



**TECHNIUM**  
**SOCIAL SCIENCES JOURNAL**

**Vol. 38, 2022**

**A new decade  
for social changes**

[www.techniumscience.com](http://www.techniumscience.com)

ISSN 2668-7798



9 772668 779000

## Transformations and Sustainability of Individual Housing in the City of Djelfa

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**Abstract.** The present study aims to shed light on the residential transformations taking place at the level of traditional individual housing and the extent to which they achieve the sustainable dimension of housing in the Algerian city of **Djelfa**. The latter has undergone design, functional, morphological, and structural changes in addition to transformations within different time periods. In order to accommodate their evolving housing demands and requirements, inhabitants translated these manifestations through their practices and interventions, sometimes outside of the legal framework and sometimes in a traditional method. In order to achieve the required goals, we employed one of the field investigation instruments, kind observation, and the questionnaire given to the neighborhood people, within a 10% study sample that was discovered and chosen for numerous aspects. This study's significance lies in knowing the relationship between the degree of housing transformation and the sustainable feature; achieving the sustainability and continuity of housing through morphology, construction, and aesthetics.

**Keywords.** Djelfa, Housing transformations, Individual housing, Sustainability, Traditional style

### I. Introduction

Algeria has experienced significant changes and transformations in urban, spatial, and social transformations as a result of political, demographic, and economic factors influencing urban and architectural aspects. Dealing with these transformations leads us to delve deeper into one of the basic components of the city, which is housing, as it is the most important and priority need of the citizen, and its availability in a convenient and comfortable way allows achieving the needs related to residential comfort, such as luxury inside the house and achieving safety and privacy ... etc. Christopher Alexander also mentioned in his book "*The Language of Patterns*" that residents do not feel comfortable in their homes unless they can change them to meet their needs and express their aspirations and desires (Christopher and Ishikawi 1977).

We concluded from our thorough analysis of residential architecture in Algerian cities that it has undergone a process of transformations and changes in terms of design, functionality, morphology, and even technical and construction, in which a number of factors and influences

overlapped and impacted the sustainability and sustainability of housing, as the latter is one of the most well-known investigators. In order to be compatible with the built environment and meet the needs of its residents for the necessity of its continuity and permanence, housing must achieve functional, design, construction, and aesthetic efficiency (Howard et Bion 2003).

## **II. Statement of the problem**

As the city of Djelfa underwent a dynamic in construction and reconstruction, symbolized by urban expansion in various directions of the city and the ensuing creation of new residential neighbourhoods and urban poles, we aimed to shed light on a number of housing transformations that impacted the traditional style of individual housing in the city. Various housing forms and modern social and promotional fragmentation have somewhat affected the characteristics and stability of traditional housing.

This residential style has gone through various transformations in terms of exterior and interior design, function, building techniques, architectural treatments for facades, and even internal functional components, etc. Translated by interventions and practices, it can be said that it is a long series of processes of compatibility and adaptation between the needs of the population and social, economic, and technical variables in all areas of life. Among the hypotheses put forward within this study are:

- The ability of housing to be modified and adapted according to the changing needs of the inhabitants contributes to the sustainability of housing socially, economically and functionally.
- Housing transformations have an impact on the sustainability of housing, either positively or negatively.

## **Rationale of the study**

Due to its fundamental significance in architectural and urban studies, this study aims to shed light on the levels of housing transformation defined by individual housing in its traditional style in the city of Djelfa, as well as its causes. It also aims to determine the extent to which housing transformation affects the social and economic sustainability of housing. and environmentally, and comprehend how they are related to one another.

## **Methodology of the study**

Research methodology is defined as the steps that the researcher follows to explain a phenomenon, as it is a group of curricula, approaches, concepts, and tools that intertwine among them (Book 2019) When conducting this study, we drew on two key areas of knowledge: the theoretical (descriptive and analytical) aspect represented in an analytical reading of the phenomenon of housing transformation at the level of individual housing units with a traditional method; and an understanding of the levels of this transformation and the factors affecting it.

In order to comprehend the relationship between residential transformations and sustainability and apply it in the analytical aspect of the study with the aid of academic studies related to the subject and field of study, we were also able to extrapolate the most crucial concepts of residential sustainability and elicit its elements and vocabulary within the traditional housing in the city of Djelfa.

Concerning the practical aspect, it was represented in the use of field investigation tools through the observation card, which enabled us to take important notes during inspections and repeated visits of the housing models that were selected in accordance with the subject of the study and supported by photographs and uploading some drawings by hand (residential

plans Internal) due to the difficulty of obtaining it by housing users, which is considered important evidence in the field documentation of the study.

