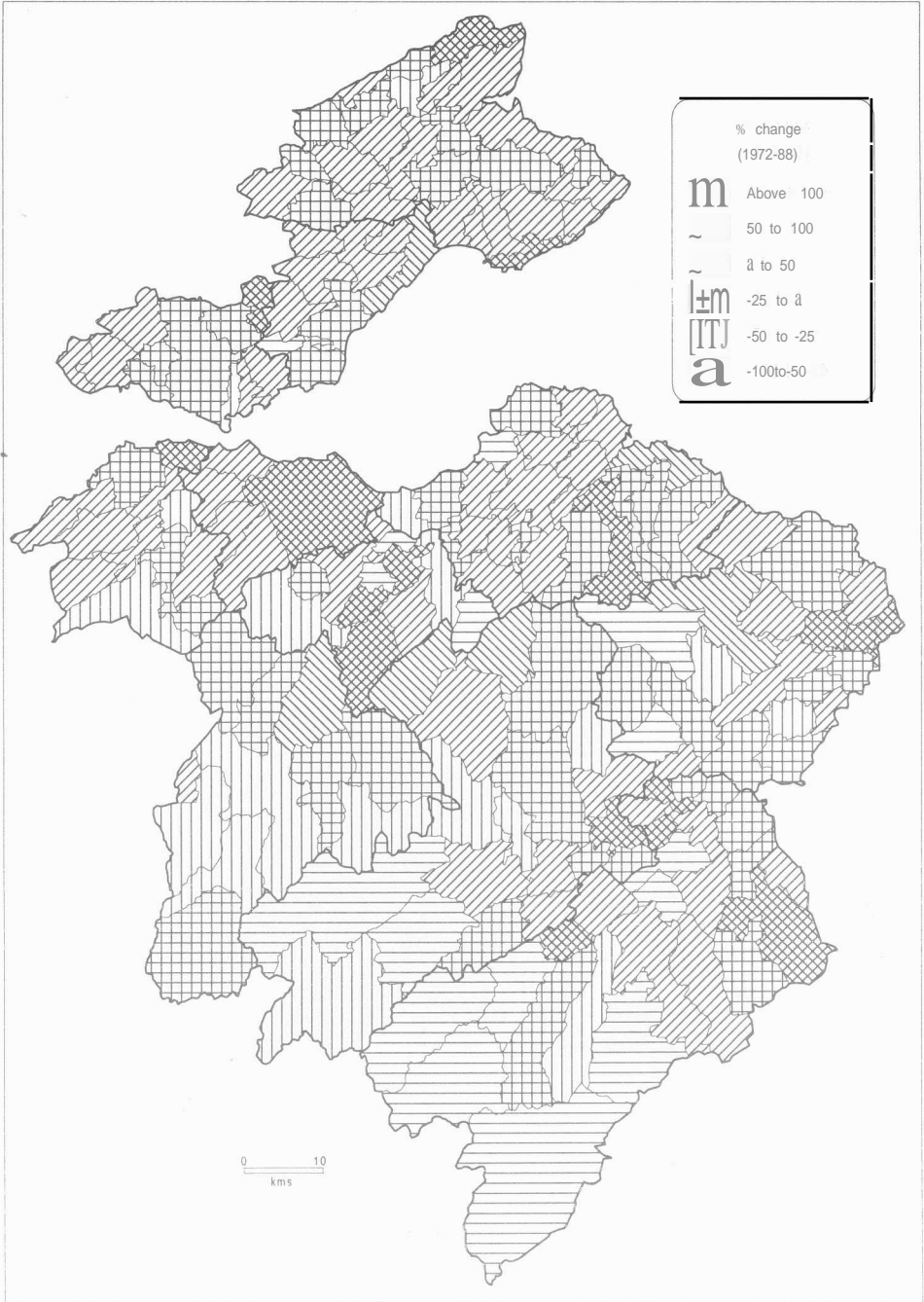


Fig. 5 : Change in area rented from outside concern in South East Scotland

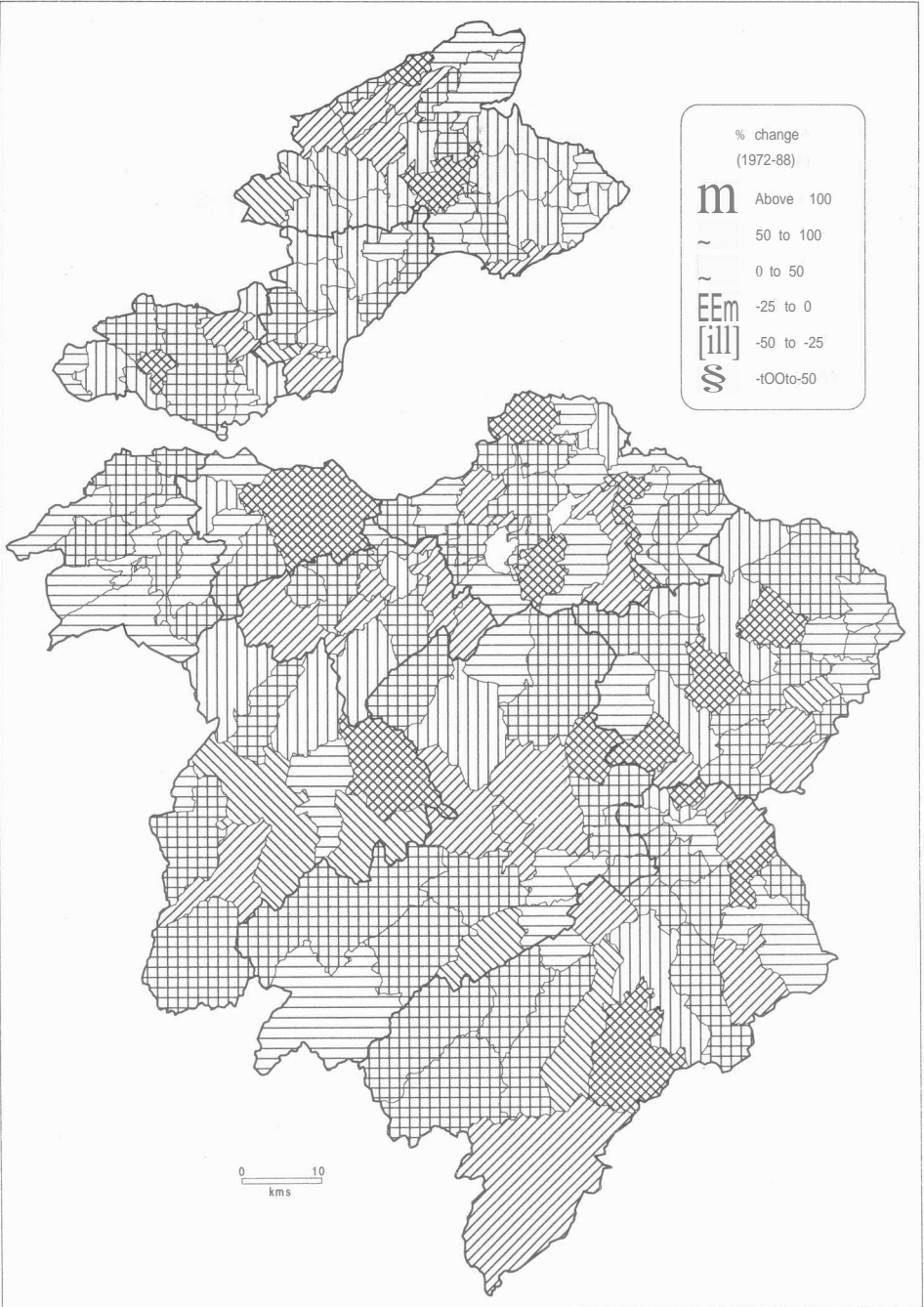
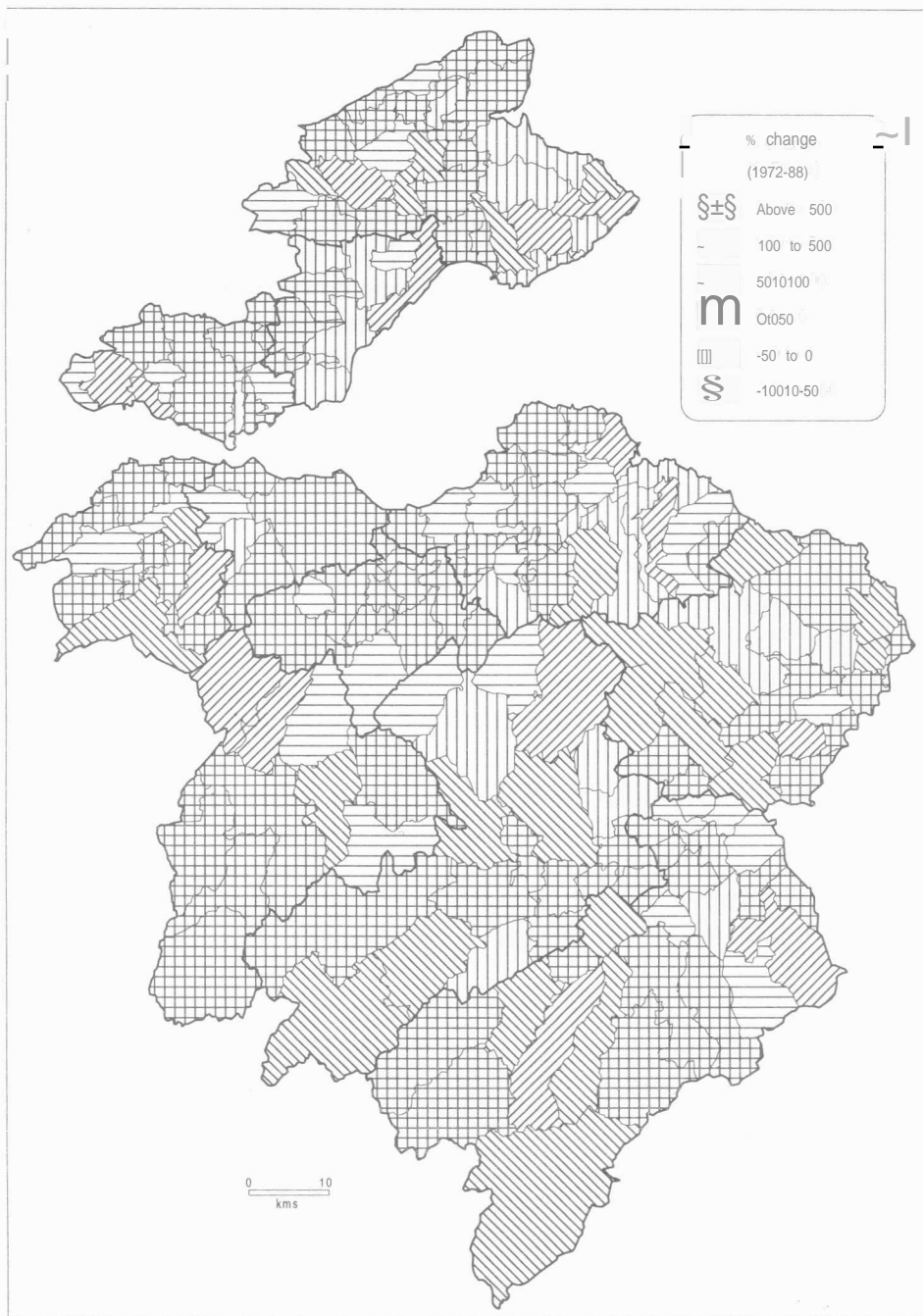


Fig.6 : Change in area rented from near relatives in South East Scotland.

FARM LABOUR REDUCTION

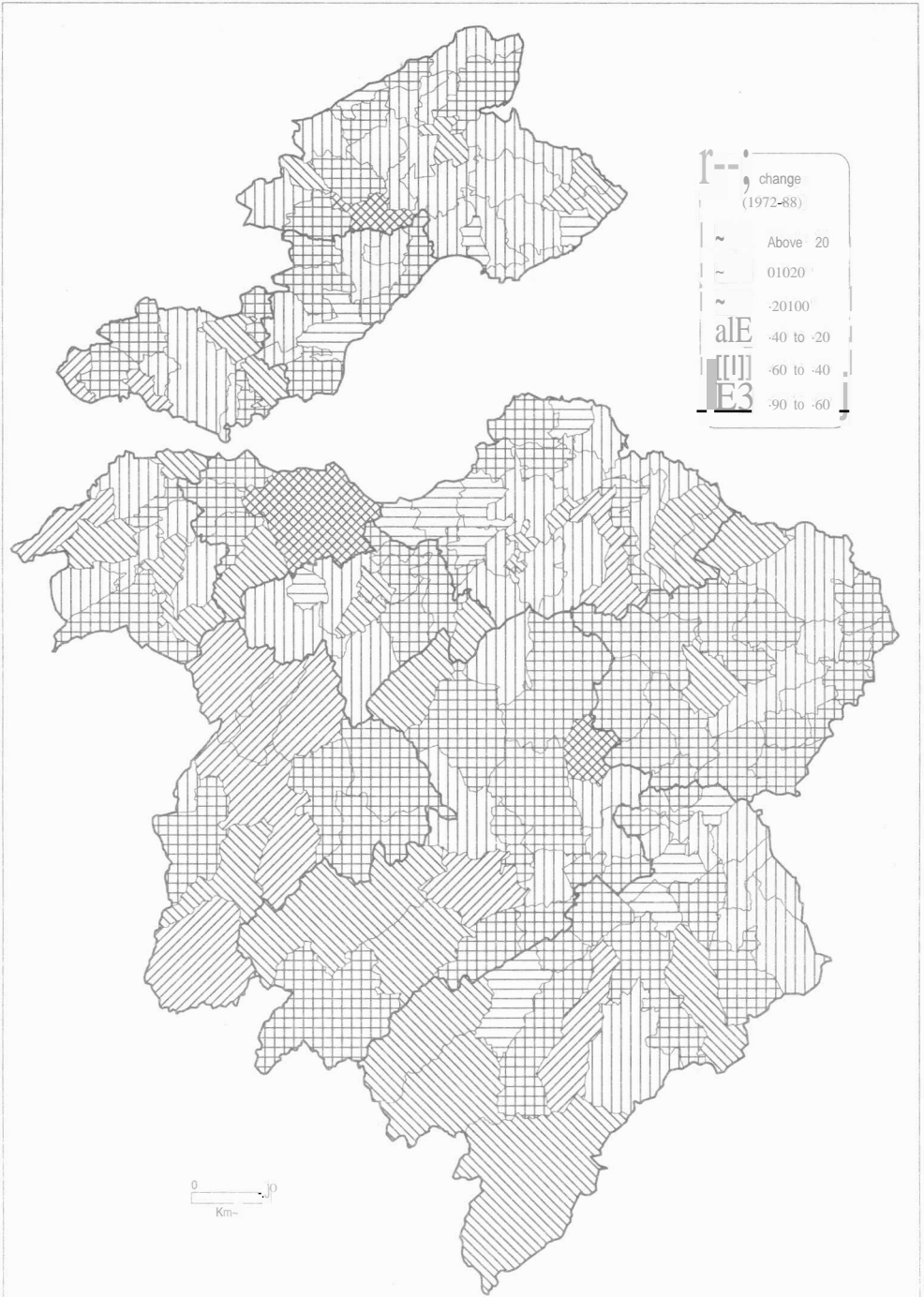
Modernization of farms by introducing structural reforms, such as improvement of farm conditions through use of heavy machinery and better field drainage, use of more inputs and insecticides & pesticides as well as reduction of farm labour has been one of the major objectives of the CAP during the period 1973 to 1988. The aim of reduction in farm labour was to introduce new farm machinery in order to cultivate large areas in less time and produce more agricultural output. Moreover, by reducing farm labour farmers were able to save a lot of money which they were used to pay to human labour. The reduction of farm labour increased the income of the farmers and, hence, improve the overall social and economic conditions of farmers. An over all change in total number of farm labour in South east Scotland can be seen in Table 1. The total farm labour reduced from 12,144 to 8119 (-33.14%). The reduction of one-third farm labour clearly reflects the nature of reductions in farm labour. The division of farm labour reduction (4025) in administrative districts can be seen in Table 4. All districts have major reductions in farm labour. However, major percentage change can be seen in East Lothian (-54.64%) and Kirckaldy (-59.55%). Some other districts have percentage change between -30to-40 percent. One pattern clearly emerges from the table that Major reduction has occurred in arable districts which are situated in lowlands suitable for tillage crops. Figure 7 represents the farm labour

Table 4: Patternso f farm labour hange at level InS.E. Seotland, 1972-88

Districts	1972	1976	1980	1984	1988	Change 1972-88	% Change 1972-88
Berwick	3163	3194	3079	2932	2777	-386	-12.20
Ettrick	903	846	872	812	677	-226	-25.03
Roxburgh	1287	1197	1178	1009	783	-504	-39.16
Tweeddale	337	324	318	323	300	-37	-10.98
East Lothian	1854	1639	1382	1115	841	-1013	-54.64
Midlothian	599	536	486	409	354	-245	-40.90
City of Edinburgh	376	366	481	346	339	-37	-9.84
West Lothian	426	405	438	376	285	-141	-33.10
North East Fife	1627	1425	1341	1166	1016	-611	-37.55
Dunfermline	457	375	344	313	296	-161	-35.23
Kirkcaldy	1115	1141	984	488	451	-664	-59.55

Source: Computed from parish summary data

Fig. 7 : Change in farm labour in South East Scotland



change at parish level. It is evident from the figure that a large number of parishes have -40 to -90% change and this change has occurred mainly in arabic parishes situated below 150 metres above mean sea level. Though some positive change has occurred in some parishes but these parishes are mainly livestock producing parishes, and this may be due to the expansion of livestock forms which needed more farm labour.

