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Social and economic inequality in Sindh - A factorial analysis approach

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The significance of social and economic inequality becomes more prominent due to the lack of regional planning, a phenomenon present in third world countries, where good governance is a rare administrative reality. Coupled with this is the lacuna of administrative coordination, which exacerbates the inequality scenario. The paper highlights the significant factors responsible for social and economic inequality in Sindh, a province of Pakistan. The lopsided nature of urban development, coupled with rural backwardness, acts as a double-edged knife leading to exaggeration of socio-economic inequalities caused mainly by population explosion natural in rural areas and migratory in urban areas. This leads to staggering economic conditions, with falling income levels, perpetrating vicious social and cultural impacts. Reduction of inequalities demands implementation of planned, targeted development strategies in line with the policies of regional planning.

Key words: Factors, quality of life, urbanization, demographic stress, Sindh.

INTRODUCTION

Inequality is an inherent part of global existence, but it becomes problematic when its magnitude becomes unbearable. It should be noted that third world countries have a high tolerance threshold for inequality, groaning under its weight and revolting only when it becomes very unbearable. Through factorial analysis approach, this work aims to pinpoint very specifically the traumatic causes of disparities. The main objective of this work is to identify the factors responsible for social and economic inequality, as this is the first and most essential step towards its redress and minimization.

Nowadays, with authorities having greater responsi-bilities for social and economic development, decision makers require indicators that could show in which direction a particular situation is tending. Ideally, a valid indicator system for social and economic welfare should consist of a relevant series of measurements that are easily understood and obtainable. In regional planning, analysis of QOL has bounded within a range of indicators that represent components in human well-being. A quality indicator is a key concept in the context of quality assurance, to which the following definition can be employed: a specially selected measure or attribute that may indicate and point to good or poor quality **(**Ader et al., 2001).

Various researches have been carried by government and international agencies to compile large set of indicators to satisfy the growing demand for quantitative evidence of socio- economic policies (Atkinson et al., 2002; Noll, 2002). Even so, it is recognized that their importance is restricted due to lack of well-defined supporting theories. While an abundance of different

regimes of social and economic welfare have been suggested in various literature, none can be considered as one that would best support the construction of a 'good' set of internationally applicable social and economic indicators (Kalimo, 2005). In the research and development of regional planning, selection of indicators depends on the purpose of the study and mental level of the people (Diener and Suh, 1997; Diener et al., 1995).

The theoretical perspective of Welfare Geography is the basis on which the present study has been conceived. The geographers' heightened concern with issues pertinent to societal problems has led to a focus of increased relevance in geographical research. The spatial concepts of welfare incorporate everything differentiating one state of society from another (Smith, 1975). It includes all things from which human satisfaction is derived and their manner of distribution. There are several works regarding social stratification and welfare states which exhibit inequality among regions (Birkelund, 2006; Beller and Hout, 2006; Zhang and Kanbur, 2005; Popay et al., 2003; Wang and Arnold, 2008; Tomul, 2009). Welfare is not directly observable but can be determined by comparisons. The best way to explain the welfare approach more spatially is to indicate the kind of real – world problems that it is designed to tackle.

Geography plays a vital role in the study of socio-economic development of human beings (Bond, 1999; Harris and Arku, 2007; Coen et al., 2008; Redding and Venables, 2004). Welfare analysis in terms of states involves economic, social, cultural and political considerations, whatever the spatial level and aspect of enquiry (Tranby, 2006; Vouvaki and Xepadeas, 2008). It also involves the physical environment, as far as this is part of the resource constraint. Welfare is thus a natural integrating theme. A welfare focus provides a centripetal force to counter centrifugal tendencies in the study of human existence, geographical 'state' or 'situation'. As such it may relate to spatial allocation of resources, income or any other source of human well being. It may concern the spatial incidence of poverty or any other social problems. These expressions may also be used to describe industrial location patterns, the distribution of population, the location of social service facilities, transportation networks, pattern of movement of people or goods or any special arrangement which has a bearing on the quality of life as a geographically variable condition, followed by the types of society, the economic, social, and political structures that generate the patterns.

The governmentality approach derived from the later work of Michel Foucault (Gordon, 1991) and subsequently developed by a number of scholars (Burchell et al., 1991) conducts its analysis from the perspective of government. Government here is a wider conception than the monolithic entity of 'the state', and even wider than the notion of governance which, in its normative and critical forms, is concerned with the top-down exposition of the context fields and axes of coordination in which regulatory structures exist (Larner and Le Heron, 2002).

The approach in the present study is the factorial approach, that is, one which focuses on the identification of factors from the following facets of life- social and economic. This factorial approach, however, has to be linked to the governmental approach for implementation of its findings and searching for governmental and public solutions. All economic and social interactions in order to be implemented successfully and viably necessitates the diffusion of government plans with the thrust of social scientists while analyzing societies and embarking on enhancements.

Weinbach and Grinnell (2001) explain that researchers use factor analysis to perform several different tasks. One common use is to reduce the length of a measuring instrument such as a scale or index by eliminating items that are redundant, that is, those that measure the same indicator of a variable more than once. Bryman and Cramer (1999) provide the easiest explanation that factor analysis is primarily concerned with describing the variation or variance which is referred to as common and unique variance. Although studies of a geographic nature were undertaken at an early date by sociologists, the technique has been used only recently by geographers. Examples of research by geographers incorporating factor analysis include economic, climatic, disease and urban area regionalization studies, classification of cities, and the analysis of commodity flow and concern of inequality patterns.

The province of Sindh has been selected for an inquiry into social and economic inequalities. Its twenty-one districts (Census, 1998) were made the basis for analyzing the pattern of social and economic disparities. The purpose of the present study is to provide cogent argument for the emerging dimensions of social and economic inequality based on factor analysis of the 47 variables deemed relevant for the various aspects of this study. The study is based on secondary data. Data were converted into variables by conversion into percentages, proportions, ratios, etc. From a geographic perspective, much of this discussion remains on disparities among districts. The previous section sets the context of the paper by discussing the theoretical framework that guides the analysis and next section for study area. The penultimate section describes the data collection and statistical methods employed in this analysis. The final section presents the empirical result, which is followed by discussion and conclusion, which provides commentary on directions for further research.