In this regard, we were also able to create a questionnaire for conventional individual housing users that contained 57 research samples, or 10% of the total housing stock of 566 individual dwelling units. In more detail, we shall go into more detail about this questionnaire in the context of the practical framework.

### **III. The conceptual framework of the study**

Defining the concepts, which is the theoretical foundation on which we base our study and which would provide a clear conceptual vision relating to the issue of the research, is a crucial stage in tackling the problem of any topic. In order to do this, we've adopted a few succinct definitions that align with the study's goals.

#### ***Transformation and change***

The linguistic significance of change and transformation meet in many meanings and they can represent synonyms so that we use one to denote the other, but we distinguish in terms of the concept that transformation in phenomena is a major deviation from what it was in the past. The change is related to the appearance itself, but while preserving its characteristics and advantages, we can say that the thing has changed, but it is the same with a change that befell it. The change of something is a change and a complete change from its old appearance, which makes it difficult to link between its old and new form (Mansouri 2014).

Some studies within the architectural and urban fields have dealt with the concept of transformation. According to Antoniades study in his book *Poetics in Architecture*, "transformation is defined as a process of change in form so that the form reaches its maximum limits due to its response from the inside and outside to a number of influences of a dynamic nature".

In another study conducted by Hillier B in his book "*Space is a Machin*" in 1996, he mentioned that transformations acquire their continuity from the continuity of form or space and occur by the action of the function or the influence of the natural factor and lead to the emergence of a new form organized by the movement of some criteria and reflecting social aspect or social function.

Eisenman, on the other hand, described it as a collection of processes that occur on the deep levels of architecture to transform it to the superficial levels and whose reading and interpretation serve as a key to a succession of readings that gradually go deeper to reveal the transformation processes that produced it (Mohammadi and Haki 2008).

#### ***Flexibility and adaptability***

The ability to adapt to changing needs and requirements over time is what is meant by the term "*flexible housing*," which refers to housing that can both accommodate changing user needs and also allow for the possibility of giving each user the bare minimum, an appropriate, and effective minimum of basic efficiency at the level of the building as a whole, and the ability to adapt to changing resident needs and desires over time at the level of the housing unit.(Freidman 1993).

Adaptation is the process of changing according to the circumstances that surround one, according to the requirements of the natural and social environment(Boutros and Boutros 2008). As for housing, it is the ability of spaces to accommodate more than one job

simultaneously, depending on the time period and the ability or susceptibility of housing models to accept changes in the future.

#### ***Sustainability and Architecture***

Sustainability in itself is communication and continuity, and sustainable architecture is to make buildings remain and continue to express the values of the past in accordance with the requirements of the present that respect the era with its technological implications without transgressing the constants expressing the characteristics of the place, environment, society, identity... etc. (Kharoufa 2018).

#### ***Sustainable housing***

The definition of sustainable housing is "housing that efficiently meets the real needs of the occupants in the present and the future through the sustainable exploitation of resources in terms of energy conservation, providing a comfortable and healthy indoor environment for the occupants, providing a comfortable and healthy indoor environment over the life cycle of the building, and reducing pollution and cost over the life cycle of the building to allow future generations to have the right to decent, healthy housing that meets their physical and psychological needs." (Al Zubaidi 2006).

Moreover, sustainable housing is also an economical building that preserves natural resources and exploits everything possible on the site to save energy, uses water sources, lighting, and renewable energy, reuses resources and materials, and deals with nature as a part of it.

The confluence and interrelation of the two concepts "*housing and sustainability*" aims to fulfill the elements of its sustainability and keep it appropriate to the needs of its inhabitants, meaning the flexible fit of the natural environmental assumptions of the place and the cultural and social temporal factor variables (Ibrahim 2004), and everything that would help to extend the life of housing to ensure future needs (Tamin 2009).

#### **IV. Housing transformations and sustainability**

The transformation at the level of housing includes all the transformations, changes, alterations, and modifications that affect residential architecture in general and residential buildings in particular at the level of the whole or part, due to internal or external factors and interventions that may be on the functional, design, morphological, structural, and technical levels.

#### ***Morphological transformation***

At the architectural level, morphological transformation is a procedure that modifies the shape until it reaches the final stage in response to a variety of internal and external dynamics (Antoniades 1990). It is also regarded as a procedure that processes the shape without going back to functional requirements (Abbes and Tariq 2005). This transformation results in changes at the level of the built framework, represented in the transformation of shape, size, and interfaces.