CONCLUSIONS

A number of authors such as Bowler, 1983; Lund and Hill, 1979; Found, 1971; Todd, 1979; and Clark, 1986 have focused upon the structural changes occurred in UK under the implementation of CAP structural policies. Patterns of decline in farm holdings, changes in land tenure patterns and reductions in farm labour reflected in tables 1-4 and figures 2-7 clearly authenticate the earlier studies mentioned above and others that major structural changes have occurred in UK agriculture particularly in Scottish agriculture. Total number of farm holdings has declined in the study area resulting in an increase in average size of farms. Interesting patterns, which have emerged after examining the land tenure data verify the fact that structural policies offered under the umbrella of CAP and UK government have been successful. These schemes have been adopted by farmers in order to improve the field drainage system, to buy new farm machinery and other capital goods for the improvement of farms. The questionnaire survey demonstrates that when UK joined the EC in 1973 there were mixed reactions from the farmers about the CAP, however, at the time of survey the total number of farmers in favour of the CAP increased from 64 to 132 during the period, and almost all farmers were very positive towards the implementation of CAP policies and were enjoying the benefits of CAP policies. Initially these schemes (Farm Amalgamation Scheme, 1973; the Farm Capital Grant Scheme, 1974; the Farm Structure (Payments to Out goers) Scheme, 1976; the Horticulture Capital Grant Scheme, 1974 and Farm and Horticulture Development Scheme, 1976 were offered to encourage small farmers to leave the agricultural practice and to improve the farm structure. Especially, Farm and Horticulture Development Scheme, 1976 (Payment to out goers) has substantial role in reducing the number of farm holdings in the area. Later, the Agriculture and Horticulture Development Scheme, 1980; the Agriculture and Horticulture Grant Scheme, 1980 and the Agricultural Improvement Scheme, 1985 were offered especially for the improvement of farm structure on the basis of a five-year plan.

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CULTURAL TOURISM RESOURCES OF PAKISTAN: A Study in Sustainable Development

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ABSTRACT

Pakistan is a land rich in all kind of tourism resources with considerable possibilities of development of tourism and recreation both for foreign and domestic tourists. The paper analyses the prospects for the growth of tourism particularly from the stand point of foreign tourism. It focuses on historical and archeological sites which evokes high Academic interest as well as popular feeling of appreciations in a perspective of past cultural attainment of the people of Pakistan. The paper also focuses on the need of developing and improving facilities oriented to the archeological and historical sites and current issues relating to sustainable management of tourism trade in Pakistan.

INTRODUCTION

Culturally Pakistan is a rich country. Its location is the natural gift where ancient civilization flourished dating back to 10,000 years. The rulers of West Asia, Central Asia as well as of Europe passed through Pakistan with their armies, occupied the region, ruled here and retreated through same route. Invaders took a passage from Khyber Pass, Bolan Pass and other passes of Northern Mountain.

Archeologically Pakistan has from Neolithic period sites and of Harrapan civilization. These archeological sites are found all over Pakistan. In 1868 the remain of modern man (30,000 years)old were found in Iran and Pakistan is in the route of who descended from an ancient African community.(J.M.Robert) Famous sites are located in Sindh, Punjab and N.W.F.P. while the excavation is in process in Balochistan with the collaboration of French Archaeologist. Recently they discovered sites in Dera Bugti where they found skeleton of the biggest dinosaur and in Kech district, Muri Qala, and Shabi Tump which is 5000 year old.

Historically, Pakistan remains the passage of all emperors like Alexander, Mahmood Ghazanavi. The Moghals from Akbar to Bahadar Shah Zafar, the last Prince of the Moghal, and the Britishers ruled sub continent for centuries. During their rule they constructed forts mosques, palaces, gardens, mausoleums. The construction of mosques, forts palaces, garden and mausoleums are typical of their architecture. This architecture is of great interest of domestic, foreign tourists as well as researchers. Some sites are important historically as well as archaeologically. (Pakistan Tourism Directory 1998) Every year thousand of visitors go to these places to enjoy their beauty architecture, and local sites. According to international tourism survey conducted in 1992, 37.9 % foreign tourists visited Karachi, followed by 19.5 % Lahore, 16.0% Islamabad/Rawalpindi and 40.3% Peshawar.

During the period of 1998-99, 46.31million domestic tourists were estimated to have traveled within the country indicating an increase of 2.61%. (Tourism in Pakistan 1998). (Table.3, andFig.3, shows arrival of tourists by nationality in Pakistan)

TOURIST INTEREST SITES BY PROVINCES

Pakistan has numerous historical and archeologically attractive sites for special interest to domestic and foreign tourists. The distribution of historical and archeological sites by province is as under:

SINDH

Karachi	Chaukundi	Makli	Thatta
Hyderabad	Sehwan	Ranikot Fort	Kot Dijji
Amri	Rohri	Sukkur	Moenjodaro

Karachi:

A natural protected harbor started construction in 1910 were made thirteen berths, by 1917 it boasted to seventeen berths and was established in 1943. As a premier sea port of Pakistan, it received high priority for further improvement in the berthing, navigation and equipment facilities.

Custom House:

It was built in 1920, houses the office of the Pakistan custom Department over looking the massive import and Native Jetty.

Port Trust Building:

It is a crescent shape building built adjacent to custom house.

Khaliq Dina Hall:

It was constructed in 1906 for the recreational and literary purpose for the native population. It assumed historical significance as the venue of an important event in the struggle for freedom from colonial rule. The trial was held in this historical hall on Molana Mohammed Ali Johar and Molana Mahammed Ali Gohar.

Frere Hall:

It was built in the memory of Sir Walter Frere, Governor of Bombay, and was opened in 1865.

Empress Market:

It is an old attractive building in the centre of the city with a Clock Tower.

Mereweather Tower:

It is a memorial to a former commissioner Mr. Mereweather in Sind. Foundation stone of the building was laid in 1884 and was opened to public in 1892. It has some five historical buildings of Victorian architecture, some old churches such as *Holy Trinity St. Andrews Church and St. Patrick's Church.*

Wazir Mansion Museum:

It is the birth place of the Quaid-e-Azam is now a museum.

Sindh Madressa:

It an old educational institution where Quaid-e-Azam got his early education.

Sindh High Court:

It is an old red stone building.

Mohatta Palace:

It is the Moghar and Gothic building of red sandstone with domes and cupolas. This is also made a museum nowadays; it was in use of Mohterma Fatima Jinnah sister of Quaid-e-Azam. (Yasmin Lari 2000) Mousoleum of Quaid-e-Azam: It is located in centre of the city and is the blend of traditional muslim and modern architecture. Its foundation stone laid in 1960 and was completed in 1970.

National Museum Karachi:

It is one of the best museums in Pakistan. It houses collection of 4500 years old Indus Civilization Artifacts, 1500 year's old Gandhara Budist stone sculpture, 10th century Hindu sculpture and Muslim art.

Chaukundi Tombs:

This is a cluster of graves of 16th and 18th century lies about 27 kms out of Karachi in rectangles shape. These slabs have carving and various designs of Jewellery and horses and words which were included in the fashion world also.

Makli:

This is a site of million graves and mausoleums covering 6 kms. Most of them are from the 16th and 17th centuries. Most of the mausoleums are master-pieces of ancient art of stone engravings and perforated stone work. South to North there are three main groups of monuments. Moghul period-16th to 18th centuries, Tarkhan and Arghun period - 16th century and Samma period -16th centuries.

Thatta:

At one time Thatta was important as Sindh's Capital City and the 14th century Muslim dynasties ruled Sindh from Thatta and in 1739 the capital was moved and Thatta declined. For centuries Thatta was the capital of Sindh. Thatta has a Moghul architecture Mosque built by Moghul emperor. Shah Jehan in 1647 AD. It has 93 domes covering the entire structure and performing the acoustical purpose of carrying the voice of Imam to all parts of the mosque. This mosque has been carefully restored to its original condition. Farruk on the bank of the river Indus 56 kms from Thatta, is a shrine of Amirpir.

Hyderabad:

It is the third largest city of Pakistan at present.. Its history goes back to Pre-Islamic times when Ganjo Takar (hill tract) was used as a place of worship. Hyderabad became capital of Sindh when Indus changed its course from Khudabad in the time of Kalhoru rulers, Ghulam Shah Kalhoru had renovated this city and laid the foundation of modern Hyderabad.(Dr. Oameruddin 2000) Hyderabad, previously known as Neroonkot: "Fort of Neroon", the foundation of the city laid in the later part of 11th century AD. The fort was in the possession of Buddhists at the time of conquest of Sindh by Mohammad Bin Oasim in 1712 A.D. The Fort (Oila) was built in 1768; it sprawled over an area of 500,000 sq. yards. It was used as the court

of Kalhoro (1700 - 1782) and the Talpur (1782 - 1843) rulers Hyderabad Fort was built by Ghulam Shah Kalhoro in 1768 AD on a rocky hill.. The most impressive feature of the fort is its impressive fortification wall which is 40 to 50 feet in height..

Shaikh Makai Fort:

This fort at Kacha Qila (mud fort) was built by Ghulam Shah Kalhoro for the protection of the mousoleum of Shaikh Mohammad Makai, a Dawesh. It is known as Dargah of Shah Maki or Jeay Shah and attracts devotees every year on his urs (death anniversary) Kalhoro monuments decorated with geometrical and floral designs are near central jail. Ghulam Shah Kalhoro and Ghulam Nabi monument is near Heerabad have attractive blue glazed tiles of Mir Mohammad Khan Talpur who died in 1870 A.D.

Miani Forest:

About 9.6 kms from Hyderabad is the Miani Forest the scene of the battle between the Talpur and British under Lord Napier in 1842. The British victory made them master of all Sindh which was to end in 1947, when Pakistan emerged as an independent state.

Runikot Fort:

This is about 90 kms north of Hyderabad, claimed to be the largest fort in the world. Its walls are about 25 kms in circumference, built by two of the Talpur Mirs in the early 19th century probably on the site of much older fort which guarded the trade route from Thatta through the Kirther hills to Central Asia.

Kot Diji:

The Kot Diji site is 24 kms south of Khairpur. It is 18th century Talpur fort in excellent condition. It is also a prehistoric site too.

Amri:

About 20 kms north of Sann lies Amri, situated on the ancient mound that have been extensively excavated. Amri predates the Indus civilization. Its people disappeared when the Indus people rose to power.

Rohri:

It is an important old settlement boasts of the mosque built by an officer of the Emperor Akbar in 1583 and decorated with porcelain tiles. The ancient city of Aror or Alor lies about 8 kms to east of Rohri.. Alexander the great

made a prolonged halt here, fortified and garrisoned the citadel before moving on, down the Indus. The city was also visited by the famous Chinese Buddhist Pilgrim Tsuan Tsang in the 7th century. And in 712 A.D. Mohammad Bin Qasim defeated Raj Dahir here.

Sukkur:

Sukkur is a holy place full of mausoleums of saints. Sukkur Barrage the first to be completed on the Indus in 1932 still is one the most impressive connection.

Moenjodaro:

At Moenjodaro on the west bank of river Indus in Sindh have been found the remains of one of the earliest and most developed urban civilization of the ancient world. Moenjodaro is an important metropolis of the great Indus Valley Civilization, which flourished between 2500-1500BC, it presents an outstanding example of well-organized civic life. (S.A. Naqvi 1973). The archaeological excavations place Moenjodaro among the most spectacular ancient cities of the world. It had mud bricks and baked brick buildings, covered drainage system. With soak pits, a large state granary, a spacious pillared hall, a collage of priests a large and imposing building and a citadel mound which is a system of solid burnt brick towers. From coins and potteries discovered, archeologists believe trade and cultural links existed between Moenjodaro and contemporary civilizations of Mesopotamia and Egypt.

The various layers of the excavated site show that upon ancient civilization raised the building of much later settlement to the Khushan period between 1st and 3rd Centuries A.D. The remains of Buddhist stupa and monastery are of later period. The ancient civilization came to an end after 1800 B.C. and its disappearance remains a mystery.

PUNJAB

Lahore	Multan	Uch	Bahawalpur
Chiniot	Saikhot	Gujrat	Nandna
Kaller Kahar	Mangla	Rohtas fort	Rawalpindi
Texila	Hasanabdal	Wah	Sialkot

Lahore:

Lahore for a thousand years was the cultural centre of Northern India. It has some of the finest gardens in the sub-continent. It has its fine monuments of the Mughul periods and the British rule. Important monuments of the

Mughals in Lahore are Royal Fort Lahore, Badshahi Mosque, The Tomb of Emperor Jahangir, Empress Nur Jehan, Anarkali, and Asif-Jah and the famous Shalimar Garden.

Royal Fort Lahore:

Characteristically Mughul in its architectural style, dates back to 1566 when Akbar the great made Lahore his seat of government. He made Fort a royal residence with its marble pavilion, the Diwan-e-Aam, the Elephant gate, Jahangir Quadrangle, the Shish Mahal the Naulakha and Moti Masjid all reflect the legendary pomp in which the mughals lived.

Jahangir's Tomb:

It is surrounded by a vast garden this was built in 1637 A.D. by Empress Nur Jehan and Emperor Jahangir's son, Shah Jahan. Four towers stand at the corners and a vaulted chamber in the middle of the mausoleum and on the marbles there is calligraphy citing the 99 attributes of God.

Nur Jehan Tomb:

Close by is the mausoleum of Mughul Empress Nur Jehan who is known to introduce rose perfume. She was buried in 1645 A.D. at Shahdara outside Jahangir mausoleum across the railway line. She had built herself during her lifetime.

Asif-Jah's Tomb:

Asif Jah brother-in-law of Jahangir was buried in the courtyard near Jahangir Tomb. It was built in Shah Jehan's time. It is the building in which the pattern are continued from one tile to another and each tile is of many colors of uniform shape. This type is popular in Iran Sindh and Multan.

Anarkali Tomb: The tomb of Nadira Begum Alias Anarkali is situated in the corner of the civil secretariat of Punjab Government at Lahore. It is a master piece of solid masonry work of early Mughul period and is neatly and beautifully fitted up.

The Shalimar Garden:

Built by Emperor Shah Jehan in 1642 A.D. This garden is one of the most beautiful examples of Moghul landscape architecture. The garden is arranged in three terraces. The decreasing elevation facilitates the flow of water to all parts of garden from the central waterway. The garden was the venue of many Meena Bazars (Women's market-Picnics where only the Mughul King and Princes could enter, now provide a charming ground for such occasions for the common man.