Study area

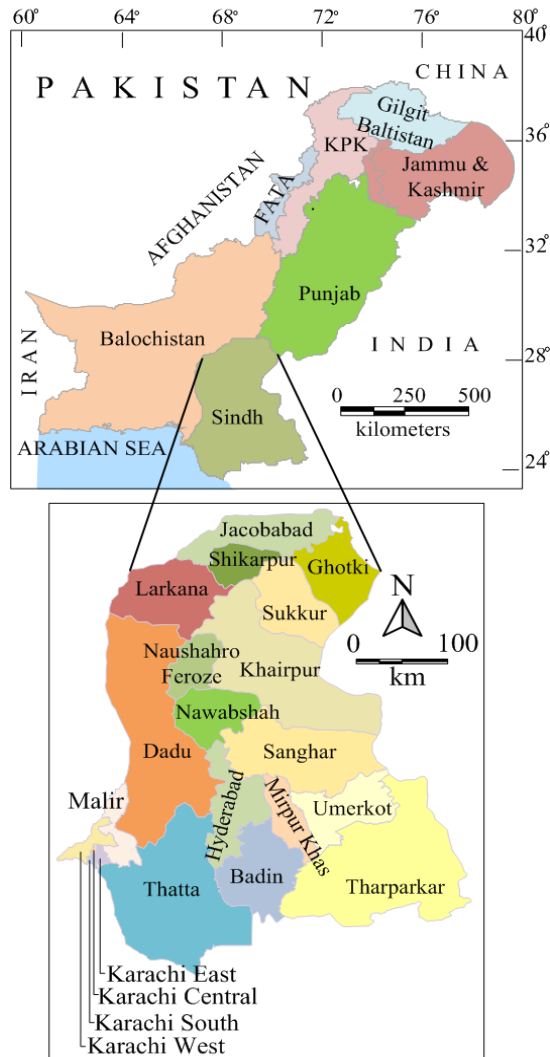Sindh Province lies between 23°40' and 28°29' north

Figure 1. Study area.

latitudes and 66°40' and 71°05' east longitudes. It is bordered on the west and north by the provinces of Balochistan, Punjab on the northeast, the Indian states of Rajasthan and Gujarat on the east and the Arabian Sea in the south. The total area of the province is 140,914 km² with a north-south length of about 540 km and breadth of about 250 km. Figure 1 shows the location of Sindh.

Sindh's economy is based on agriculture, industries, trade and natural resources. Cotton, sugar cane, sorghum and corn are major summer crops while wheat, barley and gram are grown in winter. The development of port facilities and other infrastructure elements, and the presence of a successful entrepreneurial class, witnessed a vigorous growth in the field of manufacturing and textiles, chemicals and pharmaceuticals. Sindh is now one of Pakistan's most industrialized regions with much of its large-scale manufacturing centered in Karachi

(BOI, 2006). Sindh has major deposits of metallic, non-metallic and fuel minerals. The igneous rocks of Nagar Parkar and the sedimentary rocks near Jungshahi are used for building purposes. There are huge deposits of coal and other minerals (Kazmi and Siddiqui 1990).

Sindh Province has been selected for the study of social and economic inequality as there is a glaring gap between the economic conditions of its urban and rural areas, this subsequently impacts on its social conditions; e.g. its literacy, education, lifestyles and quality of life etc. The study is based on the hypothesis that enormous spatial social and economic disparities exist in the province, which are the manifestation of a number of inherent causes. Subsequent to identification of some reasons for these in the form of variables and indicators, along with a number of limitations in this reference, all data pertaining to the study are from secondary sources, that is, government publications. Major factors responsible for the inequalities have been identified.

MATERIAL AND METHOD

Analysis for regional planning is informed by a variety of data sources and research perspectives, among which Census data continue to play an important role. All data regarding the present study have been collected from various sources: Population Census Organization, Federal Bureau of Statistics, UNDP, Provincial Statistics. The Factor Analysis used for this study is based on 47 variables (Table 1) pertaining to spatial dimensions of social and economic inequality that reflect on the social, economic, demographic, production and consumption characteristics of the population of the 21 districts of the provinces of Sindh. Although application of factor analysis was undertaken at an early date by sociologists, the technique was later used by geographers. Examples of research by geographers incorporating Factor Analysis include economic, climatic, disease and urban area regionalization studies, classification of cities, and the analysis of commodity flow and concern of inequality patterns (Kalimo, 2005; Lai, 2000; Everitt and Dunn, 1991).

Factor Analysis is concerned with explaining correlations among these original variables with a model consisting of the posited number of common factors (Brooks, 2008; Griffith, and Amrhein, 1997; Dunteman, 1984). This statistical approach involves finding a way of condensing the information contained in a number of original variables into a smaller set of dimensions (factors) with a minimum loss of information (Hair et al., 1992). Computation for this analysis was executed on Statistical Computing System; the most widely used suite of programs for statistical analysis in the Social Sciences - SPSS.

RESULTS AND DISCUSSION

Forty-seven selected variables related to social and economic characteristics have been used in the study. Table 2 explains the total variance extracted by the Principal Component Analysis technique. Table 3 shows six factors and their variance extracted from the selected variables. The most significant correlations from highest to moderate percentages (0.9 - 0.5) which emerged for

Table 1. Selected variables for the study.

CBR	Crude birth rate
PHC	% of public health centers to total population
H	% of hospitals. total population
BAPHC and H	% of beds available in public health centers and hospitals to total population
D	% of doctors to total population
LHW	% of lady health workers to total female population
PCIV	% of children immunized and vaccinated (less than 10 years)
SNU	standard nutrition units
PHP	% of houses to population(age 18 and above)
NOH	% of non-ownership of households to total housing units
ARC	average room congestion
PH	% of *pacca* houses to total houses
HUE	% of housing units electrified to total houses
HUPW	% of housing units with inside potable water to total houses
HUG	% of housing units with fuel gas connection to total houses
PO	% of post offices to population density
HTRA	% of high type road to total area of the district
HTRP	ratio of high type road per thousand population
HTRTRN	% of high type road to total road network
L	literacy rate
PE	% of primary educated to literates
M	% of matriculate to literates
G+	% of graduates and above to literates
S:	% of schools to school going age population (4-16 years)
SE	% of student enrollment to school going age population (4-16 years)
STR	student teacher ratio
SCCH	% of seating capacity in cinema halls to population age 10 and above
UP	% of urban population to total population
PD	population density
S&TW	% of secondary and tertiary workers to total workers
PCC	% of cognizable crimes to population age 14 and above
PS	% of police station to population age 14 and above
NM	% of never married to population age 18 above
GDP	gross domestic product (ppp in pkr)
CLAE	ratio of cultivable land to agricultural workers
TRH	% of three roomed houses
IS	% of information services availed houses to total houses
DAP	dependent to economically active population age 10 and above
W	% of workers to economically active population age 10 and above
PW	% of primary workers to total workers
SW	% of secondary workers to total workers
TW	% of tertiary workers to total workers
UE	Unemployment rate
P_H	Productivity per hectare (pkr)
P_W	Productivity per worker (pkr)
PIW_W	% of industrial workers to total workers
PVA_IW	Proportion of value added to industrial workers

Sindh are for 39 variables. Most of the highly correlated values pertain to the urban indicator. Based on the positive variables, factor analysis has categorically classified all 21 districts of Sindh. The data pertaining to

Table 2. Rotated sum of squared loadings.