Sustainable urbanization follows the idea that man is the centre of the link between the environment, the economy, and society because the effects of human activities (the vertical construction pattern) on the environment have clear economic and social dimensions. From a social point of view, it can be said that the city and the neighbourhood have lost their identity because of this style of construction. On the other hand, it allows us to exploit the least amount of real estate space for housing and to reduce time and construction expenses. It also maintains family ties for the extended family.

Moreover, the residential facades give the first impression of the architectural, urban, and cultural environment of the local community and reflect the visual image of the housing, the neighbourhood, and the city as a whole.(Al Nadjm 2018). The changes taking place at the level of the traditional style necessarily affect the design of residential facade patterns and their formation with all their elements and vocabulary, positively and negatively. Especially in terms of providing environmental and social privacy and expressing the identity of the local environment.

### ***Functional transformation and sustainability***

Piaget (1971) explained that one of the most important causes of transformation is the inability of previous schemes to meet the requirements imposed by new influences. This applies to housing as an integrated system in which several aspects related to humans, society, and the environment are reflected alike, and the integration between the poles of this system is a necessity of sustainability and success so that it continues to perform its function with high efficiency for the longest possible period.

By the same token, functional efficiency is achieved within the house through the appropriateness of spaces and their uses without wasting space, with the need to provide the necessary flexibility for future expansions (Howard et Bion 2003).

### ***The Social Factor of Housing Sustainability***

One of the most crucial elements in ensuring the continuity of social life is housing. According to research by Adel Hussein Jumaa Al-Mabrouk, the intimate connection between housing and family planning, in turn, promotes and strengthens the socioeconomic system as a whole. "The change in the needs of the Libyan family and the urban environment and its impact on housing design" (Hussein, Mabrouk and others 2017), that the size of housing and the distribution of its internal spaces are related to the family organization and the nature of the family that inhabits it. Also, the internal distribution of spaces is related to the differences in age and gender, such as the separation between children and the separation between men and women in times of occasions and gatherings, which allows the housing to be functionally divided into two parts. This connection positively affects the strengthening of social ties and family relations on the one hand and, on the other hand, preserves the principle of achieving internal privacy within the housing(Al Ahbabi 2012).

## **V. The practical framework of the study**

### ***The Study Area***

The city of Djelfa is situated within the territory of the municipality of Djelfa (the capital of the state) with an area of 514.58 km<sup>2</sup>, or 1.60% of the total area of the state of Djelfa. Its population reached 599.325 people (according to the report of the Directorate of Programming and Budget Follow-up for the state of Djelfa 2021).

Administratively, the city of Djelfa is bordered by the municipality of Hassi Bahbah in the north, the municipality of Mejbara in the east, the municipality of Zaafaran in the west, and the municipalities of Zakkar and Ain El Ebel in the south. A national road network passes through it, such as National Road No. 01, which links Algiers and the Great South, and National Road No. 46, which links the city of Djelfa and the city of M'sila.(Figure1)



**Figure1.** Location of Djelfa (Source: ANAT)

### ***Traditional style single housing as a study model***

This pattern was chosen in our study as it is the most prevalent within the time periods that included the period of French colonialism and post-independence until the eighties., Bab Al-Sharif District, Bin Aziz District, and Al-Daya District.

### ***Architectural characteristics of the traditional individual style***

It is similar to colonial housing in terms of organization and the external appearance of the facades, considering the stage of its beginning to appear close to the aforementioned style.

It has a regular quadrilateral shape and is characterized by simplicity in the design and architectural treatments of the facades, which often include the main entrance and a special window in the reception room overlooking the outside. It is characterized by inclined roofs on one side or on both sides because of its importance and role, especially in the winter when snow falls, as it allows it not to accumulate at the level of the surface since the city of Djelfa is known for its heavy snowfall (Ben houhou 2012).

In his study in French on the effect of building materials on thermal well-being in semi-arid areas in the case study of the city of Djelfa, researcher Ben Houhou Muhammad Naim also touched on the fact that the only method that has been adopted for heating in traditional housing since the beginning of its inception is **chimney**, as we find it mostly at the level of the kitchen and the reception room, which is known locally as a guest house (Ben houhou 2012).

