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RESEARCH PAPER

Urbanization and its Impacts on the Agricultural Land of Taluka Khairpur, Pakistan

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ABSTRACT

Urbanization is a process of urban sprawl, caused by human population. Urbanization is also a main driving force of Land Use Land Cover Changes (LULC). Recent research has shown that urban development is replacing fertile agricultural land, which is the main cause of the shrinkage of the arable land in the vicinities of cities. The social and economic, factors are responsible for urbanization. The resident of small cities and villages believe that urban dwelling is more profitable than agricultural land, so they believe that economic success is more likely to happen in cities, which leads to urban migration and cities expansions, consequently, a significant loss of cultivated land occurs. The study shows that half of the migrants have selected agricultural land for housing, while most of the people opted for freshwater, a good built-up area and a better environment. The urban growth rate of Taluka Khairpur is 23 % annually, with 262.3 acres of agricultural land converted into housing societies. An important issue that significantly affects the growing urban population is an increase in literacy.

KEYWORDS Agricultural Land Conversion, Migration, Urban Expansion

Introduction

The rapid growth in the purlieus of cities known as urbanization spreads land in different directions. It primarily refers to the process through which towns and cities are developing and expanding in size as more people choose to relocate and settle there. Urbanization can see as either an increase in a given condition through time, such as the percentage of the total population or area that is in cities or towns. Notably, the United Nations also recently predicted that cities will account for almost all of the increase in global population between 2017 and 2030, adding over 1.1 billion new urban residents in that time. (Cohen, 2015). Modern changes in the state and movement of the biosphere are primarily caused by human activities as opposed to natural forces. Land transformation because of human activities has taken many different forms, beginning with fire management, herding practices, development of agriculture and fruit farming, and culminating with urbanization including industrial expansion. It is critical to comprehend how the explicit forms of human-induced land change affect the dynamics of the earth's biological ecology as we begin to realize the extent of human effect on the planet. Bai, X., et al. (2017) stated that urban development will lead to 1.8%–2.4% damage to global arable lands by 2030. About 80% of these agrarian lands, liable to sprawl, are situated in Asia and Africa. Urbanization and associated population changes provide significant challenges in terms of hunger, food insecurity, and malnutrition in emerging countries, particularly in Asia and Africa. As a result of urban expansion taking place on some of the most productive agricultural lands in the world, food systems in emerging nations—primarily in Africa and Asia, where urbanization is now unfolding at the quickest rate will see significant adjustment pressures. (Eko, A. J. 2012). An estimated one-third to one-half of the earth's land surface had been altered by human activity, according to earlier studies. According to

recent studies, urban expansion is occurring on the most productive and agricultural terrain. We can comprehend how urbanization has gotten stronger in the past and how it will affect things in the future. The main effects of the widespread development activities in both urban and rural regions are the increase in food insecurity and the decline in agricultural yields, especially the production of fruits. (Chin, 2022)

By 2030, urban development would cause 1.8% to 2.4% harm to the world's arable lands. About 80% of these agricultural lands are found in Asia and Africa and are subject to sprawl. Urban sprawl poses a serious danger to agricultural lands, which over time lowers their capacity to produce food and fiber and leads to issues with food safety. Additionally, the remaining land must work very hard to generate food and meet the demands of the huge urban population due to the loss of marginal agricultural land and fruit orchards to urban expansion. (Eko, 2012)

Leopold et al., (1989) addressed that the fast shifting of people towards the cities plays noticeable because the major elements are responsible for the swift development. Due to social, economic, political, and religious factors, people have been relocating inside cities and across nations. The purposes for which land cover exploited by humans vary in time and space in biophysical environments, socioeconomic activities, and cultural contexts referred to as Land-use (Lambin et al., 2003). In 2050, most of the urban population of the world will be concentrated in Asia (52 per cent) and Africa 21 per cent (United Nations, 2014). These rural–urban migrations are not the sole explanation for Pakistan's rapidly growing urban population. A second factor is the natural increase in Pakistan's general population. Given the country's high rate of overall demographic growth, this natural rise is a steep one. The total population is growing by 2% every year, and if the average fertility rate (currently about four children per woman) remains constant, Pakistan's population, now about 180 million, could number nearly 300 million by 2030 – and more than 450 million by 2050. Today, however, this tradition is imperiled. Pakistan is urbanizing at an annual rate of 3%. By 2025, Lahore's population, currently about 7 million, will exceed 10 million. Karachi's will be 19 million; it is 13 million today. Strikingly, the number of Pakistani cities with populations between half a million and a million will be 11 – whereas today it is only two. Because most cities are encroaching on agricultural land, future land use and food problems may arise from the conversion of agricultural land into urban areas (Magsi et al., 2017). Thus, the present study will explore the prevalence of urbanization and the factors responsible for conversion in the study area.

