Lebanese building law between texts, Application gaps and land scarcity

Asst,prof. Hussien M. Wannous
dr.hussein.wannous@ul.edu.lb
Department of Architecture, Faculty of Fine Arts and Architecture, Lebanese University, Beirut, Lebanon.

Dr. Mohammad H. Jichi
Mohamad.jichi@gmail.com
Researcher & Advisor of the Minister of Public Works and Transport - Lebanon

Abstract

This paper examines the gaps in Lebanese building law as well as the exploitation of contractors, stakeholders, and residents in order to make illegal profits at the expense of The Shape of urban agglomerations and their expansion in cities and rural areas, which is contrary to the principles of sustainable land development. It also emphasizes the amplification of the factors of vertical and horizontal building investments in the implementation of buildings contrary to the license, as well as the burden that this places on the city's resulting infrastructure and ability to absorb the activities and needs of its residents. The study then presents recommendations in the process of transformation in the technique of planning and application based on the environmental and economic hazards of this current situation.

Keywords: private property - city-investment-land - public spaces-impact-burden

قانون البناء اللبناني بين النص وفجوات التطبيق وندرة الأراضي

أ.م. د.حسين ونوس — dr.hussein.wannous@ul.edu.lb
الجامعة اللبنانية – كلية العمارة والفنون الجميلة

د. محمد جشي — Mohamad.jichi@gmail.com
مستشار وزارة الاشغال والنقل في لبنان

المستخلص :

يهتم هذا البحث في دراسة ثغرات قانون البناء اللبناني التي يستغلها المقاولون وأصحاب المصلحة والقيمين على التطبيق، في تحقيق أرباح غير مشروعة على حساب شكل التجمعات الحضرية وتمددها في المدن والأرياف خلافاً لمبادىء التنمية المستدامة للأراضي. كما يسلط الضوء على تضخيم عاملي الاستثمار السطحي والعام في تنفيذ الأبنية خلافاً للترخيص وما يشكل ذلك من عبىء على البنية التحتية الناتجة عنه للمدينة وقدرة استيعابها للنشاطات وإحتياجات سكانها. إنطلاقاً من لحظ المخاطر البيئية والإقتصادية لهذه الظاهرة القائمة حالياً، ثم تقدم الورقة توصيات في عملية التحول في منهجية التخطيط والتطبيق.

كلمات مفتاحية:

ملكية خاصة - مدينة - استثمار - أرض - مساحات عامة - تأثير – عبىء

1. Introduction:

The Lebanese territory has witnessed an unprecedented wave of construction, in the last two decades, and this wave reached its peak in 2008, when the licensed meters for construction exceeded the threshold of two million square meters in the city of Beirut.

This coincided with two important events, the first, the issuance of the new building Law No. 646 and its implementing decrees, which was effectively implemented in 2007, and the second, the transfer of capital to Lebanon following the global economic collapse in 2008, which was stimulated by high interest rates, where a large part was destined to invest in the real estate sector.

The legislative movement in Lebanon, on the other hand, was not adequate to the task of dealing with emergency urban sprawl and the desire to live in "good urban agglomerations," as defined by the indicators proposed by UN law at consecutive Urban Habitat conferences.

This legislative action was restricted to the previously stated Building Code, as well as the Comprehensive Land Arrangement Plan [1] , which was released in 2005 and authorized in 2009 but remained locked in drawers, and was selectively and badly executed.

This did not represent a comprehensive and strategic vision of land use, especially given the presence of around 84 percent of Lebanese territory outside the categorization and vulnerable to urban invasion with no regard for future generations' needs.

In contrast, the world was witnessing a movement and introducing UN principles and legislation for "Sustainable Urban Development" in cities, but Lebanon lags behind this movement in meeting the needs of its urban residents, as law 646 was marred by gaps in legislation and application, and instead of becoming a regulator of the Lebanese urban movement, it stimulated the appetite of real estate developers, particularly in the process of exceptions plausibility (housing).

