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Urban planning and design in unauthorized neighborhoods using case studies

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Abstract

This paper is to study the unauthorized urban neighborhoods, which cause critical multifaceted difficulties. It explores the reasons that have resulted in the unauthorized urban neighborhoods generally and in Chabahar city particularly. This paper has performed a case study to analyze the socioeconomic, spatial, skeletal, and functional effects of the illegal neighborhoods in the Chabahar city with the help of academic methods and field observations. It reviews various theoretical ideas and experiences could assist the rehabilitation and reconstructing of the unauthorized urban districts. It discusses optimal strategic regional/urban revitalization planning procedures to solve the problems in Chabahar. Finally, this paper suggests a renewal/rebuilding possible development program, including eight mother projects. The results of the renewal program will be substituted with the present informal and eroded neighborhoods in the city. The renewal program made progress in both physical features of the city and urban life quality indicators simultaneously. The model suggested by this paper will be feasible in similar regions everywhere.

Keywords: Chabahar; Unauthorized neighborhoods; Skeletal development; Street axial model; Spatial planning; Green architecture

1. Introduction

Unauthorized neighborhoods have caused critical multifaceted difficulties in Iran generally and particularly in a city called for Chabahar. As Hölzl and Nuissl suggested the informal urban districts are a huge challenge against planned and managed urban developments (Hölzl and Nuissl, 2014). A major part of the problem is inappropriate places of the informal neighborhoods. Since the districts have been built unplanned and plot-by-plot, they emerge as derelict holes in perspectives of cities. However, the challenge is more than an architectural and visual one and it involves many other problems as well. *The aim of this paper* is to explore the reasons for the emergence of unauthorized neighborhoods. It will analyze socioeconomic, spatial, skeletal, and functional effects of the informal districts through academic theoretical methods and a case study. This paper suggests a redevelopment program to renew/rebuild present informal and eroded areas in Chabahar city. The program suggests possible procedures to stop expansion of the unauthorized neighborhoods, to renew unplanned earlier built homes and to recover socioeconomic and skeletal troubles of the city. *This paper uses a research method* similar to what Durand-Lasserve and

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Clerc had done. Their work titled "Regularization and integration of irregular settlements: Lessons from experience" (Durand-Lasserve and Clerc, 1996). Therefore, it describes and examines the current irregular neighborhoods. It also presents a new strategy to shape the built environment and to supply homes and infrastructure services in Chabahar. Finally, it presents an innovative renewal program based on new relationships among actors of urban development and management.

2. Introducing the problem of unauthorized neighborhoods

2.1. Background of unauthorized residential areas in Iran

Unplanned and informal urban districts are a global problem. Internationally, scholars suggest theoretical and feasible solutions to the problem, i.e. Li and colleagues assessed novelty of the corresponding relationship between street network and urban life (Li et al., 2015). Newly, Li, Lv, Hijazi, Jiao, et al. suggested a comprehensive understanding of the built environment, which contributes to this problem (Li et al., 2016). Wang, Lv, et al. also proposed a supportive platform with integrated information and big data to address the problem (Wang et al., 2015). However, this paper limits its discussions to unauthorized neighborhoods in Chabahar. Haghighi (2015), Shahraki (2014), Rafiyan et al. (2015), Zayas (2015) and many other scholars discussed about unauthorized neighborhoods in Iran, i.e. (Hadizadeh, 2003) suggested the concept as follows: "*Outskirt-sitting and informal housing is rooted in structural social changes, the emergence of economic crises and accelerated migration of villagers to the cities. The problem is not only a local physical and skeletal subject, but rather it derives from regional and national plans*" (Hadizadeh, 2004: 3). When population increase is much more than official planned urban spaces can accommodate, the problem gets worse (Cullingworth, 2015). A sharp increase in demand has augmented the informal districts in numbers out of control. The history of outskirt siting in Iran goes back almost eight decades. Dehghani argued that the population in Iran has increased 6.3 times during recent five decades and the present urbanization rate is 70 percentage (Dehghani, 2011). The accelerated growth of urbanization causes more informal and critical skeletal expansions. It has created crowded unauthorized areas in Iranian cities. Further, the failure of land reforms, the declining of agricultural livelihoods, peripheral villages' integration in cities, and changing farmlands to buildings caused serious urban problems during later times; see i.e. Rustiadi et al. (2015) and Liu (2015). Table 1 reports the average number of families that have come to the major cities of Iran. The table reports the immigrant households only from 1986. Ten years later, the migration had increased 39 percentages. In 2006, the rural–urban migration numbers peaked at 50 percentages. The table shows well how the rush of migrants into big cities has increased during the past decades.

Table 1
Number of households who migrated from villages into big cities.

Year	Households (million)	Increase of migrants
1986	1.4	
1996	3.6	39
2006	9.3	50

Reference for data: (Statistical center of Iran, 2006).

