

IMPACT OF URBAN SPRAWL ON AGRICULTURAL LAND AND FOOD SECURITY IN DISTRICT MANDI

BAHAUDDIN



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CERTIFICATE

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DEDICATION

DEDICATED TO MY mother and father

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Thanks to the Almighty who gave me strength and the sense of consistency and not giving up. Indeed, He is the most merciful and beneficent!

I am very grateful to my supervisor Dr. Zulfiqar Ali whose help was all the way with me till the end of this document. I am also very thankful to Ch. Shakeel without their guidance I would have been stranded and would not have completed my thesis in time.

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ABSTRACT

Formation of new cities and transformations of old cities are the consequences of the development process that took place in last fifty years. This phenomenon took the name of urbanization and suburbanization. This process of urbanization and sub-urbanization influenced agriculture, as agricultural lands near the cities are being affected by urban sprawl. This study is an attempt to discover the relationship between urbanization and agricultural land conversion in district Mandi Bahauddin, Punjab. This study used both primary and secondary data. Interviews were conducted for primary data collection with the sample size 20. The participants of interviews were landlords and members of local administration, while secondary data was collected through GIS.

People preferred their agriculture land conversion in the urban area owing to low agriculture profits, high quality of living standard, increase in household members, high price of agricultural land in urban areas, and the pressure of property dealers. This study concluded that the land convergence can create food and fiber scarcity for its population boom together with economic, social, and institutional issues. These issues are not city specific rather they can impact the whole nation.

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CHAPTER 1

INTRODUCTION

The term urbanization is defined as an inter-sectorial macro gage. Suburbanization can be defined as the refining attentiveness of population in urban zones both unconditionally and comparatively. The World Development Report 1999/2000 iterated that suburbanization is the consequence of the radical, communal, and economic progresses that aimed to metropolitan attentiveness and growth of big cities, variations in land use and variation from rural to metropolitan pattern of institute and management (Iheke et al, 2019). Urbanization is an imaginable trend in the expansion of humans, and it has been recognized as one of the serious factors of growth finalized in science and know-how. Urbanization affects all ranges of humanoid lifespan of cooperation in the green and urban location. Urbanization - enlarged housing populace and development of non-farm business and manufacturing - increases the burden on farmers and makes it more expensive and problematic to farm in an outdated way. The issue is complex by the fact that populace and business trade growing often takes residence in prime agrarian zones (Asamoah, 2010). Fast city population progress means a cumulative demand for city land, housing, and numerous other cities uses. Suburbanization has led to land use variation from agricultural land-dwelling to urban land practice, such as for organization, manufacturing, housing, and profitable uses. Progressive urban population evolution means a cumulative demand for urban land for housing and various other inner-city uses.

Land use is an evolving socio-economic movement; wherein, an area of one chief specific resolution utility may be changed into another land for overall purpose value. Classic

examples of such land use are a good agricultural land for a national highway being transformed into a motel, guesthouse or a fun park. Population blast, demand for increased manufacture of possessions, establishment of diversities of infrastructural services like road systems, airdromes, layouts, motels, guesthouses, flyovers, sanatoria bridges and inland waterway and such actions force people to hawk their lands or use them for changes.

Land use variation generates new shapes of urban sprawl. Urban sprawl is separated into eight separate proportions that are: absorption, mass, continuity, proximity, importance, gathering, unclarity, and varied uses. Concentration is a mark of development which is unsuitably located in a zone less than 1 square mile after the whole metropolitan area. The process of urban growth in these conditions is completely irregular and sprawl. In urban growth arena, density is firm in three procedures: building density (floor area ratio (FAR), which is the constructions floor area to the size of portion of land where it is built), net housing density (number of dwellings divided by inhabited land area in that region), and gross residential density (population of a region divided by area of the whole land of that region). Developable lands, wherever building is done, located in the closeness of urban textile zones are resolute by continuity amount. Nearness is a measure which describes various land uses which are nearby urban region. Supremacy is a measure stipulating residential and nonresidential expansions (both) which are nearby to the vital business area of an urban region. Gathering is a measure of development representative the minimum land zone in each mile which is accomplished of being advanced and occupied by residential and nonresidential land uses. Nuclearity is the rate which describes the expansion boundary of an urban area using a single essential development design (in contrast with multi core shape).

Finally, mixed use is a mark of specifying dissimilar land uses to one Small part. Urbanization has led to the alteration of land use from agrarian land to urban land use. For example, for infrastructure, manufacturing, residential, and profitable purposes. Such land usage often reduces the most productive land; consequently, the impact on agricultural manufacture and food security is frequently larger than the complete amount of land compulsory. (Francis et al., 2013).

The earth is urbanizing at a very pace. In 1950, urban areas accounted for just 30-percent of the world's population, but in 2014 about 54 percent of the world's population lived in urban areas. This means that more than half of the world's population is now living in urban areas. According United Nations' report, (UN, 2014), roughly 66 percent of the world's population is expected to be urbanized by 2050. This report also concluded that Asia's urban population is increasing more rapidly than ever and by 2030 there will be more than 1.1 billion Asians living in urban areas. Asia has the fastest urbanizing rates in comparison to other continents. One of the main reasons for such fast urbanizing rates is massive countryside to city migration in quest of jobs and improvement of living standards. Urbanization in Pakistan is not a recent trend; in fact, urbanization trends show a stable increase from least 1971 and since liberation 1947 (Blank, J., Clary, C. and Nichiporuk, B., 2014).

Agriculture plays a significant economic role for all societies and uses a great portion (35 percent) of the world's total land area. It is a continuous source of income today notwithstanding rising development and suburbanization in the world. In the developing countries, the agriculture subdivision has remained a major source of occupation and the major source of revenue. Pakistan has long been defined by its geography and

overpopulation. Annual urbanization proportion in Pakistan is 3%. (fastest in whole South Asia). The United Nations Population Separation estimated that, through 2025, nearly half of the nation's population will live in urban areas. Pakistan's current one-third population is urbanized; however, much of the urbanization is because of migration. In present era, people from rural zones in Pakistan are heading towards cities to escape war, to ensure their security and to escape natural calamities. They to seek new livelihoods and improved basic services.

Humphreys American People's Encyclopedia (1965) defines agriculture as the production of crops, livestock, and its products. Agriculture can be also defined as management of land for the purpose of production of plants and animal products to satisfy human needs. Land is the most fundamental resource for human development as 90% of humanoid food comes from this native setting and less than 1% comes from the bushels and other marine ecologies (FAO, 1991). Throughout fresh decades there has been an extreme increase in world populace. The growth of inhabitants and the consequent demand for possessions has placed massive pressure on the land. Expansion of human population and separation of limited resources among cumulative number of people will create hindrances in maintaining excellence of life.

The loss of agricultural land by urbanization not only causes loss of food supplies, but it also causes the destruction of biodiversity and species diversity, although urbanization is considered a public enemy of agriculture, (Kuusaana and Eledi, 2015). The farmland area per person declined from 0.09 ha in 1961 to 0.03 ha in 2014, due to the increasing population and continued loss of agricultural land by urbanization, (World Bank, 2017).

Land uses for residential, industrial, business, public, and cultural purposes continue to dominate agricultural lands in the urban spaces. Such dominations continue to deprive farmers of arable land for agriculture; therefore, reducing farm productivity. Urbanization is as a multi-sectoral trend that affects all areas of the society and economy. Urbanization is the product of social, economic, and political trends leading to the urban consolidation and growth of big cities, changes in land use, and transition from rural to metropolitan organizational and policy patterns. A total of approximately 14 million hectares of land (approx. 475,000 ha/ year) transformed for urban purposes in developing countries from 1990 until 2020. This rapid urbanization will diminish agricultural land production. In a developed economy, the role of farmland and urbanization has always been at the center of the debate about ongoing patterns of land usage. Although agriculture remain the primary consumer of rural land in many European nations, over the previous two centuries the amount of agricultural land has fallen by an average of 4% among European countries, and this drop is expected to grow. (Regmi, 2014). New research reports suggest that practically all future population growth world-wide will occur in metropolitan centers; in part, reflecting rural urban migration patterns driven by comparative livelihoods.