The entranceway, or **El Housh**, as it is known in Algerian society, has a symbolic and social-cultural component that is anchored in the customary individual housing in the city of Djelfa. The homeowners rely on the yard as it is considered the heart of the house, keeping in mind the idea that rooms should be directed inward in order to obtain privacy and be frequently exposed to the top (See figure 2). It takes up a lot of space because of its social significance particularly in the spring and summer as a gathering place for families and women, where weddings are held in the summer, as well as its environmental significance meeting the need for ventilation, softening the atmosphere in the interior rooms that look out onto the yard, and providing natural lighting during the day.

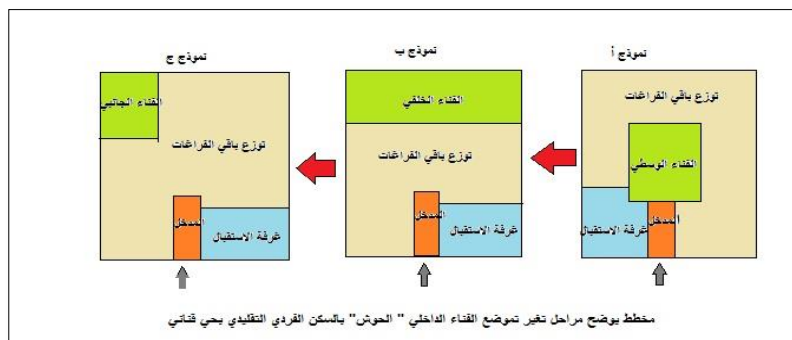
The functional importance of the yard, according to the researcher Otmani Abdel Rahman, in his study on housing and the peculiarities of the local community in the city of Djelfa, notes that the vastness of the yard is nothing but an extension of the domestic activity abroad, as the manufacture of robes, pyramids, and clothing has been an integral part of the Algerian woman's craft since ancient times, this craft has required the consumption of large

quantities of wool and lint and the yard are a place for washing and drying these two materials, in addition to spreading and drying couscous and other household chores (Otmani 2014).



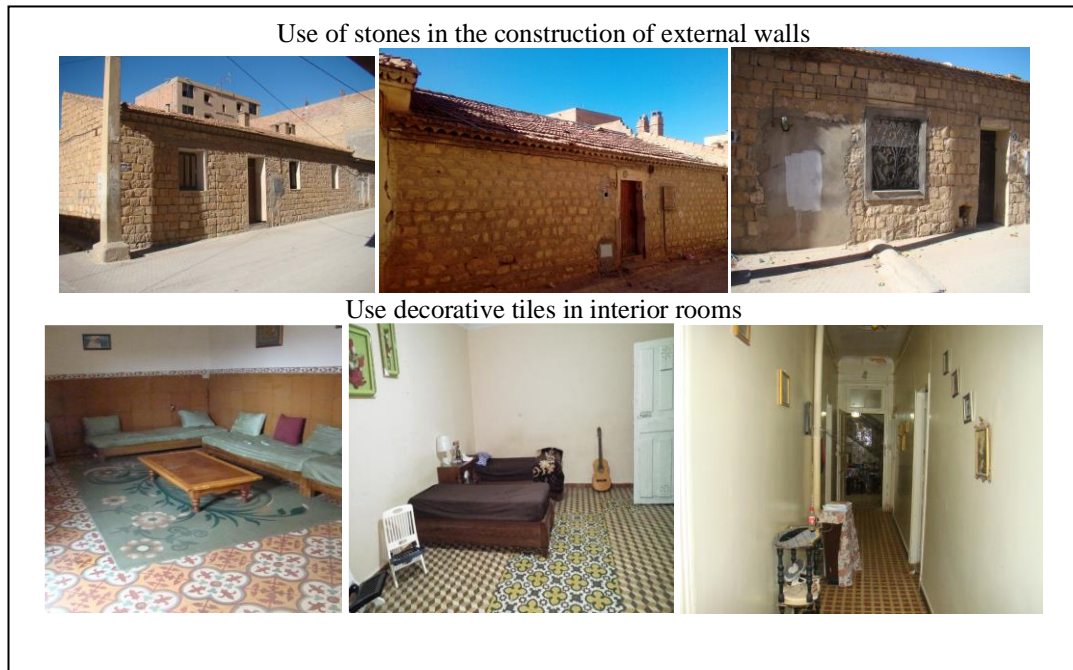
**Figure 2.** The image shows the open court yards from above in the traditional residence of Qanani neighbourhood in 1973 (Source: Office of urban and Architectural studies)

According to our observation of a number of traditional houses still preserving the symbolism of the presence of the yard in the Qanani neighbourhood, it is also sometimes placed at the back of the house or on the side to meet the needs of its daily users. (See figure 3)



**Figure 3.** The position of the inner courtyard "the yard" and its relationship to other spaces within the traditional housing (Source: Authors)

Regarding the construction methods and supplies used in the traditional individual homes, they were distinguished by their use of straightforward, low-cost methods and organic building supplies that adapted to the local environment and climate (semi-dry in summer and cold in winter) and were readily available at the time in the area, such as the use of a quart chamber finished with a hammer and then formed on the template form.