% of variance	Cumulative %	Total
45.6007	45.6007	21.4323
10.0806	55.6813	4.7379
7.9079	63.5892	3.7167
7.7255	71.3147	3.631
7.0591	78.3737	3.3178
6.0677	84.4415	2.8518

Extraction method: principal component analysis.

the 47 variables explain 84.44% of the total variance.

The first factor explains 45.60% of the variance, with nearly 50% of the variables showing strong correlation among themselves; while factors II, III, IV, V and VI explain 10.08, 7.91, 7.72, 7.06, and 6.06%, respectively of the variance. These factors highlight the main findings of the present research.

Factor I -Urbanization

The first factor accounts for 45.60% of the variance with reference to all the selected variables (Table 2). The nature of the factor is clearly identifiable by very high positive loadings, more than 0.54 for 21 variables. An insight into the variables for factor I reveals that features of urbanization, employment and education are significant in determining social and economic inequality and that all variables recording positive loadings reveal that they behave in a certain consistent fashion. Positive loadings have been recorded for all attributes that are responsible for a higher or better standard or level of living, while the negative loadings show just the reverse.

High positive loadings of variables have emerged for potable water (0.936), never married population (0.934), urban population (0.933), *pacca* houses (0.930), gas connections (0.928), secondary and tertiary workers (0.917), and literacy (0.912). Followed by high type road network to population (0.874), tertiary workers (0.861), electronic and print media services (0.847), workers (0.847), matriculates (0.841), non-ownership of houses (0.811), three roomed houses (0.763) and population density (0.727). Employment in registered industrial estates (0.704), electrified houses (0.667), high type road to total road network (0.667), children immunized and vaccinated (0.650) and high type road to total area (0.611) are also included in this category. Moderate loadings have emerged for seating capacity of cinema houses (0.542), graduates and above educated (0.497), GDP per capita (0.468) and unemployment (0.402). High negative loadings have emerged for primary workers (-0.937), public health centers (-0.869), primary educated (-0.857), houses (-0.835) and hospitals (-0.745).

Factor I has identified major disparities in various aspects related to urban development, based on correlations among variables. All positive loadings point towards better standard of living under urbanized conditions in third world countries. All the supporting variables pertain both to social and economic parameters of urban living, the reason why Factor I has been labeled as Urbanization. This factor reveals that urbanization is the prime cause of social and economic inequalities in Sindh, which is demonstrated by its lopsided spatial variation. Urbanization has a close link with development and modernization process.

Economic development results in raising levels of productivity and this provides the basis for national growth, the differentiation of sectors and territorial areas (Harris, 1990). The importance and dominance of cities in the total life and economy of a nation is a corollary for the state or the country's progress and is characterized by an increasing proportion of urban population as a result of large scale in-migrations, especially from the countryside. A shift of the economy towards urban-based activities associated with manufacturing and services occur; e.g., public services such as administration and welfare: commercial services of various kinds, including retailing, financial, leisure and transport provision. Rural activities, especially agriculture, become less important as is evidenced in Karachi. There is a change in the nature of the society; attitudes are increasingly influenced by the media and contact with the outside world. Societies have become more materially oriented because of the shift towards a money economy.

Urbanization, being a dynamic force, urban values and behavior patterns diffuse into the surrounding rural areas as they become increasingly bound up with the economy and life of the city. The influence of colonialism is clearly visible in the city of Karachi. It is a good example of the fact that large cities of the developing world, which were colonized by Great Britain, are based on the administrative role initiated by the colonizing power.

According to Carr (1997), the pull of cities is inextricably tied to inequalities, intensified by colonial system that drained the rural areas and focused wealth into the city. The disparity between the urban cores and peripheral areas has been intensified by the policies of the national governments. The processes that generate inequality are inherently linked with the process of urban development especially in third world countries, primarily because of inequalities in access to resources (Cohen, 2006). Migration to urban areas from rural areas in search of 'greener pastures' is evidence to support this claim (Ram, 2010; Malik, 1992).

Figure 2 portrays the correlation among the variables showing high degree of explanation for factor I. Urbanization is the main driving force behind socio-economic development. This factor can be taken as a cogent justification for the development of Karachi, which

Table 3. Rotated component matrix.