About 35 percent of a current global urban growth is attributed to rural-urban migration and urban populations in sub-saharan Africa are anticipated to increase in the next 40 years. Urban sprawl is a diverse set of processes that adapt to various values and beliefs of the rural vs the urban characteristics. While all are interconnected, it is not a single operation. Whether one looks on suburbanization trends from 1971, from independence 1947 or future trends, it will remain very much the same and by 2040 it will be most likely the absolute majority (Blank et al., 2014)

1.1 Locale:

Pakistan, a south Asian country with inhabitants around 207 billion with population evolution of about 2%. Based on population, it is the sixth most populated country in the world. Pakistan is further divided into four administrative units: Punjab, Khyber Pakhtunkhwa, Sindh, and Baluchistan. The most populated province of Pakistan is Punjab. Furthermore, the provinces are divided into 26 divisions and these divisions are further divided into 154 districts. The concerned province of this study is Punjab which has 36 districts. Punjab is Pakistan's burgeoning administrative structure. It is home of 56% of Pakistan's population. Urbanization heap is high in Punjab as compared to any other province. Among the ten largest cities six are in Punjab (Jan et al, 2008).

Study area of this study is Mandi Bahauddin. Mandi Bahauddin uses 2,673 square kilometers as a district in Pakistan's province of Punjab (District pre-investment study-2012). Mandi Bahauddin lies about 220 meters above the sea level and is located in between rivers Chenab and Jhelum. The population stands 1.5 million which makes the average population density of 521 per square kilometers. This is a rural district. The urban population is 15.20% and rural is 84.80% respectively. Much of the district is agricultural, and farming is the primary source of income for people of Mandi Bahauddin. 60 percent of people of Mandi Bahauddin are active in the agricultural sector. Cash point crops are essential for sugar cane, wheat, rice, and citrus.

1.2 Problem Statement:

The agricultural land in the Mandi Bahauddin covers most of the district's area. In addition to the cash crops, sugar cane, wheat, rice, and citrus remain the key sources of income in the district. The urban population is 14.97 percent and it is rapidly increasing. Exploration

of the density map of Mandi Bahauddin suggests that rural populated areas are about 50 to 60 percent. Total land area of Mandi Bahauddin is 7,623 km square, while the land requirement for the future urbanization is 3855 acres (Mandi Bahauddin PMSIP, 2011). The problem does not lie in the availability of the land area to the population to support their lifestyle. This inaccessibility of land is triggered by the faulty land management and unplanned urbanization which is getting more intense day by day owing to rapid increase in population.

The problem of land area required by the population to support their lifestyle is not subject to the availability of land, but the issue of land management and unplanned urbanization have triggered the issue and it is getting more intense with increasing population over the years.

1.3 Objectives:

Punjab is the most populated province of Pakistan with the population of about 110 million. However, during recent times urbanization is on the surge in Punjab and Pakistan as a whole. This causes hindrances in the way of agriculture development. Due to continuous urban sprawl the agricultural land is squeezing. This study focusses on this continuous urban sprawl. Keeping in view the situation this study has the following objectives:

1. To explore the phenomenon and impact of urban sprawl on agriculture land availability in Mandi Bahauddin.

Explanation: In the first objective researcher has studied the phenomenon of urban sprawl and the impact of that urban sprawl on agricultural land available in Mandi Bahauddin and its impact on agricultural production.

2. To study the role of landlords and local governments in the urban sprawl in Mandi Bahauddin

Explanation: Landlords are one of important stakeholders in the urban sprawl of Mandi Bahauddin. Having land nearby an urban area increases its value and price automatically because of improved infrastructure and availability of other facilities. Landlords usually use these lands for non-agricultural activities because of fluctuations in the prices of agricultural products.

Local government, on the other hand, also play their role in urban sprawl as when most of the urban land is used for industry and non-agricultural purposes local governments can generate more revenue through taxes. Local governments work under the national government; so, their interest is to increase the GDP. Due to urban sprawl the political power of rural areas weakens because suburbanization increases agricultural and non-agricultural land usage and conflict became more rampant.

Due to these circumstance, Local ordinances may force farmers to generate harmful externalities produced from farming. Local government orders which are mutual to control the livestock wastage, usage of insect repellent, and speculative role of suburbanization leads to spoofs used by growth pressures in agricultural production. The potential cost of land is rising because of the entrepreneurs' strong demand for land. Famers may not be willing to invest heavily in advanced technologies because the risk of selling their land reduces planning prospects. Land assumes the characteristics of a financial asset, and its usage as a profitable resource may be less available to present conditions on the agricultural market. This phenomenon dubbed the "impermanence syndrome" leading to reluctance to repair and replace agricultural equipment, irrigation systems, and other farming

infrastructure. Due to urban sprawl, farmers are settling closer to the markets to reduce transportation charges and to earn more profit. In addition, suburbanization influences land user costs by the means of property taxes and investment income (the income that comes from selling the land) from rising land value. The local government collects funding from this.

3. To understand the possible impacts of land usage pattern on food security in Mandi Bahauddin.

Explanation: Resultant migration in the cities owing to the lack of jobs in the agricultural sector, displacement of people owing to river erosion, and recurrent environmental disasters, induces high urban living rates. People desperately look for houses, jobs, and other social services. Consequently, people grab the opportunities whenever they get. Developed areas of the city can hardly provide people with space to live except in the unoccupied land under governmental control, where they take refuge without authorization. People usually end up setting the slum areas for themselves. Most of them migrate to the urban fringe and settle on the barren farmland, either under government control or under private ownership. Unused land, which is inexpensive, is often purchased for settlement purposes. Such communities are situated along the main roads of the capital city to take advantage of public services and utilities like natural water supply that can be found in rural agricultural land. The disparity between demand and land supply has led to agricultural land being used for non-agricultural purposes.

The loss of agricultural land or conversion is the major factor causing food insecurity by reducing food production and job opportunities. At the same time increase in food grain prices and vegetables are decreasing buying power.

Urban sprawl and consequent change in agricultural land because of decrease of production has a great impact on food prices. To understand the impact of urbanization on this increase in food prices this study used GIS. GIS indicated the year of increase of urban sprawl. After collecting vegetable price data from AMIS this study put it on GIS and analyzed the increase in urban sprawl prices of agricultural products and decrease with time period due to the decrease in agriculture production. Some limitations were placed due to non-availability of production data, but availability of agricultural land and prices indicated that because of lack of production food prices increased. The study too data from AMIS agricultural management system of Punjab and GIS data

1.4 Research Questions:

- 1) How urban sprawl affects agriculture land availability in Mandi Bahauddin?
- 2) What role the landlords and local government play in the urban sprawl in Mandi Bahauddin?
- 3) What are the possible impacts of change in land usage patterns on food security in Mandi Bahauddin?

1.5 Significance of the study:

Significance of the study lies in the fact that it will be the benchmark for other students or academicians as no such study is conducted in Mandi Bahauddin. This study will explore the people's perception towards urbanization and future of agriculture in the study area. It will help to understand that how urbanization affects agricultural land availability and what role landlords and local administration play in this regard. Moreover, this study is a tiny contribution to the literature for future research and policy guidelines.

CHAPTER 2

LITERATURE REVIEW

There is not a bulk of literature available on urban sprawl and its effect on agriculture land conversion and food security. Studies which have explored this relationship with the help of primary data were also scarce. But the researcher gave its best to extract the literature from available resources. Those studies who have explored the relationship with the help of GIS environment or any other method, as well as literature based on primary data is discussed in detail: the literature will cover the following themes:

- Urbanization
- Suburbanization
- Urban Sprawl
- Causes of Urban Sprawl
- Urban Sprawl and Availability of Basic Needs
- Urbanization and Agriculture Land Conversion
- Urban Sprawl and Agriculture Land Loss
- Urbanization and Food Security
- Rural-Urban Relation
- Rural Area Transformation of Occupation
- Agriculture Effect on Urbanization
- Agriculture Land Prices
- Land Use /Land Cover

2.1 Urbanization:

Yar et al., (2016) did spatial analysis of the Modern city undertaking Landsat 30m and SPOT 2.5m dataset while utilizing Maximum likelihood supervised classification approach in ArcGIS environment to analyze the impact of urban expansion on farmland. They concluded that the urban sprawl due to constructions has increased from 953 ha during 1990 to 1994 ha during 2010 at the cost of contraction of farmland in Modern city. The reasons behind their results is that the demand for housing and its constructions has increased exponentially without any management policies. New roads are also one of the factors in Modern city expansion which led to easy accessibility to newly built housing societies. All the mentioned factors have led cities to engulf the agricultural land and convert it to residential areas.