Badshahi Mosque:

It was built in 1674 A.D. by the last Mughul Emperor Aurang zeb. The gateway of old fort opens towards the courtyard of Badshahi Mosque, which is the largest in the world. A vast courtyard characteristic of Mughul architecture is bounded on all corners by four towering minarets of red sandstone.

Minar-e-Pakistan:

About 59.7 metres tall monument called Minar-e-Pakistan situated near Royal Fort. It was built in 1968. the total area of minar including park is 22 acres.

Jinnah Garden:

Formerly known as the Lawrence Garden from the British days, is situated next door to the Lawrence Montgomery Halls.

Mausoleum of Data Ganj Baksh Ali Hajveri:

The Darbar or sharine of Data Ganj Baksh is situated near Bhati gate one of the twelve gates of Lahore wall which was built by Emperor Akbar around Lahore. The Darbar which consists of the mausoleum of the saint, the hujra of the saint Hazrat Khawaja Moinuddin Chisti of Ajmeer (India) and the beautiful mosque stands on the raised platform to which a flight of stairs lead up.

Zamzama:

It is the English Poet Redyard Kipling called the Kim's Gun, in his most famous work, stands in front of the university.

Changa Manga:

It is the biggest man made forest over an area of 12510 acres, situated a distance of 68 kms from Lahore was planted in 1870.

Hiran Minar:

It is about 34 kms from Lahore is constructed by Jahangir in memory of his pet antelope.

Multan:

It is an oldest and historic town in South Asia. Multan was mostly under the Arab and Central Asian influence rather than Indians. It has some beautiful specimens of Pre-Moghul Islamic architecture in the shape of mausoleums of three saints, Shaikh Bahauddin Zakaria, Shah Rukn-e-Alam, Shah Shamas Sabzwari.

Tomb of Rukn-e-Alam was built between 1320 A.D. and 1324 A.D. is beautiful pre-mughal architecture.

The Tomb of Bahauddin Zakaria:

It is on the high mound representing the ancient fort of Multan. He was one of greatest saints of Suhrawardia Silsila and was the founder of this silsila. Multan Fort: Fort was built on a mound separating city from an old bed of river Ravi. For a long time it was the British Garrison stationed in the fort but it was destroyed.

Uch Sharif:

It was the most important cultural and religious centre of 13th century and is situated 9 kms from Panjnad.

Bahawalpur:

Formerly a princely state, comprises of three districts Bahawalpur, Rahim Yar Khan, and Bahawalnagar. The palaces of Amirs are located mainly in Dera Nawab, and palaces east of Sutlej river Bahawalpur have been founded in 1408 A.D. It was enclosed within a wall and now only two gates remain there.

Dara War Fort:

Fort Darwar is situated in the middle of Cholistan desert. Walls of the fort are built in mud bricks, plastered and fresco painted. Its underground chambers give access for trolley passages and other utilitarian concepts. Next to the fort is mosque and royal cemetery. The tombs have been painted in blue, green and yellow mosaics.

Nur Mahal Palace:

The other palace is Guizar Mahal which is equally beautiful and has Islamic architecture. In Ahmad Pur East is situated another palace renowned as Sadiq Garh Palace which is in use by the ex-royal family.

Chinnot:

It is a historical site but no full-fledged archeological excavation took place here. It may have been cradle of some ancient civilizations. It is the centre of wood carving and masonry. Masons of Chinnot participated in the building of Taj Mahal and so many new and old historical buildings.

Kaller Kehar:

A village beside Salt Lake and motorway between Islamabad and Lahore is a historical place of Mughul period. Babar stayed there. Takhte-Babri is situated there.

Mangla Hut:

It originated around 1400 A.D. The huts were made of mud and then changed to present stone structure.

Rohtas Fort:

Built in the 1540 AD. by Shere Shah Suri is located near Dina. The fort is 5 kms in perimeter and one km from the river.

Hasanabdal:

It is situated 46.4 Kms west of Rawalpindi has attracted all ages men of piety and authority. It has been regarded by Hindus, Budhists, Muslims, and Sikhs as a centre of religious piety and become the limelight of history since the Mughal suzerainty. (Institute of Islamic History Culture and Civilization 1982)

The three well known historical monuments at Hasanabdal are i. Hakim's Tomb. ii. The so-called Lala Rukh Tomb iii. Gurdwara Panja Saheb.

Wah:

It is a cantonment and little inside has Mughal garden, fondly named " Farudgah-e-Shahan-i-Mughlia"

Rawalpinidi:

It is also an old town founded some 400 to 500 years ago. It began to assume a large role under Mughuls when they built main shahi road between Kabul to Delhi. It was later taken over by sikhs and then Britisher made a Garrison here in 1849 which became the chief cantonment of sub-continent. Church built in 1854 and restorted in 1879. At the Margalla hill near Islamabad thereis historical "Margalla Pass"and archeolical remains of the Giri Fort and Parwala Fort. The forts have been recorted in Tuzuk-i-Babri. These forts fell into ruins after Sikhs invasion.(Institute of Islamic History Culture Civilization 1982).

Nandna:

It is located in the steep rocky hill in Salt ranges. It is an important historical place, has a Fort and an old Temple. Mahmood Ghaznavi defeated Jaipal Singh in 1013 AD at this place. But this place has become famous when Abu Rehan Al-Bairuni 1017 AD measured dimension of the Earth at Nandna.(Ghulam Jan Arez 1996)

Sialkot:

It is a very old city and contains many places of interest and shrines of historical importance, which are held sacred by Muslims and Sikhs, Raja Teja Singh Temple, Temple of Guru Baba Nanak, Darbar Baoli, Shrine Hazrat Imam Ali-ul-Haq and Abdul Hakim.

Iqbal Manzil:

It is the birth place of Allama Mohammed Iqbal, is a museum and library and has been taken over by the Archeological Department of Pakistan.

Sialkot Fort:

This fort provided shelter to the European inhabitant during the war of independence of 1857.

Taxila:

It is one of ancient sites of Pakistan which present rich cultural heritage of the country. It is located in the valley of Hano it is 2500 year old. It attracted Alexander.

The city witness rise and fall of sever dynasties. It was famous for it Universities. During the days of Ashoka a number of monasteries and stupas were built. The first city site known as "Bhir Mond" flourished before

the arrival of Greeks. The second city in the second century B.C. is called Sirkap. It was enclosed by a stone built city wall, three and half miles long. The third city is situated north east of Sirkap.

N.W.F.P.

Peshawar	Fort Bala	HisaCharsadda	Kund
Takht-e-Bhai	Shahbaz Garhi	Abbottabat	Gilgit
Gomal Valley			
Swat Valley			
Saidu Sharif	Chakdara	Udaigram	Nemogram

Peshawar:

It is the capital of province and a historical city because of the famous Khyber Pass. It dates back to 400 BC. The name was given by Akbar the Moghul Emperor. Many scholars, traders, historian and conquerors have passed through it. The vale of Peshawar has been described as the Ghandara Kingdom in ancient history. This city also saw rise and fall of several dynasties.

Fort Bala Hisar:

This Forth was built by Mughal Emperor Babar in 1526-30 A.D. and was destroyed by the sikhs and in 1830 A.D. Barracks were built in 1849 A.D. by Britishers.

Mahabat Khan's Mosque:

It is located in the centre of the city and has been built by Mahabat Khan, the Mughal governor during 670 AD. Its design and architecture is mughal.

Shahji Ki Dheri:

The name Shahji Ki Dheri is given to the ancient Kanishka Chaitya monument situated half km south west corner of the city. Two monuments laying east and west respectively presents the stupa and sanghrama mentioned by Chinese pilgrims. The stupa was about four hundred feet in height.

Islamia College Peshawar:

It was established in 1913 was a great land mark in the educational uplift of the region. The college holds pivot position in the Peshawar University and provided the base for the foundation of the Peshawar University post graduate level courses in English and Botany.

Charsadda:

It was once known as Pushkalavati, the lotus city. It was the capital of Ghandhara from about 6th century B.C. 2nd to 6th century. The next ruler of Ghandhara founded a new capital city of Pushkarati, and is now Shaikhan Dheri to the north east of Bala Hisar.

Kund:

Is in the Swabi Tahsil.. The ancient city kund here once accommodated the victorious army of Alexander. The village is archaeologically important.

Takht-i-Bhai:

There is a Buddhist monetary at Tahkht-i-Bhai. Here Stupas were founded in the 1st century A.D. and abandoned in the 6th century.

Shahbaz Garhi:

There is the sign of Ashokan inscriptions. There are 14 edicts written on two rocks, 12 on the big one and two on the small rock. Shahbaz Garhi and Mansehra inscription were in the local Ghandhara script..

Mardan:

It had been a major military base of Britishers in 1846. In the Central City three is a memorial arch to those Guides who died in Kabul in 1879. It is an imposing Moghul and Gothic structure.

Gomal Valley:

Some areas of Dera Ismail Khan districts surveyed in 1970's by A.H.Dani, Farid Khan, and F.A.Durrani found number of sites of Harrapa Culture in the area of Gomal Valley.(Dr.M.R.Mughal1973)

Swat Valley:

In this valley Alexander fought and won some of his major battles before crossing over to the plains.

Swat was once cradle of Buddisior of all schools, where once 1400 monasteries flourished. It was the home of Ghandhara sculptures. It is also the historical land where the Muslim conquerors, Mahmud Ghazni, Babar and Akbar fought their battles.

The ruins of great Buddhist stupas monasteries and statues are found all over Swat. The sites where these are found are Batkara near Saidn Sharif, Chekdara at Udigram and Nemogram.

Abbottabad:

It serves as a gateway to northern areas of Pakistan and to Kaghan Naran Valley. Historically it was the meeting place of all kinds of ethnic groups.

Gilgit:

It is an ancient place lying on the traditional trade route between China and Pakistan. Hunza valley is historically and archeologically important. There is a Buddhist temple at Gircka and another similar temple has been built at Nilt. It is also believed that they penetrated to Gilgit. Thirty feet above the ground on the rocky spur at the entrance of Kargan Nullah, over 5 kms west of Gilgit, a Buddah stands nine feet tall. At the entrance of Satpara valley a seated Buddah on twenty feet high boulder overlooks the capital city of Skardu, which is 5000 years old. In the Hunza valley there is old Fort built by Balti artisans named as Baltit. Fort, The Fort" is used as museum and Cultural Centre.

BALUCHISTAN:

Quetta	Ziarat	Fort Sandeman	Qila Saifullah
Qila Gul Mohammad	Fort Kharan	Meher Garh	Rama Ghundai
Hindian	Sibi	Dera Bugti,	Mili Qala
Shahi Tump.			

Quetta:

In old days Quetta was known as Shawl Kot, It was donated by Amir of Afghanistan to the Khan of Kalat by the way of dowry, when he gave his daughter in marriage to the Khan of Kalat (donated as a shawl of bride). (Pakistan Government of 1998) This was a small town of mud houses when first European visited here in 1828. This town was surrounded by mud wall when army reached Kwatta (means Fort in Pushtu). Before the earthquake of 1935 Quetta was a bright city having multi storied buildings. It was raised to ground in the small hours of that fateful day.

Hazari Ganj Chiltan National Park:

It is situated 20 Kms south west of Quetta.

Charsadda:

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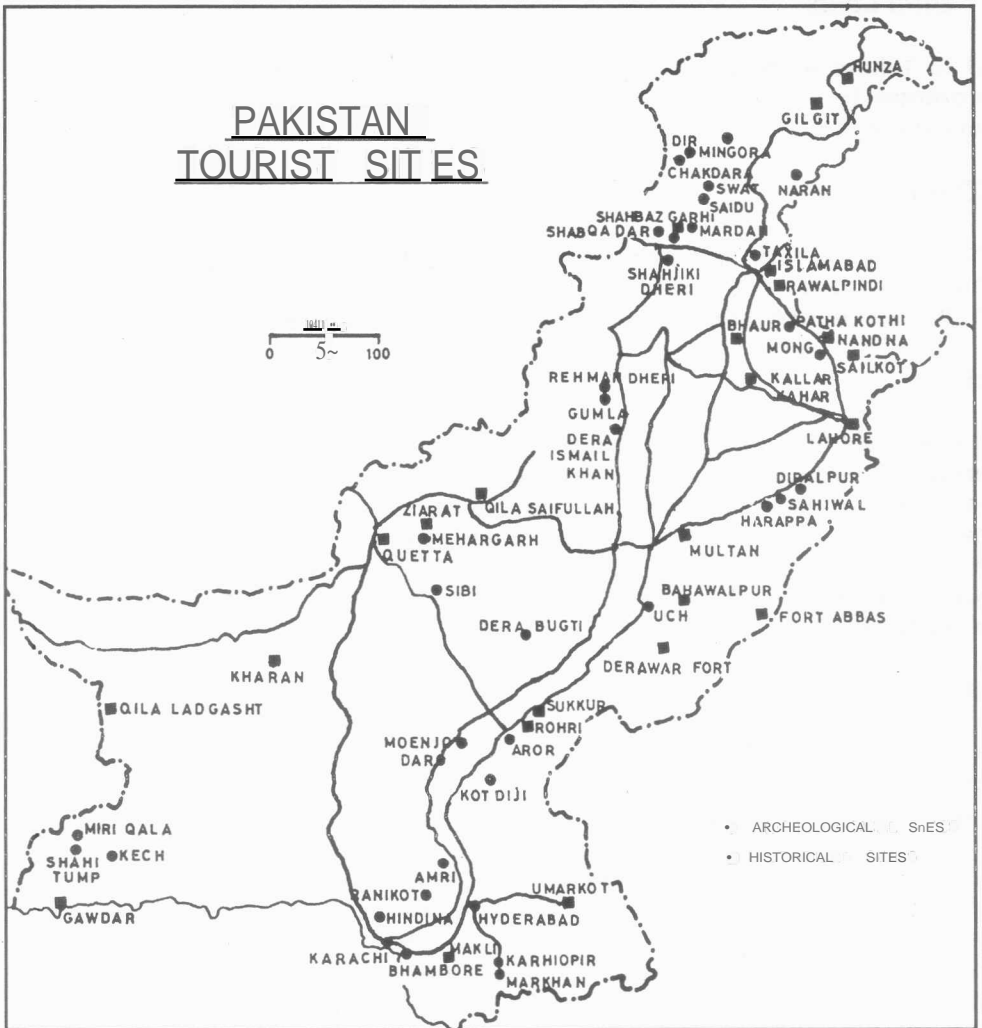
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Karkhasa:

It is a recreation park situated 10 kms west of Quetta.

Urak Valley:

This valley is 20kms from Quetta. The road is lined on either side with wild roses and fruits orchards. At the end of the valley there is a waterfall, full of apple and apricot orchard.

Hanna Lake:

It is 10kms from Quetta. The greenish-blue water of lake provides a rich contrast to the sandy brown hills that surrounded it. Chair lift is also available at Hanna Lake.

Ziarat:

Shrine of Kharwari Baba Known as Ziarat Baba Abdul Hakim at Goshki.. The saint migrated from Kandhar to this place. Quair-e-Azam spent his last days in the rest house (summer resort) Quaid-e-Azam residency.

Sibi:

It has great historical importance and a seat of many rulers in the area. It is an ancient town. Its name is derived from a Hindu princess of Sewa for a long time. Sibi was under the Gazanavi empire in beginning of eleventh century, due to its location on the mouth of Bolan Mula and Harnai Pass. It was one of the seven kingdoms of sindh during the time of Nasiruddin Kabacha. Mir Chakkar Khan Fort is the main feature of Sibi.. Annual Sibi week horse and cattle show is now a national festival..

