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IMPACT OF URBAN SPRAWL ON THE SPATIAL MUTATIONS OF THE CITY OF KHROUB

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ABSTRACT

Algerian cities have undergone many spatial, economic, social and cultural transformations since independence, as a result of the rural exodus and the industrialization policy initiated in the 1970s. These two factors have had a significant impact on the acceleration of urban growth and expansion in all directions. Constantine is one of the most important cities suffering from urban saturation, especially as it is characterized by a narrow, hilly situation, where all its real estate assets have been consumed. It began expanding at the expense of the surrounding communes in the early 1980s, as part of the implementation of the satellite towns' policy, which formed the "Greater Constantine assembly". The commune of El Khroub is considered the most important of these satellite towns, as it received Constantine's surplus population under the 1974 urban development plan. El Khroub has continued to receive various housing programs over different periods, expanding at the expense of its land, including the new towns in 2000 and the urban centers in 2016, on the most fertile agricultural land, which has caused the commune to undergo spatial, property and functional transformations, particularly on the outskirts.

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1. Introduction.

Urban sprawl is a term used to describe the intense and discontinuous expansion of urbanization. The issue of urban sprawl is on the agenda in Algeria and in many other countries around the world. This phenomenon, which has attracted the attention of urban planning specialists, is deplorable because it embodies the crumbling of the idea of the compact city, and carries with it the rejection of solidarity with the rest of the aggregated city (H.Hassina, laarouk, 2010). Urban sprawl is therefore seen as the dilution of a model, a dilution that needs to be countered spatially in order to create forms of continuity and articulation of the whole. The concept of urban sprawl is particularly relevant to the situation in the town of El Khroub, a relatively old urban structure that has undergone extremely rapid development leading to far-reaching changes. Indeed, from a very small town with no notable amenities, this locality was promoted to the rank of a large agglomeration with the status of a district headquarter, with a population of around 179,033 inhabitants (in 2008). (Guerni, 2009) This is the result of rapid and massive urbanization that has disrupted the existing socio-spatial structures; the city was not, it seems, prepared to support this radical change. This migratory movement, or more precisely this population shift, marked in particular by significant urban sprawl (H. MEBIROUK, 2012). Has this extension caused spatial mutations of this urban unit?

The demographic and spatial growth is accompanied by the implantation of equipment and services, public and private, in the recently built housing estates. However, this option, which aims to meet the needs of new arrivals, has been concretized by the realization of a certain number of reference public buildings (A.Bendjelid,1998). Has this policy, which translates a total break with the traditional centrality, achieved its goal and what is its impact on the spatial organization of the city? To understand the impact and depth of these transformations, it is necessary to analyze the current situation and identify the different stages of spatial transformations. These transformations must be matched with the real estate and economic policies of the Algerian state, and the reasons for them must be identified.

2. Study area and Methods.

El Khroub, located south of the Constantine metropolis, has been assigned a predominant role, given its potential, including a topography that is quite favorable for human settlement, to which it is appropriate to add a privileged transit position towards the southern territories of the country and the eastern border regions. Important strategic geographical location, as it is considered a gateway between the upper plains and the Tell Atlas, and it is a link between the Tell and the desert. Its location on the axis of the national road number "03" connects it from the north to the city of Constantine at a distance of 16 km and from the south to the city of Constantine. It also branches off from the national road number "20" leading to the city of Guelma, and the national road number "10" heading towards the city of Oum El Bouaghi. This has made it a regional and functional center that has experienced significant demographic growth as a result of internal migration and also gives it the greatest amount of external relations with the neighboring areas. The study area is located in northeastern Algeria, (M.Maarouk, 2007) in the Constantine province in the southeastern part of the city of Constantine, where it is 16 km away, with an area of 255,000 hectares (PDAU, 2016).