Another study in Punjab context by (Arshad et al, 2017) also arrived at the conclusions that 1) modern lifestyle of the people has enhanced people demand for better housing 2) lands in the out skirts of the cities are cheaper 3) transportation availability and new roads have made it possible to reach the city centers faster 4) rural to rural and rural to urban migration 5) population growth and 6) housing societies are the reasons behind land conversion to non-farm activities.

2.2 Suburbanization:

Andrews et al., (1998) studied the effects of suburban population growth and property speculation on the choices, prices and income of crop output. To estimate these effects for New Jersey, a dual benefit function model and a reduced form of price analysis method were used. They concluded that natural vegetation is the only subsector to gain from suburbanization, although livestock are the most harmful. Suburbanization reduces

reaction to farm prices and discourages capital and land utilization. If capital gains on land are included, the net impact on income is positive. Political considerations are explored for the protection of farmland and the "right to farm" legislation.

Namperumal et.al., (2013) analyzed the long history of urban development planning in the National Capital Region (NCR) of Delhi, that region became frequently criticized by scholars for having faced serious urban problems caused not only by a rising population but also by a lack of infrastructure and spatial expansion. Identification of phases of urban development provides policy makers with a method to plan policies to handle urban growth effectively and efficiently in this report, NCR Delhi took as a case study using the urban growth model interpreted by Klaassen-van denBerg as a loop, not only defining its period of urban growth but also attempting to forecast its future period, in order to provide planners with a forum for reviewing the developed policies to effectively manage urban growth. He concluded that since 1981, NCRD had spread over the decades in total suburbanization. This is most likely to counter urbanization and go straight to reurbanization in the prevailing deficient climate and institutional infrastructure.

2.3 Urban Sprawl:

Rameshbhai Gandhi (2019) did work on the cause of urban sprawl. They analyzed that population increase and urbanization was the major reason of urban sprawl in the developing world, the main cause for urban sprawl was suburbanization. Urban sprawl results in the form of sudden, unorganized, and haphazard urban growth. They observed that urban sprawl occurred mainly because of population growth, unequal regional development, infrastructure, government policies, affordable housing, and a shifting lifestyle. Urban sprawl on traffic jams, high energy use and more distance to drive, and

land use had a direct impact and many other problems. Through the primary survey carried out in Uttar Pradesh's Noida district, they concluded that rapid population growth, regional inequalities, employment / income opportunities, distance to Delhi, availability of cheap land, affordable housing and loan facilities at cheaper rates are the main causes of urban sprawl.

Zuhal Karakayaci (2016) urban sprawls are rural-urban transfer areas with infinite limits. Several factors, such as population growth, socio-economic conditions, technical progress, planning and policies, cause urban sprawl. Urban sprawls had arisen as a result of unregulated and unanticipated growth. She concluded that Geographic Information Systems (GIS) will help to define the boundaries of urban sprawls and rapid data development. This technology with no uncertainties and the ability to generate fast data had the attributes that support policy implementers.

2.4 Rural Area Transformation of Occupation:

Moshin et al., (2015) worked on rapid population growth as they studied the transition of Land cover and land use which was primarily correlated with population development. Most cities of Pakistan have become more urbanized with every passing day; Pakistan is also on the top of list of those countries where population growth increases day by day. The study area of Bahawalpur became the most populated area of Pakistan. The research is based on secondary data analysis that used indices of urban sprawl to calculate the rate of urban change with growing population growth. They concluded that due to population increase land consumption also increased. The city grew at a dramatically faster rate than ever before in almost every direction. There has been a rise in population and improvements within and outside the city limits have taken the form of roads (building and

widening), residential structures, economic growth and industrial expansion that have absorbed several acres of farmland. Many katchi abadis also contributed to urban sprawl, so many of the services provided by local governments faced challenges. Effective planning and management is required for this alarming situation.

Another study on the reason for rapid urbanization in Jordan's three cities. Saleh, al rawashdeh (2007) analyzed the proper management required to avoid the bad impact on the environment and socio economic. GIS and RS techniques were used in this work to locate and estimate the expansion of urban areas in three Jordanian cities: Amman, Madaba and Irbid. They concluded the entrance of war-time refugees and internal migration of Jordanians over the years constitute the reason for this irregular but superb urban growth. Additionally, the study showed that urbanization in these three cities had found attention near major roads and fertile land.

2.5 Causes of Urban Sprawl:

(Byomkesh et al, 2011) have focused on increasing the disappearance of green spaces in Dhaka. They used both secondary data and primary data for effective analysis of spatial-temporal dynamics of concerned regions. The factors responsible for this occurrence are high rates of urbanization, specifically rural-urban migration, lack of policy, lack of political motivation, and deficient management.

Taking the case of Nigeria's largest city (Dekolo et al., 2016) the effect of urban sprawl on the contracting of agricultural land was studied by performing fractal dimensional analysis when considering remote sensed images between 1984 and 2015. From the analysis they concluded that lack of policy implementation and controls have resulted in uncontrolled urbanization which resulted in loss of valuable agriculture and forest lands. Another on

African region Ghana is done by (Attua and Fisher, 2010) considering the urban sprawl in the New Juaben municipality due to political stability and socioeconomic progress as people respond to incentives which lift their living standard. Because of the urban sprawl the natural ecosystem is depleting at a very high rate. According to their results there has been 10 percent expansion in the urban core while the urban fringes have expanded by 25 percent respectively during the period of 1985 to 2003. Due to the urban sprawl there has been a 19 percent decrease in the woodlands, 9 percent tree fallow, cropland by 4 percent, and grass fallow by 3 percent respectively. Factors they consider responsible for such change are previous microeconomic policies, specifically Structural Adjustment Programme, Economic Recovery Programme, Ghana Poverty Reduction Strategy, demographic changes, and complex land administration system.

Ondogo et al., (2019) worked on urbanization in Juba city, Africa where due to urbanization the issue of transformation of rural land to urban took place after signing the agreement of Comprehensive Peace Agreement (CPA) in 2005 and after this loss and degradation of agriculture land, social changes in urban population due to political instability the agriculture land squeezed during the process.

2.6 Urban Sprawl and Availability of Basic Need:

Akhtar Hussain (2016) did work on unplanned urbanization Karachi's urbanization. He raised significant problems due to bureaucratic inefficiency and a lack of governance. These problems were the rising urban sprawl, its patterns, its effect on urban infrastructure, and the growing urban divide. He described urban problems and connected them to policy deficiencies due to which centralized service delivery had seriously undermined the city's resulting economic divide. The research was observational and analytical. The government

needs to recognize the urban vision and work cyclically with all stakeholders towards set ambitious urban growth targets. The growth of the city needs to ensure the presence of disadvantaged groups and reduce the economic disparity between urban rich and poor. The paper concluded that Karachi 's urban experience turns out to be a total embarrassment due to crushing infrastructure, under per service delivery, and uneven economic profit distribution. The continued influx of people would build the demand and supply gap for basic services that can only be bridged smarter solutions coupled with technological advances and all-inclusive approaches required from the authorities. The failure of government institutions due to citizens did not enjoy basic services but facilitated the growth of the informal sector as well. It must be tackled by structural adjustments and reshaped socio-economic policies by investing in needy people and making them part of an egalitarian society.

2.7 Urbanization and Agriculture Land Conversion:

Peerzado et al., (2018) focused on nexus between urbanization and agriculture land use conversion in the Hyderabad District, Sindh. According to their findings based on data of the period 1981 to 2017, the population of Hyderabad has risen by 44 percent. They narrowed down their focus into sub-districts to more vividly analyses the relationship and they concluded that sub-district Qasimabad is mostly affected by urban sprawl as 3508 acres is converted. It is led by Latifabad where 1064 acres, 562 acres of Hyderabad town and 342 acres of agricultural land of the rural sub district of Hyderabad were eaten up by urbanization. Around 70 percent of the agricultural land has been sold and turned into urban infrastructure, according to rough estimates. According to the researchers, such a huge

amount of agricultural land conversion can result in shortage of food supply for the ever increasing population and can result in socioeconomic and infrastructural problems.

Work done by (Malik and Ali, 2015) identified urbanization socioeconomic factors which lead to the loss of agricultural land. Designing policies to tackle the loss of land to agriculture is significant. In their analysis they described socioeconomic issues in which land loss happens to agriculture. The explanatory variables i.e. urban population that is used as a potential moderator of urbanization while arable land, GDP per capital growth, agricultural added value (GDP value), agricultural real benefit (percentage of annual growth) and cereal output are considered as independent variables. They summed up their study as Urbanization increases the agricultural land is squeezed. They concluded that with the increase in population, more land is required for economic activities, which results in agricultural land loss. This is not a good sign for the agricultural sector.