**Figure 4.** Examples of traditional housing in the Qanani neighbourhood showing the use of traditional building materials (**Source:** Authors. 2021)

In addition to the use of traditional gypsum and lime in the coating of houses and the use of sinks and clay to fix the stones, in addition to the use of wood and bricks in the roofing and decorative tiles ... etc. These building materials are most of what we have noticed at the level of traditional housing, which still preserves part of its architectural identity. (See figure 4)

#### *The studied sample*

For a number of reasons, including the fact that it is a well-established, popular area with roots dating back to the year 1940, the Qanani neighbourhood was chosen to collect research samples (Kaki 2014). It is also strategically located, as it is located along National Road No. 01 and the main road linking the city centre and the new city passes through it (figure 5).



**Figure 5.** Examples of traditional housing (**Source:** Google earth. 2020)

With 566 individual homes and a total population of 2594 people, the neighbourhood has a lot to offer. We chose a sample size of 10% or 57 individual traditional homes, and we distributed the questionnaire to them in a deliberate manner in accordance with the study methodology (See Appendix No. 1) .

It was taken into account in all the selected models that the residential transformation occurred within a period of time.

## **VI. Manifestations of housing transformation and its levels**

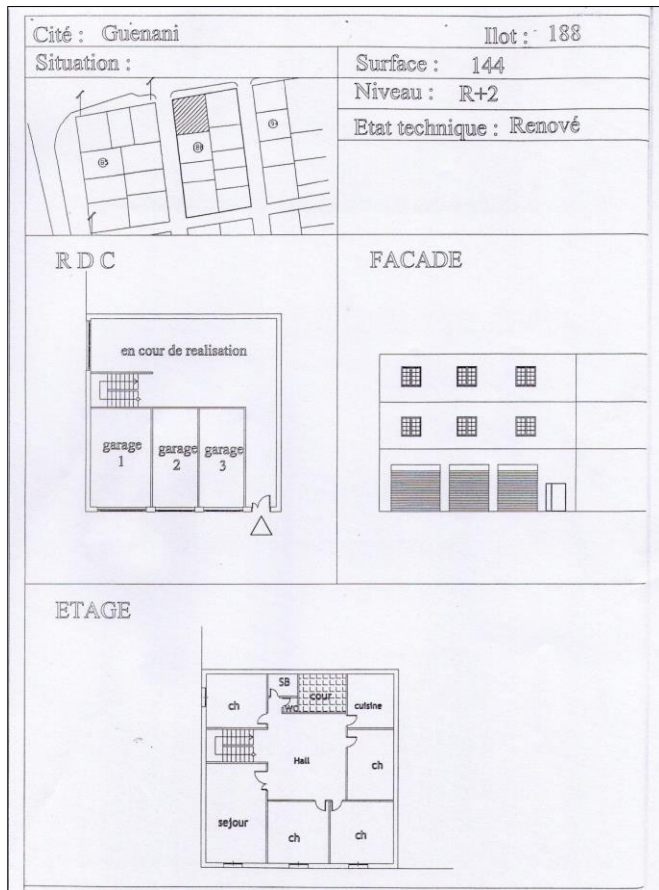
We discovered the presence of housing alterations at all levels that we recognized inside the theoretical framework and in relative proportions by unpacking and evaluating the questionnaire's data so that among the 57 study samples we recorded at the level of 45 housing transformations at the construction level, i.e., 78.94%, 48 housing units in which there were design transformations by 84.21 % of the total transformations that took place, and 50 houses also had functional transformations by 87.71%, whether at the level of the housing function or the change in internal jobs, while the morphological transformations (formal) had the largest share of the housing transformations at the neighborhood level with 56 housing by 98.24%.

### ***Functional-level transformation***

Traditional individual housing used to be identical in both form and function, but as time has gone on, this connection is less obvious, which has allowed us to rely on two different types of functional transformation, the first at the level of internal housing functions and the second at the level of the function of used housing (residential, commercial, administrative, multiple uses).