Study Area

Khairpur city is the principal city of district Khairpur ranked as 12th largest city of Pakistan. Taluka Khairpur has an altitude of 61 m from the mean sea level its absolute location is 27° 3′12" to 27° 33′ 34" N latitudes and 68° 42′ 36" to 68° 47′ E longitudes. Taluka Khairpur has an area about 481.70 km^2. The population of Taluka Khairpur is 440412 persons (GoP 2017).

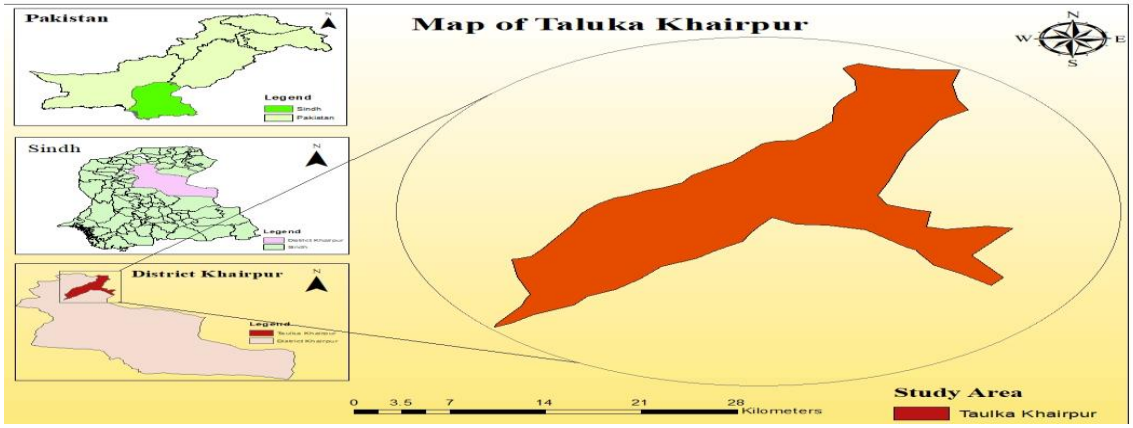

Fig. 1.

The urban population of Taluka Khairpur is 231,845 (52.6%), while Rural 208,567(47.3%) (GoP 2017). The Density of Population of Taluka Khairpur is about 752.8/km^2 Annual Population Change (growth rate) of Taluka Khairpur is about 2.93 % (1998 → 2017) (GoP 2017). By counting the growth rate formula the total population Taluka Khairpur in 2020 is about 498670.

Taluka Khairpur becomes the most catchment point for residency as they change the agricultural land to plotting (to build their houses in future). By the census report of 1998 headquarters urban dwelling (town) were major portion of urbanization that have a 100,000 population, apart from it 7 western Taluka of Khairpur District has 17 major towns or urban settlement. Khairpur Taluka carries about 493.5 per/ km2.the ratio of houses built up houses in 1998 rural dwellings were 56% and urban dwelling were about 28 % increased rapidly and with the increase ratio of 31 % in 2007-2007 it reached 41 % urban settlement and 65% respectively rural dwellings.(Khairpur Existing report 2016). The rapid movement of villagers towards the cities of Taluka Khairpur, causing a noteworthy change in the utilization of land for residences. The rapid change in urbanization impacts agriculture Arable land changed for residential purposes and it causes less production of crops and cultivatable items.