Annabestani and Anabestani (2011) studied reasons of the immigrations. They considered unemployment and poverty, drought and declining of agricultural production, attractions of urban life, and cheaper homes in informal urban districts respectively as major reasons for the migrations. As they suggested during the time studied 19 percentages of the migrants moved to the big cities because of the drought and decline in farming livelihood. Unemployment and poverty caused 39 percentages of internal migrations as a major cause. Other national observations indicate that the number of migrants and the unauthorized neighborhoods are increasing in size permanently. Several international scholars, i.e. Davis, also believe that the event is an increasing reality (Davis, 1995). The phenomenon of unauthorized urban neighborhoods harms cities in underdevelopment countries. Informal districts are features of poverty that show the fiasco of urban and regional planning policies.

2.2. Background of unauthorized residential areas in Chabahar

Chabahar is a significant harbor from economic, strategic, and geopolitical views. As the following map shows, Chabahar is in southeastern Iran on the Oman Sea (see Fig. 1).

In the map from the east direction, Chabahar is a neighbor to Gwadar and Karachi in Pakistan. From the west side Chabahar is close to Oman. From the south direction, Chabahar has a three hundred kilometer long border coast. Shahraki believes that the unauthorized neighborhoods in Chabahar go back to the 1970s, when the Pahlavi monarchy started big development projects like Chabahar–Zahedan corridor, Pishin dam, Konarak military airbase, and some massive housing projects, which absorbed many people to Chabahar (Shahraki, 2014:96). Fig. 2 shows Chabahar population growth from 1960 until 1995.

Chabahar's first core was Masghatia quarter. Unauthorized districts in Chabahar have emerged almost in the form of slum dwellers made of palm straw materials. People from different ethnic groups in Baluchistan came to use the hunting potentials and commercial services. They settled in Shiriha and Korsar districts along the eastern direction of the coastline. Masghatia at the beach of Chabahar Gulf was the place to present fishing productions and commercial services. It was the place for trade of imported commodities from Dubai and other Gulf Emirates. In the 1990s, the establishment of a free economic and industrial

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Figure 1. Place of Chabahar on the region. *Source:* Google map.

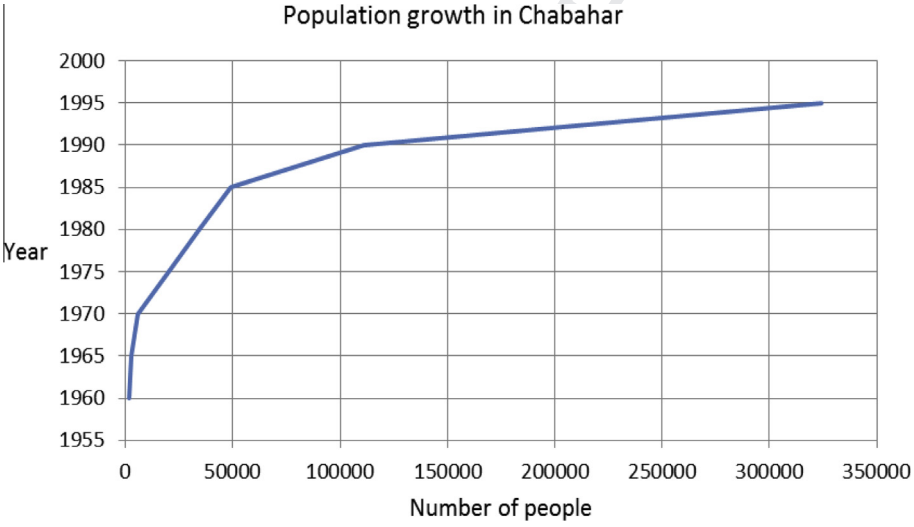

Figure 2. Shows the increase of Chabahar population during the period. *Source:* Ebrahimzadeh (1999: 43).

zone in Chabahar had been announced. The announcement encouraged many people to move to Chabahar at an accelerated speed many times faster than in the Pahlavi era.

However, since the failure of the strategic plans of the free zone many of the migrants settled in the unauthorized districts around the city. After the Islamic revolution, due to new policies, i.e. cancelation of the population control policy more people moved to Chabahar. The arriving people ignored municipality standards and established the unauthorized districts. By that time, many people from other regions migrated to Chabahar and started to build informal settlements on their traditional owned lands rapidly, but the government has not acknowledged the old tribal land ownerships. Now, the unauthorized zone occupies a huge area bigger than the legal urban districts in Chabahar. The phenomenon clearly threatens the sustainability of the city.

3. Impact of unauthorized neighborhoods in Chabahar

3.1. Introduction

Inhabitants in Chabahar designate the unauthorized districts by words like outskirt-settings, huts, and self-growing settlements. Outskirt setting as some scholars, i.e. Myers (2014) mean is the outer parts of a town/city. Dehghani defined huts *"These are areas with particular socioeconomic, cultural, and skeletal features and differ apparently from planned urban areas"* (Dehghani, 2011: 12). Sheikhi also

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defined the concept *"A self-growing settlement is a crowded and accelerated growing edge district which has two characteristics. First, it has shaped shoulders for self-motivated people. Second, it has emerged in the absence of the official control and management rapidly"* (Sheikhi, 2002:16). Generally, unauthorized neighborhoods do not have the necessary urban infrastructure. About the particularities of the outskirt-settings, Shahraki suggested *"There are three key signs which distinguish between an authorized urban area and a legal neighborhood while visiting a city at a glance, namely; the physical and skeletal views of the area, the functional and economic features of the area, and its legal and social characteristics"* (Shahraki, 2008:11).