Sheikh et al., (2018) The reasons for urbanization and its effect on the population were studied. In that review primary and secondary sources of data were used. The key factors behind agricultural land transformation in the study region are urbanization, overpopulation, water shortage, housing demands and soil quality. The other conclusion drawn is that urbanization is a global issue due to which the demand for more houses, water, food, good health and education etc. increases, so, management and provision of social and economic comfort is a dilemma. They laid a case of government intervention in such circumstances.

Pandey and Seto, (2014) analyzed the case of loss of agricultural land in India between 2001 and 2010, using time series data. The data analysis from which the results were derived established the land degradation and the trend is more extreme in small cities than

those in big cities from 2001 to 2010. Every state lost less than 1 percent of total region. They reported that there was less land loss in the northeastern states. Therefore, in some States and districts the conversion of agricultural land is more necessary due to high economic growth. In addition, the total growth in agricultural land use changes has gradually swelled since 2006. Agricultural land loss due to urban growth exceeds 5000 ha (50 km²) in just 6 per cent of India's districts. They either did not recognise agricultural land losses as a result of urban development in 40 per cent of the districts or the total sum is less than 100 ha (1 km sq.). The urban population in India is smaller than the rural population, and a rise is projected in the future.

Kausana and Eledi, (2007) discussed the implications of urbanization for farmers in the instance of Ghana. The study is conducted for the period June 2013 to August 2013. Their study is based on primary data i.e. interviewing high rank officers of the bureau of food and farming and 48 farmers. They concluded their paper that as urbanization increases farmers in urban areas become institutionally unable to control the degradation of agricultural land. They suggested that the use of GIS mapping systems would allow stakeholders to recognize and track changes in urban land use and thus protect agricultural lands against 'concrete' invasions.

Iheke et al., (2015) in this study analyzed the impact of urbanization on farmland in the state of Abia. They categorized the status of farmers' land in their analysis. On the other hand, different constraints were imposed which affect the productivity of agriculture. The impact of urbanization as well as other factors on agricultural productivity showed that the significant variable that contributed to productivity were farm size, urbanization fertilizer/agrochemical system, land tenure system, land use period, and farmland costs.

According to their results, the major factors that affect productivity and result in failure to capitalize on agricultural production are the lack of improved farm inputs, high land prices, land fragmentation, high population, and high planting material costs. The primary data collected in their study is through multistage random sampling technique. They concluded that identifying some areas for only agriculture purposes through law and order make policy for efficient use of land.

2.8 Urban Sprawl and Agriculture Land Loss:

Gumma et al., (2017) conducted study for Hyderabad, India to cover the adverse effects of uncontrolled and unorganized urban expansion on agricultural land in urban and peri-urban areas during period of 2005 to 2016 while making use of Landsat-8 and IRS-P6 data. The conclusions they drew from the analysis included: 1) loss of water bodies due to which the use of waste-water irrigation has increased. These wastewaters irrigated staple foods (rice, wheat, maize) feed the residents of peri-urban localities 2) during the focused period the surge in built-up area controlled to the defeat of valuable agrarian land due to which food supply has decreased enormously. This change is irreversible, and the food production burden has shifted to the surrounding areas which are also contracting due to rapid urbanization. 3) The urban sprawl has influenced an area's environmental profile in a temperature-changing mode of heat.

Taking into consideration the case of Bangladesh then the scenario does not vary because according to the study done by (Quasem, 2011) during the period 2001 to 2008 the annual land conversion rate of farmland into non-farmland is estimated as 0.56 percent. The total converted land consisted of 90 percent cultivated land while on the 10 percent were bushes and some was left fallow. The 55 percent of the converted was consumed by the housing

sector while 8 to 10 percent by building new roads, respectively. He also estimated the loss of rice due to urban expansion which is in the range of 0.86 to 1.16 percent. The main factors responsible for the land conversion were household ownership of the size of land and occupation of households outside the agriculture sector. While conducting the study he collected data from 24 villages from six divisions. Another study by (Dewan and Yamaguchi, 2008) for the Dhaka Metropolitan also arrived at the same conclusions of reduction in wetlands, cultivated land, vegetation, and water bodies. Analysis of the maps showed a total of 15,924 has risen in the urbanized area 7,614 decrease in cultivated land and 2,336 has decreased in vegetation and 6,385 has decreased in water bodies respectively. The urban sprawl resulted in an increase from 11 percent during 1960 to 344 percent during 2005.

2.9 Urbanization and Food Security:

Z. Mahmood et al (2015) analyzed agricultural resources and food security connection in Pakistan for the distribution of land and water resources, their classification, and food security ties in all districts of Pakistan's Punjab province. The Gini Coefficient and multiple linear regression were used. The results showed a significant relationship between both the Gini of operating landholdings and the proportion of land ownership titles with the proportion of food insecure population and availability of food, while the vast majority showed negative relationships the threshold level of land ownership holdings / operational holdings shall be redefined to produce in abundant supply not only for the availability of food for household consumption but also for distribution of food across regions.

China is urbanizing at a faster rate and one of the high urbanizing regions is Pearl River Delta for which (Du et al., 2013) conducted a study to assess the increasing urbanization

and protecting farmland dilemma. They used maps obtained from Landsat imagery for 1999, 2000, and 2010. They observed a surging urban sprawl and an increasing built-up area, even some of the areas were mingled with megacities. They concluded that the surging rate of urbanization has caused the farmland depletion and deforestation in the hilly areas. Due to which the farmland was not ensuring food production to cope with the demand of the region. The factors they observed behind the discussed phenomenon were high urbanization, shift in the grain production to market oriented ones for profits maximization, and less effective use of farmland.

2.10 Rural-Urban Relation:

Urban and rural areas enjoy numerous and sometimes comparable properties, and for socio-economic success, greater management between those areas is necessary. Rural-urban relations are an important way to tackle the need for control of these connections and to replace economic growth or well-being. Ruralurban partnerships help regions to boost public goods production; Benefit from economies of scale in the provision of social goods and help to develop greater business opportunities.

Ding LU (2002) analyzed economic development and shows Kuznets–Williamson's type of relationship between economic growth and income disparity through Chinese interim data. He attempted to regulate the level of this relationship in the context of urban–rural disparity and classify some other factor that may affect urban–rural disparity rather than economic growth. On the other hand, the intersectoral gross provision effect (GAE) at the provincial level is compared and measured to discern the effects of labor mobility and allocative performance at urban–rural disparity. Community governance's response to urban rural inequality by examining the disparities between rural urban areas to boost the

living conditions of community citizens. He suggested that the positive influence of higher growth in private spending on urban rural equity offers new proof of the efficacy of market processes to trickle rural resident's income. Hence, it improved equity to allow for better allocation of resources initiative by the private sector. In this respect, it was strongly recommended that fiscal discipline on taxation and income collection by local governments should be increased, as this will start releasing more resources into private hands. Therefore, the banking and financial system should be updated to be more favorable to funding private consumption and being more market oriented in assigning capital for investment.

Waibel and Schmidt (2002) did work on rural urban relationship city roles in managing food and agriculture policy. City played a key part in the regulation of purchase and consumption of agriculture products based on the relation between producer and consumer and problems which arised through urbanization. They concluded that government intervention was much needed for managing the agriculture land. City authority must improve the information environment about agriculture production line through use of different harmful pesticide which was harmful for human lives due to improvement in technology producer used these pesticides so its government duty manages these through market intervention. It was not necessary that agriculture was only restricted in non-urban post-harvest and agroindustry develop in rural areas which helped in alleviating poverty in rural area. Different types of vegetables grow in urban areas which were profitable to grow in urban areas. It was governmental duty to play a role in the adoption of sustainable technology. Government gave tax rebates to manage land for agriculture purposes. Agriculture zones made in pre-urban area plans made green belts through this decrease in

the food insecurity. City role must not be limited to the food purchase and consumption; in fact, they should also play their role in the food chain.

Mughal, (2018) worked on rural urbanization of rural social institution: case study of the southern Punjab city of Ladhura; wherein, the rural people were discussed moving from agricultural activities to non-agricultural. These partnerships have been developed in favor of a commercial, cash-based economy with recent shifts in socioeconomic levels and high rural urbanization. They claimed that the competition of rural people for a better socioeconomic position has now taken on more individualism aspects rather than a rivalry between different boundaries that has been complicated by patronage, alliances, and differences in rural social organization. Land reforms were the big issue in the implications of economic development policies to eradicate poverty. Introduction of indigenous knowledge helped rural people in this industrialized era. The simple structure of relationships between socioeconomic and human nature was prevalent in most villages. Thus, by including local viewpoints the shifting aspects of such relationships must be considered in the development and application of realistic policy agendas.