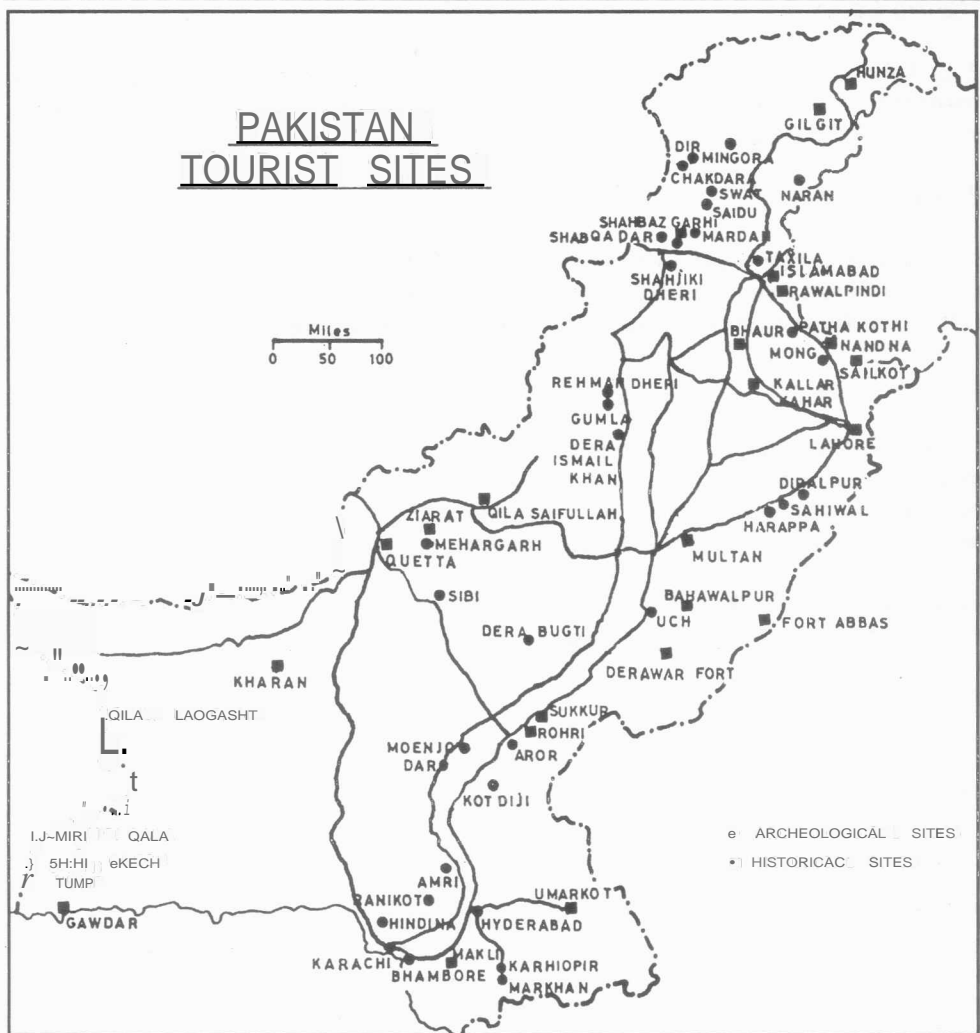
Mehargah:

A 10,000 year old settlement of Neolithic period discovered in 1984. It predates the civilization of Egypt and Mesopotamia.. The site is occupied from 7,000 B.C. to 2,000 B.C. it is the early Neolithic site.

It was the centre of craftsmanship in 7,000 B.C. It is situated at the foothill of Bolan Pass. The agriculture of Mehargarh is 8,000 B.C. Wheat was the main crop and cotton is growing in the area 5,000 B.C. Zhob valley is located on ancient caravan routes to Afghanistan. It continues through Muslim Bagh, Qilla Saifullah and Fort sandman. It was flourishing at the beginning of 3000 B.C. The discoveries occur at various sites like Rana Gundai, Sur Jungle, Persian Gundai, Mughal Gundai and Kandai, and suggest affinities of this culture with that of Bronze age culture. The resemblance of Zhob valley pottery is with the Indus valley and suggests link with these cultures.

Kech:

Makran indicates the existence of a civilization that was more than 5000 year old. The excavations were made in the Turbat district of the Makran division in 1996-97. The two locations were west of Turbat at the village of Miri Qala and Shahi Tump on either side of the Kech stream.(Table.4,5 and Fig.4,5)



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Table.1

City wise	Pakistan Tourists Arrival to Museums 1997-1998		Pakistan City wise Archeological sites 1997-1998	Tourists Arrival to Museums	
	Domestic	Foreign		Domestic	Foreign
Karachi	65.77	0.89	Moenjodaro	40.31	1.37
Lahore	290.36	3.25	Bhambhore	40.96	2.64
Peshawar	31.23	4.39	Umerkot	5.24	0.04
Taxila	62.89	7.77	Takht-e-Bhal	1.95	1.29
Sialkot	5.56	0.13			
Harrapa	0.89	0.60			
Swat	9.19	1.21			
Dir	3.22	0.37			
Islamabad	100.45	13.82			
Hyderabad	78.69	0.09			

Source: Department of Archeology, Government of Pakistan

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Table.3

	Pakistan Foreign Tourist Arrival by Nationality 1990-98								
	1990	1991	1992	1993	1994	1995	1996	1997	1998
Europe	147.4	127.9	132.9	176.3	239.4	165.7	153.0	153.8	183.9
Ameica	42.3	41.9	39.6	47.7	58.8	57.8	54.0	54.2	61.1
South Asia	168.7	195.0	105.7	72.8	77.2	71.6	76.1	88.1	99.2
Middle East	27.2	28.8	28.3	30.3	29.1	32.2	31.7	28.5	27.5
Pacific&East	5.2	8.9	10.0	13.0	13.3	10.5	9.8	8.3	8.3
Asia	33.0	35.4	34.9	39.0	36.9	40.5	44.0	41.9	48.6

(in thousand)

Source: Department of Archeology, Government of Pakistan

Table.4

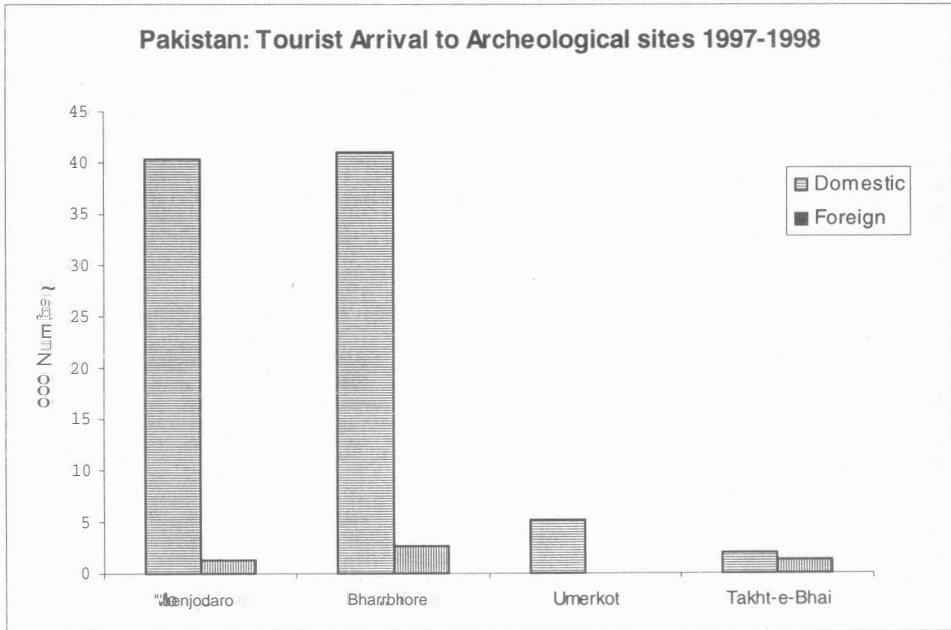
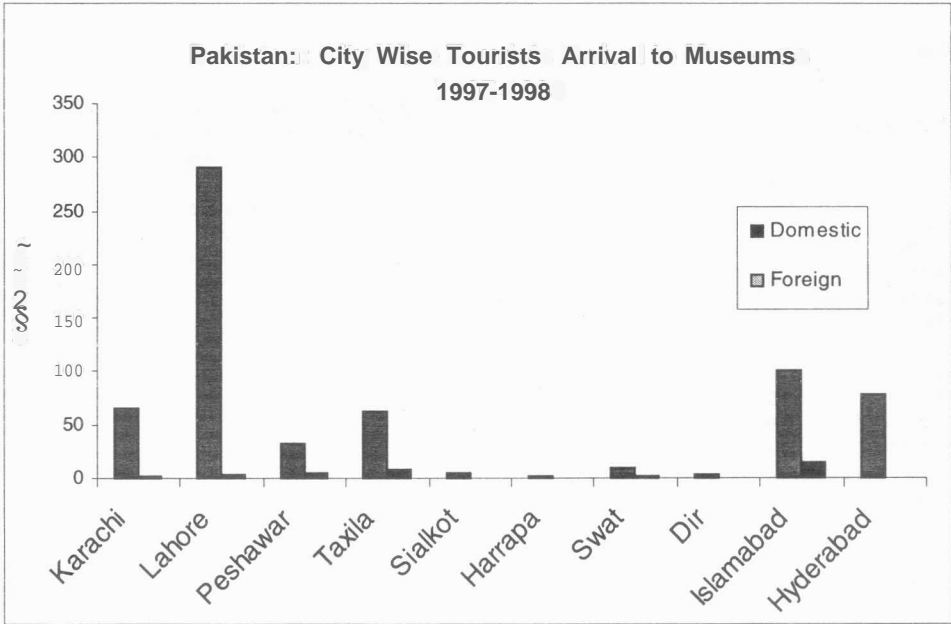
	Pakistan Domestic Tourists Arrival at Cultural Places 1989-1998		
	Historical Places	Archeological Places	Museums
	1989	1787.58	78.73
1990	2420.84	63.09	455.57
1991	2068.09	70.29	528.23
1992	1688.02	61.73	574.84
1993	1941.99	91.97	546.82
1994	1912.62	97.7	749.58
1995	1422.94	73.24	605.84
1996	1211.01	75.36	669.29
1997	961.28	88.46	678.25
1998	1329.07	75.21	700.71

Source: Department of Archeology, Government of Pakistan

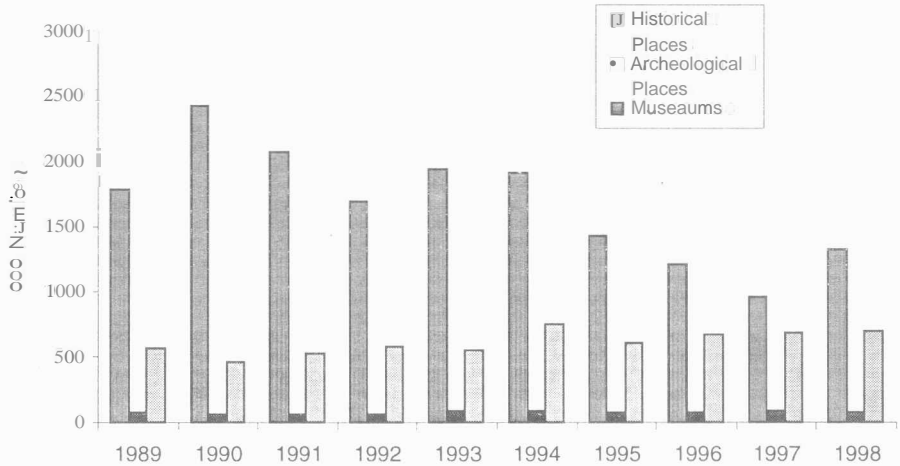
Table.5

	Pakistan Foreign Tourists Arrival at Cultural Places 1989-1998		
	Historical Places	Archeological Places	Museums
	1989	60.66	4.43
1990	148.84	4.81	20.95
1991	61.10	2.40	34.74
1992	35.28	2.85	37.59
1993	32.62	3.13	44.30
1994	58.77	3.93	43.78
1995	79.89	2.48	30.13
1996	73.07	5.10	33.80
1997	29.32	5.34	35.52
1998	18.60	3.48	48.20

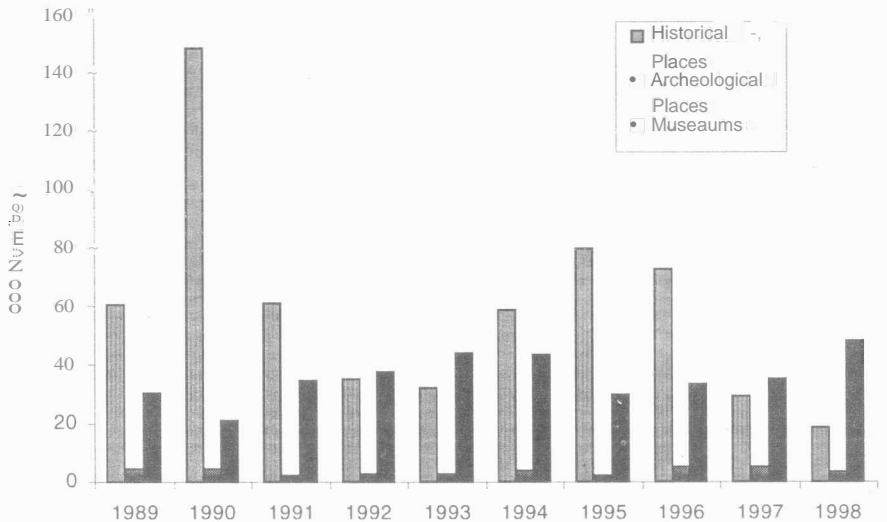
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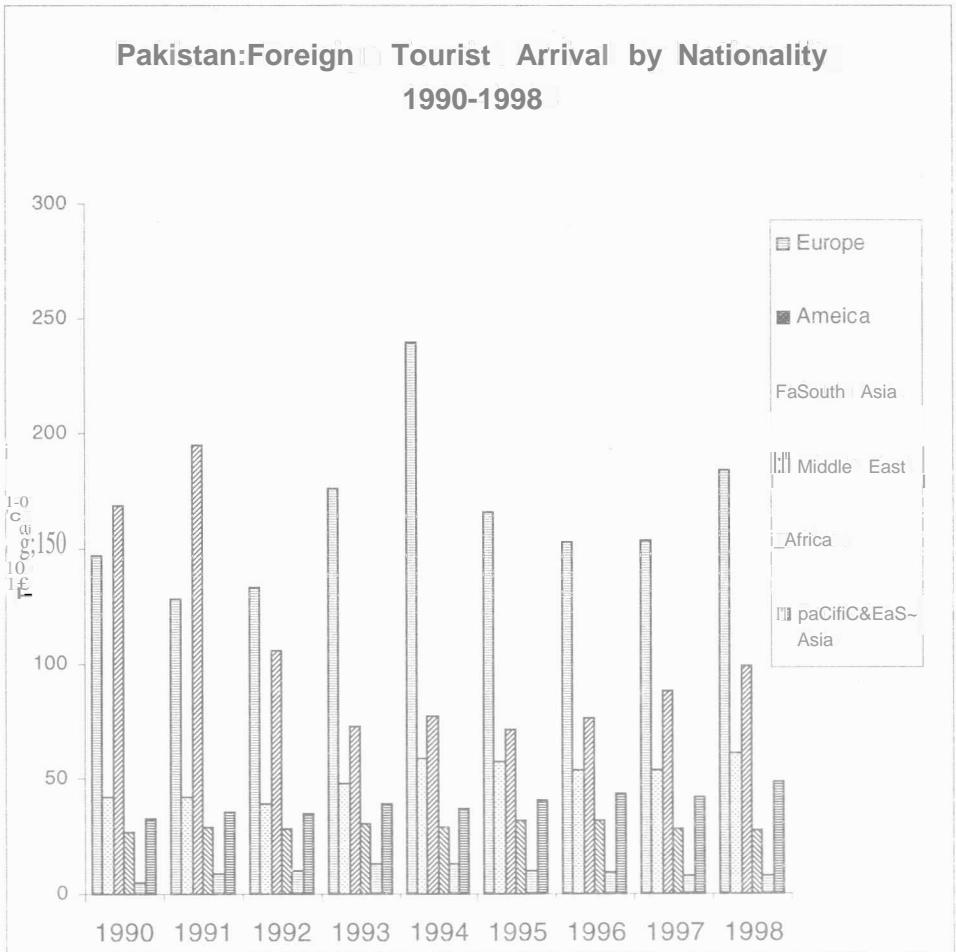


Pakistan: Domestic Tourists Arrival at Cultural Places 1997-1998



Pakistan: Foreign Tourists Arrival at Cultural Places 1997-1998





MUSEUMS

There are historical and archaeological museums in Pakistan. Most of the museums are located in big cities and others on sites.