3.2. Introducing the impact of informal districts in Chabahar

The focus is mainly on the negative impact while the target is to renew Chabahar. The method to determine the impacts is a comparison of the present situation to national building regulations of Iran (http://www.nbri.ir/). This method controls how the least quality of the built environment shall be. In the aftermath of the theoretical exploration, the field observation, the regional recognition, the comparisons, and experiences the problems caused by the unauthorized homes in Chabahar can be categorized into six groups as follows:

3.2.1. Group1 ignorance of urban land use policies

You read earlier that the first core of Chabahar expanded over the time until the desperate and poor people rushed around the core and set up unauthorized neighborhoods peripherally. The result of ignorance of urban land use programs was the emergence of Shiriha, Islamabad, Seidabad, Atashabad and Ramin unauthorized urban districts.

3.2.2. Group 2 shocking impressions on visual views of Chabahar

Poor people are not able to pay attention on the architectural and esthetic aspects of their homes. They try to build those by primary building materials. It has been observed that the unauthorized districts are composed of poorly designed lodges and huts. Fig. 3 is a picture, which visualizes a view of an informal district in Chabahar.

3.2.3. Group 3 hazardous impacts on physical shape and urban infrastructure

The informal urban districts suffer the skeletal problems. Since the plazas, streets, and passages have not been planned with the help of architectural and building standards, the geometrical shapes of urban places are problematic. The areas lack the needed urban infrastructure and services. People carry water from a long distance to their homes. They do not have access to the urban water provision infrastructure. The situation of solid waste collection is critical as well. The electrical power network infrastructure is cluttered, messy and hazardous!

3.2.4. Expansion of old urban textures

Buildings in the areas are old and out of standards. Architectural standards, structural requirements, and infrastructure necessities do not exist. Building materials do not fulfill the necessary technical standards and the materials are out of minimum tolerance. Thus, they must be replaced by new regulated safe homes and spaces. The result of the observations done block per block and home per home revealed that most of the homes should be demolished or renewed and some parts should change their usage. In Table 2 below, you see the result of the observation in every unauthorized district. The table reports the numbers of homes that should be demolished, change their applications, or be renewed.

3.2.5. Group 5 undesirable socioeconomic bearings

Unauthorized settlements are the result of unfavorable socioeconomic situations. From the other side, the informal and outskirt districts produce poverty. As Dehghani suggested the unemployment prevents people from saving. While the community does not have any savings they do not invest in housing projects and the efficient outcome is low indeed. Therefore, the circle will continue forever if the external actors do not intervene (Dehghani, 2011).

3.2.6. Group 6 unauthorized districts prevent sustainable urban development

Undoubtedly, the outskirt urban regions are not sustainable. According to the theories and experiences, the areas not only are unsustainable, but also threaten the future of the city.

4. Theories for mitigating the impacts

4.1. Introduction

An exploration in predominant literature suggests that there are a number of classical relevant theoretical approaches to solve the problems of unauthorized urban settlements. Durand-Lasserve and Clerc, suggested that the regularization in urban land policy is a main tool to include the irregular neighborhoods in underdevelopment cities *"The integration of settlements primarily requires a policy for urban land use regulation and provision of urban infrastructure and services"* (Durand-Lasserve and Clerc, 1996:27). According to the results of this research, various ideological ways could be classified into six groups.

4.2. Question-oriented ideas

A question-oriented procedure understands the phenomenon as a normal and natural part of urban life. In other words, its proponents are not keen on recognizing the roots of the problem. Shahraki (2014) suggested a systematic program for sustainable urban planning and design in Bonar city; there he used the question-oriented method. The program was a systematic procedure to transform an

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Figure 3. An unauthorized settlement block with poor visual views in Chabahar. *Source:* Photo taken by the author.

Table 2
Numbers of the homes with various qualities in informal districts.

Unauthorized urban districts	Number of homes to be demolished	Number of renewable homes	Number of homes to change usages	Total numbers
Atashabad	105	189	67	190
Islamabad	95	14	79	188
Jadgalabad	91	9	66	166
Sorkhrig	163	0	17	180
Seidabad	135	22	63	220
Shiriha	178	35	35	248
Osmanabad	138	27	33	198
Korsar	86	21	63	170
Moradabad	191	4	15	210

Reference for data: (Shahraki, 2008).

earlier non-sustainable built environment in a sustainable new town. Sheikhi argued on the school as "*The question-oriented idea tries only to decrease the social turbulence, crimes, and socioeconomic hazards caused by the informal urban districts*" (Sheikhi, 2002: 16). In fact, the school does not consider the origins of the problem. It seems that this idea cannot solve the current multifaceted problem of the unauthorized districts in Chabahar.