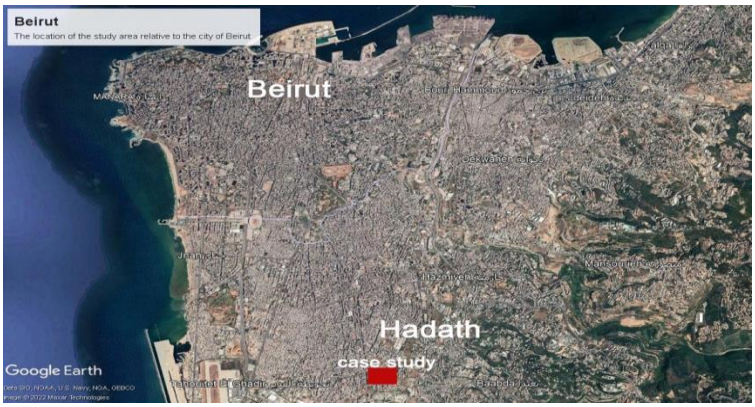
1. Methodology

[1] Council for Development and Reconstruction (CDR), **National Physical Master Plan For The Lebanese Territory**, November 2005, www.cdr.gov.lb

To address this issue, the study's methodology will be based on the principle of "public to private," i.e. we will present the aspirations of contemporary urban communities and what laws and legislation create a culture of "quality

of life in the city," particularly in Beirut, which has the largest population in Lebanon, and then we will highlight the gaps in the application of the building Law No. 646 and the urban leg.

This will be proven by a field sample study of one of the neighborhoods at one of its suburbs (Map 1) built under this ordinance that is next to the city of Beirut. Then, choose a section (apartment) and compare the permit to the executed outcome that arose from that as well. To discuss them, identify flaws, and then offer proposals to improve them.



Map 1 : Case study's Location

1.2 The impact of the construction waves on the city of Beirut under law 646

In Beirut, which has an administrative area of 18 km2 and an urban area [2] (Greater Beirut) of 85 km2, 67 km2, or 79% of the total area, is consumed, and this percentage includes buildings, roads and services, which indicates the

[2] Urban agglomeration: a term given to major cities with regard to their environs, towns and adjacent villages. Composed of a large number of residents and workers associated with this area, it extends over a wide earthen field, from which it usually takes its name from the big city.

"Greater Beirut "is a" vague" term that includes Beirut and its environs, and researchers point out that it does not have a clearly delineated border, it stretches from the Damour River south of the airport to the Kalb River in the North, and includes the mountainous areas of Mount Lebanon in the East.

Adapted from: conference on "migration among Mediterranean cities" organized by the municipality of Beirut (November 9, 2017) in partnership with the United Nations housing organization and the International Center for Migration Policy Development (ICMDP) link: http://www.al-akhbar.com/node/286129 (November 9, 2017)

extreme scarcity of the remaining land, because the remainder belongs, in large part, to private property that is open to use without any restrictions.

This city has witnessed an unprecedented wave of reconstruction under the new building law, as the census of about 15 million square meters were licensed according to the records of the order of Engineers [3] , in the period from 2006 to the end of 2021 were buildings of all sizes (table below), most of which are residential in nature.

But what is interesting in the table is the record number of meters achieved in 2008 (Figure 1), which exceeded the threshold of two million square meters, which is indicative of the direct impact of the new building law with its incentives, coupled with a turning point: the movement of funds resulting from the global economic crisis, a large part of which was invested in the Lebanese construction sector, which witnessed an unprecedented boom in that period as a safe haven and profitable rarely happen simultaneously.

Licensed meters in Beirut under the construction law between 2006 and 2021	2006	2007	2008	2009	2010	2011	2012
	1,455,000	1,610,000	2,147,000	1,400,000	1,564,000	1,331,000	1,095,000
	2013	2014	2015	2016	2017	2018	2019
	615,000	937,000	668,000	513,000	712,000	363,000	336,000
	2020	2021	About 15 million square meters of buildings in Beirut governorate alone were licensed and executed under the building law in this period.				
	96,000	114,000					

Table 1: statistics of meters built between 2006 and 2021 (author's preparation according to the data of the order of Engineers).