1. Lahore Museums, Lahore
2. Peshawar Museums
3. Archeological Museum Saidu Sharif, Swat
4. Archaeological Museum Taxila, Rawalpindi
5. National Museums of Pakistan, Karachi
6. Allama Iqbal Museums, Lahore
7. Library Museum at Birth Place of Allama Iqbal, Sialkot
8. Dir Museums, Chakdara
9. Islamabad Museums, Islamabad

10. Sindh Provincial Museums, Hyderabad
11. Quaid-e-Azam Birth Place Museums, Karachi
12. National Art Gallery, Islamabad
13. Pakistan Museums of Natural History, Islamabad
14. Pakistan Folk Art Museums, Islamabad

(Table.1,and Fig.1)

SITE MUSEUMS

1. Archeological Museum Bhambore, Thatta
2. Fort museum Lahore
3. Archeological Museum, Umerkot
4. Archeological Museum, Moenjodaro, Larkana
5. Bahawalpur Museum
6. Fort Museum, Pacca Fort, Hyderabad
7. Archeological Museum, Harrapa, Sahiwal
8. Archeological Remains of Takht-e-Bhai, Mardan

(Department of Archeology, Government of Pakistan)

(Table.2, Fig.2)

Foreign and domestic tourist visits museums but more domestic tourists are interested in visiting museum. As indicated in table 2 both domestic and foreign tourists visiting museum since 1990 increased.

CONCLUSION

Pakistan is the cradle of many ancient civilizations and there are numerous historical places worth visiting in the country. Some of these places are located in the big cities of Pakistan but most of them are located in the remote areas specially the forts. These historical places need attention, renovation and infrastructure so that access of tourists may become easy. The artifacts uncovered from Moenjodaro, inserted on the world heritage list can be placed at par at with any other archeological sites of the world in term of their antiquity and importance to mankind. There are fourteen museums established by the Government of Pakistan in the major cities of Pakistan. (Map)

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TOURISM AND GEOGRAPHY: INTRODUCING METHODOLOGIES FOR RESEARCH IN PAKISTAN

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ABSTRACT

The continuing growth of tourism worldwide has brought with it the emergence of new forms of tourism. As a result there has been increased recognition of tourism not only as a major industry, but also as a valid area for teaching and research, which is evident from rapidly growing research and increasing number of courses offered in various disciplines. As an area of academic study, tourism poses an accessible and stimulating interest because it requires an integration of all the main social sciences, including geography. This study looks into the relationship between geography and tourism with particular reference to Eco-tourism, the field that can be studied and developed in a region like Pakistan, where its historic landscapes constitute significant heritage tourism resources and sustainable development projects for theme parks and green areas. Since tourism is a new area for geographical research in Pakistan, this study thus introduces some basic tools for study at various levels. These basic tools combined with other appropriate methods, will help not only to initiate tourism research in the region but also to identify a number of issues like; marketing, identification of opportunities for sustainable development, definition and measurement of the geographic structure of industry, description and evaluation of tourism regions as well as the estimation of the economic magnitude of tourism.

INTRODUCTION

There are many difficulties in defining the words, tourist, tourism, trip, visitor, and similar terms used frequently. These difficulties become more apparent when one begins to compare the definitions used by various governments. The definition of tourism as an industry is more than a list of definitions of the phenomenon to be studied. However, tourism being a very common term can be defined technically as well as on the basis of its

psychological impacts (Pigram, 1983; Wahab, 1997). According to technical definition used by the British Tourist Authority for the collection of statistics, the tourism is definition as;

a stay of one or more nights away from home for holidays, visits to friends or relatives, business conferences or any other purpose, except such things as boarding education or semi-permanent employment.

This technical definition seems to lack the fun that is associated with the tourist experience, which can be recognised by psychological impacts of tourism. From this viewpoint, Ryan (1991) has defined the term as;

the means by which people seek psychological benefits that arise from experiences new place, and new situations that are of a temporary duration, while free from constraints of work, or normal patterns of daily life at home.

In the light of this it becomes possible to define tourism from at least four viewpoints, the economic, technical, holistic and experiential. Another approach might be to view tourism and the nature of its demand as a reflection of its economic development and social change. As Krippendorf (1987) comments that "sick societies generate sick tourists". This raises a number of questions about the socio economic, cultural, political, environmental and geographical situations of the regions and its relationship with the development. The purpose of this study is to look at similar questions and ideas relating to tourism development in a region like Pakistan and introduce some methodologies to measure existing tourism phenomenon in tourist attraction areas of the country in general, and Azad Kashmir, in particular.

Tourism: a positive force for world peace, security, justice and cooperation; a means of forestalling wars, combating racism and spreading wealth. These were the positive views expressed by President Kennedy in the 1960's (Hall, 1994:89), while during the 1990's there appears to be a considerable change in opinion and attitude, as tourism has been seen by many as an international pariah, which is threatening societies, cultures and environments, social justice and human rights and human rights. The tourism industry has not involved the interaction of people on equal terms. It is seen as an industry for the privileged which, particularly in the developing world context, is predicated upon, takes advantage of and makes a significant contribution to the under privilege of others and thus is an industry of victims as much as victors (Parnwell, 1998; 121). Whereas recently, the concept of this industry appears to be changing, which has thereby created space for the analysis of security to be drawn into the fields and disciplines beyond its traditional heartland of strategic studies and

international relations, aided by the dawning realisation that long-standing problems such as poverty, inequality and exploitation have significant implications for the security of individuals, groups, states and regions (Ullman, 1983; 133). There is a growing literature about the threats and security of tourism. The economic realm includes factors which may threaten the livelihood and welfare of the people (Thomas, 1987; 1) and the threats of quality of life (Ullman, 1983; 133) and restrictions on the expression of societal identities, and threats to cultural identities (Buzan, 1993; 42) ethnic rivalry and conflicts (Booth, 1991; 318; Pasha 1996; 227) and threats to the cohesion of marginal societies (Waewer, 1993:23).

Despite these variations in the opinions and attitudes, tourism has been identified as one of the fastest growing industries in the both developing and developed countries of the world as it has proved a major source of generating employment and income in vulnerable economies. Some of the developing countries in Africa have placed tourism as a major component of their economic strategy, while in the developed worlds of Europe and North America, tourism has been perceived as an important means of urban renewal in inner city areas. There are several examples of local governments, which seek to attract funding to support tourism development as a means of revitalising wasteland and to cover it into a prosperous area that does not become a drain on local authority resources but contribute to the text revenues through higher property taxes. In addition to government levels, the individuals and local people can also exert pressure to secure tourism development, as is the case of Cyprus where in 1988, the local people sought to overcome environmental pressure groups and asked the government to permit tourism in their areas so that they can generate employment and income. Similarly, in developing regions like Pakistan that are rich in agriculture, forest and wildlife, eco tourism or tourism that promotes conservation, can play a significant role in the regional development.. According to Murphy (1985: 166), tourism system act like ecosystem, which is further defined by Odum (1969) as; any unit that includes all of the organisms in a given area interacting with the physical environment so that a flow of energy leads to.... exchange of materials between living and non living *parts* of the system ... is an ecosystem. Murphy believes that an ecosystem approach to tourism requires flexibility. To achieve this goal, this is important to understand the concept of ecotourism in the developing world with particular reference to a region like Pakistan. This would be then helpful to achieve the goals, which require detailed analysis of the ecotourism industry, seeking to understand the components and interactions, predict and manage impacts.

ECOTOURISM

There are a number of definitions of newly adopted terminology--- Ecotourism. People believe that ecotourism is an approach that creates a variety of quality tourism products and services that are environmentally, ecologically sustainable, economically viable, socially and psychologically acceptable. They further believe that ecotourism must promote sustainable development by establishing a durable productive base that allows local inhabitants and ecotourist service provider~ to enjoy rising standards of living. So, ecotourism is defined in different ways, by different groups of people with different agendas. Many tourists are attracted to the adventure that is associated with many remote, natural areas. Others wish to encourage conservation practices in environmentally sensitive areas, using profits to restore habitat, change public perception through education, and develop community. However, local people also want the opportunity for new jobs and capitalist ventures. No matter how one chooses to look at ecotourism, it is a new element shaping the use of rainforests and other natural settings. Likewise, ecotourism appears to be altering the lifestyles of indigenous peoples and causing certain changes in local behaviours.

According to Ceballos - Lascurain (1996), the term "ecotourism" is identified as form of travel in which the natural environment is the primary focus and it is the element which provide us with a simple, yet core, starting point in understanding the ecotourism phenomenon; particularly as a specific form of alternative tourism. The centrality of the natural environment to ecotourism comprises two main facets;

- It involves travel to unspoilt natural environments.
- This travel is predominantly for experiencing the natural environment.

Ecotourism includes four fundamental elements; the notion of movement or travel from one location to another. This travel should be restricted on experiencing natural areas, this then leads to the second component, which must be included in a definition of tourism because ecotourism is nature based. Activities like business travel, travel in main cities, conventional beach holidays and sports etc. cannot be considered as ecotourism because their focus is not primarily on as experience based on the natural environment of the visited area. Thus for ecotourism the travel (often in developing countries) should be in relatively undisturbed natural areas for study, enjoyment or volunteer assistance that concerns itself with the flora, fauna, geology and ecosystem of the area-as well as the people (host or care takers) who live nearby, their needs, culture and relationship to the land (Swanson, 1992). Thirdly, the ecotourism is conservation led and has emerged as a result of increasing global concern for disappearing cultures and ecosystems (Kutay, 1990; 34). Ecotourism thus aims to take small

groups of people to natural or protected areas with a minimum impact on physical, social and cultural environments. This is expected that ecotourists should be more concerned with environmental aspects, to promote greater understanding and respect of cultures, heritage, natural environment and local people. The fourth idea is that ecotourism has an educative role of learning about the area and teaching the local people about importance of nature, heritage and the attractions that tourists come to visit. Although ecotourism components vary among sites and activities but may include the resource setting, ecotourists, ecotour operators and guides, developers, nongovernmental organisations, governmental agencies, politicians, landowners and local people (Hvenegaard, 1994; Mandzuik, 1995). All these components are interlinked and are part of the overall system. Looking at the other side of the picture, ecotourism has been argued as a negative force of social change in these remote, yet once isolated areas of the world. According to Sachs (1993), ecotourists may in fact be travelling to remote areas in order to experience the customs and rituals of native cultures; however, they may not come equipped with a certain cultural sensitivity. In some cases, native peoples are forced to stage re-enactments of history or rituals and customs that may not be a regular pattern of existence for them. The best example is of Kalash (Chitral valley in Pakistan) where people are wearing 3000 year old style of clothing--just for performing that their culture is living civilisation or to get money from the tourist for pictures. As a result, local people have been seen to acquire the western desire for expensive things, leading to major changes in the lifestyles of these people who have lived simple, more traditional lifestyles for centuries. Likewise animal behaviour has been seen to change when tourists travel in relatively large numbers through their habitat (Sachs, 1993).

AIMS AND OBJECTIVES

This study aims to introduce the concept of tourism and how this differs in various regions of the world. This also looks into the growth and development of ecotourism, with a focus on various areas of Pakistan and examines the traditions of academic disciplines with a focus on the relationship of geography and tourism and their approaches towards tourism research. Some cross-disciplinary dimensions of research are discussed including such aspects as; theoretical and applied research, descriptive and explanatory research, and quantitative and qualitative methods, which can be used to study and understand the existing picture of tourism in Pakistan and also to identify the gaps where more attention is required. This is also the aim of the study to introduce the readers and researchers to a variety of methods useful for tourism analysis. The level of difficulty of the various methods differ substantially as some require only basic arithmetic skills and easily collected data while others require large, expensive and computer readable data sets and are able to be analysed

according to competent multivariate techniques. However, the aim is to provide a profile for easy and simple methods with an illustration of how the method can be applied to a typical tourism problem in various regions and tourism spots of the country.

GEOGRAPHIC PHENOMENON

The movement of people in space clearly indicate that tourism is fundamentally a geographic phenomenon and the reality is that tourism varies dramatically in form and function from one place to another. Until recently geographers have had surprisingly little to say about the implications of the growing leisure time in the affluent countries of the world. Even now, tourism still remains a sadly neglected area of studying geography (Mercer, 1970: 261). However, research on tourism is not new to the geographers as they have been engaged in a number of issues including the description of travel flows, spatial structure and land use of tourist places and facilities; economic, social cultural and environmental impacts of tourism activities; impact of tourism in third world countries; geographic patterns of recreation and leisure pastimes; and the planning implication of these topics (Britton, 1991: 451). In tourism the traditional area of interest for geographers include the spatial pattern of supply, location of resorts, of landscapes, places and attractions. Moreover, geographers have a key role to play in isolating patterns of demand and associated tourists movements. Where are the primary tourist generating regions, how are they ties to the receiving areas by transportation networks and what are the characteristic form of flows of visitors between generating and receiving areas? Geographers are also interested in the resulting impact of environment, economy, social and cultural, each of which has a geographical dimension. Geography has the capacity for exploring more complex issues such as nature of links between tourism and development processes or the socio cultural and anthropological concerns for host visitor's relationships, which is however, beyond the scope of this study. Geographers are not only limited to this but have been very prominent in tourism research and have not generally restricted their interests to their formal discipline (Coppock, 1982). Geographers can be expected to be concerned primarily with spatial and environmental issues as well as with large scale natural and man made phenomenon like coastline, wilderness and the patterns of human settlement. The geographers like Pigram (1983) have also focussed their interests on the green areas, such as urban and national parks, whereas they have made a major contribution in the study of travel patterns and their modelling by using gravity model as well as the studies about tourism capacity and regional development (Mitchell, 1985; Smith, 1983; Pearce, 1987; Mitchell and Murphy, 1971). Moreover, the geographers have been at the forefront by demonstrating the use of aerial photography in examining the spatial distribution of recreational resources and utilisation (Van der Zande, 1985). However, the of 1990's can be seen as

the period of the application of social theory by geographers in terms of marketing (Goss, 1993), evaluation of countryside (Squire, 1993), heritage (Crang, 1994; Cartier, 1996), consuming space (Cater, 1995) and exploration of integral links (Chang, 1998). This literature provides a very good base to understand and compare the needs for tourism in the areas like Pakistan, with a focus on the effects of tourism in sustainable development. This will open further avenues for theoretical debate about economic and environmental changes in the regions.

The tourist attractions in mountainous areas of Pakistan are quite different from those in the plain areas and the major cities like Karachi on the sea. Although all these are well known tourism destinations but there are differences in geographic situation. The differences include local customs, climate, level of economic development and the tourism infrastructure, types of attractions and areas having previous experience with tourism. Like difference in location, tourism also means different things at different geographical scales. Moreover, the analytical and planning questions, data precision, definitions and even the purpose of doing research and planning vary greatly according to the scales of problem being addressed. There are many forces at work, which not only affect the tourism industry but also complicate the work of researchers and planners. Among these challenges, one can identify some of the major research strategies, which are necessary for good planning and policy analysis. According to Smith (1989), the planners have identified the following six themes;

- marketing and tourist demand questions;
- identification of opportunities for development, especially in the context of site selection and regional development priorities;
- definition of the geographic structure of industry;
- description and evolution of tourism destination regions;
- determination of the value of public resources used in tourism; and estimation of the economic magnitude of the industry, and
- estimation of the economic magnitude of the industry.

THE REGION

Many developing countries seem to suffer generally from external indebtedness, scarcity of foreign currency earnings, under utilisation of major resource, comparatively disadvantageous export, and inadequate development finance and poor quality of life. Falling prices for the commodities dominating their economies exert a profound negative impact upon production and employment ratio in such countries. One comparative advantage that developing countries seem to enjoy is still unspoiled nature and their attractive and genuine, though not necessarily modern, way of life (Wahab, 1997). But political issues and insecurity in the regions is main barrier in the international tourism.