4.3. Fundamentalism

This method differs sharply from the question-oriented idea. Fundamentalists focus on the origins that cause the unauthorized areas. This idea is helpful in urban planning and explores the links between the political and socioeconomic regimes, which caused the informal homes in the underdevelopment cities. Shahraki (2014) and McFarlane and Waibel (2012) also recommended the school as a helpful method to rehabilitate informal urban districts. The fundamentalism searches for the connection between the capitalist and unplanned urban homes, i.e. Fainstein commented as "*the fundamentalist method analyzes the housing and town building facilities that the communities provide for people*" (Fainstein, 2000:451). Recognizably the fundamentalism has influenced a number of renewing programs.

4.4. Ecological ideas

Newly, Benne and Mang (2015), Davies (2015), Mattoni et al. (2015), Mehr and Omran (2015), and Galvin (2015) have suggested the ecologic urban planning and design as the best way to reconstruct the unauthorized neighbor-

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hoods in underdevelopment cities. The scholars of this idea would combine the flow of energy, movement of materials, and efforts of communities and humans together. In such an integrated system, humans in the ecosystem face two significant threats, namely; rapid population increase and quick development of technology. Sympathizers of this idea mainly look at the physical aspects of the problems caused by unauthorized areas Zahedani (1977). The ecological idea helps to save the environment and to prevent depletion of natural resources. For example, Momtaz argued: "*The ecological idea applies the land policy to solve the problems caused by the phenomenon of unauthorized neighborhoods. The land policy would manage the populations under the umbrella of the regional plans*" (Momtaz, 2000:47). Shahraki also promoted it and argued, "*Ecological urban development requires inclusion of renewal projects in strategic policies on protection of natural resources*" (Shahraki, 2008:23). The ecological procedure considers the basic human needs and believes that human is a biological element in the natural and built environment. Therefore, people demand both material flows and urban places.

4.5. Regional system thinking

Houghton et al. (2014) examined the regional system thinking into planning practice and experienced it as helpful for urban planning in underdeveloped countries. Bracken (2014) and Knox (2014) discussed on planning in informal neighborhoods and suggested that from a regional point of view, there are actions and reactions in functional cities. The interactions happen according to certain regularities among internal and external stakeholders of an urban system (Knox and Pinch, 2014; Bracken, 2014). Pourahmad et al. (2014) and Salehi and Baghdadi (2014) worked with the method in Iranian cities and considered a city as a regional system where every part plays a role in the game of the urban development Pourahmadi et al. (2014), Salehi and Baghdadi (2014).

Other scholars in the urban renewing subject suggested the regional system thinking, i.e. Rabbani wrote, "*A city is a mixture of spaces and systemic relationships which supply productions, attractions, tools, and services*" (Rabbani, 2002, p. 19). In other words, this idea considers the city as a big organism that spends inputs in the form of financial investments, supplies urban infrastructure, uses energy, affects environmental components and natural resources, and produces outcomes such as urban services, health, and attractiveness.

4.6. Liberal ideas

Recently, Gualini has analyzed critical perspectives on contentious urban developments such as; democracy, dynamism, political conflict, culture, knowledge, power, hegemony, large infrastructures, and entrepreneurship. Gualini considers the liberal method of urban planning as a suitable method to solve development conflicts in pluralist cities (Gualini, 2015). Other scholars, i.e. Momeni and Jafari (2015) believe that the liberal school pays attention to socioeconomic and skeletal aspects of urban districts. Borandeh also states that the liberal method studies the degree of accessibility to the urban services and incomes (Borandeh, 2015). It seems that the liberal ideas on the renewing of informal neighborhoods are affected by the ideas of Malthus. Saei interprets the idea of Malthus as follows: "*The poverty is a feature of god's determination and it is a part of life's nature so the governments should not support the poor people. The school assumes that the mass populations in unauthorized areas caused the deep poverty. The school argues the causes well; but, it fails to see more deep roots of the problem*" (Saei, 1999: 11). Generally, the liberal planners investigate the qualities and conditions of urban life, but do not focus on the distribution of livelihood resources. Selim studied the features of liberal urban planning and promoted the liberal idea to plan and design cities when it makes the balance between order and modernity (Selim, 2015).