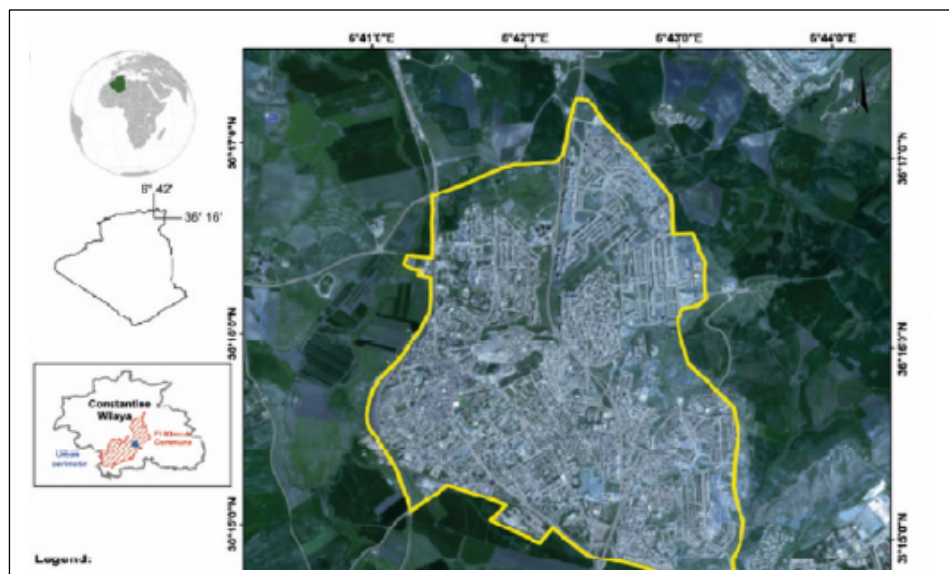


Figure 1. Aerial view showing the location of El Khroub city.

According to the 2008 division, the municipality of El Khroub, has become a municipality with a 01 center (ACL) and 10 secondary centers, in addition to scattered areas.

Research methodology is based on a bibliographical research on the subject followed by a field work. The field work is based on surveys, interviews, and quantitative and qualitative analyses. Data were collected from various organizations and administrations, including the Directorate of Agricultural Services, the Land Agency, the Directorate of Domains, the National Office of Statistics of the Constantine Province, the Cadastre, the Directorate of Planning and Territorial Development, and the Directorate of Urbanism, Construction and Housing.

The interview and the questionnaire are two statistical techniques that researchers use to collect information that they cannot obtain from other sources.

- The interview: we conducted an interview with the owner of a private farm in order to obtain information that was relevant to our research subject.
- The questionnaire: in this phase, we decided to distribute questionnaires to store owners the sample was selected randomly and consisted of 30 questionnaires.

2.1. Rapid urbanization and demographic explosion are behind the irrational exploitation of real estate.

El Khroub has benefited from about 20 housing projects, the first of which (450 housing units) was launched in 1976, in the north of the city. It was followed by others at a rate of one project every two years on average. The period 1977-1987 constitutes the turning point that deeply and durably marked the space of El Khroub. Indeed, the built-up area was multiplied by seven during this decade, from 28 to 203 hectares. Despite a few relics dating back to distant eras, the creation of the center of El Khroub as it is known today undoubtedly dates back to the colonial era. Indeed, originally, the nucleus was limited to a few houses structured in a checkerboard pattern, around a few buildings (town hall, church, post office, etc.). (N.Benkouachi, Alatou 2017) Its strategic position and agricultural potential aroused the interest of the colonists, who made it the commune headquarters, following the royal decree of March 28, 1863 (official collection of the acts of the communes of the prefecture of Constantine,).



Figure 2. Algérie - Le Kroub — Geneawiki El Khroub city.

