

INVESTIGATION OF THE EFFECTS OF POPULATION GROWTH ON URBANISM AND PHYSICAL EXPANSION IN REY CASE STUDY: HASSAN ABADFASHAFOOYE (REY)

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ABSTRACT

Understanding urban expansion process plays a major role in urban planning and durable urban expansion. This paper aimed at investigating and analyzing the physical and urbanism expansion process in Hassan Abad Fashafooye and we investigated the process of expansion and emergence, reasons and grounds of urbanism and appropriate basis and how and why it expands such that it can be a suitable basis for any kind of urban planning, decision making and policy making in this city and the region and help the planners. This research was descriptive- investigative which used library studies and field studies, maps and tables for analyzing the material looking at the urbanism process and considering it as helpful for reasonable decision making. The results indicate that:

- The emergence and dynamic of the city have resulted from topographic and communicative position of Hassan Abad
- Hassan Abad has experienced fast population growth during recent years.
- The highest growth and physical expansion during last two decades has resulted from the establishment of Shams Abad Industrial Township and plentiful employment opportunities.

Keywords: *Population Growth, Urbanism, Urban Physical Expansion, Migration, Employment*

INTRODUCTION

Today, Iranian population is of young and efficient state regarding fertility. The more the young in population, the more one can expect higher rate of population growth in short term. Daily activities all humans, nations and states are internally correlated to population changes, the levels and patterns of utilizing natural resources, environment quality and socio-economic expansion. The population growth affects urban society structure, family, and the environment and etc. generally, the fast population growth leads in dominant and serious social and ecologic problems and it has consequences including high rate of unemployment, foodstuff and other natural and critical resources shortfall, housing shortfall, moral stress and conflicts which result eventually in emotional problems.

Problem Statement

People around the world are increasingly interested in urbanism such that has led to urban physical expansion in Iran. Such an expansion over settlements, which is quite affected by environmental factors particularly geomorphology and geology, requires systematic planning for this phenomenon. Geomorphologists investigated it through researches on forms and processes on the land and any kind of activities changing these forms and make the material to move or change the kinetic energy qualitatively and quantitatively. In this case, urban geomorphology seeks to minimize damages o the cities understanding urban and geomorphologic processes and learning cities standardization (Moghimi, 2008). Mohammad TaghiSheykhi (faculty member in Al-Zahra University) expresses that:

Population growth in Iran has had an increasing velocity over last 50 years. During recent 35 years, the population ratio was higher than ever. He adds: this is to say that the more the basic population or the more the young, one can expect that the population will grow up fast in a short time. Urban area of Hassan Abad is particularly intricate regarding the development and expansion and the intricacy is considerable because transformations aren't derived from development and natural and population structure rather it's the urban problems and difficulties coming from employment opportunities and higher number of job applicants that made this area to face particular problems which will increase in

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near future. Therefore, investigation of reasons of population growth can be helpful for authorities planning prospect of the city.

Research Questions

1. Is there any relationship between population growth and urbanism expansion in Hassan Abad?
2. What are the factors led to fast population growth and consequently urbanism and physical expansion?
3. In what way, the population growth has impacted urban space structure and people's settlement?

MATERIALS AND METHODS

Research Method

This research was performed through descriptive- analytic method. We first performed library and documentary studies and used the general plan of the city and statistics department web site. Then, observation, photos and interviews performed in the city. The research method included areal and satellite imagery and topography and analysis. The existing documents have been used introducing the studied area. In order to increase the coefficient of reality and credibility, we tried to select statistical population of age, gender, duration of settlement groups, appropriately. The respondents (25-70 year olds) were selected randomly (50 persons). We tried to distribute them identically with regard to the gender (male and female) and the desired duration of settlement in this city was selected at least 10 years because it was considered as they must be familiar to the city.

Theoretical Basics (Literature)

The city is considered as a center for servicing dense population and the influence area of the city is dedicated for activities other than cultural activities in urban settlements as a dominant way of life and indicating the tipping point or the peak in their way through accomplishment and human society civilization (Shokooei, Hossein, Urban Geography). One of the significant theories on the city and urbanism is the concept of urban revolution by Gordon Child. He believes that the emergence of cities was accompanied by two tremendous revolutions in the economic and social organizations structure; these two revolutions in turn have led to the population growth.

Ibn- Khaldun: he believed that the Bedouin is the origin of cities and urbanism emergence. The Bedouin is older than urbanism and is considered as the main course of the society and the civilization and it has been the origin of the formation of the cities and population (Ibn- Khaldun, Vol. I: 229).