4.7. Strategic planning

Zekavat and Motamedi (2015) performed a new case study to renew the informal neighborhoods with the help of strategic planning method in a wider context in Tehran. They analyzed the relationship between municipal management practices and poor compliance with planning standards and suggested that the practices of municipal management may contribute to poor compliance with residential standards. They suggested that the method of strategic planning is helpful to renew the informal urban districts. They argued that the urban management affects the occurrence of urban contravention and their increase/decrease in two ways. The first is through the policies that control urban land and respond to the needs and demands of citizens for affordable housing. The second is through the direct control of urban construction and building contraventions. On this way, governments will be forced to acknowledge that the existence of informal settlements is a result of their public policies. The exploration of this paper shows that this method formulates and promotes feasible solutions. From one side this method is nearer to the problem-oriented procedure and from the other side, it differs when it aims to change the urban critical situations. Shahraki described the strategic planning as follows: "*Strategic planning is keen on social homing projects, strategic land policies, provision of infrastructure and renewing programs. It translates every program code to a clear possible practice*" (Shahraki, 2008:31). Chabahar, prefers application of the latter method, but the ecological idea promises to be very helpful as well.

5. Policies to renew unauthorized urban districts

Without any doubt, a renewal program is a useful way to mitigate the problem of the unauthorized urban dis-

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tricts. Chabahar would prefer to work with the problem-oriented method. All informal and unplanned neighborhoods have been scanned in detail. For the first time, this case study provided a plan of the unauthorized neighborhoods at the block level in Chabahar, see Table 2 in this paper. With the help of the scanning, the situations of the informal neighborhoods, outskirt areas, lodges, tinplate villages, and old areas have been determined within the general plan of Chabahar. Synchronously it has been argued that the general plan of the city must be revised. To provide a new general plan for Chabahar, the urban land ordering should be changed based on socioeconomic strategies, statistical facts, and natural resources. Among different urban skeletal design procedures, Chabahar selected the street-axial model. The model first considers land for freeways, streets, avenues and other secondary urban passages. Then, it allocates land for other needed urban spaces. The street-axial model is pertinent to the unauthorized crowded urban neighborhoods in view of their critical urban problems and lack of suitable traffic spaces. To create the model a basic traffic map with names of streets and urban passages has been drawn. On the map, all edges of traffic networks like roads, streets, railroads, and water supply lines have been determined. The map exhibited nodes of the traffic networks like bus stations, terminals, and airport of Chabahar as well. In the next step, the model performed its urban land policy. The following map, Fig. 4, shows the land allocations for necessary urban spaces according to the model.

The map illustrates how the model has allocated land for other urban spaces like residential, educational, and public green purposes. reports the amount of land in hectares considered for every urban spatial purpose.

Table 3 suggests that the total used urban land area is equal to 2299.49 hectares. Residences use more land compared to other urban spaces. As you see in the table, fishing services occupy more than 10 percent of the urban area. It is logical since fishing is the main livelihood here. Higher education spaces are two percent of the total urban land. As adequate unused urban lands (1132.2577), it was possible to plan and design the urban spaces according to the socioeconomic and feasibility studies. The situation was enjoyable for the urban development so that the model could have new development. It could also gather more urban lands and use them for new public spaces. It benefited from the opportunity to plan new residential and cultural spaces for Chabahar. To save nature the program would make the homes and the urban places climatically adjusted. Respecting the climate and nature of Chabahar the program planned new urban districts separately, but connected them together with boulevards and wide streets. The majority of the people are poor indeed and need official support to improve the built environment. The city needs to renew the unauthorized neighborhoods by social homing policies, by legal land granting to the people, and by monitoring and auditing technical mechanisms to build homes and other buildings. Chabahar must use systematic thinking as well. It must consider the different parts of the city as interactive members. The city will use the problem-oriented school to understand where Chabahar should go in the future. The applied theoretical approaches will decide the skeleton and architectural features of the future built environment. Further, the municipality of Chabahar should stop the current informal developments and guarantee the planned and targeted developments. The development actors must respect the frontage limitations of rivers,

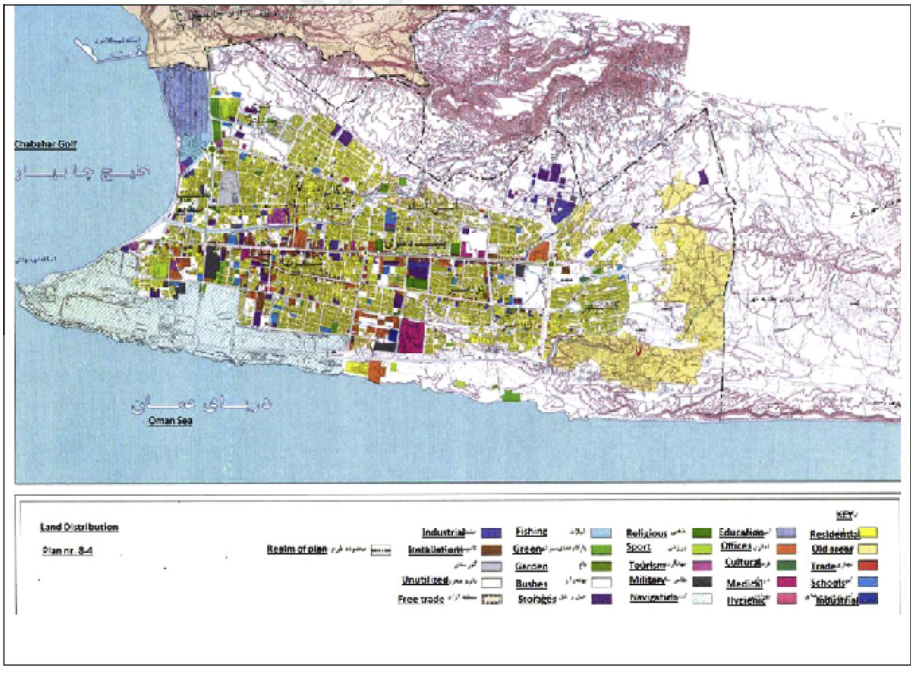

Figure 4. Urban land allocation policy. *Source:* General plan of Chabahar.