Thus, several housing estates and subdivisions came to be grafted on either side of the initial nucleus. The most important units are located in the southeast (the housing estates of 1039, 1013 and 1600 housing units) and in the north (the housing estate of 900 housing units). The subdivisions are mainly located in the north (Bouhali, Seraoui, and the Frères Spiga), but also to the west of the old center (Beau Séjour). These urbanization programs, initiated at the end of the 1970s in a rather favorable socio-economic context, opted for a construction model considered at the time to be the only alternative to meet a considerable demand for housing. Indeed, large prefabricated elements theoretically allow for the acceleration of the construction pace and thus large housing estates multiplied, consuming all the land on their way in record time (M.Maarouk, 2007). This expansion weakened somewhat during the period 1987-1997 compared to the previous one, as it is characterized by a slowdown in construction, following a certain saturation of the urban space, but above all to an unfavorable economic and security situation. In fact, the promulgation of a new urban policy, which has been in effect since the 1990s, did not take long. It responds to the objectives of liberalization of the 1986 national charter, where the state is no longer the sole developer and entrepreneur at the same time. New forms of access to housing are emerging: social rental housing (1993), social participatory housing (2000-2001) and rent-to-own (August 2001). These formulas, which cannot meet the strong demand for housing on their own, have been reinforced by the provision of building land to individuals, which has been materialized by the start of several subdivisions for individual housing. They first exploited the empty pockets, to then extend to other areas occupying a total area of around 150 hectares. Despite their

relatively large number (11 in total), these subdivisions do not manage to break the monotony of the architectural landscape by establishing urban diversity (BOUCHELOUCHE, 2005). Indeed, the dwellings built are much more similar to individual buildings than to villas. Their spatial organization predestined them to play rather a role of social rampart and architectural showcase because they surround the city in the shape of a half-crown. But if urban diversity does not manifest itself spatially, social diversity seems to be taking shape. Indeed, the facts show that a large number of executives and traders are holders of building land, while occupying in the vast majority a social housing unit, while completing their construction (I, Diaf, A.lifa, 2023).

Table 1. Evolution of the population size of the municipality in the period 1977-2008.

Census	1977	1987	1998	2008
Population	25702	50786	90222	179033

Source: ONS, 2022.

Since El Khroub receives the demographic surplus of the Constantine metropolis, we find that the geographical origin of the population is from the mother city, the neighboring municipalities, the neighboring states and abroad, because the city knows an active real estate dynamic, as shown in Figure 2.

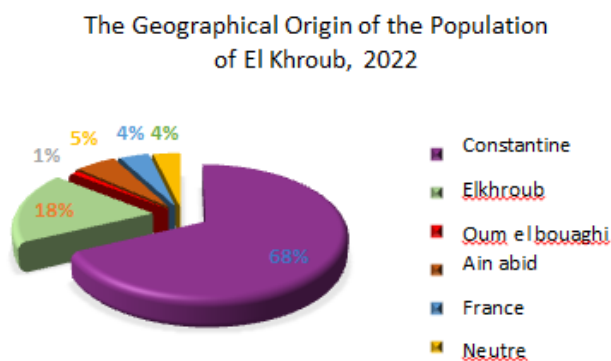


Figure 2. The Geographical Origin of the Population of EL Khroub, 2022.

3. Results and Discussion.

3.1. El khroub, Face À un transfert de population de la métropole Constantine.

Constantine, a regional metropolis, is facing real difficulties due to its excessive spatial growth and its frightening and cumbersome demographic weight, in a constraining, troubled site, marked by a hilly topography, which no longer allows for extensions (A.BENMATTI, 1982). Once its site was saturated to relieve it; a solution was sought in terms of quantitative urbanizable space by orienting its growth towards the villages located in its immediate periphery in accordance with the 1974 Master Plan (P.U.D.).

The P.U.D. (urban master plan), created to be a long-term strategic instrument, in fact had no operational power and was unable to determine and specify a spatial form, it was in reality only a land use plan on which many actors act” (M.KHAZEN, 2008). These choices of development for the Constantine space, have transferred a significant part of the surplus of Constantine to El Khroub, The city of El Khroub has become home to two new cities, Ali Mendjeli and the new city of Massinissa, as well as the urban pole of Ain Nnass. These urban expansions have come at the expense of agricultural land, on the one hand, and the functional transformation of rural areas, on the other.