TOURISM IN PAKISTAN

Pakistan, a land of many splendours and opportunities, repository of a unique blend of history and culture of the East and West, the cradle of one of the oldest civilizations. Le., the Indus valley, is the ninth most populous country of the world with more than 125 million population wishing and striving hard to enter into the 21st century as equal partners in the community of developed nations. It is located between 23 and 37 degrees north latitude and 61 and 76 degrees east longitude. Pakistan extends along either side of the historic Indus River, following its course from the mountain valleys of the Himalayas down to the Arabian Sea. Flanked by Iran and land-locked Afghanistan in the west and Central Asian republics and China in the north, Pakistan can rightly boast of having a significant location advantage with a vast, tapped and un-tapped market of 200 million people. The affluent Gulf states are just across the Arabian Sea in the south that provide an additional vista of a high mass consumption market for its products and tourism. It is in this scenario that Pakistan has emerged as a favourable tourist destination. Its strategic location has made it a gateway to Central Asian States, and China by road. The northern region of Pakistan possesses eight of the ten highest peaks in the world and contains the second tallest peak on Earth, K2 (28,250 ft., 8611 m), and over 300 glaciers. Three great mountain ranges stretch across this part of the country: the Himalayas, the Karakoram and the Hindu Kush. The Karakoram Highway is an epic feat of modern day engineering has significantly increased the accessibility and level of connectivity in the northern areas as it winds its way up to a height of 16,000 feet above sea level and on to the People's Republic of China.

Pakistan, spread over a land mass of 796,095 square kilometres having a very favourable geographical location and physiography for tourism in general and ecotourism, in particular with one of the highest peaks of the world in the north and vast plains in the south. The region has the capacity to attract tourists throughout the year as it offers an unusual diversity of temperatures ranging from sub-zero levels on the mountains in winter to scorching heat in the plains in summer, providing habitat to an exquisite range of flora and fauna and a large variety of agricultural crops. Moreover, the region offers a lot for nature lovers, for the adventure seeker, this is a terrain that challenges the most daring of spirits, for the historian there are excavations and museums, as well as sites of old civilisations like Indus Valley, which flourished at Mohenjo Daro and Harappa 5000 years ago and the similarly the evidence of the glorious Gandhara era is still to be found in the country. In terms of urban tourism, Pakistan is a tourist's delight with its luxurious hotels and elegant restaurants in metropolises and captivating shopping boutiques and ethnic bazaars replete with merchandise of all sorts. As a Muslim nation, Pakistan is strongly influenced by the culture

and traditions of Islam. The land where the Islamic Republic of Pakistan is situated today had been a seat of world's leading civilizations from the time immemorial. The country is rich in its national and diversified heritage, which came at the time of independence.

Geographically, Pakistan can be divided into three regions: the lowlands along the Indus in the south and east, the arid plateau of Baluchistan in the southwest, and the mountains of the north. The provinces of Punjab and Sindh, in the east and south, are well irrigated by the Indus and its tributaries. The land is fertile and produces most of Pakistan's food. These two provinces, which include the cities of Karachi, Islamabad (the capital), Lahore and Rawalpindi, is the most densely-populated in the country. The south-western province of Baluchistan covers almost half Pakistan's territory. The land consists of a stony plateau, sparsely populated and very dry.

AZAD JAMMU AND KASHMIR

Azad Jammu and Kashmir state is located in the northeast of Pakistan. Total area of the state is 13,297 square kilometres with total population 2,915,000 as per 1998-census. According to 1999 projections, total population of Azad Jammu and Kashmir stands at 2,982,000. Azad Kashmir is stretched in the shape of a crescent; 400 kilometers in length with width varying from 15 to 60 kilometers. Azad Kashmir extends from the plains of Mirpur at the northern edge of the Punjab through the outlying foothills of the Himalayas, to the mountains in the north at 6,000 meters above sea level. The state is drained by three major rivers, the Jhelum, the Neelum and the Poonch whose valleys are very beautiful. The terrain is mostly rugged and mountainous with 15,000 feet high mountains in northwest touching the Punjab plains. The area is criss-crossed with rivers and numerous *nullahs* (water channels).

Azad Jammu and Kashmir is bounded to Pakistan in southwest and in the east to the Line of Control or (ceasefire line) with occupied Kashmir. The state is divided into two divisions-Muzaffarabad and Mirpur, comprising 7 districts consisting of 18 tehsils/sub-divisions. The territory of Azad Kashmir is dotted with a vast chain of scenic and natural beauty spots amidst flowing streams, gushing springs and flowering plants. The mountain tops over the valley look like circular and rectangular caps. The panorama is really enchanting. Official language of the state is Urdu. Local languages spoken in the state are Kashmiri, Pahari, Gojri and Hindko. Carpets, Namda, Gubba, Pattu, Shawl are the notable handicraft prepared in Azad Jammu and Kashmir. The state is rich in natural resources such as Gypsum, Lemonite, Mica, Marble, Ruby, Turmaline, Bentonite, Yellow Ocher, Pyrites, Limestone and Dolomite etc. Among the wildlife, Snow leopard, Panther, Leopard, Bob Cat, Throated Marten, Red Fox, Brown Bear,

Black Bear, Blue Bull, Grey Goral, Musk Deer, Himalayan Ibex, Pirjungle Markhor, Snow Partridge, Himalayan Snow cock, Chakor Black Partridge, Grey Partridge, Western Horned Tragopan, Pheasant and Cheer Pheasant are very significant.

This area deserves the attention of researchers not only because there is immense potential for tourism growth but also due to its diversity of cultures, political regimes and environmental attributes, which the region presents a rich laboratory to investigate the issues relating to tourism.

METHODS FOR TOURISM ANALYSIS

As Deasy (1949:240) observed that because of the inadequate attention to the tourist industry by geographers, there exists a concomitant dearth of techniques, adaptable to the collection, analysis, interpretation and cartographic representation of the geographical data of the subject. For scientific understanding of the accurate description of region in terms of naming, classifying, measuring, comparing and summarising, is very important that one should look at it through different angles. In the fields of social sciences and tourism, description works best when it is tied to another problem and must be taken with the spirit of trying to uncover some new hidden relationships or patterns that will teach us new important and useful things about the world (Smith, 1989). Thus the use of any qualitative or quantitative method will not be able to tell us much about tourism unless it is used to answer a question that extends beyond the calculation of the descriptive statistics. However, in this section some of the methods and tools for tourism analysis are introduced, which can be applied to understand and compare the position of tourism in various areas of Pakistan.

To study tourism there are several research methods available in the literature, however, to avoid creating false methodological issues and committing oneself to inappropriate research strategies, it is appropriate to rephrase the issues and consider them from the perspectives of "what kind of problems are best studied through what kinds of methods. In the regions of Pakistan the tourism research includes a variety of phenomenon ranging from type of tourism, distribution of facilities, transport and interest of tourists, which can be addressed by a number of different methods. However, this is very important that the individual issues should be studied by using the appropriate approaches and methodologies. This study recommends the following three approaches; qualitative (observation and semi-structured interviews), quantitative and combination of both techniques.

QUALITATIVE TECHNIQUES

Qualitative methods range from passive observation and personal reflection, through routine participation to active intervention. Qualitative research is organised in a variety of ways, from semi structured interview schedules to the open ended questionnaires. Research on tourism in general and on ecotourism in particular depends on an effective partnership between tourists, researchers and local community. The planners cannot rely solely on standard technical solutions and the projects work best when they are in tune with the real community needs. The best way to study ecotourism is participant observation, which is highly effective method of in depth study in a small community. The researcher participates as fully as possible with the community and tourists, keeping detailed notes of what they hear, see and feel about the subject under study. This approach combines observation, discussion and informal interview. Its effectiveness depends upon the quality of information and careful recording of the information, coding and analysis. For example to study a national park like Lal Suhanra (Bahawalpur) the primary data can be collected through interviews of the general park visitors and birders by selecting them at random with a common questionnaire. Similarly, in the northern and Kashmir areas, the trekkers can be interviewed during their trips with the help of self-administered questionnaires according to the required sample size. The respondents can be asked about their demographics, trip activities and costs, sites visited, motivations, conservation activities and reasons for visiting the sites. This information can be supplemented with participant observation and the sources of secondary data previously collected by officials. Keeping in mind the objectives of the research, the interviews can be extended to park officials and other staff, experts in the field of tourism and conservation, academics, government officials, leaders of environment and Non Government Organisations, researchers, development officials and tour operators. The data collected can then be coded, analysed and interpreted accordingly.

QUANTITATIVE TECHNIQUES

Quantitative techniques or statistical methods were first introduced into the discipline in early 1950' mainly consisting on descriptive statistics and are employed in generating and testing hypotheses using empirical data and mathematical modelling, which came from at least two sources; first social physics which initially focussed on gravity model, and second neoclassical economics which influenced geography principally through the regional science movement and location theory. The typical pre occupation of social physics is the spatial interaction among a set of discrete geographical points, while for neoclassical economics it is with optimisation over

continuous space. Since the subject of tourism is associated with the spatial distribution of the phenomenon, therefore the quantitative techniques can be applied to get a good picture in a region. For this a number of techniques are mentioned to apply in the regions of Pakistan.

MEAN CENTRE

One of the basic problems in tourism analysis faced by the social scientists in summarising of spatial distribution of the phenomenon like facilities, resources and tourists. To measure this phenomenon in a region like Pakistan, the simplest method is Mean Centre, which can be determined either for one or particular sets of data and then compared. Smith (1989) believes that determining the Mean Centre of the distribution of tourists at an attraction in a region can be helpful to plan different sets of facilities like hotels, restaurants and travel agencies and this information will also help to compare and study some of the forces affecting the location and operation of each type of business. Keeping in mind the drawbacks of this method, it is often wise to present the mean centre with additional information such as map of the actual array of points and the standard distance or the standard deviational ellipse. This method can prove more useful on the plain areas of Pakistan as compared to the northern mountainous areas, where the tourist spots are along the rivers or other water channels. For further details of the method the readers are referred to Cole and King (1968), however the formulae and procedure to determine mean centre in a tourism region is as under;

- Prepare a map of the study / tourist region by plotting location of the features as points.
- Superimpose a square grid as a coordinate system.
- Determine the coordinates for each point with reference to the grid and list these on worksheet and the phenomenon such as facilities like hotels should be weighted according to their room capacity.
- To obtain the mean centre, sum the coordinates and divide by the number of points, as under;

Mean Center = Horizontal coordinate of point ÷ Number of points

STANDARD DISTANCE

As this has been pointed out earlier that the mean centre loses the information about the distribution of the phenomenon, thus this method can be supplemented with the standard distance, which is the spatial equivalent of standard deviation. This measure is used to understand the variation of facilities or tourist location around their mean centre. The more widely spread the locations, the greater will be the value of standard distance. Moreover, this is also a function of the size of a region and can be very

helpful to compare the distribution of hotel and accommodation between two areas. In case the sizes of two areas are significantly different, the standard distances must be converted into a common scale. One way of estimating the standard distance of population is to map the population of the city as an array of points located at the geographic centres of enumeration areas or other subdivisions. These points are then by the sizes of the population, they represent to provide a weighted standard distance for the population. The weighted standard distance for the population then divides the standard distance of the point pattern being studied:

$$\text{Relative Dispersal} = \frac{\text{Standard Distance of the point pattern}}{\text{Standard Distance of the Population}}$$

The relative dispersal of two regions can then be compared to understand the factors responsible for the development and variations of the phenomenon.

COMPACTNESS INDEX

Most of the tourism research is related with the description of the destination regions characteristics like size, climate, attractiveness and level of development. During a district level network study of Punjab, this was found that the shape of a region plays an important role in its development (Malik, 1983). Shape is a simple and valid measure of the overall internal accessibility of the region. The more compact a region, the easier it will be to transport commodities and to move tourist around the region, everything else being equal. The calculations of compactness index are simple and can be based on a good map and planimeter or grid system can be used. To calculate this measure, obtain a base map of the region and calculate area of the required region or regions. Measure the greatest diagonal (D) distance of the region. This diagonal is the straight line that can be drawn between any two points on the boundary of the region and calculate the diameter of a circle with the same areas as the region.

$$D = 2 \sqrt{(A / \pi)}$$

Having obtained this value, calculate the compact index:

$$C = \frac{D}{D_1}$$

The extreme values of Care 0.00, if the region were a line, and 1.00 if the region were a circle. The higher the value of C, more compact the region.

CONNECTIVITY INDEX

More compact regions have a greater degree of accessibility, everything else being equal. A direct measure of accessibility can be useful complement to the compactness index and may be useful in its own right (Kansky, 1963). The measure of accessibility with relevance to tourism is based on the fact that travel in regions follows established routes, which are composed of links connecting nodes and form a transportation network. The higher the connectivity, the better are the opportunities and facilities for tourism in region. The connectivity index comes from a branch of mathematics known as graph theory (Kansky, 1963) and has been applied on transportation networks of Punjab (Malik, 1983; 1993) by using all the connectivity indices turn by turn. Among these the Gamma Index (V) is the most appropriate for tourism and relatively simple to calculate as it is based on the ratio of actual to possible linkages. The higher the degree of connectivity with in a network, the higher the value of Gamma (V). This index can be calculated by the following formulae:

$$= L \div \{3(P - 2)\}$$

L = Number of direct links between pairs of points

P = count the number of points in the network

This is basically the ration between the actual number of links in a network and the total possible number given the existing points. Extreme values are 0.00 for a system of points totally unconnected with each other, and 1.00 for a system of points with all possible connections made. This index is meaningful for any network with three or more points. The readers interested in further details and applications of the index are referred to Kansky (1963), Malik (1983; 1993; 1994) Malik and Noor (1995) and Haggett and Chorley(1969).

NEAREST NEIGHBOUR ANALYSIS

Sometimes a simple visual inspection of a map is not sufficient to indicate whether a pattern is clustered, uniform or random. To determine the nature of a point pattern and distribution of tourism and facilities more precisely, a method of nearest neighbour analysis can be used. The concept of this method is very simple but there are some issues about shape and use of squares, which must be looked at before it is applied (Haggett and Chorley, 1969). The distances between nearest neighbours are measured as straight line on a map. In reality this ignores the effects of perceptions, borders, physical barriers, and the transportation networks (Malik, 1991).

Linear nearest neighbour analysis is modification of the regular method to be used in linear situations such as patterns in along highways, rivers or coastlines. This will be very useful to study the tourism businesses and facilities in the valleys of Northern Areas (Kaghan and Swat) and Kashmir, particularly Neelum and Jhelum valley. This method is also of special value when used for spacing of tourism businesses on urban streets in the tourism region. For this method the distance between tourism businesses and facilities should be measure in physical units while these can also be measured according to travel time, travel costs and even the number of intervening features. The measurement can be based on a map of the region showing the distribution of facilities along linear feature. Measure the length of the line (L), this line may be defined for reference to either natural end points or by reference to arbitrary end points. Then count the number of observation points (N) and the distance between each point and its nearest neighbour along the length of the line or river and determine the mean distance (D). Then estimate the theoretical distance (Dr) between points under the condition of a random distribution;

$$\text{Theoretical Distance (Dr)} = 0.5 \{L / (N - 1)\}$$

Then calculate the linear nearest neighbour ratio (LNNR) by using the following formula;

$$\text{LNNR} = D \div \text{Dr}$$

To interpret the results, a value of 1.00 indicates a random distribution, while a value of 0.00 indicate complete clustering. A perfectly uniform spacing produces a ratio value of 2.00, thus according to the obtained values the distribution can be assessed.

In addition to these, there are many measures like Peaking Index, Directional Bias Index, Tourism Attractiveness Index and Defert's Tf (measure), which are exclusively developed for tourism studies. The introduction of these tools and measures does not mean that these are helpful for only geographical phenomenon and problems rather these tools have the potential for being applied for a variety of tourism topics. However, one of the challenges to tourism researchers is not just to use the tools introduced in this study, rather to combine them to provide more powerful and useful methods for the identification, analysis and solution of the tourism problems in a region like Pakistan.