Generally surveying theories of Ibn-Khaldun, one can interpret that he had emphasized two factors of migration and government in case of cities emergence and development.

He believes that the urban population growth ingredients are of three resources (origin):

1. Net migration (immigrants in- immigrants out) including immigrants from rural and foreign countries.
2. Natural growth of the population (birth and death) including native population natural growth, immigrant population and redefined areas.
3. Redefining the districts of the urban population including continuity of urban population and definition of the urban population.

Research Background

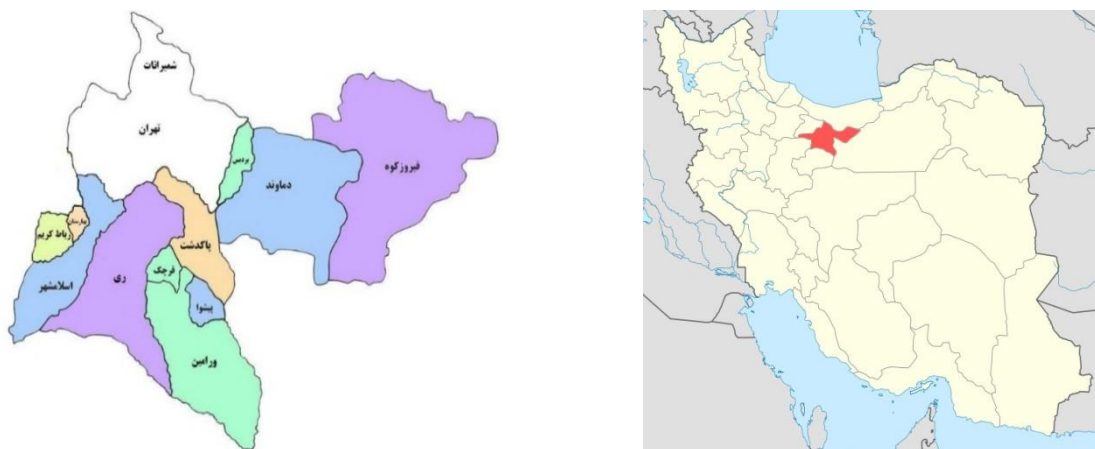
The emergence of sciences related to the urbanization and urban planning have led in the development of various ideas and theories in the field of city and urban development. Hemmer believes regarding physical expansion of the city that it is the socioeconomic differences between physical and population structures that results in the formation of sectoral pattern of the city. Chesney Hard and Edward Ullman have developed multi-core urban structural model with full geographical foundation and adjusted based on the morphological and topographic differences (Farid, 1995). As well, William Herd relying on the importance of entering and exiting ways to the city considers that the city expands in these ways (Shokooei, 1998). Louise Mumford assumes 6 steps relying on the urban expansion. Within first step or Eopolis, the city is a generality relying on the agriculture, in the second step or Pupolis the city is a small unit with trading and commercial activities, in the third step or Metropolis the city expands ultimately, in the fourth step or Megapolis the city has developed to a complex form, in the fifth or Tirapolis the city declines with regard to the commercial and trading activities, in the sixth step or Negropolis the city

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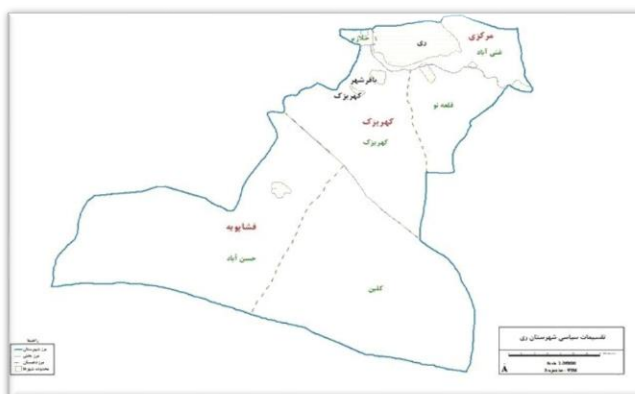
develops to the worst situation. Haroll Meyer American geographer stresses on using the automobile which in turn leads to urban physical expansion and suburban development as one of the factors resulting in the emergence of multi-core structures and urban development (Shokooei, 1998). Providing urban bond theory in Iran in 1995, Yadollah considered the bond between lands surrounding initial core of the Iranian cities and the bond between cities and villages as an effective factor of the urban physical expansion (Poorahamd, Yadgar, Habibi). Hanafi (2000) studied the physical expansion of Maraghe and expresses that the city has grown horizontally and there is no sign of vertical growth and the expansion pattern resembles star growth. Nasiri (2002) studied Malayer urban space expansion and found that the dominant pattern is a checked- radial one and the city expands toward northwest. Other researchers including Zangabadi studying Kerman, Ebrahimfar (1994) studying Ardebil, Mahbood (1997) studying Neyshaboor, Karamzadegan (2000) studying Astara, have performed various researches on urban expansion patterns. MoradiDowlatabadi (2005) studied the expansion of Kamyaran and concluded that the main cause of urban development and expansion results from irregular migrations from rural districts to cities as well as the communication road between Sanandaj- Kermanshah.