Material and Methods

Data Collection

The research is based on survey in which data were collected from the District agricultural department, city planning department, population census report, bureau of statistics Sindh, Khairpur existing report, and municipal board of Khairpur, different private state agencies of Taluka Khairpur, and different research articles. A self-administered questionnaire designed for the data collection. Random sampling techniques were used total 173 samples were collected from the different areas of Taluka Khairpur, and each sample was collected individually. Research Methodology: flow chart

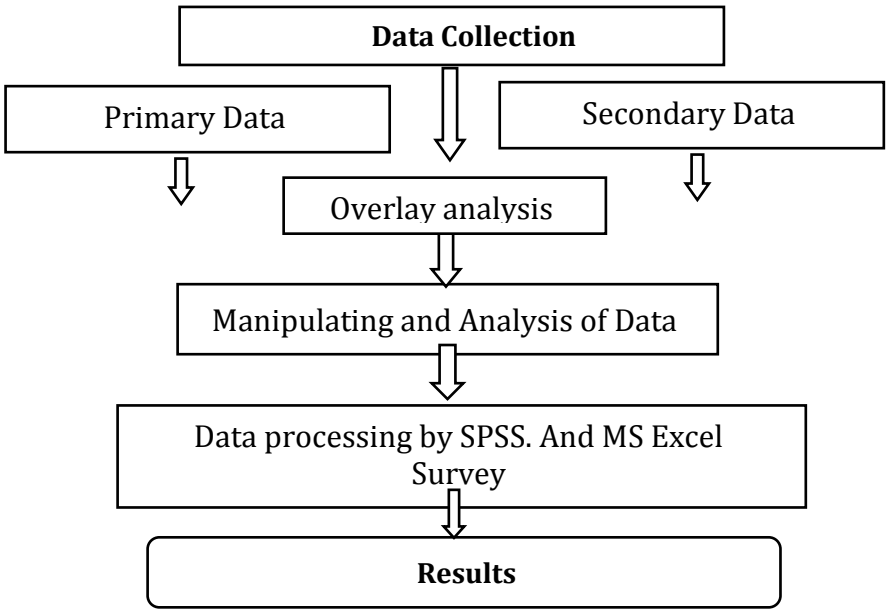

Fig.2.

These variables further correlated with each other through and SPSS 24 (Statistical Package for the Social Sciences) version software to see whether independent variables are significantly associated with dependent variables, this chapter highlighted the association

of different variables, which have been examined through the help of SPSS techniques of data analysing. Some of table and graphs created with the help of M.S Excel 365

Results and Discussion

According to the 1998 census total was (1,546,587) with growth rate of 2.71 % including 24% urban and 76% rural population, and now according to 2017, it has reached about 2,404,334 with urban population 53 % and rural 47%. The Taluka of Khairpur District has perceived change in built up of house and changed the rate of activities in urban dwellings, by this rate of rate improvement there were a notable change between the styles of rural to urban dwellings by this factors of changing the ratio of rural settlement reduced from 74 % to 68 % in 2006-2007. The (78.9 %) population of Taluka Khairpur is 440752 in (Pakistan Bureau of Statistics 2017) it has about 481.70 km^2, 752.8/km^2 Population Density 2.5% Annual Population Change (1998 → 2017), Males 227,622, Females 212,736, Transgender 54 with the literacy rate of 179,810 males (59%), females are 124,700 (41%) males. The urbanization rate of Taluka Khairpur is 231,845 (52.6%), while Rural 208,567(47.3%), (Pakistan Bureau of Statistics 2017) by counting the growth rate formula the total population Taluka Khairpur in 2020 is about 498670.43. The urbanization growth rate will extend estimate significantly. Urbanization relates to modernization, civilization, Economic growth, and rapid change in social value or status. So, there is no any work has been done one the urban expansion in Taluka Khairpur, Sindh province, Pakistan.

Table 1
Population of Taluka Khairpur 1951, 1961,1972,1981,1998 and 2017.