2.11 Agriculture Effect on Urbanization:

Trapathi and Rani, (2017) focused on the urbanization effect on agriculture. India experiences a high level of rural to urban transition. The explanation behind such a change is that in creating and absorbing urban areas, resources (land and worker) are in abundance. In the development phase demand and supply side economic factors play a vital role in demand side income/job opportunity, higher living standards and easier access of basic infrastructure pull the rural population into urban areas. On the other hand, supply side major consideration higher productivity of agriculture is supply side factor that realizes

rural factors for urban. Statistics on urbanization and agriculture were collected for empirical study from the Census and Ministry of Agriculture report for the period 1981 to 2015. The study considered data concerning 15 major agricultural states in India. The government would invest into agriculture through this rise in demand and labor surplus that was used in manufacturing.

2.12 Agriculture Land Prices:

Salman.k et.al (2016) investigated agricultural land price determinants in Pakistan's city Peshawar. A linear hedonic model was used to examine set of data on sale prices of agricultural land parcels and their characteristics of cultivation, location, and the environment. The price of agricultural land is positively influenced by the fertility of the soil, the amount of irrigation water, and the proximity to agricultural markets. The features of the area, distance to the city, distance to the main road and distance to nearest houses had a major effect on the prices of property. Agricultural land situated closer to the city have a considerably higher price compared to a more distant region. Land pollution, such as contaminated freshwater sources, had adversely affected prices of surrounding farmland. They concluded that state interference for the preservation of agricultural land, financing in the development of agricultural infrastructure such as dams, water sources, roads, transportation, agricultural markets, etc., and the provision of subsidized nitrogen fertilizer and other inputs to boost the returns of farmers and influence their attitudes of favoring land use.

2.13 Land Use /Land Cover:

Forkour and Cofie (2009) conducted study for Freetown, Sierra Leone. To find out how to convert land use/cover to other types by mapping nine LULCs from multi-temporal data

from the period 1974, 1986, and 2000. They observed major conversions during the period from agricultural, green lands and forestlands to built-up areas, and barren lands. They concluded their paper with the results that during the period 1974 to 2000, its built-up area continued to increase by 140 per cent as well as the reason they recognized was the high urbanization rate. Approximately, 882 ha i.e. 27 percent of the valuable agricultural land has been converted to residential area during the period 1986 to 2000. These conversions took place at the urban fringes due to an increase in the population growth rate. Due to high food staples demand and shrinking agricultural land deforestation took place, due to which 14 percent of the land has been converted into agricultural land. They concluded a robust connection among urbanization, agriculture, and deforestation.

Another study in context of India was conducted by (Bhat et al., 2017) in which they have focused on the urban sprawl and land use dynamics in Dehradun city, a North Indian district. The focus period of their study is 2004 to 2014. By analyzing the focused variables relationship, they have used IRSP-6 data, topographic sheets, and GIS environment. They have concluded their analysis as there is an unprecedented urban expansion in the focused area, even in some of its protected regions during the last few years. Therefore, toward urban growth and increasing urbanized areas there has been a drastic variation in the land use and land cover in shape of squeezing agricultural land. Reducing agricultural land has a contrary influence on the nutrition consumption and environment of the region.

Gumma Lagerkvist (2017) analyzed that land use within city limits has altered dynamically, accepting development while gradually replacing patterns of land use. Various tools used to evaluate changes in land-use in urban and peri-urban Hyderabad and their effect on land-use and **landcover**. From 2005 to 2016, the wastewater irrigated area

adjacent to the Musi River increased with the simultaneous expansion of the city's boundaries opportunistic landuse shifts, particularly in relation to wastewater irrigated agriculture, emerged as a response to increasing demand for fresh vegetables and urban animal feed and as a result of the expansion of the city, easy access to the market.

Iheke et al., (2015) in this study evaluated the influence of urbanization on farmland in the state of Aba. In their study they categorized the farmer land status. Different constraints were imposed which affected agriculture productivity. The impact of urbanization as well as other variables on agricultural productivity showed that the major variables that gave rise to productivity were farm size, urbanization, pesticide / agrochemical, land tenure process, land use length, and farmland costs. As per their estimates, the key factor affecting production is lack of capital for agricultural investment, lack of improved farm inputs, high land costs, division of the region, high population, and high planting costs. The primary data collected in their study was through multi-stage random sampling technique. They concluded by identifying some areas for only agriculture purposes through law and order makes policy for efficient use of land.

2.14 Literature Gap

Exploring the literature, both national and international, most of the studies have used quantitative methods to evaluate the urban sprawl effect on agricultural land use/accessibility. However, literature related to qualitative studies has also been reviewed. The study area lacks the relevant literature. The intensive literature was scarce both nationally and internationally, especially on the research area. Moreover, the literature adopted only a single-dimensional approach towards urbanization. The available domestic

literature is also scarce. It lacks literature based on food security problems due to rapid urban sprawl in district Mandi Bahauddin.

CHAPTER 3

THEORETICAL FRAMEWORK, METHODOLOGY

3.1 Theoretical Framework:

There are two classifications for land use for rural and urban areas. Rural uses may be non-agricultural. Tasks like tourism activities, ecotourism, educational institutions, mineral extraction, and quarries can all be classified as rural uses. Natural areas such as forest lands, canyon areas, and rivers may also be used for rural land. Urban land use, on the other hand, is for industrial, retail, administration, industrial or residential, producing flows assisted by transportation systems. Through different highways and GT roads. When any urban area developed or technological advance then the market increases the prices. When they increase the prices, people move to nearby area which is close to urban area but is located outside of the urban boundary where land prices are feasible for middle class people. These lands are included in the land of rural area which are used for agriculture purposes but after suburbanization these lands are used for non-agricultural purposes like school, market, and transport. This is an alarming situation for food security because these lands are no more being used for agriculture purposes. In this way suburban areas develop. Sometimes these people cannot enjoy the basic needs of life, clean water, good sanitation system, and employment. In this way shanty towns develop around the urban areas and in resultantly urban sprawl emerges.

While land use is regulated by competitiveness among urban and agricultural purposes, the outcome has gradually shifted in favor of urban usage, leading to significant urban spatial growth and prompting urban sprawl criticism. The word "market failure" is used by

economists to describe a situation where the unseen hand does not distribute capital in a socially beneficial order to enhance aggregate economic wellbeing. Market failure occurs when market players face rewards that are skewed due to structural failures or some such cause, leading to economic results that are poor from the public point of view. The business failure is focus of this study and the inability to take into account the open space social interest. For the welfare of society, ready access to open space is essential. Open spaces give city residents a convenient escape from the hectic urban landscape and an opportunity to enjoy environment. However, these advantages of open spaces are not taken into consideration when transforming land to public use.

In most development location theories, the key role played by the distance from the market basically town centers (also metropolitan area core). As noted by (Wästfelt et al., 2016) agriculture, which is a low-profitability sector, usually loses in the competition for land. As presented by the various writers, the zones of location of different land uses are versatile and change as a city grows. When business applications (and jobs) are developed and the population rises as a result (with the consequent increase in housing construction), the quantity of the agricultural zone gradually decreases and begins to be used for non – agrarian purposes. When population of the nation rises, towns must be elevated temporally to accommodate more residents. Overpopulation is one of the most critical and severe problems worldwide, as it is also a struggle to provide housing, clean drinking water, healthy food, enough educational safety. Thus, it is challenged to provide and preserve the economic and social stability. It calls for further homes to be secured, more nutrition to eat, more land to urbanize, and fundamental human rights facilities to be safeguarded.