CONCLUSIONS

The less developed countries like Pakistan account for most of the world's population and this share will continue to grow. These countries need to identify strategies to achieve a higher stage of development, as potentially

though ecotourism is therefore more imperative. Although tourism is becoming more important within less developed world, whereas negative impacts cannot be excluded, as there are evidences of interrelated economic, socio cultural and environmental problems associated with the rapid development of tourism, particularly in the urban areas. The severities of environmental problems suggest urgency for remedial strategies like "ecotourism".

Pakistan presents a very good case for ecotourism development because of the apparent scale of ecotourism activity, which provide a good cross representation of geographical, ecological and economic sub regions. Equally important are the tropical setting and the extreme variations in altitude ranging from Karachi to Khunjab, with a diversity of coastal areas, plains, deserts, plateau and high mountains. Evidence of this biodiversity includes the presence of a number of life zones (mangroves, forests, grasslands and species of birds, trees, animals and mammals et.) including a variety of people and tribes. In northern areas of Pakistan this activity has been more significant during the last two decades as the construction of Karakoram Highway between Pakistan and China was instrumental in opening Himalaya region such as Gilgit and Hunza to tourism and other modernising forces. Pakistan was described as a significant competitor with Nepal in attracting trekker-oriented tourists during 1980's (Allan, 1988). This study has raised a number of issues relating to the rural areas of Pakistan with particular reference to ecotourism as a strategy for development and involvement of local community.

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EDUCATION AND MARRIAGE: A CASE STUDY OF COLLEGE TEACHERS OF KARACHI

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ABSTRACT

It is generally perceived that education is one of the major determinant of age and pattern of marriage in most of the developing countries as well as in traditional societies like ours. A positive association is found between years spent in schooling and age at marriage. In Pakistan there also a positive association has been observed between education and age at first marriage and all the available statistics reveals that age at marriage is increasing in the country. Since college teachers in every society are highly educated segment of population therefore, the present study is an attempt to find out the age and pattern of marriage prevailing in the college teacher of Karachi.

INTRODUCTION

Education and age at marriage are positively associated for both males and females. There exists variation in age at marriage of both males and females among population and within population's subgroups. It is also revealed from data that generally females tend to marry earlier than males, thus age at marriage of females are lower than males, specially in traditional and religious societies. It also means that there are many socio-religious reason of females lower ages at marriage. In many cultures it is responsibility of parents to marry their daughters at young age. However one important factor of early marriage of females is biological, that with increasing age females capability to bear children decrease. Additionally according to Rindfuss and Bumpass (1980) at younger ages female's physical attractiveness and personality characteristics are also observable. It is also argued that women prefer to marry relatively early because the availability of eligible male tends to decline sharply as women get older (Jojeebhoy, 1995).

Among socio-economic reasons education emerged as one of the most important factor of delaying marriage specially of females. Dixon (1971) analyzed cross national data about marriage. She concluded that in most countries the average age at first marriage of woman tends to be higher among educated and employed women and higher in urban than rural areas. Question arises here that why educated women marry later? According to many researchers women who married late usually they have some alternative to marriage in the normative age range. Because more education provides greater independence and employment which allows women to set a higher standard for the minimally acceptable match. The consequence is an increase in delayed marriage with some accompany greater risk of non-marriage."

However, it is observed that effect of education vary across countries. (Cochrane 1977, Dixon 1971). Dixon (1971) found that magnitude of effect of education on age at marriage and hence fertility vary in developed and developing countries.

Jejeebhay (1995) mentioned after analyzing 51 studies that the overall effect of education on marital age is positive but the relationship is not necessarily linear or steep. She found two distinct patterns of relationship of marriage age to years of schooling (a) positive relationship means women with more education marry later than uneducated women and (b) reversed 7-shaped relationship which indicate that a small amount of education produces a negligible change (less than 5 percent) in the age at marriage of women, whereas substantial increases are recorded for women who are better educated.

EDUCATION CAN DELAY MARRIAGE THROUGH FOLLOWING ROOTS

1. Educated females have decision making power and may play active role in selecting bands so resisting early and arranged marriage. Masan (1984) said that arranged marriages are usually associated with young age at marriage. She also said that educated women have more power in deciding about the marriage. Jejeebhoy (1993) said that better educated women's greater decision making role leads them to postpone marriage. But it vary culture to culture. In more gender stratified culture the relationship of education to marital decision making is weak such as in Pakistan and other South Asian countries. Education enhance premarital employment which encourages to postpone marriage in favour of work.

2. Higher education is generally associated with respectable employment Mason (1984,1993) mentioned that in both gender-stratified setting and egalitarian settings premarital employment is an important

motive for delayed marriage. However it is more powerful in egalitarian societies than in gender-stratified (Jejeebhay 1995).

3. Educated women are less marriageable at an early ages because of their marriage cast is more, and it is difficult to find appropriate husband.

AGE AND PATTERN OF MARRIAGE IN PAKISTAN

In Pakistan marriage is almost universal. Marriage is associated with religious and cultural prestige, and it is duty and responsibility of parents to marry their children. It is revealed from data that age at marriage is increasing overtime for both sexes (Table 1). However age at marriage of males is comparatively higher than females across the country and in all studies (i.e. Karim, 1984, Mahmood and Khan, 1985; Korson, 1984).

EDUCATION & MARRIAGE IN PAKISTAN

It is revealed from several studies.. that education particularly female education is positively associated with age at marriage in developing countries (Cochrane 1979; Dixon, 1971). Like many other countries education plays a role in postponement of marriage in Pakistan. In Pakistan it has been found that age at marriage of both educated males and females is higher than the uneducated counterparts. Specially urban males and females with 9 years or more education, show substantially higher age at marriage (Mohammad and Mubashir, 1984, 1984, Mahmood and Khan 1985; Karim, 1984; Sathar and Kiani, 1986).

Sathar and Kiani (1986) found in analyzing PLM 1979 data that there was a difference of four years between the mean age at marriage for women who had no education and those who have nine or more years of schooling in urban areas and a slightly greater difference of 4.4 years in rural areas. For males difference was not much greater. Table 2 presents median age at marriage by education. The difference was 4.2 years between uneducated and those who had education secondary or more than secondary level.

METHODS OF THE STUDY

The main objective of the present study was to know the age at marriage and marriage pattern of highly educated and employed males and females and compare the difference (if observed) among them.

This is survey based study conducted in Karachi.. The respondents of the present study were college teachers both males and females. In all 163 college teachers from all cadres (means lecturers, assistant professors, associate professors and professors) were interviewed. Among them 97

CONNECTIVITY INDEX

More compact regions have a greater degree of accessibility, everything else being equal. A direct measure of accessibility can be useful complement to the compactness index and may be useful in its own right (Kansky, 1963). The measure of accessibility with relevance to tourism is based on the fact that travel in regions follows established routes, which are composed of links connecting nodes and form a transportation network. The higher the connectivity, the better are the opportunities and facilities for tourism in region. The connectivity index comes from a branch of mathematics known as graph theory (Kansky, 1963) and has been applied on transportation networks of Punjab (Malik, 1983; 1993) by using all the connectivity indices turn by turn. Among these the Gamma Index (γ) is the most appropriate for tourism and relatively simple to calculate as it is based on the ratio of actual to possible linkages. The higher the degree of connectivity within a network, the higher the value of Gamma (γ). This index can be calculated by the following formulae:

$$\gamma = L \div \{3(P - 2)\}$$

L = Number of direct links between pairs of points

P = count the number of points in the network

This is basically the ration between the actual number of links in a network and the total possible number given the existing points. Extreme values are 0.00 for a system of points totally unconnected with each other, and 1.00 for a system of points with all possible connections made. This index is meaningful for any network with three or more points. The readers interested in further details and applications of the index are referred to Kansky (1963), Malik (1983; 1993; 1994) Malik and Noor (1995) and Haggett and Chorley(1969).

NEAREST NEIGHBOUR ANALYSIS

Sometimes a simple visual inspection of a map is not sufficient to indicate whether a pattern is clustered, uniform or random. To determine the nature of a point pattern and distribution of tourism and facilities more precisely, a method of nearest neighbour analysis can be used. The concept of this method is very simple but there are some issues about shape and use of squares, which must be looked at before it is applied (Haggett and Chorley, 1969). The distances between nearest neighbours are measured as straight line on a map. In reality this ignores the effects of perceptions, borders, physical barriers, and the transportation networks (Malik, 1991).

age 25-29 year. It shows that upto age 30 nearly 81 percent of our female respondents were married, were 59 percent of our male respondents reported the same.

Age at Marriage of Spouses: We asked our respondents to report the age at marriage of their spouses. Table 3 shows that a large majority of female reported that age at marriage of their husband's were 25-34 years where a large number of (68 percent) males reported that at the time of their marriage age of their wives were under 24 years.

Table 4 also provides some interesting insights about mean age at marriage by current age of respondents. It is revealed from the table that mean age at marriage was highest for those now aged 45-49 years and lower for those who were less than 25 years of age. However, mean age at marriage is not showing any consistent pattern.

Nearly the same pattern emerged when analyzing the mean age at marriage of our female respondents. Highest mean age at marriage observed for cohort of 40-44 age group, followed by those who were aged more than 50 years.

Mean age at marriage of spouses was consistent with mean age at marriage of our respondents. Highest mean age was found for wives of male respondents for age cohort 40-49 years. The mean age at marriage of husbands of our female respondents was highest for age group 50 and above. The mean age at marriage was lowest for younger cohort and highest for older cohort (Table 5).

Age Difference Between Spouses: Smith (1983) suggested that when parental control is great there exists a wider age gap between spouses. In Pakistan among some ethnic groups age difference between spouses is great. Because they do not marry outside the family, they also marry within their own family due to customs and some other socio-economic factors. Therefore, they do marry whatever mate is available in the family. Consequently, the age difference between spouses is great, sometimes 20 years or more.

Table 7 shows that 10 percent females reported that age difference between them and their husband was more than 12 years while nearly 5 percent males said the same. The proportion of females and males who said that age difference between their spouses was under 5 years was the same.

Mate Selection and Marriage Decision: In many traditional religious societies marrying off children is a religious duty, and a source of honor and prestige on the part of the parents. In these societies parents are responsible for selection of male also. Strong parental control over

marriage regulations leads to early marriage.

However, evidences about parental control and its impact on age at marriage are mixed. According to Lesthaeghe (1977) parental control mainly increases the tempo of marriage and reduces variation in marriage timing. Davis-Blacke (1965), thinks that there is no empirical evidence to demonstrate that parental control over the selection of mate has been primarily associated with very early marriage and said "social changes release parents from intense moral obligation to marry off their children will allow the older generation to use its control to prevent early marriage despite favourable conditions encouraging it."

Literature about mate selection and parental influence of cultural specific rules and practices related in the process of being married is some what lacking. Few studies have examined the impact of parental involvement on mate selection (Korsan and Hull 1975, Maire, 1971) Asian Marriage Survey (AMS) also provides information about marriage pattern in Pakistan.

In marriage system where decisions are largely kin-based and kin-group interest is strong, daughters are considered eligible for marriage at puberty or soon thereafter. Various studies have shown that in Pakistan status of women is low and mate selection and the entrance in to marriage are controlled by the parents (Korson, 1979). Asian Marriage Survey shows that all of the village and urban squatter respondents indicated that parents chose their spouses for them. Only in a elite urban a negligible proportion indicates a degree of personal involvement in mate selection, that only 3.8 percent respondents indicated the decision was primarily theirs. Since women are segregated from men after puberty there are few opportunities to meet prior to marriage.

ASM indicated that in Pakistan family control is strong and in the urban middle sample, personal involvement in mate selection has significant positive impact on marriage timing. The result of survey suggests that marriage behaviour of nearly all daughters is controlled by their families. It is proved by some other studies also (i.e. Afzal et ai, 1973; Korson. 1979).

It is generally assumed that educated males and females are much free in decision making about their personal life such as marriage. But it is not conform here. In response to our question that who took the decision about their marriage, nearly 4/5 respondents informed that their elder or kin decided about their marriage only 20% male and 14% females claimed that they took the decision by themselves. It shows that due to socio-cultural norms and religious teaching, inspite of acquiring higher education, hey were not free in decision making and still some of them reluctant to accept so-called 'love-marriage' and expressed their opinions that" in our socio-cultural environment marriage should concerned with parents. It is duty of

parents to take decision about marriage of their children and as educated persons have to give regard them and do not try to erode cultural values." However, they are in favour that parents should ask with their children when deciding matters of marriage.

Relation before Marriage: In traditional societies where level of fertility is higher, inter-family marriage is common. It means that in these societies higher level of fertility is associated with low age at marriage and also cousin marriages, (marry with those, with whom they have any blood relation).

Education is associated with higher age at marriage, marriage outside the family and thus low level of fertility. PDHS 1990-91 shows that those females have secondary or more than secondary level of education, marry outside the family, and those with no education generally marry within the family.

It is revealed from the table 3 that only 6 percent male and 7 percent female respondents informed that they had personal friendship before marriage and the rest said that their marriage was arranged by their family member i.e. parents or elders. In some cases where both husband and wife took the marriage decision they informed their elders. In this respect all marriages were 'arranged' marriages. No one claimed about civil marriage.

Table 3 indicates that more than half marriages were with cousins or within 'biradri'. When comparing the responses of both male and female, it is clear that nearly 70 percent males married with cousins or within biradri when only 51 percent females said the same. Only 18 percent males married outside their families, or with whom they did not know prior to marriage, but 41 percent female married outside their families. It clearly shows the marriage pattern of educated males and females. Sathar and Kazi (1988) in their study also found that a large proportion of working female married outside their biradri where a large majority of non-working females married within biadri or with cousins.

Generally these marry with cousins or in biradri, their age at marriage is lower than those who marry outside, consequently their education attainment is lower, but it is not true in all cases. In case of working females it is most likely that they marry outside their family. Usually it is common pattern in Pakistan that if there is any suitable proposal for girl, specially from biradri/cousin, parents prefer to marry their daughters because they think that it is their responsibility to marry their daughters soon and in case of refusal they face problems. In many cases girl could not complete her education even if she is in professional colleges (engineering, medical etc.) She leaves the college without completing her

education. This is due to the fact that in many cases when girls or her parents prefer complete education, it would be difficult to get married with suitable mate after that.

Table 1
Mean Age at Marriage in Pakistan 1951-1991

Source	Male	Female	Difference
1951 Census	22.3	16.9	5.4
1961 -do-	23.3	17.7	6.6
1972 -do-	25.7	19.7	6.0
1981 -do-	25.1	20.2	4.9
1991 PDHS	26.5	21.7	4.8

Source: PDHS, 1992

Table 2
Median Age at First Marriage Women among 25-49 Years by Education

Education level attended	Median Age at Marriage
No education	18.3
Primary	18.7
Middle	18.9
Secondary and more	22.5

Source: PDHS, 1992

Table 3
Distribution of Respondents by Duration and Age at Marriage

Duration of Marriage	Male (Percent)	Female (percent)
00-04	15.5	15.2
05-09	39.2	39.4
10-14	20.6	28.8
15-19	14.4	12.1
20-24	10.3	04.5
25-29	0.3	

Age at Marriage

15-19	03.0	07.2
20-24	15.2	34.0
25-29	40.9	40.2
30-34	34.8	13.4
35-39	03.0	04.1
40-44	03.0	01.0
45-++		

Age at Marriage of Spouse

15-19	24.2	00.0
20-24	43.9	05.2
25-29	24.2	35.1
30-34	06.1	34.0
35-39	01.5	15.5
40-44	00.0	06.2
45-++	00.0	04.1

Type of Marriage

Arranged by elders	78.8	85.6
Self Selection	21.2	14.4

Relation before Marriage:

Personal friends	6.1	7.2
Family relations/ neighbours	53.0	28.9
Blood relatives	22.7	22.6
Others/outside family and friend	18.2	41.3

Table 4
Mean Age at Marriage of Respondents

Current Age	Male		Female	
	Freq	Mean	Freq	Mean
29	01	25.00	03	24.33
30-34	03	27.67	19	24.47
35-39	10	27.90	21	24.86
23-44	13	26.92	23	27.70
45-49	12	30.75	21	24.76
50-++	27	27.59	10	25.90

Table 5
Mean Age at Marriage of Spouses

Current Age	Female		Male	
	Freq	Mean	Freq	Mean
29	05	20.20	00	00.00
30-34	14	22.79	10	28.00
35-39	09	21.00	16	29.56
23-44	10	20.40	16	29.62
45-49	19	23.63	16	31.50
50-++	09	20.89	39	33.67

Table 6
Age Difference Between Spouse by Sex

Year Difference	Female (Percent)	Male (Percent)
00-02	15.5	15.2
03-05	39.2	39.4
06-08	20.6	28.8
09-11	14.4	12.1
12-++	10.3	04.5
	100	100
Mean Difference:	5.92	5.92

Respondents of present study was highly educated males and females, working in colleges of Karachi Primary objective of the study was to know the reproductive behaviour of educate persons. It is emerged from the study that reproductive behaviour of study population was different from other groups. Respondents of the study population had much lower fertility than general population of the Karachi city. They also had lower mortality. But the noticeable feature was the high number of pregnancy loss. What were the factors behind that difficult to explain perhaps relatively late ages at marriage, employment, mental tension etc. this area needs further investigation.