Site Studies

Hassanabad is the center of Fashafooye with an area of approximately 1800 km² is located 32 km from Rey and is under supervision of Rey regarding civil divisions (figure No. 1).



Position of Rey in Tehran



Position of Hassan Abad in Rey **PERSIAN WORDS MUST BE REPLACED WITH ENGLISH WORDS**

Figure 1: The map of position of Hassan Abadin Iran, area of Tehran province, Rey city

Source: Tehrangovernor web site

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It is bounded to Kahrizak and Arad kooch mountains from north, Naalbandan col from south and Aliabad and mount Mare and Qom Lake from southeast, and to RobatKarim from the west, and Varamin plateau from the east.

This city is located in 35 degree 22 minute north latitude, 51 degree 14 minute east longitude almost at the center of the district south of Arad mountains (Arat) in a fertile plane. The moderate height of the city from the sea level is 965, the highest point is 1428 in Arad mountains and in south mountains the highest point reaches to 1503 m. The general gradient is less than 1% and is directed from northwest to south east. This area has a semi-dry climate in summer and cold winters. The temperature hits 40 centigrade in Tir (June and July) and is as cold as 11.2 in Dey (December and January).

The average temperature is 16.6 and rainfall is dominant in spring and winter and the average precipitation is in the range of 180-220 mm annually. Winds in this area are generally local and from west to east. Water resources include underground water and rivers like Karaj, Shoor, SiahAb, Shahchay and number of aqueducts (Qanat). Based on survey performed in 2012, this city had 7415 households and 27859 residents) 14533 male and 13326 female). The ratio of the male to the female is 109 male per 100 female.

RESULTS AND DISCUSSION

Research Findings

Physical Urban, Neighborhood and New Areas Development Steps

When the process of the physical development of the state divisions was investigated various urban developments were provided two of which are accepted by commentators:

1. City growth according to the origin
2. City growth according to the direction

City growth according to the origin is classified into two classes:

1. Natural growth
2. Planned growth

Hassan Abad has grown naturally and unplanned; that is to say that the city growth was organic and without considering prospect planning. Within natural growth of the city, road systems, parks, playgrounds, schools, industrial sections, trade centers, hospitals are constructed without prospect planning and irregularly. The city growth is based on the direction and expansion rout is fulfilled as following:

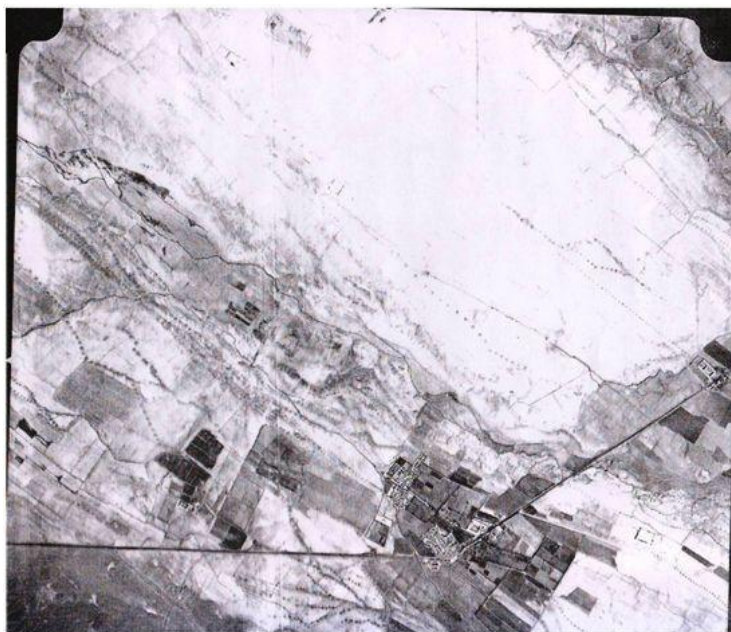
1. Horizontal growth
2. Vertical growth

The spatial growth of a city is as horizontal expansion and physical growth or vertical. They are creating different and separated bodies. The physical growth of the city occurs in the form of increasing area or so called the horizontal growth. The vertical growth is in the form of population growth and urban compressed growth. Those patters are of various consequences.