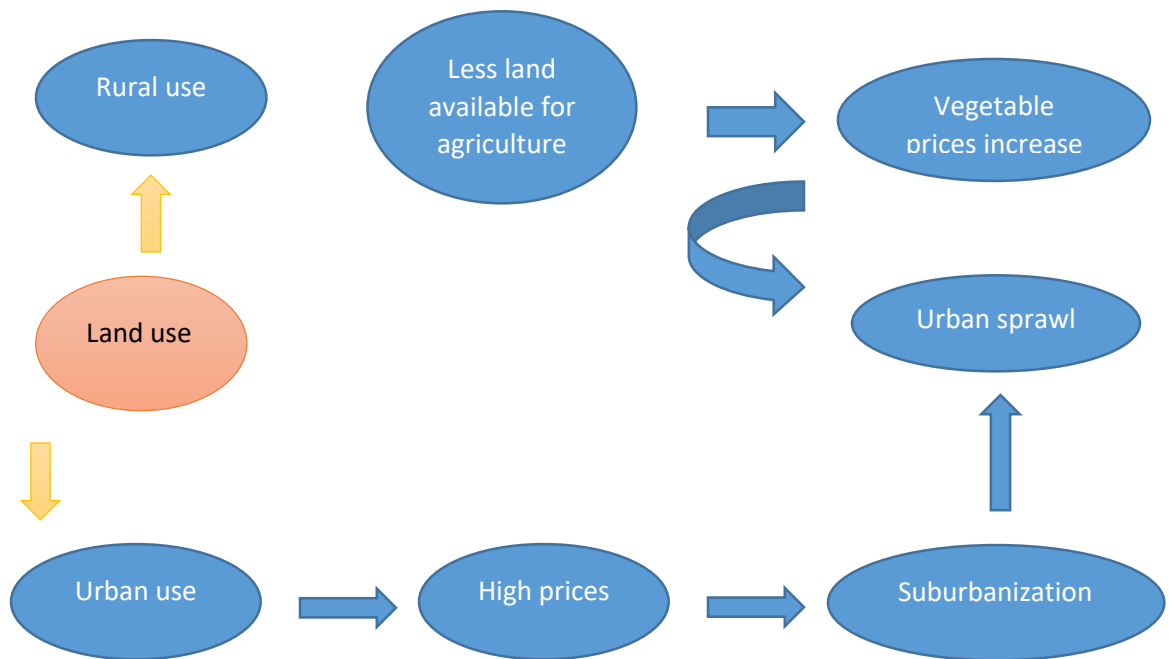
Furthermore, Urbanization brings major changes in demand for agricultural products both from increases in urban populations and from changes in their diets and demands. In addition, urbanization brings significant changes in demand for agricultural products because of both the increase in urban populations and shifts in their diets and consumption. It has introduced and continues to bring substantial improvements to how demands were met, and to the benefits of the (and losing out) producers, enterprises, companies, and local and national economies. This can also pose significant food security problems for urban and rural areas. Moreover, growing incomes push urban development as city residents demand more housing space as they get better-off over a period. City's need for space sources grow spatially as residential sizes rise. This effect is compounded by the desire of the inhabitants to carry out their higher consumption of housing in a place where accommodation is low cost, such as the **suburbanization**. So, a cost opportunity that favors suburbanization strengthens the 3-dimensional development due to increasing incomes.

In addition to investment in the roadways and other transportation infrastructure, a similar trend occurs. Since such investment makes easy to transport faster and more suitable; thus, lower the cost of transportation, consumers may enjoy affordable land in the suburbs while paying lower traffic-flow fines. Therefore, suburban locations are becoming increasingly desirable as transportation costs decline, which is spurring suburbanization and contributing to city urban expansion. Job suburbanization also take place as the cities expanded spatially. This reorganization of jobs to the suburbs is partly due to changes in company's transport alignment. Companies are increasingly relying on truck transportation rather than transporting their production via conveniently placed railway depots and port facilities; thus, choosing the convenient access (as well as the low cost) of suburban areas.

The facts, though, indicates that jobs follow people too. In other terms, work suburbanization is in part a reaction to population suburbanization, occurring for the reasons mentioned above. Thus unlike the basic forces speeding urban growth, suburbanization of employment is partly an effect instead of a cause of this expansion, (Thurston and Yezer,1994).

The government should also make laws to limit that no additional agricultural land could be used for **urbanization** and residential projects should be established in areas where there is no pure farmland.

Figure 1: Land Conversion to Urban Sprawl



3.2 Methodology:

3.2.1 Research Design

Qualitative work is more of a scientific study. Scientific research consists of an investigation that: seeks answers to a query. It systematically uses a predefined collection of procedures to address the question, collect facts, produces results, draw conclusions relevant to the sample. These features are shared by qualitative studies. Furthermore, it attempts to understand a specific research issue or subject from the viewpoint of the local community it involves. In specific, qualitative research is successful in getting specific cultural data on the values, opinions, behaviors, and cultural situations of specific categories. Qualitative methods are also helpful in defining unquantifiable issues such as market standards, socioeconomic status, gender stereotypes, ethnicity or religion, and the significance of which may not be easily apparent in the research topic. On the other hand, quantitative research is a form of academic research in which the investigator determines what to study; asks clear and narrow questions; gathers participants' quantifiable data; analyzes those numbers using statistics; and conducts the research in an impartial, objective way. Kumar, R. (2019).

The benefit of qualitative approaches in exploratory research are the use of open-ended questions and sampling offers participants the ability to respond in their own terms, rather than pressuring them to choose between predetermined responses, as do quantitative methods. Open-ended questions can suggest reactions that are: meaningful and culturally significant to the respondent, unforeseen by the researcher, rich in nature, and explanatory. The benefit of qualitative approaches is that they give the researcher the opportunity to evaluate initial responses from the participant, such as, to question why and how. The

researcher must carefully listen to what the person says, interact with them according to their different personalities and styles and use "samples" to allow them to build on their responses.

3.2.2 Sampling:

Because this initiative is a situation analysis, the aim was to understand in detail the selected circumstance of the effect of urban sprawl on agricultural land and its effects on food supply in return. Problems with sampling were also important to this study. The key point to note at this point that sampling is an unavoidable aspect of most if not all sort of public research; thus, constitutes an important stage of any study. The population based on the sample was spread over a large geographic region i.e. Mandi Bahauddin, because pure random sampling of the entire population was not possible.

In such circumstance, it was sensible to use purposive sampling i.e. landlords and urban planner at MC Mandi Bahauddin together with systemic sampling for vegetables and urban sprawl data, vegetables data take from (2009-2015), and to understand urban sprawl use in 2009-2015.

3.2.3 Data Collection Methods

Methods of research refer to all those methodologies through which the research is carried out. **Inother** words, the researcher uses both of those approaches when researching his research problem (Kothari, 2004).

3.2.4 Units of Data Collection

A unit is a section of the given phenomenon from which the data is collected. Units may be persons, households, or organizations etc. Beukenhorst, et.al, (2012).

Research Data Collection Units for this study are following:

Landlord

GIS

AMIS (through food prices data and GIS)

Local Development Authority (TMA)

GIS: A Geographic Information System (GIS) is a platform for data collection, management, and analysis. Steeped in spatial science, GIS incorporates several data types. It analyzes the geographic distribution and organizes information layers through maps and 3D scenes into visualization techniques. GIS provides deeper insights into data such as trends, interactions, and circumstances with this specific capability — helping users make better decisions.

Landlord: A person that owns and leases apartments to others, or a person who owns an organization and leases land, buildings, etc.

AMIS: AMIS seeks to provide comprehensive market price information services in a single phase. Around the same time, it seeks to provide information on agricultural resources to broader audiences. Gathering data is the central point of every research project.

Local Administration: Members of Municipal Authority of Mandi Bahauddin will include in this group. Semi-structured interviews were conducted for second objective.

3.2.5 Tools of Data Collection:

For the first objective this study used GIS (online mapping) technique to understand how much area was under the urban sprawl. For the second objective interviews of landlords were conducted who had interest that their land exist under the commercial land and

through which they gain high profit .Interviews of TMA local development authority officials were also conducted ,who manage lands and collect revenue to understand the governmental interest in GDP instead rural community development and provision of public goods to rural community .For the third objective ,this study collected data from AIMS and through GIS, this study analyzed the impact of urban sprawl food production.

The method of data collection incorporated in this study was semi-structured interviewing. This method of interview was used so the interviewer can be more transparent about the shapes of what he or she wants to learn, so ideas and hypotheses can arise from the results. Unfortunately, this study used the same word — question — for both the study questions and the kinds of questions asked in interview; After collecting data and analyzing it briefly, the prospects were that to horizontal development following rapid rural to urban relocation with the constructions of new housing societies and other governmental projects in District Mandi Bahauddin caused the agricultural land to squeeze. This has resulted in food security problems for new and former residents in newly urban sprawled areas. Thus, further deteriorating the living standards.