Social indicator	Component					
Health and nutrition	Factor I	Factor II	Factor III	Factor Iv	Factor V	Factor VI
CBR	0.017	0.063	-0.085	0.772	0.060	-0.047
PHC	-0.869	0.245	-0.081	-0.013	-0.117	-0.158
HO	-o.745	0.045	0.341	0.080	-0.088	0.231
BAHPHC	0.091	0.143	0.884	0.095	-0.040	-0.178
D	0.129	0.085	0.810	0.130	0.040	-0.197
LHW	-0.150	0.243	0.442	0.571	-0.329	0.015
PCIV	0.650	0.002	0.124	-0.137	0.447	-0.173
SNU	-0.330	0.704	-0.001	0.395	-0.030	-0.200
Housing and environment						
HP	-0.835	0.216	-0.282	-0.032	-0.280	-0.077
NOH	0.811	-0.013	0.144	0.070	0.070	-0.273
AC	-0.207	0.741	0.079	0.212	-0.110	0.188
PH	0.930	-0.240	0.053	0.163	-0.010	0.067
HUE	-0.667	-0.175	0.413	-0.000	0.409	0.336
HUW	0.936	-0.224	0.095	0.165	0.128	0.033
HUG	0.928	-0.308	0.102	0.093	0.125	0.026
PO	-0.592	-0.005	-0.017	0.233	-0.006	0.171
HTR-AREA	0.611	-0.010	0.009	0.021	0.626	-0. 176
HTR-POP	0.874	-0.366	-0.197	0.065	0.116	0.025
HTR-TRN	0.667	-0.474	-0.093	-0.052	-0.051	-0.000
Education and Culture						
L	0.912	-0.194	0.136	0.085	0.247	0.122
PE	-0.857	0.203	0.096	-0.054	-0.116	0.322
M	0.841	-0.151	-0.184	-0.163	-0.045	-0.235
G+	0.497	-0.196	0.143	-0.066	0.066	-0.002
SI	-0.835	0.272	-0.231	-0.075	-0.208	0.298
SII	-0.587	0.463	0.186	-0.232	0.372	0.240
S_T	-0.113	0.034	-0.258	-0.750	-0.368	0.036
SCCH	0.542	-0.214	0.188	-0.184	-0.565	-0.213
Crime and social welfare						
PCC	0.133	-0.428	0.764	-0.068	0.131	0.280
PS	-0.597	-0.163	0.577	-0.026	0.368	0.321
NM	0.934	-0.053	0.057	0.268	0.030	-0.031
Urbanization						
UP	0.933	-0.257	0.110	0.101	0.151	0.020
PD	0.727	-0.215	-0.203	0.041	0.453	-0.088
S AND TW	0.917	-0.123	-0.014	0.043	0.120	0.206
Economic indicator: income, wealth and consumption						
GDP (PPP)	0.468	0.293	0.070	0.538	-0.099	0.469
CL_AW	-0.503	0.008	-0.073	-0.223	-0.702	-0.110
TR	0.763	-0.463	-0.248	-0.195	-0.013	-0.240
IS	0.847	-0.209	0.185	0.320	0.205	0.113
Occupational structure						
D_AP	-0.831	0.143	-0.198	-0.401	-0.230	-0.101
W	-0.004	-0.059	-0.050	-0.190	-0.100	-0.815

Table 3. Contd.

PW	-0.937	0.219	-0.135	-0.121	0.122	-0.127
SW	0.847	-0.318	0.306	0.085	0.038	0.045
TW	0.861	-0.026	0.116	0.020	0.145	0.258
UE	-0.402	-0.271	0.033	-0.716	0.132	0.344
Agricultural development						
P_H	-0.399	0.802	-0.011	-0.226	0.073	0.238
P_W	-0.444	0.766	-0.152	-0.262	-0.122	0.159
Industrial development						
PERIE	0.704	0.363	-0.142	-0.417	0.242	0.213
VA_IW	-0.031	0.367	-0.168	-0.184	-0.083	0.654

Extraction method: principal component analysis. Rotation method: Varimax with Kaiser normalization. A. Rotation converged in 8 iterations
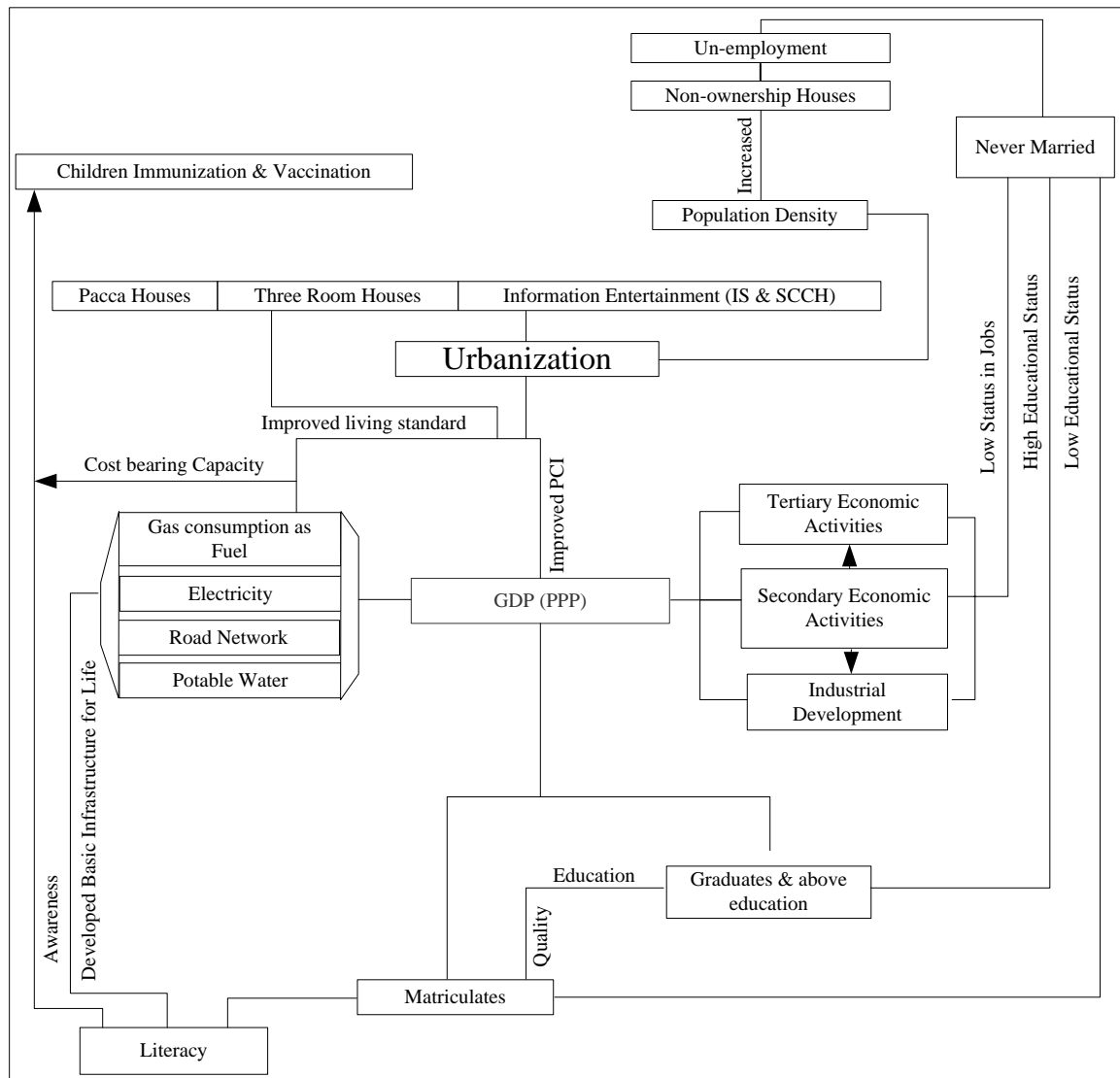
Figure 2. Prime variables of factor I– Urbanization.
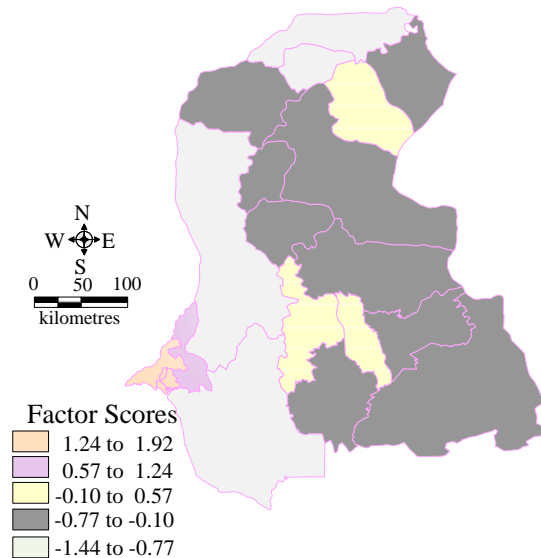
Figure 3. Factor I-urbanization.