Year	Total population	Urban	(%)	Rural	(%)
1951	67593	18184	26.9	49409	73.1
1961	93477	34144	36.5	59333	63.5
1972	130904	566	43.3	74216	56.7
1981	175613	73247	41.7	102366	58.3
1998	288655	124939	43.3	163716	56.7
2017	440412	231645	52.6	208567	47.4
Total change (1951 to 2017)	372819	213461	25.7	159158	25.7

Source BoS, 2017

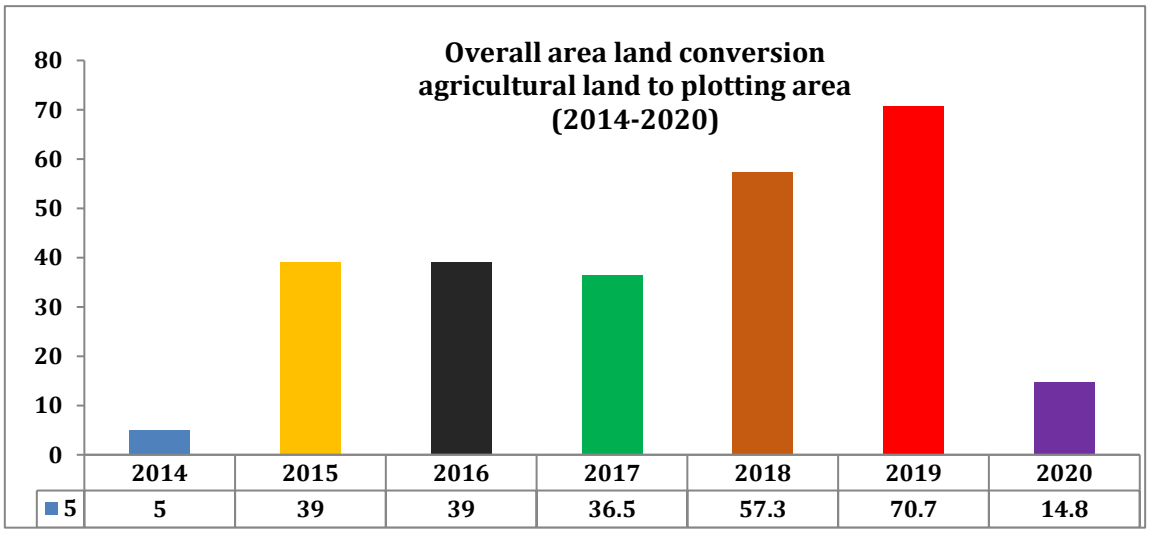

Fig. 3.

The Khairpur Existing report notified that area of Taluka Khairpur is about 480.9 km^2 (square Kilometers) in 2004-2005, in the same period 16% of land was cultivated. The

remaining portion of land remains un-cultivated from which about 1.232,000 were not able for agriculture; 51000 hectares were filled by the forest while the remained 510000 hectares were cultivable waste 208000 were not mentioned (Khairpur Existing report 2016). The urban has much larger effects on agriculture. Due to urbanization, agricultural production has reduced up to 20 % in it will be expected for reducing day by day. The urbanization growth rate will extend estimate significantly. By the report of Sindh Agricultural Department, the total agricultural area of Khairpur is about 331.121

Factors responsible for urbanization in study area.

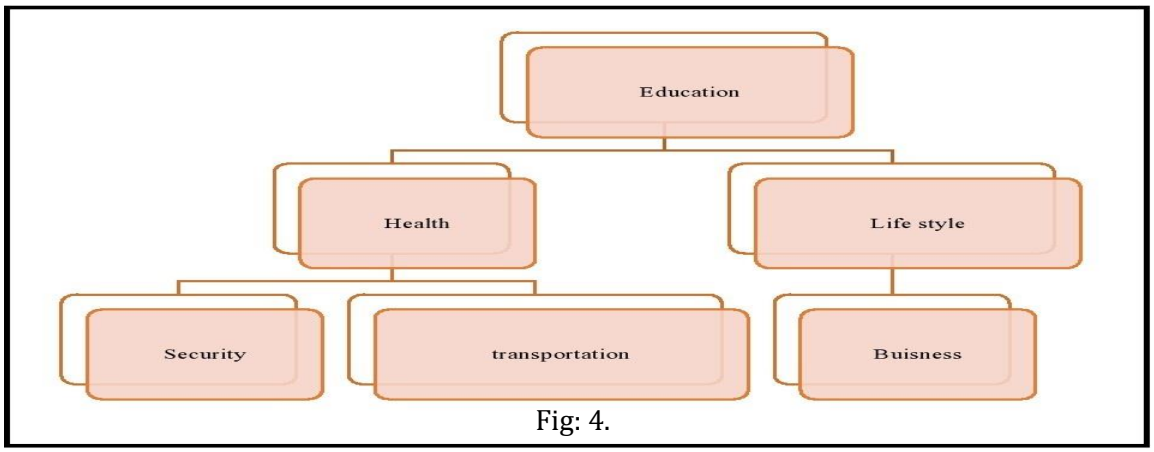

Fig: 4.