CHAPTER 4

RESULTS AND DISCUSSIONS

4.1 Low Profit:

People don't want to invest on agriculture products because of the fears of losses and the lack of fixed governmental fixed prices and policies in case of losses. Sometimes people face severe losses because they borrow money from friend, or any middleman who gives them things (petrol, seeds pesticides) because of absence of governmental subsidies. One of the respondents marked that:

“I have 11-acre land in which I used for cultivation before going to abroad when I came back from abroad, I use my land for property dealing purpose. I make plot and sale these plots through which I gain a lot of profit now I am doing that as business. Through cultivation I cannot get enough profit which I gain now from that business. He said in this property dealing business I have paid 6 percent government fee on purchasing of land.”

4.2 Improving of Living Standard:

Most people want to improve their living standard, so they want to shift from rural to urban area for business. Another respondent marked that:

“I sold half of my land for my son who wanted to move aboard. With the remaining money, I started business in Mandi Bahauddin in 90s and now I have two shops of sweets in the main bazar. These shops have generated great profit for me and are still doing well.”

4.3 Infrastructure:

Infrastructure includes all the organizational structures and facilities (e.g. buildings, roads, power supplies etc.) For this study area, GT- roads play an important role because they

give an access to city where goods and services are available. With the improved infrastructure, prices of land increase. According a respondent:

“My land is far away from main road, so my land price is not so high. Consequently, I would not start any profitable business-like marriage hall, or shop. I do not want to sale my land because I do not want to leave my and live the life of ‘muhajir’ as muhajir; even though, I do not cultivate any crops on my land. Now a days, I am earning money from livestock. If in future infrastructure of my village is improved other nonagricultural activates like shop would be profitable, I would use my land rent for other nonagricultural activities.”

Another respondent said:

“We made our home on land which is on the road because we thought that living nearby school and market will make it possible for children to go to the school and get good education. This education will increase their living standards which is not possible by cultivation as ultimately the division of the land will decrease. I did not invest in any shop or non-agricultural activity because in village shops cannot generate a decent profit. I became a dairy farmer to meet my day to day expenses and used some land for cultivation.”

4.4 High Interest Rate on Debt:

High interest rates and complicated banking procedures also make people reluctant to invest their time and money in cultivation. One respondent said that,” He will prefer to take debt from any friend or middlemen than a bank.”

Two respondents even reported that sometimes to bear the losses from cultivation they were forced to pay from their pockets.

He said that,

“I sold my cattle to fulfill the expenses of crops but did not take loan from bank. One of my friends has a shop in main bazar (gala mandi) he earns monthly 5 lacs and 80 thousand rupees. There exist great discrepancies between selling and purchasing prices. When we sale vegetables, their prices are as low as 45 rupees per kg but when we purchase them from market its price will be 100 rupees per kg. I fulfil my expenses through cattle, and I have dairy farm in Rawalpindi.”

4.5 Availability of Basic Needs:

In cities availability of basic needs are easy like hospital facility and a good education system. All government institutions are close, so travel cost would be null. In some villages there are no school and hospitals hospital even for minor diseases. People travel from villages to cities after paying high rents. And sometime for employment people shift to city areas. Another respondent said:

“If we want a good education for our children, then we can’t fulfill our children’s expenses from agriculture. Good schools are in the cities so I sold one acre of land and purchased land in Sufi city where he made a house and a cloth shop.”

4.6 Bad product of seeds, pesticides:

Poor quality seeds, pesticides, and fertilizers are not effective for crops. However, their prices are **be** high which poor farmer cannot afford them.

4.7 High Rated Agriculture Land in Urban Area:

High rate of rent (bata) for land used for agricultural purposes in urban area or near to urban area are so high as compared to the lands in rural areas. This makes urban lands more profitable.

4.8 Remittances:

Remittances also play an important role in migration and cultivation, those who have land and get remittances they get profit because they have enough resources to pay to the workers and purchase high quality seeds fertilizer.

A landlord who have two sons living in Europe will have enough resources to manage his land for cultivation. They can also construct shops on road and a park to increase their profits.

Increase in family members:

When people in one house will increase, then people divide their lands among their children, it decreases their lands and people prefer to migrate from villages to cities after selling their lands.

One respondent said:

“I have two sons. I have house in village, but my house is not enough for his family. So, they want to purchase land in city and prefer to live in city due to facilities. Mostly the landlord **live** in cities and do their business in cities and have workers in villages who look after land.

4.9 Custom:

Landlords do not want to leave the village because they do not want to abandon the customs of their forefathers. They think that people in village know them and respect them. Because of transportation facilities they easily move from village to cities.

Awareness:

Most people in the villages are illiterate they want their children to get education for better future. So, they sale their land. For the study a urban planner in municipal committee was interviewed. In Pakistan mostly area develop horizontal (linear) so due to this need more area for development

4.10 Horizontal Development:

He said that if we control urban sprawl then the prices in city land will be high. Urbanization is a dynamic process, so with the passage of time adjacent agriculture lands will be included in the cities. Following governmental acts and rules legalizes land with the passage of time.

Punjab local government act (2019)

Punjab land use classification reclassification rules (2009)

Punjab private housing scheme rules (2010)

Manage new population by these laws

Outline development plan (1985-2012)

That is guideline for city extension: Where city increases; where the growth the city will be; what type of growth will be in which zone; In which zone make residential area in the

next further 20 year. Housing department prepared it in 1985. Afterwards local government owned it. After 2012, no plan became further amendment .70 to 80 percent of this plan was successful but on the cities maximum extension was given according to range which was given by this plan (parallel to primary roads). Roads going to phalyia, salam, and head rusal along these roads city extended according to proposed plan.

4.11 Peri-Urban Area:

In all rules one term is common peri-urban area. Pri-urban area is the area between urban limit/municipal limit and agricultural area which has the potential to be urbanized in the next coming 20 years. In peri urban area state government of Punjab permit urbanization even in these areas of cultivated land. That are itself on time also an agriculture area around the city radius

4.12 Fee:

Any development in these urban area or physical development, housing colony then collect fee from developer.

4.13 Conversion Fee:

When agricultural land is converted into the residential unit or residential land is converted into the commercial, 1 percent charge for land convert from agriculture to residential. For private schools, colleges, and hospitals 10 percent is charged. For petrol pumps, malls, shop and CNG point 5 percent is charged. When land price increases above 10 lacs to 1 crore then charge 20 percent of Conversion fee is fixed by government of Punjab.

4.14 Building Fee:

This fee charges as per square feet, only on covered area it will be charge according to per square feet. Municipal Mandi Bahauddin charge 15 rupees square feet. Municipal committee fix these charges.

4.15 NOC Fee:

Like petrol pump CNG station they charges NOC fee. Municipal committee fix them but notifies with government.

4.16 Issue:

Sometime they face issues for charging the fee. Including some mafia, external pressure and political influence but eventually recovers from 95 percent.

4.17 Total fee:

Two crore 48lakh 54 thousand fee is collected that is used for development.

4.18 Open Spaces:

We provoke parks, open spaces, greenery on land, but we don't have any notification about agriculture land.

4.19 Infrastructure:

When investment on infrastructure or structural plan took place the prices of land increases and the urbanization growth rate also increases along with road e.g. When salaam interchange became dual carriage way then urbanization increase in different area which was not urbanized before. People uses their land for non-agriculture purposes due to improvement in infrastructure because agriculture cost is high, and profit is low and subsidy which is given by government is not enough.

4.20 Property Dealer:

Property dealer works as catalyst. He is trend setter and convince farmer developers to use agriculture land to non-agriculture land, property dealer gain profit through purchase land in **peri** urban area from farmer who compare her profit from land which is far away from road.

4.21 Basic Needs:

Basic needs developer provides in new housing society after pay fee contract with local government give them time for 3-5-year time period for completion of the project after that handover with local government. Hamza town makes written contract with local government, irregular form outside the housing society avail basic facility electricity, water, shelter took but MNA's take time for this provision.

The cost of agricultural land is largely influenced by the leading market forces, which in many traditions regulates demand and supply for land. As the financial activates grows results in the economic configuration changes due to which there is rise in demand and the subsequent value of land. This rise demand met by obtaining more and more rural/agriculture land. The urban development authority and other public assistances have chased the policy of land purchase development and removal of land.

As the municipal committee Mandi Bahauddin has proposed to acquire many agriculture land, they have master plan of Punjab private housing scheme which is out dated now because it till 2012 but the land limit which discuss in this master plan peri urban area (the land in which engage in both agriculture and non-agriculture activates and in next twenty year include in urban area) cross this limit and increase urban sprawl.