[3] Order of Engineers, website, reports and publications, 2022, license statistics www.oea.org.lb

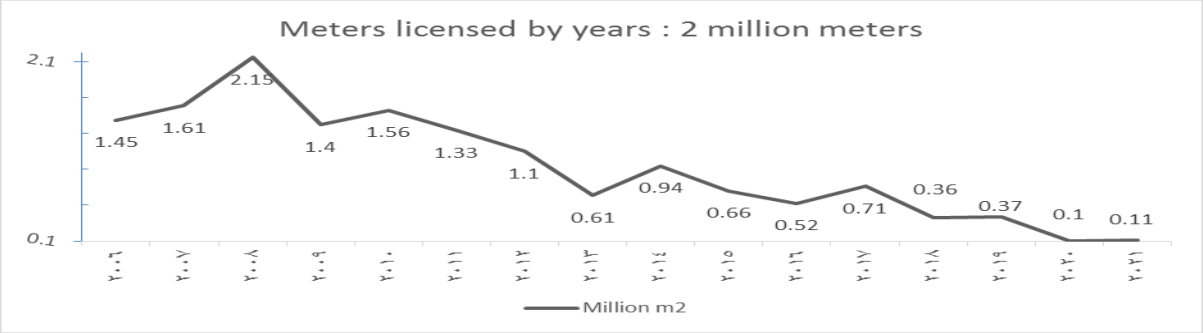


Figure 1: ***building's meters licensed between 2006 and 2021 (By author)***

2. City and the concept of "laws of living culture"

There is no doubt that the greater Beirut area urgently needed to reconsider the structure of land arrangements and relevant real estate laws, particularly the determination of brownfield properties to be included in the first rows of properties allowed to be built on, rather than eliminating the remaining stock of "rare lands" in and around the city, which could not be compensated.

To achieve Goal 11 of the United Nations 2030 Agenda for Sustainable Development, including targets 11.2 and 11.7 on urban centers, policymakers must first pass legislation on "quality of life in the city and adequate land for building."

"Provide universal access to safe, inclusive and accessible green spaces and public spaces ". These goals aim to "promote social cohesion and ensure equal opportunities for all populations, to enable them to realize their fullhuman potential by facilitating access to and security for two essential elements of public life, namely Transport and community spaces" [4] .

While acknowledging that all cities are growing, but within constraints and with a future outlook, unlike the urban and social transformations witnessed by Lebanese urban complexes today, which appear to be primarily the result of large real estate dealers' power in dealing with legal and procedural restrictions that enable them to multiply their profits without respecting any of the goals of the "culture of living in the city."

[4] ESCWA Arab digital inclusion platform (ADIP) (2015) "Right to the city" and the sustainable development Goals https://e-inclusion.unescwa.org/ar/node/1117

Because the indicators show that the city of Beirut is inefficient in meeting these requirements, we find that the population density is concentrated at 12,500 people per square kilometer, while the average total density in Lebanon is 587 people per square kilometer[5], indicating the high population concentration in the capital and its surroundings.

Lebanon's urban sprawl ignores all regulations and indicators, including the urban green public spaces index. While other cities in the world, such as Vienna and Stockholm, do not have a different reality, this may be due to the existence of indicators respected by the building codes in force, so that they are reviewed on a regular basis, and the development of laws to come in the service of city indicators rather than real estate.

1. Beirut public green space availability index

The city of Beirut is sorely lacking in green spaces open to the public that it is only 3% of the total built area of Beirut, so the per capita resident in the city is only 0.8 square meters, which is far below the threshold set by the World Health Organization, which is at least 12 square meters per individual [6] , while in many cities The reality is very different: Vienna has 120 square meters per capita, Stockholm has 87 meters, London has 30 meters and New York, which is 18.2 meters densely populated, the list goes on (Figure 1).