is now a mega city. Mega cities are so called because they have relatively more advanced social and economic facilities in addition to greater population concentration (Glaeser et al., 1995; ADB, 2000). By virtue of this, it has become the focus of attention in our study area, with reference to various dimensions of inequality. Figure 3 shows that because of high factor scores, Karachi Central, East, South and West are the most developed districts in the province. The results reveal great disparities between urban and rural areas. A comparison of Karachi Division with the remaining districts of Sindh reveals that, with reference to the nature of the selected variables, only 3% workers are engaged in primary activities, while 80% in secondary and 52% in tertiary sectors of the economy of the province. Karachi Division has only 0.86% of Sindh's cultivated land, therefore, the aforementioned employment figures. After independence in 1947, Karachi became the economic and financial capital of Pakistan and attracted a large number of entrepreneurs from all over the country. It has one of the best inland harbors of the world where all types of ships can be berthed. Since Karachi is the largest industrial and commercial center of the country, attraction of business and job opportunities has brought a large number of people from the rest of the country. Malir, which has been shown in the high category, became a district in 1993 after being carved out of Karachi East. Occupationally, the district is rich in industrial and commercial economic activities, with the main occupation of the people being business and trade. Hyderabad, Mirpurkhas and Sukkur falling in the category of moderate urbanization reveal appreciable social and economic conditions. Nawabshah, Ghotki, Naushahro Feroze, Sanghar, Badin, Umerkot, Tharparkar, Khairpur

and Larkana depict a picture of backwardness with reference to urbanization. Because of factor I, the lowest level of socio-economic conditions is found in Jacobabad, Dadu, Thatta and Shikarpur.

Factor II- Rural-Agricultural Nexus

The second factor explains 10.08% of the total variance of social and economic inequality. The rotated factor matrix shows that the highest positive loading has been recorded for productivity per hectare (0.802) followed by productivity per worker (0.766), room congestion (0.741) and standard nutrition unit (0.704). Moderate positive loadings have been recorded for schools to school going age population (0.463) and some notable loading for value added to industrial workers (0.367). These have been counterbalanced by high negative loadings for high type road to total road network (-0.474), three roomed houses (-0.463) and cognizable crimes (-0.428). All these significant variables, viewed in a general perspective justify the entitlement of this factor as Rural-Agricultural Nexus.

The very high positive loading for productivity per hectare and productivity per worker is an indication of the fact that agriculture is one of the most significant occupations in Sindh and a prime contributor to the stability of the economy. In addition to this, it lends strong support to the significance of land being an important source of economic stability. The excessively large number of agricultural workers leads to a reduction of productivity per worker. However, the high positive loading for productivity per hectare is an indication of the heavy input in the form of irrigation, fertilizers and high yielding variety of seeds, intensive cropping, mechanization etc. Thus, the output per unit of land is more significant than output per person engaged in agriculture. The position of the variable relating to health and nutrition, that is, SNU, reveals availability of this essential and basic human need, which is produced as a result of the predominant economic activity in rural areas, that is, cultivation of crops. Huda et al. (2008) have found in their study of SNU that common food crops, which are used as staple diet (e.g., wheat, rice and bajra) are extensively cultivated in Larkana and Shikarpur, followed by NaushahroFeroze and Jacobabad. Ghotki, Nawabshah and Khairpur record average production.

High positive loading of average room congestion is a stark reality, as in rural areas the farmers construct makeshift huts near the fields, on their landlord's vacant land. These so-called huts are composed of a single room merely to provide some sort of shelter from the elements and vagaries of nature and all types of predators. Females along with their infants cramp up in these shanty abodes for sleeping and some sort of privacy. In contrast, high congestion in rooms in urban
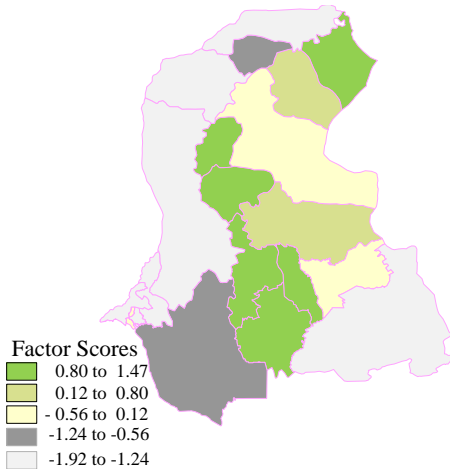
Figure 4. Factor ii-Rural-Agricultural Nexus.

areas is due to high density of population, high rental rates and low ownership of houses.

Moderate positive loading of schools to school going age population coupled with small positive loading of students indicates the fact that although government has constructed schools in large numbers in rural Sindh, poor administration leads to drop out of students for various reasons e.g. poverty, seasonal nature of occupation, etc (SBP, 2004). The negative loading for literacy, matriculates, and graduates and above, lends great support to the fact that the quality of education in interior Sindh is not sufficient. It is also an indication of mismanagement of educational sector, because in urban areas most of the children are enrolled in private schools, which has become a lucrative business, although education should be an essential service provided by the government, according to the constitution.