Meanwhile, the municipality of El Khroub has the most fertile agricultural land and includes 4 model farms:

- The Ibrahim Kaderi Model Farm: Founded in 1993, it belongs to the Ain El Bey plateau and covers an area of 970 hectares.

- The Berrada Model Farm: Founded in 1993, it is also located on the Ain El Bey plateau and covers an area of 1,047 hectares.
- The Boussabah Model Farm: Founded in 1992, it is located in the suburbs of the new city of Ali Mendjeli and covers an area of 1,300 hectares.
- The Bousfar El Hocine Model Farm: Founded in 1992, it is the second largest model farm in the municipality of El Khroub, with an area of 1,397 hectares.

3.2. Spatial transformations as a result of urban expansion and the liberalization of the real estate market.

El Khroub was originally a colonial village that served an agricultural area due to the pastures that surrounded it at that time. These pastures were manifested by the presence of several stables in the center and farms on the periphery. The center was limited to the main street that runs through it from end to end and up to the level of the current court. Its railway station dating from the colonial period confirmed and took over its geographical position as an important crossroads. In the 1980s, El Khroub's great boom began to take shape. The village was flooded with housing projects, the scale of which has never been equaled. The establishment of new peripheral neighborhoods in the form of ZHUN (new urban housing zone) and subdivisions gave it a new face. According to (M.Maarouk, 2007) this urban dynamism did not occur without causing major problems for the village. The authorities were concerned only with the need to quickly have large masses of housing to meet a demand that was increasing exponentially vis-à-vis the supply, which was increasing arithmetically. "It may seem banal to talk about socio-spatial changes in an urban environment, because the questioning on the subject has been the ferment of profuse discussions. But if we cannot help but come back constantly to the theme evoked, it is to think that the related reflection can never be closed. This is true when we talk about Algerian cities, as long as they continue to face the dichotomy of urbanity-rurality. It is also advisable to understand the consequences, especially when it comes to taking a look at the old French colonial agglomerations of urban tradition." (S, Bouchemal, 2009). A strong urbanization has gradually taken place, occupying all the free spaces located on either side of the national road (no. 3) in two preferential directions: north and especially southeast. Thus, several cities and subdivisions have been added to the original nucleus. The most important units are located in the southeast (the cities of 1039, 1013 and 1600 housing units) and in the north (the city of 900 housing units). The subdivisions are mainly distributed in the north (Bouhali, Seraoui, and the Brothers Spiga), but also to the west of the old center (Beau Séjour). These urbanization programs, initiated at the end of the 1970s in a rather favorable socio-economic context, opted for a construction model considered at the time to be the only alternative to curb a considerable demand for housing. In fact, large prefabricated elements in principle allow the acceleration of the construction pace and thus large complexes have multiplied, consuming all the land area in their path in record time (N.Benkouachi, Alatou 2017).

The passage identifies two main phases of urbanization in El Khroub. The first phase, from the late 1970s to the mid-1990s, was characterized by the construction of large, prefabricated housing complexes. The second phase, from the late 1990s to the present, has seen the development of more diversified housing types, including individual homes and subdivisions. (BOUCHELOUCHE, 2005). The passage concludes by noting that the urbanization of El Khroub has had a number of social and economic consequences. The city has become more diverse, but it has also faced challenges such as the loss of agricultural land and the type of housing occupied (I, Diaf, A.lifa, 2023).

4. The Phases of Evolution of the City of El Khroub.

Phase 1: The first stage (before 1962): Rural space

During the colonial period, the city of El Khroub experienced relatively rapid urban development, especially after 1887 with the construction of concentration centers for Algerian residents so that French colonial units could control them and thus dominate them. The spatial organization of the nucleus in a checkerboard shape responded to the lifestyle of the French and their objectives.

Phase 2: The second stage (1962-1977): Little significant spatial growth.