The growth occurs horizontally in Hassan Abad and there is fewer large building especially in the center and most of them are one or two storied and in case of modern neighborhoods two or three storied. Hassan Abad historically was consist of two neighborhoods; GhaleBala (enclosing Qomi St., Soleymani and Kermani Avenues known as Chaparkhane and Shah AbbasiKarvansara) in other parts the owners used to build their houses in gardens which have been undergone following changesaong with population growth and city expansion:

GhaleBala: other street shave been expanded toward south of Enghelab St. and southwest of Qomi t. toward the main boulevard and GhalePayin and consequently removed the distance between these two neighborhoods and then the city has expanded toward north and northeast. Where the owners are settled in their gardens residential apartments increased and gardens replaces with the residential settlements. For example, Razavi, Nowroozi streets have grown toward north and after passing Koleyini St. extend to the SiahAb river area. The mentioned parts consists the historic and main texture of the city mostly living native people in.

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Figure

New and modern neighborhoods have been formed as follow:

Ahmadiye: in 1991, approximately 140 plots were initiated.

Janbazan: in 1994, 140 plots were separated.

Behesht: in 1996, 610 plots were formed near the city.

Farhangian: in 2000, was separated with 260 plots.

GoleNarges: in 2005, was constructed with 170 plots.

After that time, vast separation was performed including: Farmandari, Fadak, Basij St., MalekAshtar St. neighborhoods and separation Zakeri (located at south of GoleNarges) and etc.

Effecting Factors on Physical Growth of Hassan Abad

The goal of this discussion is to identify effecting factors and elements on the physical growth of the city which will be discussed in 4 patterns:

Natural or Artificial Factors- Social Factors- Political Factors and Policy Making Elements, Economic Factors

Urban expansion is a process that is affected by abovementioned factors which pass various steps during time. Noting urban environment and considering citizens' welfare along with observing city beauty are other objectives of the urban expansion.

Natural and Artificial Factors Affecting Urban Physical Expansion

The organization of the city space which contains the structure of the metropolitans and is generally formed by main centers, district centers, main axis and region which along each other form the general structure of the city and its spatial structure. The establishment of Hassan Abad due to the natural conditions (fertile soil, abundant water) and its development due to main elements and factors we can conclude as follow:

a. The axis of the old road of Qom- Tehran passing from the city center affected the linear urban expansion. The main buildings and activities have been formed around this corridor and made an active axis in the direction of northwest to southeast. Attempts to establish around boulevard body and approaching this axis have resulted in the formation of linear city.

b. The geographical and morphological basin of the city and its continuous area affected the horizontal expansion of the city and its expansion in the form of townships. This basin will play a major role for urban expansion.

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c. Roads between urban and rural settlements including ZivanKenargerd and Ibrahimabad and Ghalenow Roads are going through east and west from the main axis of the old Qom- Tehran Road. These axes will play a major role in the formation of future city.

d. Natural landmarks including seasonal floods and Karaj River have been a restrictive factor for city expansion. These landmarks will play a major role in spatial organization and structure of the city in future.

e. Artificial barriers and sanctums like gas and oil transferring pipelines are affecting and will affect future expansion of the city and its general structure.

Social Factors

Social factors are among expansion factors which mean to examine social status of various neighborhoods. In past, GhaleBala and Payin were resident for big tribes in Hassan Abad. One of the reasons that made them to select this area as the settlement was to avoid main road because of certain prejudices and being far from others as well as being near a single tribe. Other owners and in fact the real owners of the city used to build their residences in their gardens and live there. After that and passing time, the distance between these two neighborhoods vanished and they practically integrated and formed the main and old texture of the city. In the other hand, many residential building were constructed in dried gardens. Therefore, social factors have had no major role in Hassan Abad expansion.

Political Factors and Policy Making Elements

Governmental policy making factors have not interfered in the way of expansion considerably because land properties had private owners and the city did have no urban lands.