Most of the land has been changed into barren area (areas used for settlement in recent times) about 261.34 acres. Respectively it is starts from 2014 year that accounts 5 acres, however it started increasing respectively 39 acres (2015), 39 acres (2016), 36.5 acres (2017), 57.3 acres (2015), 70.7 acres (2019) and 14.8 (2020) that accounts 78 % used for the purpose of settlement.

Taluka Khairpur becomes the most catchment point for residency as they change the agricultural land to plotting (to build their houses in future). Khairpur Taluka carries about 493.5 per/ km2.the ratio of houses built up houses in 1998 rural dwellings were 56% and urban dwelling were about 28 % will in increased rapidly and with the increase ratio of 31 % in 2007-2007 it reached 41 % urban settlement and 65% respectively rural dwellings. (Khairpur Existing report 2016). The rapid movement of villagers towards the citizenship of Taluka Khairpur, causing a noteworthy change in the utilization of land for residences. The modernization of land impacted the agricultural area. The rapid change in urbanization impacts agriculture Arable land is changed for residential purposes and it causes less production of crops and cultivatable items. The urban has much larger effects on agriculture. Due to urbanization, agriculture reduced up to 20 % in terms of production and will be decrease day by day.

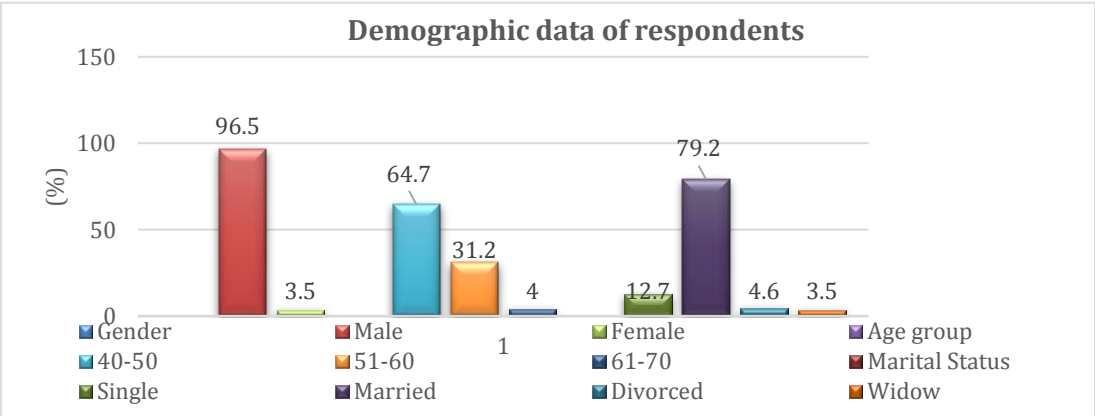

Fig.5.

The majority of respondents were male while the ratio of female respondents is low due to their insecurity however, 96.5% male and 3.5% were female. Age selected with mature level 40 years to 70 above, the ratio of respondents, in which 40-50 age were 64.7%, 51-60, 31.2 % from 60-70 age group were only 4%. The marital status of respondents was 12.7 % single, 79.2 %, and married 4.6 % divorced, and 3.5% widows.