The results of the questionnaire processed within (the appendix and Figure 15) , showed that the transformation of the residential function into a commercial one (demolition and re-employment of the building for a commercial purpose only) came at a rate of 56%, most of which are located on the main streets of the neighbourhood that knows a large commercial movement along its facades, as we find multi-story buildings designated as rental offices and language schools, including associations that offer private lessons, after the owners of the old In addition to newly built commercial centers, housing was demolished and reconstructed. We found that 28% of the residential-commercial mixing involved transforming the ground level to other uses, such as stores, showers and bathtubs, warehouses for washing cars, etc., and allocating the upper floor for housing (most of them are between I+1 and I+3). Moreover, this transformation included the housing units located on the facades of the neighborhood only (Figure 6).

The transformation at the level of internal functions of housing came in 16% of the total functional transformations and included the use of spaces within small spaces such as the space under the stairs as a bathroom, an additional toilet, or a store for tools and hardware (Figure 7.8.9). In addition to the use of the yard for cooking, family meetings, and other household activities, sometimes the kitchen and family living room can be closed in the summer. Although there is no clear functional definition of these spaces, they play an effective role that ensures flexibility in performance.



**Figure 6.** A modern scheme for traditional individual housing in the Qanani neighbourhood Demolition and re-employment (Source: Obtained by the homeowner)



**Figures 7.8.9:** Using the spaces under the stairs as an additional bathroom and storage for hardware (Source: Authors. 2021)

### *Design transformations*

According to the results of the questionnaire at the level of design transformation, it was found that 72.91% of the studied sample was affected by a change in the original housing scheme of the traditional style.

This change was accompanied by a shift in the form of housing, its internal functional components, and even the function of housing as a whole. We also obtained 12.50% of the

sample, who maintained the old housing design as an indicator of their satisfaction with their traditional housing, both in terms of formal, functional and social terms. And 14.58% of the sample experienced a shift within the internal distribution of spaces.

According to some of the residents who have included this change of residence, its entirety was limited to the expansion of some rooms, such as the kitchen, by subtracting an area from the inner courtyard and adding it to the kitchen, and changing the location of the middle courtyard to become sideways with less space in order to achieve more privacy and safety for them.

### ***Morphological transformations***

The adjustments and changes that affected the built framework, such as the size of the structure and the exterior facades, were the focus of the morphological transformations in our research study with a rate of 98.24%, or 56 homes out of 57 study samples, they represented the majority of residential transformations at the level of the analyzed sample.

At the level of the size of the building, the results of the survey showed that 94.64% of the traditional dwellings were covered by the vertical expansion by adding between one and four floors according to the housing uses, through:

- Completely demolishing the traditional housing and rebuilding it with more floors as required by the new housing function, and this transformation affected most of the study samples overlooking the main streets. (Figures 10.11.12)
- Retaining the former traditional housing (preserving the shape of the housing) with the addition of another floor, this transformation led to the abolition of the middle courtyard (the courtyard) at the level of several studied samples.



**Figure 10.11.12** a traditional residence that was completely demolished and reconstruction with multiple floors by its owner (**Source:** Authors. 2021. 2022)

- The morphological transformations at the level of the facades came at a rate of 89.28%, according to the results of the questionnaire, and they included:
- The complete change of the simple and deaf facade to better facades in order to achieve aesthetic and utilitarian function.

→ Partial modification of some architectural elements (increase in the size of windows, widening the entrance to the residence...etc) Figures 13.14



**Figure13.** Represents a traditional single residence before modifications were made to the facade level (Source: Obtained by the homeowner 2018)



**Figure 14.** a traditional single residence after modifications were made to the facade level (Source: Authors. 2021)

#### ***Transformations of building materials and techniques***

The survey's findings revealed that, particularly in the homes that had undergone functional and design changes, 78.94% of the sample was affected by the change in building materials and methods. Modern materials such as cement, iron, bricks, tiles, etc. are available locally and even imported. Many of them are available in abundance in addition to their lower cost, especially cement moulds and bricks. Unlike the stones that were used in traditional housing, they are no longer available locally and at high prices and require more time and muscular effort for transportation and unloading. They also require high skills and experience in construction.

In accordance with the thoughts of the locals and a declaration made by a local architect who specializes in maintenance and restoration), Due to their resilience to weather conditions and longevity, modern construction materials may currently be the sole choice for the average citizen. This is especially true given that they offer superior aesthetic benefits to older materials and don't require as much upkeep.