Figure 4, showing the spatial pattern of the Rural-Agricultural Nexus reveals that tracts with high positive scores are areas with least disparity and vice versa, with reference to this factor. Nawabshah, Mirpurkhas, NaushahroFeroze, Ghotki, Badin and Hyderabad have recorded highest positive scores. Sanghar and Sukkur have emerged as districts with high levels of the rural-agricultural nexus, while Umerkot, Khairpur, Thatta, Karachi South and Central show moderate levels of the rural-agricultural nexus. The rest of the district displays low levels of the rural-agricultural nexus, with Shikarpur showing worst performance with reference to factor II.

Factor III – Health and Social Welfare

The third most important factor, explaining 7.907% of the total variance shows high positive loadings for beds in allopathic hospitals and PHCs (0.884), doctors (0.810), and LHWs (0.442), while moderate loadings have

emerged for cognizable crimes (0.884), police stations (0.577) and electrified housing units (0.413) and a marginal negative loading for secondary workers (-0.306). An insight into the loadings indicates that they all point towards districts that are notable for the lack of availability of facilities pertaining to health and social welfare, therefore this factor has been entitled as Health and Social Welfare.

The persistently positive loadings for the three variables on health indicate that availability of this facility to the populace is strongly dependent on the stock of infrastructure. A devoted medical professional may be considered a gift of God, but provision of medical facilities is the duty of the government. In third world countries the poor quality of infrastructure and health facilities deter medical professionals from serving there, while their concentration in urban areas lures them into private practice, a highly lucrative avenue.

The highly traditional nature of the rural society in Sindh as well as its poverty compels the use of services of LHWs, which is supposed to be available at their doorsteps, being a government service. However, due to the lack of such facilities and in emergency circumstances, travelling to the urban areas becomes essential in order to save valuable lives especially of women and children, who are most susceptible to mortal health problems.

Moderate positive loadings for crimes and police stations indicate that in rural as well as urban areas, unemployment is the main cause of occurrence of crimes (Lanche, 2009; Zaidi, 1998) but in third world countries it has often been found that establishment of police stations is found responsible for proliferation of crimes. The strong feudal system prevalent in the rural areas is also responsible for the high crime rates there, while in urban areas proliferation of political parties and related crimes is more common (Budhani et al, 2010; Detho, 2003; AIP, 2002). Figure 5 reveals the spatial nature of factor III. Karachi South showed the highest rank, followed by Malir and Larkana. Moderate levels of health and welfare condition can be seen in Shikarpur, Hyderabad, Nawabshah, Sukkur, Dadu and Naushahro Feroze.

Factor IV– Demographic Stress

The fourth factor, explaining 7.725% of the total variation encompassing both social and economic variables, has been termed as Demographic Stress, as it shows positive loadings for CBR (0.772), unemployment (0.716), LHWs (0.571), GDP per capita (0.538), employment in registered industrial estates (0.417) and SNU (0.395). Negative loadings have been recorded for student-teacher ratio (-0.750) and dependency ratio (-0.401). Figure 6 showing Factor IV portrays the stress of population increase on magnifying social and economic disparity. As
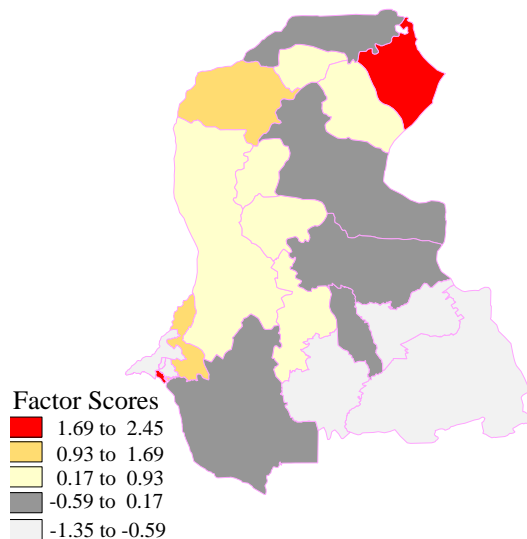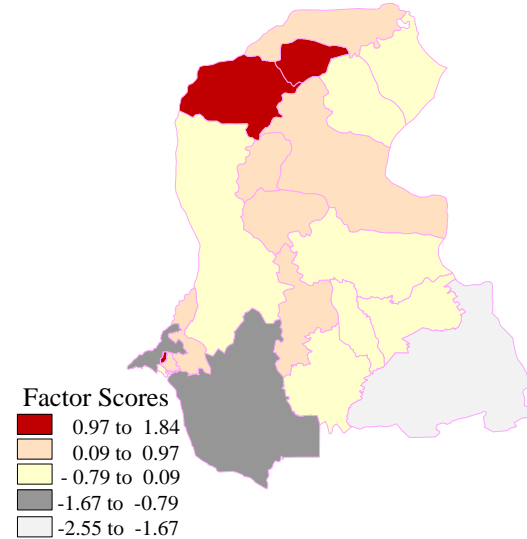
Factor Scores
- 1.69 to 2.45
- 0.93 to 1.69
- 0.17 to 0.93
- -0.59 to 0.17
- -1.35 to -0.59

Figure 5. Factor iii-Health and Social Welfare.

Factor Scores
- 0.97 to 1.84
- 0.09 to 0.97
- -0.79 to 0.09
- -1.67 to -0.79
- -2.55 to -1.67

Figure 7. Factor v –Infrastructure and Service Facilities.

FACTOR IV -
Demographic Stress

Factor Scores
- 0.80 to 1.47
- 0.12 to 0.80
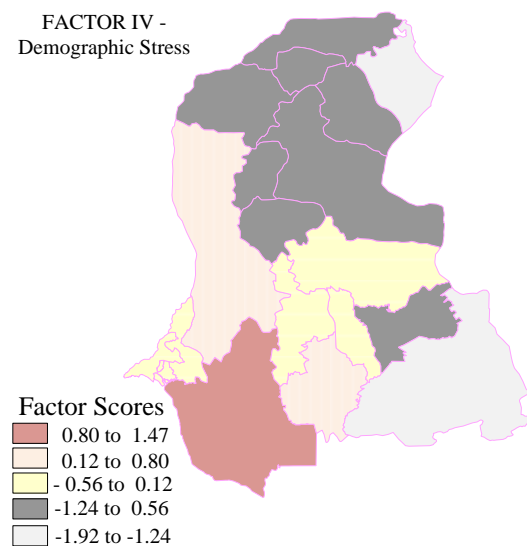- -0.56 to 0.12
- -1.24 to 0.56
- -1.92 to -1.24

Figure 6. Factor iv –Demographic Stress.

regards this factor, Dadu and Badin follow Thatta. The aforementioned variables with high positive loadings are pertinent explanatory causes of Demographic Stress.