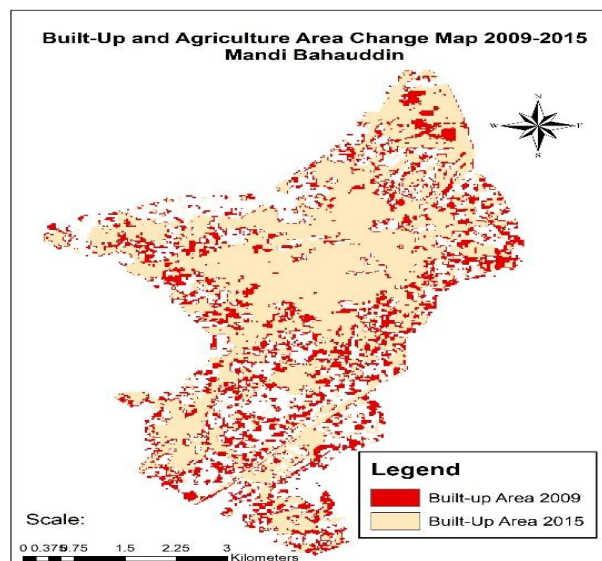
Table 1: Area Change

Area Change (Km) ²				
Land Use	Areas in 2009	Areas in 2015	Total	Change
Built-up	16.35	21.04	37.39	4.69
Agriculture	17.05	12.2	29.25	-4.85

Own Source

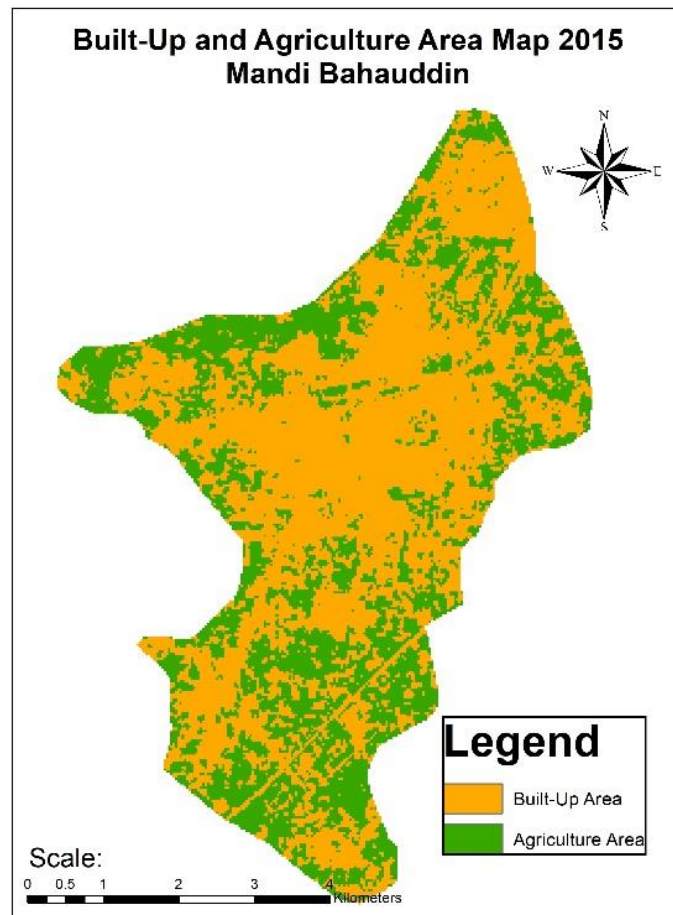
14 different housing colonies constructed as shown in table that in 2009 built-up area was 16.35 per square kilo meter and in 2015 that area was increased to 21.04 per square kilo meter and the change between these is 4.69 which shows that peri-urban area increases resulting in the decrease in agriculture area. On the other hand, agriculture area in 2009 was 17.05 per square kilo meter which decreases in 2015 by 12.22 per square meter and change -4.85 shows that agriculture area decreases and consume in build-up area which effects on vegetation and cultivation. This also shows in map, that the loss of agriculture is more rapid in these recent years.

Map. 1



In the above graph we have presentation of average prices of commonly used five vegetables and five fruits for half decades ago i.e. from 2009 to 2015. In most of the cases the increase in prices of daily use products may go up due to two major reasons and that is importing that product to other countries/cities and second reason might be low profitable product. In 2010 it can see that there is an increase in the average price of ginger as compare to previous year and that is. Similarly, the average price of ginger is 9,430.83, 4,947.39, 17,418.49, 22,487.62, 9,562.94 in the years 2011, 2012, 2013, 2014 and 2015 respectively.

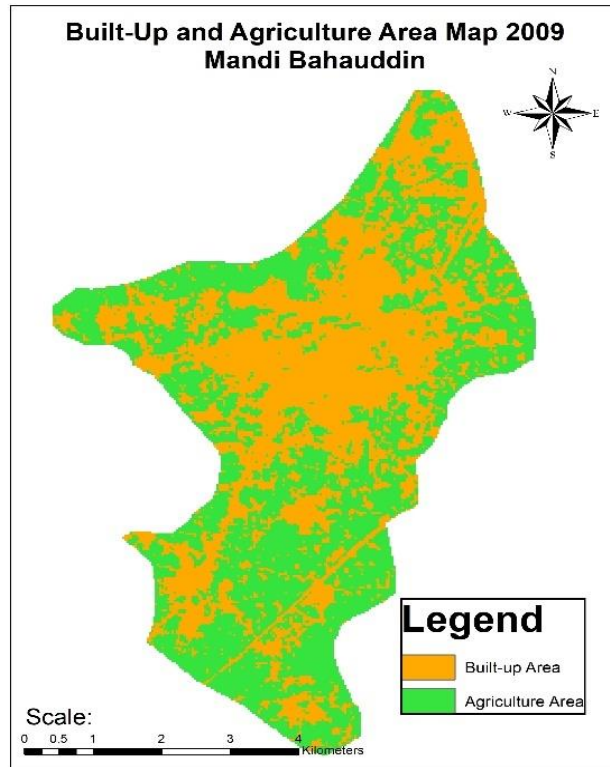
Map. 2



As we see in graph of potato store whose prices were low in 2009 when the agriculture land in Mandi Bahauddin was not decrease with the passage of time agriculture land decreases and the whole sale average prices of store potato also increases. And the same case with the average price of lady finger these prices also fluctuate. Brinjal graph also shows that in 2009 its average prices was low but with the passage of time its prices increase due to import from other [cites.i](#) In Spanish graph case prices fluctuate in 2009 prices was low and with the passage of time increase in prices due to urban sprawl increase build up area as can be seen in map 3.

On the other hand, same case with fruits graph here we take five common fruits in basket guava, apple apricot, peach melon which prices also increase due to increase in demand of product and due to less supply of these item prices drastically increase, due to lack of land availability for the production of these vegetables and fruits these supply decreases which effects on the middle men income because these items are of daily use. If these basic item prices increase then it will be an alarming situation for nutrition and the income of daily wagers, because if they pay more for their meal then they can't afford other basic needs of their life.

Map. 3



CHAPTER 5

CONCLUSION:

This study concludes that the transformation of agricultural land into suburbanization can lead to multiple problems including social, cultural, environmental and economic instability. Because as nonagricultural products are necessary as well as agriculture products are also necessary for society, manageable urbanization is good for society but if it's not manageable ends up on creating problems through different aspects, people don't want to grow crops because they think that it's not profitable and government is not providing any subsidy on agriculture so most of them want to use their agricultural land for nonagricultural purposes or sell their land and start another business in urban area. In this way many urban areas expand and spread on fertile agricultural land like lala-zar colony, Arshad town or Doctor town like these many other colonies and mohalla expand and spread over agricultural area. It is the government's duty to make amendments on the act which are for the management of growing population. Focus on vertical development in this way many lands will be used because urbanization is a dynamic process and focuses on roof top gardening. City agriculture "is a business located within a town, a urban or capital, which produces, methods and issues a range of nutrition and non-food foodstuffs (re-) using mainly human and substantial capitals, products and facilities create in and everywhere that urban extent, and in turn providing human and substantial resources, products and services largely to that urban area" (Mougeot 2000).

Empowering urban deprived to yield their own foodstuff would permit them to excluding a great amount of currency. Though, Nugent (2000) information that deprived families attractive in urban horticulture frequently flop at presence appropriately supplied with

food. De Zeeuw et al. (2000) entitlement that the purpose for this is the deficiency of access to acceptable amounts of land. Therefore, city horticulture is less important for the deprived as they usually have little or no access to land (de Neergard et al.2009).

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