This period is characterized by a first growth of the nucleus. The village of El Khroub experienced the first exodus, from the secondary agglomerations of the neighboring communes: Guettaret El Aich with the highest rate of 18.37%, followed by Ouled Rahmoun with 17.52%, and El Heria with 16.81% [ONS. RGPH 1977]. The search for employment remains the main cause of these

population migration currents, supported by other factors, such as the schooling of children and the improvement of living conditions. The appearance of spontaneous and precarious housing quarters.

Phase 3. The third stage (1977-1987) A remarkable explosion of space.

The built-up area has been multiplied by seven. A strong spatial expansion has been established, occupying all the free spaces located on either side of the national road no. 3, The appearance of new urban housing zones (ZHUN). Migration to the capital has become more significant. The places of origin are rather regional. This exodus was concretized, by a very high rate of a population of Constantine origin, which occupies the first rank with 76.17%.

Phase 4. The fourth period (1987-1998) Slowdown in the pace of spatial growth.

This period was characterized by a slight slowdown in construction compared to the previous period. Following certain saturation of the urban space, but especially to an unfavorable economic and security situation.

Phase 5. The fifth stage (1998-2015).

After 1998, a project of 450 participatory housing units was launched (currently completed), for the benefit of the city of El Khroub, with a very pronounced launch of construction, in the subdivision procedure, in order to alleviate the housing crisis that the population of El Khroub is experiencing. This period saw a significant shift in the urban population of Constantine with a rate of 75% on the capital of El Khroub due to housing programs carried out especially in the northeast of the city.

In 2000, the urbanized area still increased and reached 668.90 ha to reach 1004 ha in 2010 and 1543 ha in 2015, an increase of 875 ha, which is still considerable (Khenchouche, 2020).

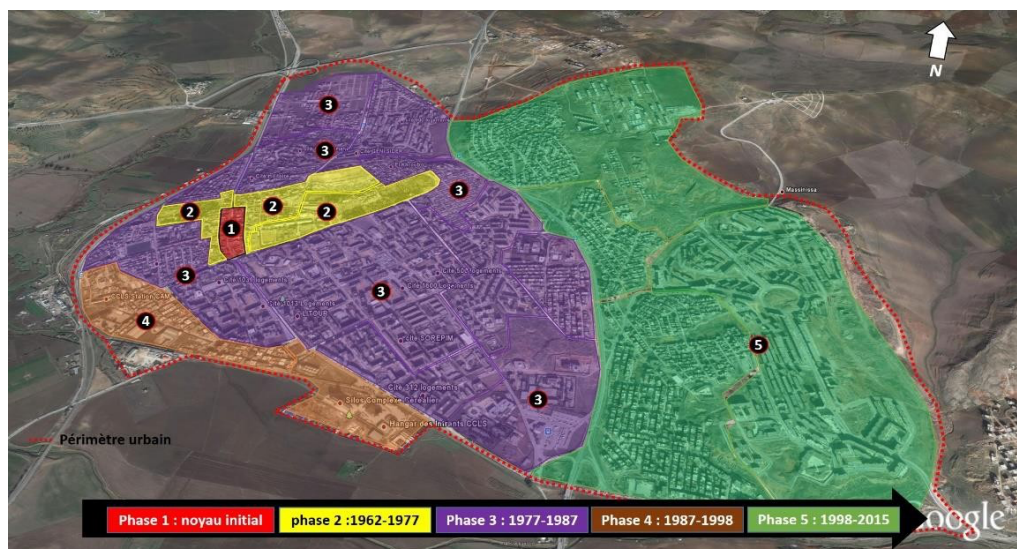


Figure 4. L'historicité et l'évolution spatiale de la ville d'El Khroub (carte synthèse).
Source: Mohamed Amine Khenchouche and Nassima Khenchouche 2020.