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Table 3
Allocation of urban lands for various urban spaces.

Types of application	Areas (Hectares)
Residential	320.3775
Commercial	19.7656
Educational	15.1641
Higher and professional education	39.3393
Cultural	1.3453
Religious	10.2523
Tourism	8.8340
Medical	15.9714
Hygienic	0.1355
Sport	10.6258
Official	28.7363
Green spaces	21.7290
Military areas	13.9873
Industrial	20.9864
Urban installations	14.8375
Transport and storage	29.0423
Water passages	340.7231
Unused	1132.2577
Gardening	3.9268
Fisheries services	252.8021
Total used urban lands	2299.494

Reference for data: General plan of Chabahar.

water canals and the coasts. The municipality must predict future demands for various urban spaces by the help of academic forecasting methods. Regulation and deregulation works are very vital for Chabahar. The municipality surely needs public participation in the revitalization programs.

6. The renewing program in Chabahar

6.1. Components of the program

The renewing program includes projects for new development, redevelopment projects, and regularizations. The renewing of informal districts in Chabahar has both theoretical and practical perspectives as Shahraki suggested, *"Renewing of informal settlements always has two wings. The first wing is the theoretical framework and the second one is potential projects to interpret the theories into possible building projects"* (Shahraki, 2008:7). The renewal program should be seen as an economic engine to push the region toward economic growth. Several scholars are in agreement with this idea. For example, Elise Bright listed some sides of renewal programs as *"Urban renewal may involve replacement of businesses, the demolition of buildings, the relocation of people, and the uses of eminent domain as a legal instrument to possible the development projects"* (Bright, 2003: 19–20). The general purpose of the renewal program in Chabahar first is to house people suitably and then to control the future development projects under the umbrella of the general plan of the city. To meet the targets of the renewal program, it included the following mother projects:

- Public participation
- Increasing of urban managerial capacity
- Land assembly programs
- Improving of esthetic perspectives
- Climatic, bionic and green town building projects
- Plantation projects
- Solving the problem of unusable homes
- Projects to build climatic buildings

Note that every mother project includes sub-projects. This paper reports only the mother projects briefly.

6.2. Public participation

Producing films to enhance the public awareness and public participation is necessary. The publication encourages public contribution to improve the quality of the homes and the built environment. The program recommended establishing a new technical office in Chabahar municipal office to ease communicating with people. Citizens are referred there to supply information about the new acts, standards, codes, funding facilities and bank loans to rebuild their homes. Some of the people must sell their lands to the municipality and then they receive new lands in specially planned zones according to the general plan of Chabahar. People learn about new building materials. Such planned guidance substantially increased the public participation.

6.3. Increasing of urban management and organizational capacity

Increasing knowledge and managerial capacity of official bodies is significant to overcome the urban problems in the city. The author of this paper collaborated with the official housing and town building agencies to complete the first general plan draft for Chabahar. In this way, the mayor had been convinced to revise the general plan and rework a new general plan for Chabahar based on academic methodologies and new professional studies on the past, present and future of the city. The municipality of Chabahar agreed to control the physical expansion of the city and to respect the land use policies of the general plan. The technical office would control the technical qualities of future private and official developments. The technical office will control new/renewed/strengthened neighborhoods, according to their sizes. The Iranian home bank funded the renewing program in Chabahar. The Maskan[1] Bank agreed to pay the costs of the renewal projects in the form of long-term loans. The size of every home should be determined during a meeting between one representative of the bank, one engineer from the housing and the town building office and the owner of the unauthorized home based on the size of the family (see Table 4).

[1] Maskan means housing in Farsi

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Table 4
Sizes and funding amount of the approved homes.

FSizes of homes per square meter	Funding in US$
Less than 100	6000
100–200	10,000
200–300	15000
300–400	20,000
400–500	25,000
500–700	34,000
700–1000	42,000
More than 1000	47,000

Reference for data: General plan of Chabahar.

In the table, the left column reports the sizes of the approved homes to receive land and funding. The right side column of the table is to show the amount of the funding by the bank.

6.4. Improving the esthetic perspectives

The program planned projects to protect the historical heritages like the Portuguese castle and the English post office building and to improve the regional attractiveness. The renewal program included new attractive public spaces to attract tourists. It used water, light, and colors for the various attractions.