## **VII. Results and discussion**

From the analytical analysis of the housing changes that took place in conventional individual housing, we were able to draw the following conclusions:

### ***At the functional level***

- The continuity of the transformation of residential function over time affects the specificity and fading of the traditional residential fabric.
- Multiple uses within one house contribute to creating additional resources for the individual, which encourages a change in residential employment
- The functional transformation contributed to raising the functional efficiency of housing through the functional suitability of the interior spaces, which is considered an important indicator in the sustainable design of housing.

### ***At the morphological level***

- The shift in the volume of housing vertically represents a sustainable economic option in light of the high prices of land and real estate in the city of Djelfa, which reduces infrastructure costs and property depletion.
- The morphological transformation at the level of architectural facades has lost an aspect of the identity of the architectural vocabulary and treatments that characterize the traditional residential style, which generates a sense of not belonging to the place.

### ***At the structural level***

- Shifting building materials enhances the sustainability of housing by reducing operating costs and regular maintenance.

### ***At the design level***

- The abolition of the central courtyard has led to the weakness of many of the dimensions of the environmental and social sustainability of housing, which do not allow adequate ventilation, lighting, and isolation, providing visual privacy, social activities, and family sessions.
- The design transformation made it possible to modify and adapt according to the needs of the housing user, thus achieving a kind of satisfaction towards housing.

## ***Conclusion***

In a broad sense, sustainable housing transformation is a significant and unavoidable phenomenon for the continuation of the housing life cycle and is the way to achieve flexibility and adaptation in a way that meets the needs of the individual in the present and the future and contributes to achieving satisfaction in the residential environment.

Through our analytical reading of the housing transformations at the level of the traditional individual pattern in the case of the study, it can be said that it did not achieve the functional, design, and morphological efficiency at all levels since the needs of families differ from one another with different influencing factors.

From the discussion of the earlier findings, we also draw the conclusion that all housing units that have undergone total change or partial modification have an effect on the continuity of the housing function and its social, functional, economic, and environmental sustainability, either favorably or unfavorably.