Pull Factors of Migration

The figure 6, Pull factors for migrating into Khairpur. Out of the total, 20.2% were farmers who worked as daily wage. Additionally, 28.3% were executives engaged in various activities in Khairpur Taluka, such as property development, commercial housing, and dairy farming. Furthermore, 34.1% reported being employee in different institutes and sectors of Khairpur, with a significant number working in the education and health sectors. Around 17.3% were unemployed and relied on other family members for support. It also illustrated the pull factors for migration to Taluka Khairpur. According to the respondents, 9.2% cited the flood situation that occurred in nearby areas in 2010 as a reason for their migration. Security issues mentioned by 23.1% of the respondents, as Khairpur Taluka provided a safe and secure environment. A majority of 57.8% stated better residential environment as the main factor for migration. Other factors accounted for 9.8%, including a better overall environment leading to a harmonious society in Khairpur with no social or religious conflicts. Approximately 32.3% of the people migrated to Taluka Khairpur due to alarming situations caused by floods. Many individuals from vulnerable areas, known for insecurity, found Khairpur to be a secure location and chose not to return to their original homes. Regarding the reasons for migration to Taluka Khairpur, when asked, 23.7% of the respondents mentioned health, 20.8% cited job opportunities, 47.4% highlighted education, and 8.1% mentioned other reasons, such as a better environment, security, well-built areas, and a good society. Around 71% of the people suggested that the quality of education and healthcare were the major drivers of urbanization in Taluka Khairpur.

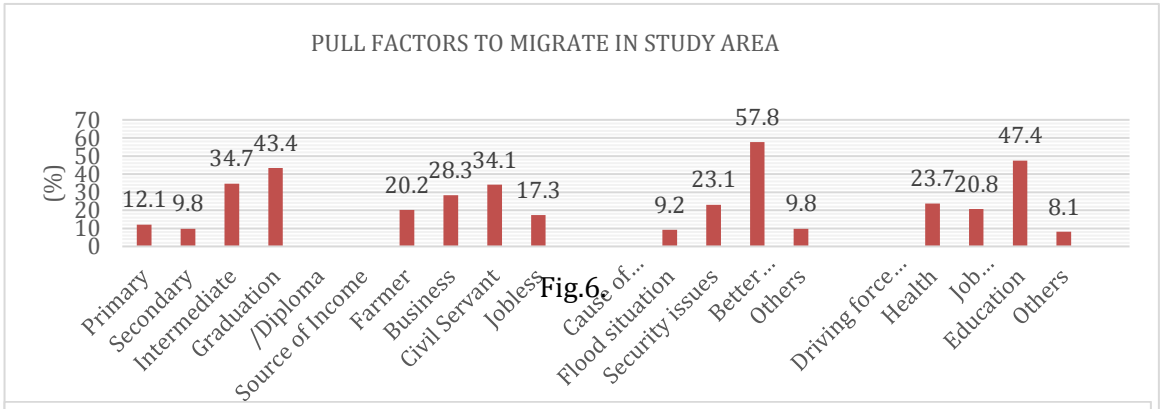

Fig.6.

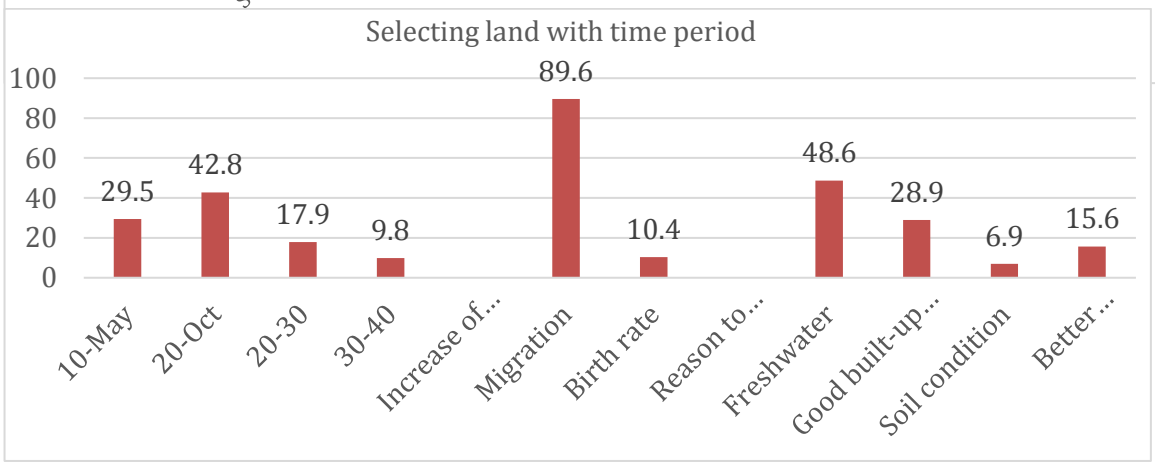

Fig.7.