6.5. Climatic and green town building projects

Since the local environmental components have been damaged and people are poor, the green urban planning and design should contribute to sustainable development. The renewal program has projects in the district and the town dimensions to solve the earlier described critical urban problems in the unauthorized areas. The program divided the new built neighborhoods into blocks and sub-districts. It organized workshops and projects according to the divisions. In every division, the renewal program has planned infrastructure projects for the urban fluent traffic and transportation, urban sewage, urban water networks and power distribution systems. The projects would protect the environmental components and would save regional natural resources as well. The main idea in every project is the ecologic town building school. The idea would give less energy consumption, less development costs and integrating the buildings into local nature. The program has planned and designed buildings for the program by the bionic architectural design ideas. It tried to express the layouts and lines of the structures by borrowing the forms and shapes from local traditions. Instead of the classical drawings, this model based the new urban district's design on the local natural requirements. The idea was to strike a balance between structural technologies, esthetic perspectives of the neighborhoods and nature. The following three-dimensional plan, Fig. 5 that has been worked out in the program shows the result of the model composed of climatic harmony, ecological ideas, bionic designing methods, and postmodern architectural styles.

The neighborhood includes blocks of apartments, villas, a cultural and religious center in the core of the district and other accompanying buildings. The necessary spaces for various needs have been determined according to their sizes and technological measures. The structural system of the buildings should tolerate all likely tensions caused by floods, winds, and earthquakes. This model has selected suitable building materials to fulfill the earlier mentioned purposes. The new neighborhood has green and climatic buildings. The buildings have less energy consumption and use renewable natural resources. One goal of the renewing program in Chabahar is to absorb tourists into the region. Therefore, some projects are to supply more tourist facilities and services, i.e. coastal bowers along the coast.

6.6. Integration of urban lands

This program gathered urban lands that people used outside of the general plan's purposes. It found homes that should be removed and changed those lands to public urban spaces. Then, it used the collected lands to plan new projects aiming to protect the natural environmental components in the unauthorized neighborhoods. The projects would increase green spaces like parks and protected areas or save attractive volcanic sites, called Gelafshan[2] in the region. The volcano is boiling continuously and throws up the doughy clay up to twenty meters height. The action of throwing up the liquid clay together with the characteristics of natural environment produce exciting views and people enjoy watching it. It is interesting for scientists and researchers as well.

6.7. Plantation projects

The renewal program has set up green spaces along two sides of the streets and avenues. People should plant trees in front of their homes as well. The program designed a green area in every neighborhood so that everybody could reach a local park after maximum four hundred meters walking.

6.8. Solving the problem of unprofitable homes

How should the program tackle the unprofitable buildings? The program made decisions about various kinds of homes in the unauthorized areas. It saw three groups of informal buildings in the areas. Those were; homes which should be renewed, homes which must be empowered, and homes which should be destroyed. Then, it planned and performed several projects pertaining to each class. After demolishing some of the unauthorized homes, the

[2] Gelafshan means Clay spray in Farsi

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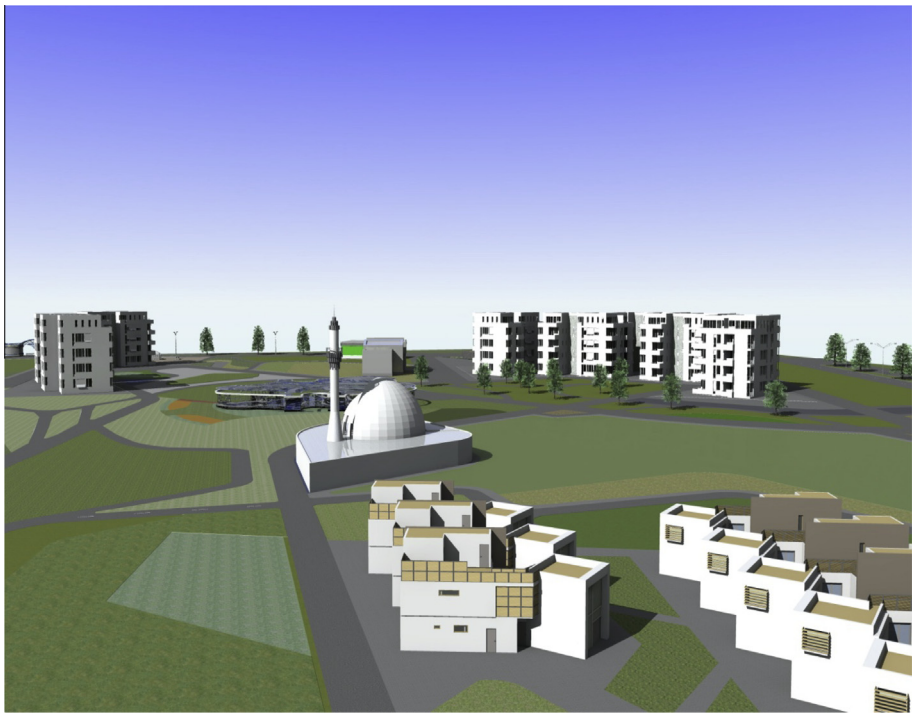

Figure 5. Three-dimensional plan of a new urban neighborhood in Chabahar. *Source:* Designed by the author.

program could supply urban land. By the help of the street-axial model, first of all the program has planned a boulevard as a main street with its exits in the form of secondary traffic passages along its two sides. In the middle of the boulevard, an urban square has been planned with the help of statistical data and expected urban support functions around it. Only then, new homes and other necessary urban spaces were designed around the boulevard.