The high CBR, especially for the districts showing the high positive loadings, that is Thatta, Dadu and Badin is supported by the presence of a predominantly rural society there; e.g. in Thatta 88.79 % living in its 652 villages, in Dadu 78.64 percent in its 523 villages and 83.58 % in the 500 villages of Badin. Rural areas are characterized mainly by agricultural economy and a leisurely way of life. A conservative, illiterate, male domi-nated society with exploited females, males enjoy their lives in a multiplicity of ways, as a result of which CBR

are high, leading to unemployment, low incomes, poverty and deprivation with several manifestations, including malnutrition and under nutrition. Government employ-ment in the form of LHWs has aided in increasing the CBR due to provision of better medical services. Employment in registered industrial estates is mainly to support the agro-based economy, which helps the pres-surized population to somewhat eke out an existence.

Factor V - infrastructure and service facilities

Six variables explaining 7.059% variation in Factor V are high type road to total area (0.626), graduates and above (0.66) with high positive loadings, while children immu-nized and vaccinated (0.447), population density (0.453), electrified housing units (0.409) as moderate and marginal loadings for police stations to population (0.368). On the basis of the positively loaded significant variables, which show a somewhat variegated composi-tion, this factor can be entitled Infrastructure and Service Facilities. The spatial patterns level based on Factor V can be seen in Figure 7. Karachi Central, Shikarpur and Larkana have been categorized in highest rank followed by Karachi East, Jacobabad, Khairpur, Naushahro Feroze, Nawabshah and Hyderabad. The worst level of development of infrastructure and service facilities has been observed in Malir and Tharparkar.

A perusal of the contributory variables to Factor V reveals that the presence and availability of infrastructure and facilities both in the districts categorized in the highest, as well as in the lowest ranks are very much in consonance. Karachi Central showing fully urbanized, highest density of population and percentage of graduates and above, that is the highest figure in
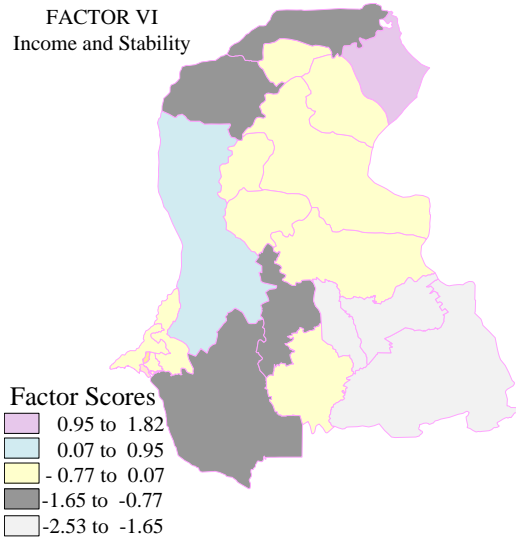
FACTOR VI
Income and Stability

Factor Scores
- 0.95 to 1.82
- 0.07 to 0.95
- - 0.77 to 0.07
- -1.65 to -0.77
- -2.53 to -1.65

Figure 8. Factor vI –Income and Stability.

Pakistan, has justifiably ranked topmost with reference to this factor.

Malir, Tharparkar, and Karachi West showing worst performance on this factor are justifiably so because Malir has 47 and Karachi West 29 villages, with 33 and 9% rural population, while Tharparkar has 96% rural population. A large number of people of Karachi West live in *kacchi abadies*. Although old settlements of Karachi are found in the District West, their lifestyle is close to that of *kacchi abadies*. Burke et al. (2008) have found a very high density of houses in Lyari, which was one of the earliest settlements of Karachi, characterized mainly by *kacchi abadies*, which is one of the major obstacles to the infrastructural development of Karachi West.

Transport has emerged as the most important infra-structure or service facility in this factor. As connectivity is a good indicator of the level of economic and social development, hence the level of inequality is its reverse facet. Therefore, it is relevant to jot down here, while assessing transport connectivity of Karachi by Kansky`s π index for 2000, has concluded that Karachi Central, showed π value of 3.03km, while Malir and Karachi West have recorded 15.97 and 7.46kms, respectively. With the average connectivity for Karachi being 5.50kms, Karachi Central shows the best connectivity, while the other two show poorest connectivity.

Factor VI - income and stability

Factor VI explains 6.067% of the variation. The multifaceted nature of this factor, characterized by high positive loading for PVA_IWs (0.654), moderate loading for GDP (0.469), while unemployed (0.344), electrified

housing units (0.336), primary educated (0.322) and police stations (0.321) showing marginal loadings; while the variables on workers to economically active population (age 10 and above) with high negative loading (-0.815), may be entitled Income and Stability. That purchasing power is highly dependent on income is indisputable. Any type of stability, therefore, is associated with this and instability, whether it is an economic, social, cultural, political or environmental manifestation, ensues as a lack or dearth of earnings and purchasing power, which has been represented here in the form of positive and negative loadings of the variables.

Ghotki records the highest scores for this factor, while Dadu has preceded (Figure 8). Umerkot, Tharparkar and Mirpurkhas show the lowest. PVA_IWs reveals the inter relationship between nature of industries and quality as well as quantity of workers, e.g., high-tech industries with a handful of highly qualified workers would receive appreciable remunerations, evident as high value addition and vice versa. Umerkot, Tharparkar and Mirpurkhas record 0 and 0.3 million for this variable, while Ghotki records highest (3.65 million). However, the real GDP per capita, 1.38 million, for Umerkot, Tharparkar, Sukkur and Karachi is lower than the provincial average. The highest GDP per capita was recorded for Dadu and Ghotki, 1.63 and 1.43 million PKRs, respectively.