Economic Factors

This city has been a main center of production for agricultural products and the fields were near the houses which resulted in absorbing migrants and urban expansion. After the time that, Amir Kabir Dom was constructed on the Karaj River and initiation of draughts the owners acted toward separation of their gardens and migrants and new generation purchased and built a building there. This issue initiated urban expansion in the old gardens without any criteria just relying on the land separation and transfer by the owners. At that time (during three last decades), proximity to the main roads was considered as an advantage of settlement and on the other hand because HassanAbas located on the old road of South-Tehran, it had maintained a strategic position which in turn resulted in the population growth.

One can conclude from those factors that the way of urban expansion in Hassan Abad had much more by economic factors and job opportunities for migrants and consequently land purchase for construction. In other words, after the owners separated their lands migrants and those who were working here and specially in industrial district of Shams Abad purchased a land plot and constructed a building. Therefore, employment in Shams Abad was one of the factors affecting urban expansion.

Migrations: migrations here include intraregional and interregional types.

Intraregional Migrations: based on field data for native and local people prior to 1992, few people have moved to this city for living and some used to be here for a short time and then return to their home town. Up to this time, the migration wasn't considerable which demonstrated by the population growth. Since the very early time of 1990s, the migration increased such that most of rural people settled in this city. It was demonstrated by the survey of health care houses. For example, population statistics of Khanliq one of the biggest villages is as follow:

The population of this village was 378 persons in 1977, 726 in 1987, 935 in 1997, 740 in 2007, 534 in 2012.

Approximately most of migrants of this village based on village council and village administration have settled in Hassan Abad. The other villages were so.

Cross-regional Migrations: as mentioned earlier, the main flow of migration into this area started in 1990s particularly from 2001 and a lot of people migrated from nationwide including Azna, Aligoodarz, Malayer, Bookan, Shahinsezh, Gonbad, Neyshaboor, Sabzevar, Zabol, Kermanshah, Sangher, Sanandaj as well as Tehran, Rey, Eslamshahr, Robatkarim and other cities. Regarding the high growth of population from 1967 (1967-1977 15.6%, 1977-1987 11.5%, 1987-1997 5.8%, 1997- 2007 6.2%, 2007-

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2012 6.4%) which led to the increasing of population and physical expansion of the city. During 1987-1997 approximately 8.6% of urban population and statistic period of 1987- 1997 3.5% of them was migrants. This ratio was 4.4% during 1997-2007 and was 4.8% during 2007-2012 of population growth resulting from net migration.

If the number of migrants into the Hassan Abad is deducted from the total population the rate of population growth during 1977- 2012 will be a following table. This indicates the higher effects of the number of the migrants on the population growth and urban and urbanism development in this area and as a result higher rate of migration is proportionate to population growth

Population changes and growth rates in Hassan Abad

Table

years	Total population	Levels- rates True growth	Natural growth	Net migration
1977	1976			
1987	6272	11/5	2/9	8/6
1997	11178	5/8	2/3	3/5
2007	20471	6/2	1/8	4/4
2012	27859	6/4	1/6	4/8

Source: Iran center of statistics, detailed results of general consensus of people and housing, Hassan Abad 1977-2012

As seen, the net migration in this city is higher than natural level of growth and the effects of the population growth are clear in all eras.

Integration of Surrounding Villages into Hassan Abad

The trend of urban development during recent years was toward northeast and along with the direction of the main road and has reached to Kenargerd and KenargerBala turned to a part of the city in practice.

This village is small in size located at northeast Hassan Abad whose population have migrated to nearby cities very long ago and there are fewer natives living here now and because the property is cheap compared to Hassan Abad most of migrants have absorbed.

One of the reasons of integration of Kenagerd into Hassan Abad is Mehr housing constructions of Arghavan in Kenargerd neighborhood which will be occupied by people whose number is higher than the population of Kenagerd now.

It is worthy to say that Arghavan complexes have been completed and delivered to applicants some of which are settled now. Other villages nearly to be integrated into the city are including Zivan located at eastern part after Ahamdieh neighborhood as well as Ebrahimabad located at northeast of the city which is inside legal sanctum of the city and any kind of construction is controlled by municipality of Hassan Abad and permissions are issued. In other words, integration of Zivan and Ebrahimabad are inside the future plan of the city.