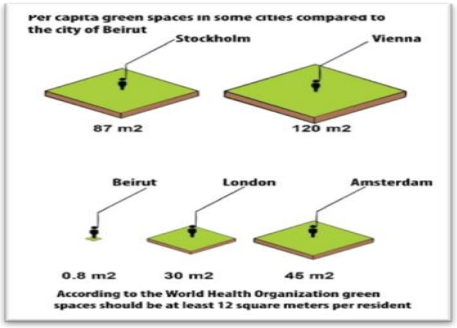


Figure 2: ***Per capita – green spaces in some cities compared to the city of Beirut***

This is mostly due to the nature of Lebanon's regulations, particularly the Lebanese building code, how it applies land investment criteria, and how

[5] IDAL (2016), Lebanese Republic, Lebanon profile, Lebanon in numbers, population density, more link: http://investinlebanon.gov.lb/ar/lebanon_at_a_glance/lebanon_in_figures

[6] Bryan Keogh (2013), Can Beirut Be Green Again? Mantra communications.

developers comprehend them. It is also due to the management of land classification, which recognized that 84 percent of Lebanon's land and regions are not classified, allowing for the quick and worrisome development of structures since the "Comprehensive Plan for land classification" could not safeguard it and moderate its rhythm.

This violates land sustainability principles and deprives future generations of significant benefits, as well as depriving major cities, including Beirut, of the acquisition of agricultural land to secure their food basket of vegetables and avoid moving this basket from the ends of Lebanon, which means a high cost on the cost of production, transportation, and marketing.

3. Dialectics of the application of the building Law No. 646

Almost two decades later, in 2004, the building legislation was enacted in its current form as Legislative Decree No. 646 as an update to Legislative Decree No. 148 of 1983. A year later (2005), its Legislative Decree No. 15874 went into effect, and two years later (2007), a fresh modification, Decree No. 617, was published.

Now, less than two decades after the implementation of this law, and the licensing and implementation of thousands of new buildings under it, and in the absence of the implementation of the Comprehensive Plan to classify Lebanese territory, several controversial questions impose themselves and are addressed to legislators and engineers, will be addressed in this paper:

The first key question: What are the gaps that the beneficiaries have exploited in order to reap enormous riches at the price of urban complexes and the unsustainable exploitation of scarce natural lands compensation?

Why don't the spaces listed in permits and title deeds correspond to the real executed spaces of the building?

To answer these questions, it is necessary to review some of the articles of the building code, which is a reflection of the buildings that we see in our urban communities and live in our daily lives. Especially those materials concerned with investment factors in the general and surface.

1. Average of surface footprint area and total construction area of buildings

The building legislation, particularly Decree No. 15874, defines the "surface footprint area " as the ratio between the area of the horizontal footprint of the building and the area of the property. The "Total investment factor" is defined as the ratio of the building size for all floors determined in the investment to the property area.

The law then enumerates eight parts in the construction with exceptions and does not count these two factors, including balconies, where 20% can be added for the entire building floors included in the public investment. the thickness of the external walls, which could reach the thickness of 35 centimeters, in addiction to stairs and elevator 20 meters and 6 meters for each additional elevator, Geometric protrusions 60 centimeters, not to mention the basement according to the nature of the land and the brick barracks, which is expected to be in favor of the construction service, shafts and others.

The application of these exceptions inflated the size of the building, and therefore the size of the city or village, was manipulated with great skill and regulation, accompanied by weak oversight and administrative corruption.

Where the "two maps" phenomena occurred, with the first map being the legal building map through which the construction permission is acquired, and the second map being the map that is implemented, which plainly reveals the weaknesses and limitations of the building law's implementation.

To find out more about this phenomenon, an example will be discussed in supported by plans and drawings.

3.1.1. The phenomenon of the two maps and bulging buildings

In this context, and to demonstrate the phenomenon of the application of the building law according to its decrees, as well as the outcomes that resulted in the existence of "two maps" and "two areas," it was necessary to look for a neighborhood that was built in accordance with law 646, i.e. within the last two decades.

As a result, we picked a neighborhood in the Al Hadath region near the Lebanese University's Al Hadath campus, specifically the "AL – Mahmul neighborhood" in the Baabda District-Figure 4, which was mostly created after 2006 under the current construction legislation.