The negative loading for workers and its spatial variation in the above-mentioned districts is highly supportive to the condition of economic instability. The workers in Tharparkar, Umerkot and Mirpurkhas number above the provincial average, 28.07 yet, PVA_IWs and GDP are well below this average. The percentage of unemployed is also below the provincial average, 13.35, in all the above-mentioned districts except Dadu and Karachi, which have urbanized employment trends in industries and services. Economic instability represented by poor proportions of electrified houses shows great correlation with income as Tharparkar, Umerkot, and Mirpurkhas record below provincial value of 65.97%. The figures relating to schools in these districts, however, are above the provincial average, 0.44%. This statistical data can be misleading as there are a number of 'ghost' schools, evident by low literacy rates, which is highly pernicious for social, cultural and hence economic stability of any area. The presence of police stations is low in Karachi, Mirpurkhas and Umerkot, that is, below the provincial average of 0.003%, indicating unsure law, order and security conditions in these districts, contributing to social volatility.

CONCLUSION AND SUGGESTIONS

Factor I based on the nature of loadings does reveal that urbanization is one of the factors responsible for social and economic inequality. However, an insight into the

loadings reveals that density of urban population has increased, especially in Karachi creating a string of problems like non-ownership of houses, problems of electrification, decrease in the facility of high type roads, health facilities. This leads to a strained education viability resulting in employment problems and per capita income etc. Urbanization can prove to be successful, only if it is accompanied by concurrent availability of facilities, which are necessary for enhancement of standards of living.

The nature of the second factor instigates the suggestion that agriculture being the backbone of the economy should be given overriding significance. Its development can prove to be extremely helpful in reduction of crimes, as empty bellies are breeding grounds of evil. Development of high type road network is essential for developing this economic sector.

As revealed by the third and fourth factors, reduction of demographic stress is essential in fostering social welfare and hence economic well-being. The fifth and sixth factors reveal that prosperity is directly associated with income and stability of any region and although revenue may be generated, its exaggerated consumption is a potent cause of inequality, especially with reference to Karachi West and Malir. Targeted efforts and planning is essential to develop strategies in line with the suggestions based on the factors.

From 2000-2010, for the first time after independence, Local Government System replaced the Commissioner System of administration. This had a great impact on quality of life as it envisaged changes at grass roots levels. Thus, future research can be directed to analysis of governmental changes on quality of life. In view of the prevailing conditions in the province, with reference to the selected variables and the emergence of factors, improvement of facilities at the district level is an essential prerequisite for improving the quality of life, thereby minimizing inequalities. With this end in view, the coverage of the following has been suggested:

1. Population explosion should be controlled
2. PHCs for at least 0.1% of the total population
3. Hospital facilities for at least 0.01% of the total population
4. Beds in allopathic hospitals and PHCs for at least 0.5% of the total population
5. Doctors' services for at least 0.01% of the total population
6. Services of LHWs for at least 0.05% of the total female population
7. Immunization and vaccination coverage for 90 % of the total population less than 10 years
8. Housing / shelter for at least 35% of the total population of 18 years and above
9. Electricity, water, gas should be ensured to each and every household

10. Construction of roads should be based on the economic potential, feasibility and service to the economy of any area.
11. All rural areas, not directly accessible, should be within 3km accessibility of the high type road.
12. Emphasis on education at the grass roots level should be implemented. Establishment of Primary, Secondary, Higher Secondary, and Technical and Engineering Education Commission must be established in addition to the existing Higher Education Commission.
13. The definition of literacy should be enhanced with reference to certificates, general and professional literacy levels, etc.
14. School enrollment should be ensured at 100%
15. Dropout levels should be reduced. At least 50% of the primary educated should pass their secondary and higher secondary level examinations
16. Schools for at least 5% of school going age population should be ensured, in view of the existing conditions.
17. Student-teacher ratio at 20 : 1 should be maintained even in areas where lower ratios have been recorded
18. Improvement of cultural and recreational facilities and promotion of sports activities by setting up sports complexes, gymnasia, theaters, etc. should be ensured
19. In order to reduce urban density new housing schemes at the periphery of cities should be planned
20. Facilities for improvement of agriculture and rural living must be a priority.
21. Improvement of the judicial system is of utmost importance not only for crime reduction but providing justice at the doorsteps.
22. Development of a GIS database for recording of crimes and evidence which will help in providing effective justice.
23. Remuneration to all classes of workers must be enhanced.
24. Launching special appreciation awards for services rendered to the citizens by the police
25. Government rule of minimum age of marriage, that is, 18 years should be enforced and simple, community marriage ceremonies should be practiced, along with abolition of dowry system
26. Raw materials, locally produced, should be provided primarily for domestic consumption, while surplus should be exported, thus lending stability to the economy, as this would increase the number of business persons and taxpayers.
27. All canals and water distribution courses should be cemented and fair distribution of irrigation water to the agriculturists, irrespective of their landholding, status should be ensured
28. Upgrading of technology in all spheres of life is essential, especially in agriculture, as it is the backbone of our economy
29. Improvement of agricultural education is fundamental

to meaningful agricultural development

30. Absentee landlordism is a major problem, therefore, strong emphasis must be given to policy formulation to ensure that those actually responsible for agricultural production live in rural areas, close to their farms and preferably work on the land themselves

31. Cultivation practices should be in accordance to water availability

32. Government purchases of staple and major crops like rice, wheat, pulses and sugarcane at reasonable prices must be ensured

33. Data on seasonality of minor crops must be maintained and imports of market gardening products from neighboring countries prior to domestic harvesting should be avoided and protection to local farmers must be ensured

34. Development and promotion of small and cottage industries in each district should be promoted

35. Provide support for livestock herding to rural population of every district

36. The use of indigenous fuels like coal and gas in power generation and other sectors must be encouraged in order to reduce the import burden

37. Ad-hoc measures and emergency relief policies should be replaced by well planned, long term strategies

38. Keeping the socio-cultural scenario in perspective, they should be unmindful of the prevailing dire economic conditions , a necessary prologue to any positive results desired to emanate from sincere government policy formulation; to execute the so called honest desires is the provision of facilities; firstly to improve literacy standard in the province. This will serve as a corollary to development and enhancement of quality of life, as education is the building block of an enlightened nation. All else will follow suit.

Solution of problems related to social and economic inequality is rooted in the governmentality approach. Governmentality is concerned with the specific ways that individuals and populations are governed at the micro level. Disparities minimized at the grass roots level of planning could contribute to a balanced macro-planned economy as governmentality, according to Larner (2000; 2006), is a patterned way of thinking or style of reasoning which governs the thoughts and actions of the populace. Translation of findings of social scientists into plans necessitates the burgeoning of governmentality guide through factoriality.

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