Not only the level of fertility was low among study population, but the ideal family size and desired family size were also low preference of sons over daughters were not much noticeable. Being educated they all had knowledge about contraceptives and also about Pakistan's family planning programme. Some of them were not in favour of the programme. A small number of respondents were against family Planning programme and considered it un-Islamic. They thought that use of any type of contraceptives is against Islam. Some of them specially males became angry when talking about contraceptives. However a large number of respondents were in favour of natural contraceptives.

A comparison of reproductive behaviour of male and female respondents show that although both were highly qualified, educated and had employed in same profession, having somewhat similar socio-economic conditions, their reproduction behaviour was not same.

Reproductive behaviour was different, that female respondents had somewhat lower number of children ever born, lower ideal family size, desired family size was also lower, high proportion of female respondents were using contraceptives and also they had much favourable attitudes towards family planning.

The findings of the study support the thesis that education enhances womens knowledge, decision making power, confidence.

Womens education have much effect on fertility than male/husbands education.

CONCLUSION

The positive relationship of education to marital age is one of the most pervasive findings in the literature. The reasons underlying the positive relationship of education to marital age include the greater say of educated women in marriage decisions including where and when to marry, the greater control over resources derived by educated women as a result of premarital employment and in many settings, the lessened marriage ability of educated women at an early age. The impact of these factors may be conditioned by the kinship structure. In highly gendered, stratified cultures, the relationship of education to enhanced decision making and prudential employment tends to be relatively weak (Jejeebhay, 1995).

Respondents of the study were educated and employed. It is emerged from the study that age at marriage was higher among both male and female respondents. Mean age at marriage was 27.7 years for male respondents and 25.3 years for females respondents. According to PDHS 1990-91 it was 26.5 for male and 21.7 for females.

Male age at marriage was higher than females but the difference was not much.

Age difference between spouses was not much more

It was revealed from the study that all female respondents informed that their husbands were also educated, and all male respondents said the same.

Large proportion of female respondents than males were married outside their family. However, large majority of marriages of both males and females were arranged by their kin. It shows control of parents and their decision making roles.

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ANALYSING RAINSTORM INDUCED DISASTERS FOR AGRICULTURAL PLANNING

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ABSTRACT

An alternative, simple model for analyzing rainfall (especially the heavy ones or rainstorms) measurement is what this paper tries to discuss. The rainfall data, obtained from 12 stations were analysed daily. From the analyses, the probability of occurrence in each month were calculated. The values obtained were used cross-sectionally with latitudes. From the results, some useful inferences for agricultural planning were deduced. The model helps to solve some agronomic questions of when or the start of the rains, period or time of rainfall (or rainstorm) occurrence, areas of severity and less-severity, what to do and what not to do at these periods. All these are guides to farmers in proper planning of farm activities with wet season = since (heavy) rainfall cannot but occur yearly. Northern Nigeria is used as a case study.

INTRODUCTION

Throughout the world, considerable effort is devoted to the collection of rainfall data (Stern *et al*, 1984). The data collected have been subjected to various methods while analyzing them. Unfortunately, the work on data collection is not at present matched by a corresponding effort on analysis (Sprinthal, 1980). This paper demonstrates a method of analyzing daily rainfall data and explains how the model could be useful for direct results in agricultural planning.

The reoccurring disaster of heavy rainfall (rainstorms) and decreased in agricultural productivity during past decades especially in Northern Nigeria point to the need for a clearer understanding of the causes of such disaster. Rainstorm is a yearly weather phenomenon with a lot of damages to lives and property (including man). Thus, for more precise applications in agriculture, it is important to look at ways of ameliorating the bad sides of rains to the farmers. This can either be by avoiding the area at the period of heavy rains, prepared well in advance or find ways of lessening the impacts of the disasters when and if occur (Singh, 1983).

Natural disasters occur all over the world but their effects have been particularly severe in developing countries due to their low level of technology (Ojo, 1991). Analyzing daily rainfall using models for agricultural purposes is not new and abounds in the literatures (Mutsaers, 1978; Hermano et al, 1980; Stern et al, 1982 a, b, 1984; Adefolalu, 1991; Sivakumar, 1992; Aremu, 2001). They all deal with rainfall analysis using daily rainfall data for agricultural purposes though their various places. Some of these studies use empirical methods (Stern et al/1982 a; Aremu, 2001; Sivakumar, 1992) with some using models (Stern et al, 1982 b, 1984). Most analyses involve the idea of grouping rainfall days into 5, 10, 20, day's totals before analysis. With this grouping method, some vital information useful for agricultural purposes is lost (Stern et al, 1982 b).

This paper wants to simplify and proffers a new alternative model that uses daily rainfall data without grouping. It involves the use of Latitude and the time of occurrence (G.M.T.) of the rainfall as data to be analyzed. The model is simple to use and gives straight answers to some problems facing purposeful agricultural planning of farm activities especially in this part of the world.

DATA AND METHODS

The data used for this study is that of daily rainfall amount obtained for 12 stations from the Federal University of Technology, Minna. For each stations, the frequency occurrence distributions were calculated on time (G.M.T) basis month by month for the period under study. The frequencies were transformed into events. A day was divided into 8-time periods 0000-0300, 0300-0600, ...2100-0000 hours. Data used for each station were those available (Table 1). Years with missing data or suspicious data were discarded. Latitudes used for the Latitude-time (G.M.T) cross-section analysis were latitudes 08°N, 09°N and 13°N. They could be more or less but for this study, only 3 were used. The frequencies of stations on or near them were used to analyze the daily occurrence of rainfall for rainstorm - induced disasters (Fig 1). This will help in obtaining valid inferences with respect to agricultural planning.

Table 1 – Stations used for the Study.

Station	Long		Lat		Period (years)
	o	'	o	'	
Bida	09	06	06	01	1960-1962
Ilorin	08	35	04	35	1968-1977
Jos	09	52	08	54	1955-1977
Kaduna	10	36	07	27	1956-1979
Katsina	13	01	07	41	1961-1971
Kano	12	03	08	32	1962-1984
Maiduguri	11	51	13	05	1960-1969
Nguru	13	53	10	22	1958-1967
Samaru	11	11	07	38	1976-1970
Sokoto	13	01	05	15	1956-1976
Yelwa	10	53	04	45	1960-1974
yola	09	14	12	28	1956-1971

Source – Fieldwork, 2002

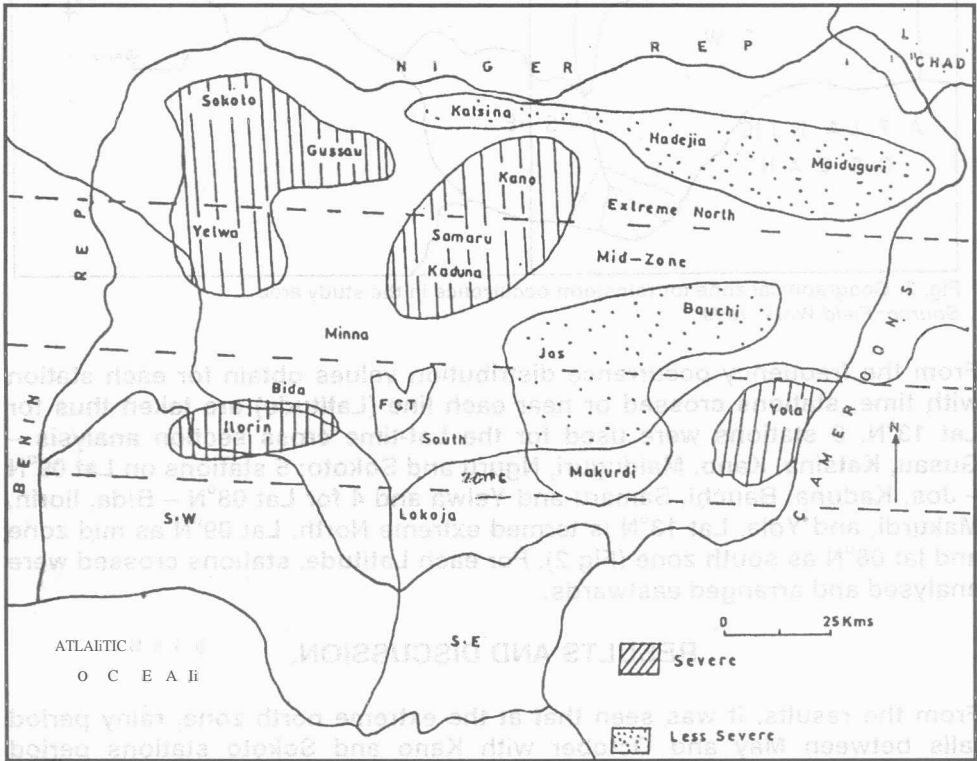


Fig. 1: Nigeria Showing Latitudes and Longitude used for Lat, Long Time Cross-Section Analyses.

Source: FieldWorks, 1999.

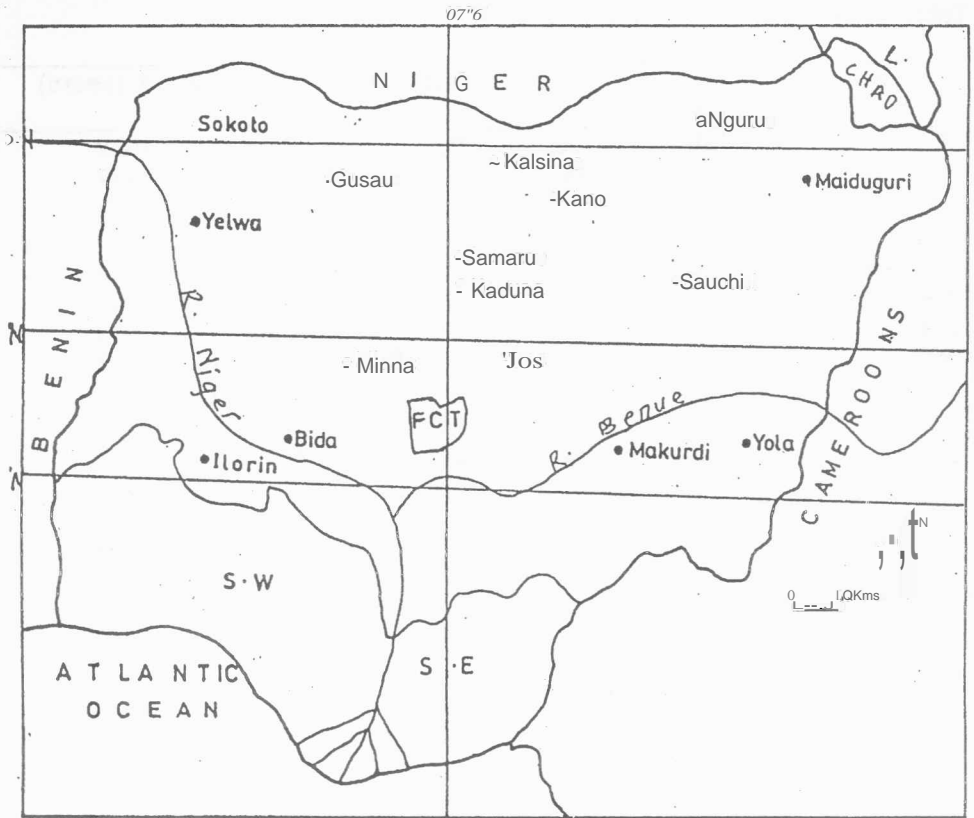


Fig. 3: Geographical zone for rainstorm occurrence in the study area

Source: Field Work, 1999.

From the frequency occurrence distribution values obtain for each station with time, stations crossed or near each line (Latitude) are taken thus for Lat 13°N, 6 stations were used for the Lat-time cross section analysis - Gusau, Katsina, Kano, Maiduguri, Nguru and Sokoto; 5 stations on Lat 09°N - Jos, Kaduna, Bauchi, Samaru and Yelwa and 4 for Lat 06°N - Bida, Ilorin, Makurdi, and Yola. Lat 13°N is termed extreme North, Lat 09°N as mid zone and lat 06°N as south zone (Fig 2). For each Latitude, stations crossed were analysed and arranged eastwards.

RESULTS AND DISCUSSION.

From the results, it was seen that at the extreme north zone, rainy period falls between May and October with Kano and Sokoto stations period extending to early October. The months of July and August had the highest amount of rainfall throughout and coincide with period of rainstorm - induced disasters of flooding, massive erosion and destruction to lives and properties. The heavy rains (rainstorms) were mostly received at late

evenings to the early hours of the morning (1500 - 1900 hours and 0000 - 0300 hours) with less heavy rains.

At the mid - zone, months of rainfall are April - October with the heaviest rains (rainstorms) recorded in August - September. Time of occurrence (G.M.T) of heavy rains is daytime mostly (1200 - 1800 hours) with lesser frequency occurring in the early mornings (0000 - 0300 hours). The South - zone shows that heavy rains start by May - October with October recording the highest frequency of heavy rains (rainstorms). Time of occurrence in the zone is daytime to late evenings (1200 - 1900 hours) with lesser frequency recorded in the early hours of 0000 - 0300 G.M.T.

From all the analyses, fig. 3 were produced showing the geographical zones for rainstorms occurrence in the study area. The central part of the area - Kano, Samaru, Kaduna and environs axis and the north - western parts of the extreme north zone Sokoto, Gusau and Yelwa have the worst rainstorm disasters. Rainstorms are severe in these areas: Yelwa, Samaru and Kaduna axis fall into the mid zone.

The northeastern part (Nguru) has less - severe rainstorms with Maiduguri. Station like Katsina (extreme north), Jos, Bauchi (mid zone) Bida, Makurdi have less severe rainstorms. The severe rainstorms' occurrence at the South zone occurred at Ilorin and environs together with Yola.

APPLICATION OF THE ANALYSIS

The study revealed that disasters from heavy rainfall (rainstorms) occurred mostly in the nights (Obasi, 1991; Adefolalu, 1999). About 80% frequencies of occurrence were recorded at night - time. This period, the farmers will not be on their farms to adequate planning to avoid or lessening the effects of rainstorm induced disasters on their crops and animals should be made before leaving for their homes.

Since certain areas (north-western and the central axis of the study area) are peculiar with severe rainstorms at certain periods of the year agricultural activities that can be affected should be avoided at these periods. These will lessening the harmful and untold hardships the farmers would have faced. Good storage facilities can be made on farms for adequate protection from the disasters of rainstorms usually experienced at the time. There is no year under study that rainstorm is not experienced, so farmers need proper planning before the occurrence or the arrival of the dreaded period. Farmers can relocate from severe zones to less - severe zones for his agricultural activities or avoid the areas or move up-bank from low-lying riverbanks to avoid flooding.

CONCLUSION

Data on daily rainfall used in this paper show that they could be effectively used for a simple analysis to provide good information on rains. The model is a bit complex but an alternative to the numerous ones already in the literatures (Aremu, 2001). Its shortcomings are the long years of daily data needed, longer time of analysis involved and the extra work it requires. It is simple to calculate and not as cumbersome as other models.

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