This region is plagued by a lack of State Water Network for all new emerging structures, requiring them to rely on unsustainable underground wells. It is rapidly expanding at the expense of scarce and irreplaceable agricultural land, which is supposed to be Beirut's food basket, and by which transit of vegetables and fruits from Lebanon's farthest reaches is replaced by double prices, necessitating a high energy bill to feed the capital's largest population.

Despite this serious error in land arrangements, we find that the implementation of the buildings in this neighborhood has increased the process of erosion of agricultural land and increased the burden on the already-weak infrastructure, has expanded its licensed area upon implementation by 10%, taking advantage of some gaps in the application of the building law in several aspects, particularly in understanding the investment rates of external double walls, , shafts, protrusions, balconies, elevators of common sections and others.

We counted a license and implementation procedure for around 85 residential structures, each with six stories and a total of about 1,000 units, in the region depicted in Figure 3.

Figure 3: The proliferation of buildings under the new building law and the nibbling of agricultural land (Source: Google and the author)

Following a check of some of the ownership deeds for some of the apartments in this sample of buildings, it was discovered that the overall average area of the apartments, according to the legal deeds issued by the real estate departments, is around 125 square meters (Fig.3).

However, when we did a real inspection to the area in some few some samples, including the apartment listed in the deed (Figure 4), we found that the actual area of this apartment was 155 square meters (Figure 5).

This is the case for the majority of the flats in this neighborhood, whose areas have expanded by 10 to 20% in comparison to what is mentioned in the official deeds of these units and even on the maps of the licenses that belong to them. As a result, the flat, which was expected to be 125 square meters in the license and deed, is really 155 square meters when completed and ended up costing.

We confirmed this phenomenon by reviewing the websites through which some residents of this neighborhood advertise their apartments for sale, where they clearly state two areas of the apartment, one of which they actually want to sell on the basis of, and the other of which they do not want the buyer to buy on the basis of, knowing that the buyer is aware of this phenomenon, which has become a "culture of thinking" in Lebanese society.

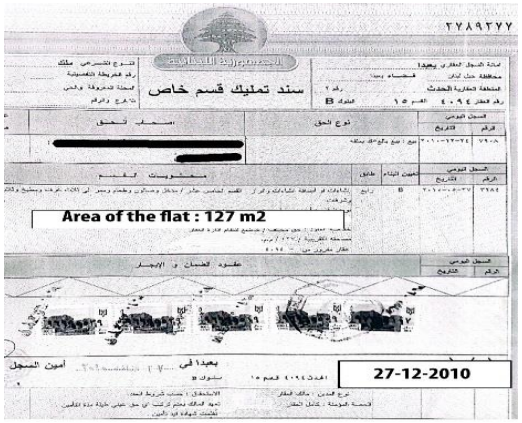


Figure 4: a deed stating the area of an apartment as opposed to the actual area (By author)

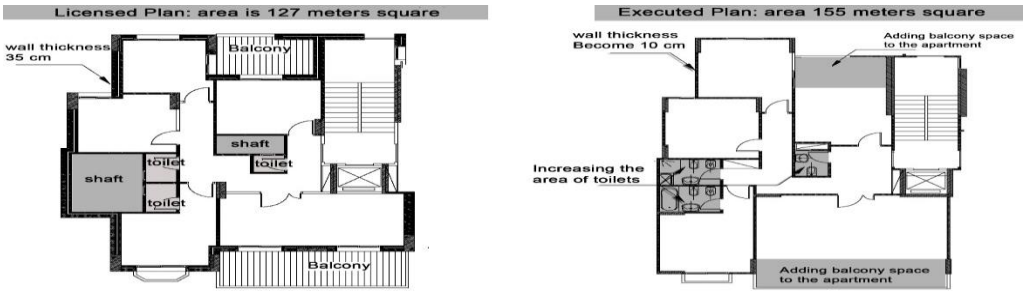


Figure 5: an apartment with an area that does not match the ownership deed (By author

Here we find that the owner deals with the increase made to the licensed space, as a legitimate gain for him because he bought it on this basis from the contractor, and this is recognition of the culture of “violation in order to make more illegal profit".