Appendix No. 1

Figure 15

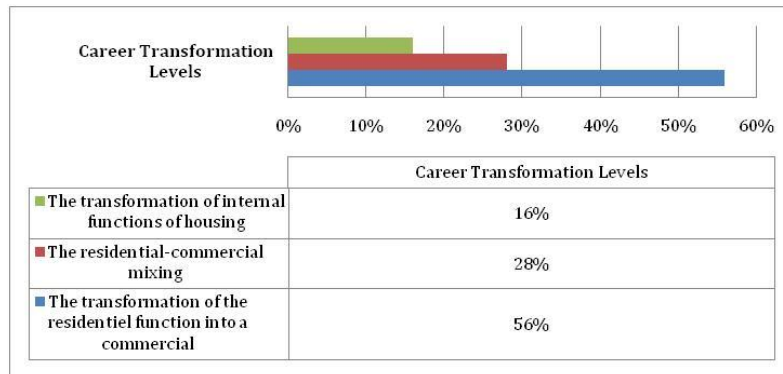


Figure 16

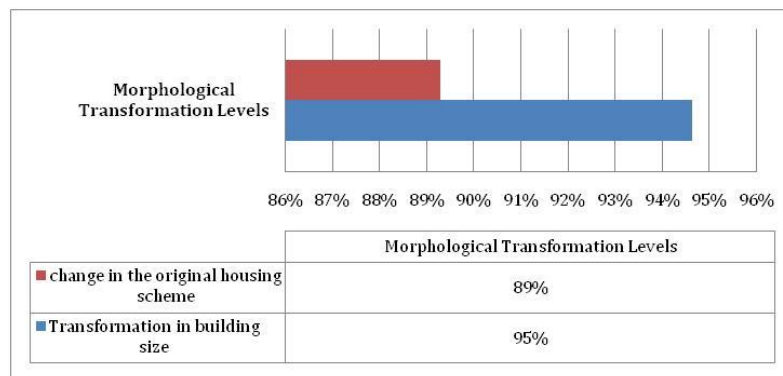


Figure 17

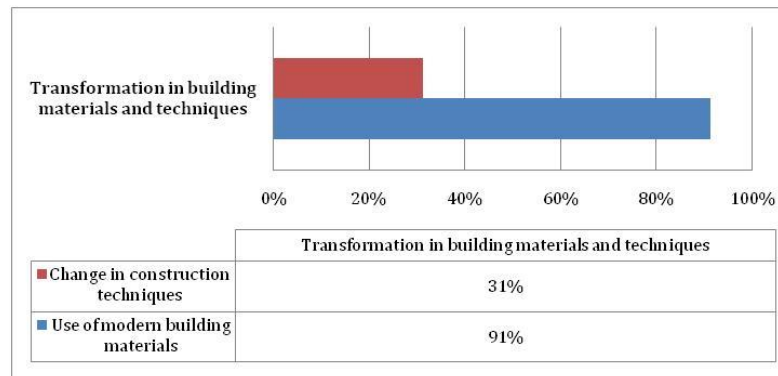
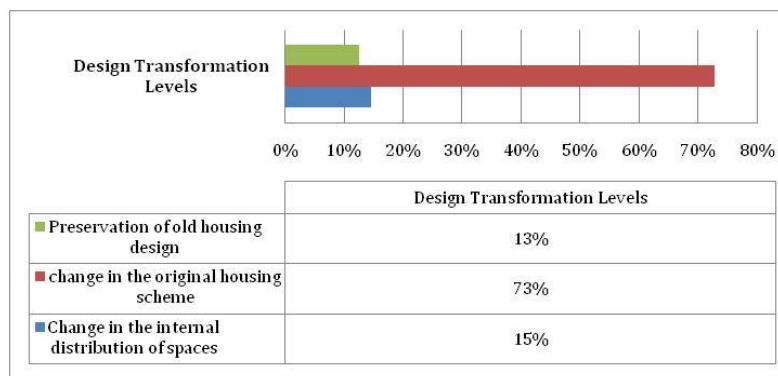


Figure 18



Source: Processing analysis of the results of the questionnaire designed by the researcher

## References

- [1] Abbes, S. S., & Tariq, A. (2005). Transformations in urban design. 46.
- [2] Al Ahabbi, S. H. (2012). Indicators of achieving adequate housing in light of the principales of sustainability. 32.
- [3] Al Nadjm, M. (2018). The Impact of Design and Plastic Development on changing the facade patterns of residential buildings. 8 (2) , 1-33. Oum Al-Qura journal .
- [4] Al Zubaidi, M. S. (2006). Environmental sustainability in the formation of housing communities in Iraq. Department of Architecture, University of Baghdad, Iraq.
- [5] Antoniadis, A. (1990). Poetics in Architecture. New Work USA.
- [6] Ben houhou, M. N. (2012). L'impact des Matériaux sur le confort thermique dans les zones semi-aride , cas d'etude la ville de Djelfa. Mémoire de Magister . Ecole Polytechnique D'architecture et D'urbanisme , Algeria.
- [7] Book, C. (2019). Scientific research methodology and techniques in the social sciences. The Arab Democratic Centre for Strategie, Political and Economic Studies . Berlin, Germany.
- [8] Boutros, B., & Boutros, H. (2008). Adjustment and psychological health of the child . Amman: Dar Al Masirah.
- [9] Christopher, A., & Ishikawi, S. (1977). A pattern Language. New YORK: Oxford University.
- [10] Freidman, A. (1993). Decision Making Process for Choice of flexible interd partition options in multi-unit Housing Decision Theory Techniques. Design and Decision support systems in Architecture Kluwer Academic publishers , pp 179-188.
- [11] Howard, & Bion. (2003). Green Building (A primer for Builders Consumers and Realors. Building Environmental Science and Technology B.E.S.T.
- [12] Hussein, A., Mabrouk, J., & others, a. (2017). The change in the needs of the Libya family and the urban environment and its impact on housing design. 45 (2) , 244-266.
- [13] Ibrahim, M. J. (2004). Humanitarian considerations are a design indicator to support the sustainability of housing . Cairo.
- [14] Kaki, M. (2014). Djelfa: Colonisation et Urbanisation. Journal d'humanisatio pour la recherche et les études , 10, 1-22.
- [15] Kharoufa, O. H. (2018). Methods and means of applying sustainability in building. 6 (2) , 169-184. Al Muthanna University: Al Muthanna Journal of Engineering and Technology.
- [16] Mansouri, M. (2014). Social and cultural transformation in algeria between 1990 and 2000. an anthropological study. Thesis PhD in popular culture . University of Abu Bakr Belkaid, Tlemcen, Algeria.
- [17] Mohammadi, A., & Haki, M. (2008). Transformation in the urban context. University of Technology, Iraq.
- [18] Otmani, A. R. (2014). Collective Social Housing and The Privacy of the local community in Algeria, case study of The city of Djelfa. Urban Engineerig Management Institute, University of M'sila, Algeria.
- [19] Tamin, R. (2009). The problem of housing in the EL Koul region: characteristics and implications in the light of spatial and social influences . Mentouri University of Constantine , Algeria.