6.9. Projects to build climatic buildings

Climatic urban planning and design in Chabahar requires considerations completely different to, for example Zahedan city at the north of the Sistan Baluchistan province or to Tabriz in western Azerbaijan in Iran. Since Chabahar has a humid warm climate, the space between the entrance room and the building inside has been covered to make shadow and stop the direct sun exposure. The marginal roofs on the building stop the direct heating of the peripheral walls and make it cooler inside the building. The following plan, Fig. 6, shows the suggested home.

In the picture, you see apparently the special middle space and the extra roof. The structural plan of the home will allow the flow of air within the living rooms, sleeping rooms, the kitchen, and the workroom. As Chabahar is wet and warm, the stoppage of air makes troubles. Therefore, the named spaces should have windows on the opposite walls to let the movement of fresh air through the home.

The use of ventilation shafts is a climatic traditional method to cool the buildings without costly mechanical and electrical equipment. However, in Chabahar the ventilation shafts should be designed differently to those in warm arid Middle East cities. A ventilation shaft suitable to Chabahar shall place wide windows with little height at the highest part of the building right under the roofs. This design mitigates the hot sunshine, see Fig. 6. Experiences suggest that a higher height provides more air in homes. Since the local natural warm air moves up a cooler temperature stands on the grounds of the rooms. Thus, it is necessary to use higher heights compared to homes in moderate regions. Chabahar requires its own scales due to heights, openers and the position of the openers. Using suitable building materials is also significant to produce climatic homes. The best pertinent building technology for Chabahar is the armed concrete system. However, the armed concrete system is very sensitive and it must fulfill all building standards. It should make efficient use of all standards about granulated sizes of the concrete, quality of water, type of Portland cement, type of steels and other materials involved. The observation suggests that the regional building materials lack required standard qualifications. Worse, the work styles are unacceptable. The renewal program would recommend armed concrete frame system building very conservatively for Chabahar. The green and climatic buildings are economical and many studies verify the benefits of green building, see for example the experiences of Longdon (Langdon, 2007). Importantly as many scholars are suggesting the green building in the process of renewing has improved urban life quality indicators in Chabahar simultaneously (Afacan, 2015; Figueiredo Miller, 2015; Roquet et al., 2015).

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Figure 6. A three-dimensional plan for a climatic home in Chabahar. *Source:* Designed by the author.

7. Conclusions

This paper discussed the unauthorized urban settlement for the first time in the region of Chabahar and introduced a scientific analysis of the phenomenon. This study scanned informal homes on the block and district levels. The case study explored the causes of the emergence of the areas and found the socioeconomic problems and poverty as major reasons. This research has classified the effects of the informal homes in Chabahar. It studied ideas and theoretical hypotheses that scholars around the world have suggested to program the renewing developments. This paper highlighted the importance of natural resources, saving the environmental components, and increasing of the functionality of the city during the renewing efforts. It has suggested that the climatic methods and strategic determined planning ideas would be particularly useful since the unauthorized neighborhoods need both natural environmental and socioeconomic aids. Based on the strategic regional and urban goals and considering the general plan of Chabahar, the case study has planned the renewal program. The climatic and ecological renewal program for the unauthorized areas of Chabahar included eight groups of mother projects. Yet the managerial and professional conditions are not ready, but the package included projects for public awareness to improve the inhabitants' participation. It included also projects to encourage the knowledge and management capacity in the official bodies. One key part of the package included the regulation and deregulation negotiations to bring into force the national building acts, codes and standards in the region. The program has renewal beautification projects to save the historical places. The renewal program increased the attraction of Chabahar so that the city would invite tourists and investors. The program has removal projects to gather land areas, aiming to use them later for urban public and green spaces. The package planned to renew the unauthorized neighborhoods in Chabahar and aimed at solving the lack of urban infrastructure and services. At the same time, the renewal program would increase the indicators of urban life quality, i.e. public health and community spirit simultaneously. To assess the results of the renewing program until now, it shall be stated that the renewal projects have had both successes and failures. The failures are dependent on management, financial and knowledge shortages. By the way, social conflicts prevent the success also. As has been observed the ideas and experiences suggested by this paper improve and advance the unauthorized neighborhoods in the continuation successfully. The renewing program as a pilot project is applicable in similar regions in the world because of its suitable pragmatic theories and practices the validity of which has been tested in the social laboratory of Chabahar.

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