This was our motivation to survey and raise the measurements of several apartments from several different buildings, and then check the extent of their conformity with the licensed maps and what are the gaps through which the real estate developer implemented, and behind him the engineer in charge of designing the project, as well as the employees of the civil organization departments owners of technical Reporting Authority in such cases, not to mention the municipality that issues building and housing licenses overlooking what is happening.

We're talking about a full system that can't function without one of its pillars; they're in place, and there's a construction code that can be studied and understood in depth, as well as the listed ratio of construction area.

We'll look at three aspects that might be regarded part of a larger case that answers the dialectic: "creating law between text and application" to explain what these interpretations are in law. We'll simply go through three details because there's no room for more in this paper:

- Balconies are being transformed into inside rooms (note that this space did not increase the size of the apartment, but changed its function before the law and entered into the factor of Public Investment).

- The changing of the wall thicknesses (from a space outside the investment legally to a space used and invested in practice).

- Shafts transformation (from a building service space to private property to expand the actual space of the dwelling).

2. How to use the space allowed for balconies and enclose them in the interior space?

Balconies are identified as part of the construction that is not included in the calculation of public and surface construction factors, described as unlocked, and granted possession of 20% of the designed area in the second paragraph of Article XII of the applied Decree No. 15874 of the building code No. 646.

However, we frequently come across a building permit in which the balconies are designed in such a way that they can be converted into a room later after implementation, so that the wall leading to them is modified either by adding an internal door or even removing it, as well as adding glass

curtains on the balcony's outside walls. In reality, this procedure entails the partial or complete conversion of balcony investment (20% of the apartment space) to the general investment element (Figure 2).

This situation, which is especially common in cities, demonstrates that the owner's need for additional indoor spaces is more important than the presence of balconies that are difficult to use, especially in the presence of noise and pollutants from car exhaust, not to mention the need for the occupant to install fences that give him privacy in the presence of buildings close to each other in many cases. There is also a demand that develops with the size of the family, especially for those who are expanding their family. This necessitates the construction of more rooms in the apartment.

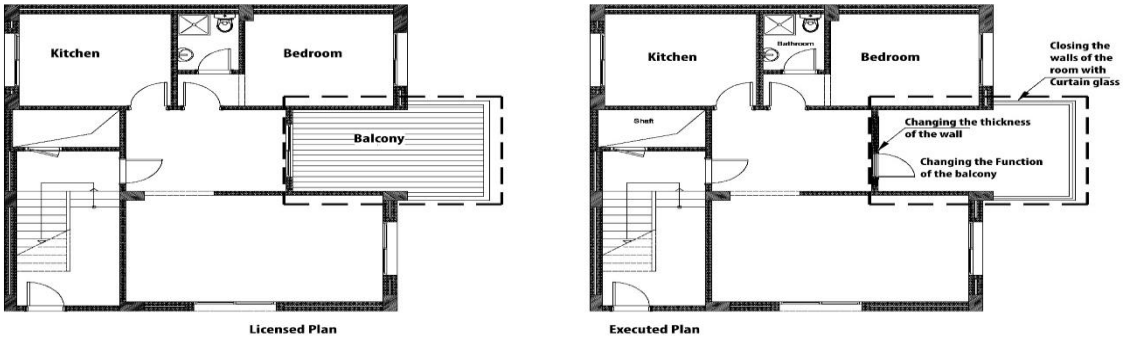


Figure 6: a model showing how the function of balconies has changed (Author).

However, the lawmaker did not address the status of this case, which permitted the owner or contractor to expand the interior areas of residential units.

This is a common occurrence after receiving a house permit. The owner removes light walls (gypsum boards) that were put up temporarily for this reason and subsequently puts their leftovers into landfills that are already too small to meet the city's needs. These panels were purchased in hard currency and utilized as temporary barriers for a few days until a dwelling permit could be secured. They were then removed and piled on top of the rubbish piles, all because of an

inflexible law that isn't evaluated on a regular basis to meet and fulfill the population's changing demands. Every year, tens of millions of dollars are squandered in this manner.