Effects of Mehr Housing Projects and Facilities for Construction on the Urban Expansion

First, we examine the effects of Mehr housing on the physical expansion of Hassan Abad:

According to credible information and through final planning fulfilled by the housing institute of Islamic revolution it was held that Mehr project with 1000 thousand to be constructed in northern lands of Hassan Abad and hill foot of Arad mounts which was resisted by the municipality officials and they expressed the problems existing in the city as following when the ministry of road and urbanization wanted to inaugurate the project:

1. Regarding to the fact that the shortage of water is one of the main problems, then providing fresh water for 1000 residential units will be very difficult and even impossible.
2. Since the big projects of Damgostar was transferred from Tehran to the west of considered lands including industrial ranches and are active presently as well as Bijin husbandry is located at the east the settlers will be resented by the odor of these industry and will object.

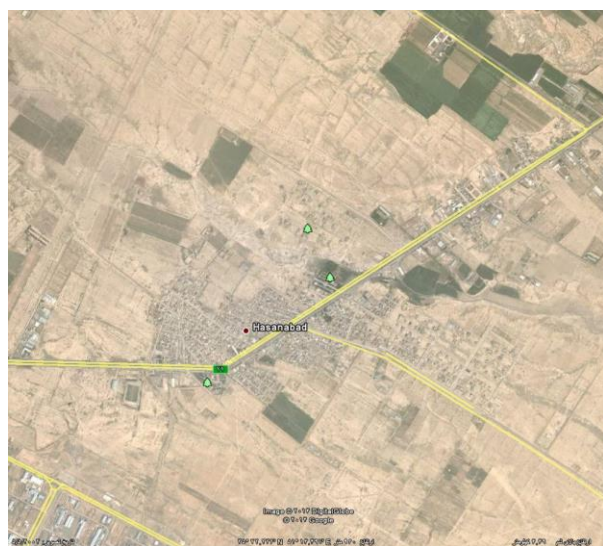
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3. Regarding the distance between this area and Hassan Abad transferring infrastructure services and utilities would be costly. As well, monitoring on the construction and structures and passages and other municipal services will encounter serious problems.

4. Because Hassan Abad is low populated (28000), the settlement of over than 4000 residents in Mehr housing will destroy the balance of the city and consequently many problems will arise.

5. They suggested that instead of constructing 1000 units Mehr housing can be constructed where required in the city in a scattered pattern. Then, it will be easy to service constructed buildings.

The minister of road and urbanization canceled the inauguration of the project after hearing them and Mehr housing (2300 units) was constructed in certain places of the city and 10000 unites were constructed in personal sites.



Hassan Abad, 2002



Hassan Abad 2014

Figure: Problems resulting from rapid physical expansion

One of the main problems of the city is the rapid population growth and its physical; expansion. Nowadays, most of cities are involved with this problem and have changed the urban structure as well as affected imprinting of cities and made the adaptability a dark issue. Physical expansion in Hassan Abad has experienced evolution because of geographical and economic properties and population growth as well as housing loans. Such an expansion has occurred horizontally and moved in all direction taking gardens and fields.

The expansion of the main physical and socioeconomic body of the city as well as migration from other points have resulted in irregular growth and affected deeply abnormal expansion of the city. Different eras of expansion don't indicate urban regular pattern together with planning. Plot separation and after that constructions in different areas have performed in an unplanned manner and had just economic reasons.

Conclusion

Considering the reasons for population and urbanism growth in Hassan Abad it became clear that the economic reasons were more effective in this city. The most significant factors are employment opportunities and growing migration. In other words, industrial companies' around the city turned it to a distention for migrants and they inevitably devised ways for providing housing for themselves which have led to urbanism growth and city expansion. In other words, regarding the fact that the economic issues play the main role in population and urbanism growth in this city one can conclude that economic issues and employment opportunities are the most considerable factors of population and urbanism growth in this area. Thus, law makers and policy makers must adapt ways to direct this increasing trend in

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a proper tract to avoid from disorganization and slums and there must actions for providing people's welfare and housing.

Suggestions

Regarding the fact that the physical expansion is fixed there must be decisions made by officials to make the future expansion in a correct and scientific way. Thus, it's recommended that:

1. Complying regulations of urban development planning and focusing on the legal constructions based on linear development pattern formed among ring (passing from north) and the main body of the city toward north and North West will be a suitable model for future development and southern lands isn't recommended for development due to the proximity to Shoor River.
2. Regarding infrastructure utilities due to the proximity to Tehran Gas pipelines and power supply network, there is no problem. Regarding the fresh water, it's impossible to supply water from the area because underground water level is low and there are no perpetual and seasonal rivers. Therefore, the fresh water must be outsourced.
3. Since the main road of Tehran to south passes through Hassan Abad, creating a ring out of the city will decrease traffic and avoid pollution.
4. The urban expansion in the form of vertical preventing destruction of lands in this area

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