Figure 7, shows the time to settle in Taluka Khairpur. Most of respondents settled in Khairpur between 10-20 years for several reasons. On the other hand, 29.5% settled within 5-10 years, while 42.8% settled within 10-20 years. Furthermore, 17.9% settled within 20-30 years, and only 9.8% settled within 30-40 years. Cumulatively, 72.3% of respondents moved to Khairpur within 5-20 years. However the changes in the land usage and built-up area. According to the data, 72.8% of the agricultural land has changed followed by 9.8% barren land, 8.1% drought-affected land, and 9.2% other land areas. The majority of the land that has been converted into residential areas in Taluka Khairpur is agricultural land, accounting for 72.8% of the changes." For the settlement in the reasons for selecting agricultural land for residential purposes were explored, and respondents provided the following feedback: 48.6% selected it due to the availability of fresh water, 28.9% chose it for its good built-up area and better construction land, 6.9% considered soil condition, and 15.6% valued a better environment. Consequently, the two major reasons for selecting agricultural land were the availability of fresh water for drinking and agricultural purposes, as chosen by 48.6% of respondents, and the presence of good built-up areas for constructing safe houses, as indicated by 12% of respondents. On the he frequently asked questions regarding the increase in urbanization. A significant majority, 89.6% of respondents, agreed that urbanization has increased due to population growth and migration, while 10.4% disagreed and did not attribute urbanization to population growth and migration in Khairpur Taluka.

Discussion

The United Nations also recently predicted that cities will account for almost all of the increase in global population between 2017 and 2030, adding over 1.1 billion new urban residents in that time. (Cohen, 2015)Urbanization typically results from particular growth in an area that also promotes human development and modern life-leading amenities. It is directly tied to industrialization and the growing tendency of economic and social modernization. A key factor in today's urbanization is the rising urban population trend. Rahman and Chandio et al (2023) found that people from rural areas moved in search of better education, health, quality of life, and jobs. This overwhelming migration resulted in an unplanned expansion of the built-up area over agricultural land and encroaching on open areas. Major elements of urbanization include the availability of employment opportunities, economic growth, and the spatial distribution of construction projects (Seto et al., 2012; World B., 2009). Socioeconomic, age, income, and education factors are identified as primary factors. Magsi et al., (2017) .The results of the studies that 20.8% of respondents moved to cities in search of employment, 57.8% for a better quality of life, and 47.4% for better educational opportunities. Current study's results show that pull factors were the primary stimuli that drove the majority of the respondents. Pull factors significantly influenced the migration of a large majority of respondents (78.0%), whereas push factor for migration. These finding correlatives with study of Magsi et al., (2017) who reported education, employment and standard of life is one the major pull factors for urbanization.

The study shows that in taluka Khairpur most of them have settled in Khairpur between 10-20 years for several reasons, in that case in the period of 5-10 years there were 29.5%, from 10-20 years 42.8%, 20-30 years there were 17.9% and between 30-40 years there were only 9.8% people settled in Khairpur. Cumulatively there were 72.3 % respondents have moved in Khairpur between 5-20 years. The major reasons/pull factors for migration to Taluka Khairpur were revealed as 23.7% due to health, 20.8% job opportunities, 47.4% education and 8.1% for several others reasons like better environment, security good built area, good society and so on. Approximately 71% peoples declared about the quality of education and health as the major reasons for urbanization in Taluka Khairpur.

Conclusion

Conclusively Pakistan is a county, which is facing a fast-growing population, which creates the issues of food security. 220.9 million Population of the country depends on 49.09 % area of Pakistan, which is under cultivation by the migrants trends in study areas due to the increasing of population by birth rate and migration the major areas agricultural areas of country is being converted into houses. Agricultural opportunities like Rates of Food products, appreciation to farmer and awareness of negative impacts of converting the agricultural land should conveyed. Infrastructure of houses, health facilities, and education should be engaged in rural areas to support for resident. The agricultural area is under the threat by Housing Societies. Rapid urbanization in Khairpur may create issues like food, security problems that could cause social imbalance, if measures are not take to secure the future of the agricultural sector.

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