The ACL (agglomération chef-lieu) of El Khroub is surrounded by land with high and medium agricultural potential in all directions South, North, East and West. This constitutes a double-edged sword, on the one hand, a constraint for urbanization and on the other hand, an important base for agricultural production. It is worth noting that the legal status of the land, in turn, presents a real constraint; because they are mostly private (which has cost the state a significant amount of money to compensate the landowners in the context of expropriation for public utility in order to insert collective housing programs) according to Law No. 91-11 setting out the rules relating to expropriation for public utility. (A.lifa, 2017).

5. Impact of Spatial Transformations in the Municipality of El Khroub on Rural Property.

After the liberalization of the real estate market under Law 90/25 on Real Estate Guidance, significant transformations have taken place in the rural area of the municipality of El Khroub. This law gave private individuals (property owners) the freedom to dispose of land use on the one hand, and in real estate transactions on the other. In order to highlight these transformations, we studied the spatial transformations on agricultural land located on the most important exits of the city of El Khroub towards Constantine, which indicate the existence of an activity zone consisting of commercial stores and sales points on the axis of the national road N° (03) and the national road N°(20), the status of commercial activity in the rural area of the northern region of the municipality of El Khroub where we distributed 30 questionnaires to a random sample of commercial activities in the northern part of the municipality of El Khroub. We divided the study into two regions:

Zone 1: We called it Region A, located in the northeast, on the banks of the national road No. 3.

Zone 2: We called it Region B, located in the northwest of the municipality, on the banks of the national road No. 20.

Through this sample, we tried to highlight the type of property in the region and the role of property owners in transforming the rural area in the two regions concerned by the study.

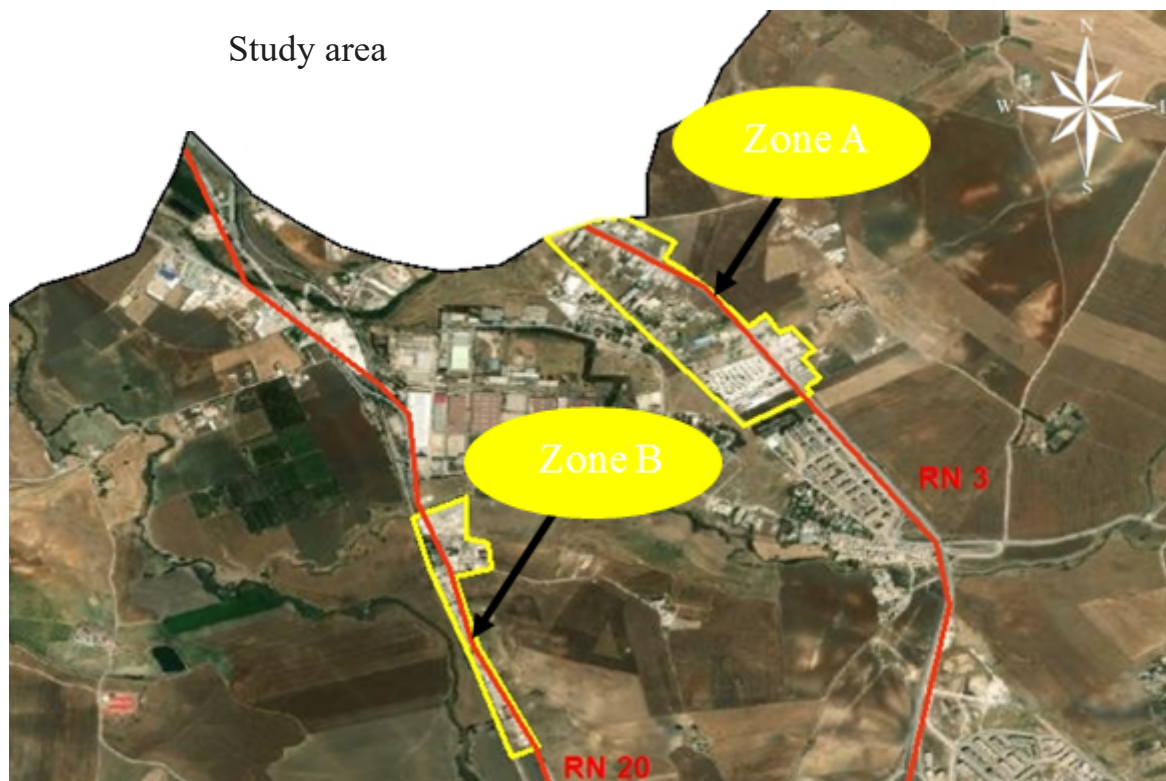


Figure 5. The Type of Property in the Region and the Role of Property Owners in Transforming the Rural Area in the Two Regions Concerned.

5.1. Human Factors Drive Spatial Expansions.

A survey of the study area found that human factors are the primary driver of spatial expansions. The practices in the study area are dominated by the 25-45 age group, which accounts for 94.44% of the sample. The +65 age group represented only 5.56% of the sample. All commercial activity centers in the area were built on agricultural land with an area of no more than 1 hectare.

Region A: all of the surveyed stores were built on agricultural land with an area of no more than 1 hectare. There are two types of land ownership: private ownership, which accounts for 60% and is all original ownership, and rental, which accounts for 40% of the study population. The land is rented from the original owners. In terms of the legal nature of the contracts, 80% of the land has full ownership

contracts, while the remaining 20% is land without ownership contracts, but has a documentary contract in the form of a full gift contract from the owner of the rural property.

Region B: 88.88% of the stores were built on agricultural land with an area of no more than 1 hectare, while the remaining 11.12% were built on land with an area of 1-5 hectares. There are two types of land ownership contracts: private ownership, which accounts for 5.55% of the study population and is the result of sales exchanges between the state and individuals; and rental, which accounts for 94.45% and is rented from individuals. All of the land in this area has ownership contracts.

5.2. Classification of Commercial Stores by Activity in Regions A and B.

In general, the percentage of non-food commercial stores exceeds the percentage of food commercial stores in both regions. The percentage of non-food commercial stores in the two regions is 88.89%, while the percentage of food commercial stores is 11.11%.



Figure 6. Commercial Activities in Zones A and B.

Source: editor2023.

Construction of major projects on the outskirts of the urban fabric: as is the case with areas A and B, which are located respectively on National Road No. 03 and National Road No. 20, which represent the entrance to the municipality from both the north and south. These roads are dynamic and have contributed to stimulating individual landowners to adopt non-agricultural economic activities on their lands in order to achieve quick profits and public benefit. This has been a factor in the transformation of the rural area.

With the exception of some property owners who are still holding on to their lands and investing in the agricultural sector, especially fruit trees and poultry farming.



*Figure 7. The Rural Practices of Periphery.
Source: editor 2023.*

Conclusion.

The municipality of El Khroub has undergone transformations in its rural area due to two factors: the first is from the laws and decrees enacted by the state, especially expropriation for the settlement of housing units, and the second is from the individual initiatives of individuals and the liberalization of the real estate market. We were able to divide these transformations into two major periods.

The period before the 1990s.

This period was characterized by urban expansions in the central core of the city of El Khroub. The state pursued this policy through legislation such as Decree 74/26, which expropriated the property of individuals and associations to form real estate reserves for the municipality to settle the excess population, especially those coming from Constantine. During the 1970s, the region saw north-south expansions. In the 1980s, the region saw east-west expansions, especially in the east, where the largest percentage of urban expansions took place.

The west side was characterized by the presence of the railway and Wadi Boumerzouq, which worked to curb expansions at the expense of the western agricultural lands, which are some of the most fertile lands. Moreover, these lands are owned by the state and contribute to national production.

The period after the 1990s.

This period is known as the post-liberalization of the real estate market period. Law 90/25 gave individuals complete freedom to exploit their land. This led to the misuse of agricultural land, as individuals converted their activity from agricultural to commercial to achieve their own interests.

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