3. External wall thickness between expediency and Environmental Protection

In the seventh census of the second item of Article IV of the applied decree of the building law, we find an exception to the thickness of the external double walls of the building from the calculation of the surface investment rate and the public investment factor. the law allowed a maximum thickness of this wall up to 35 centimeters (Figure 3). perhaps the legislator in this case wanted to encourage owners to acquire buildings insulated from external heat indicators and thus reduce the energy bill of heating and cooling.

However, in this case, the desire for material profit was prevalent, as many construction dealers preferred to implement something other than the license, causing the rooms to expand at the expense of the external walls, denying the buyer the benefit of high-efficiency thermal insulation, which he will pay for exponentially when he wants to heat or cool his apartment, not to mention the extent of environmental damage.

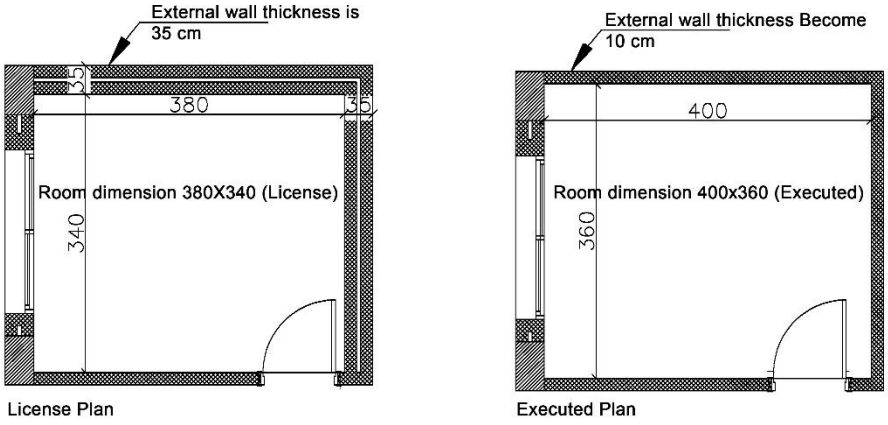


Figure 7: external walls changes (Thickness) - (author)

In Figure 7, we find that the area of the room increased from 13 square meters at the time of authorization to about 14.5 square meters at the expense of the walls that the law allowed him to

implement with a thickness of 35 cm, so he often implemented with much less thickness to add the acquired space to the room originally designed for this purpose.

In actuality, the total construction area at the expense of land in the implemented structures grows by 10%. Thousands of square meters have been licensed as double walls to safeguard the environment, thus they are converted into indoor spaces that are marketed in fictitious numbers. However, this situation would not have been prevalent if not for the oversight authorities charged with enforcing the law, and thus brings up the issue of widespread corruption in government administrations. This is a regular occurrence in Lebanon, according to us. This rise is due to a number of causes, including the use of ducts to increase the thickness of the walls.

4. The shafts: between avoiding visual distortions and exploitation

Shafts were omitted from the computation of public and surface footprint area in the fourth census of the third item of Article XII of the applicable Decree No. 15874 of the building Law No. 646, since they are parts of the floors assigned for technical benefits.

The law allowed for the development of extensions within buildings, avoiding the phenomenon of random wires on building facades and in the streets, as well as the extent of their damage to the visual landscape and danger to public safety, and the shaft is considered a future element in the building, allowing for the renovation and provision of contemporary equipment, for example, buildings that were equipped with shafts before the advent of the internet and satellite. This structure may also benefit from the rehabilitation and restoration process more easily than a structure without shafts.

As a result, the law encouraged (intentionally or unintentionally) real estate developers to allocate technical shafts when designing buildings and exempted them from investment factor calculations, but the trick was to expand the shafts when licensing and then annex their area later on implementation to the area of one of the sections of licensed units, particularly by enlarging the toilets at their expense (figure 8).

These consequences will manifest on the building's exterior a few years after it is completely finished, as seen in Figure 9, where we show a model of a structure with a distorted facade that served as a shaft.

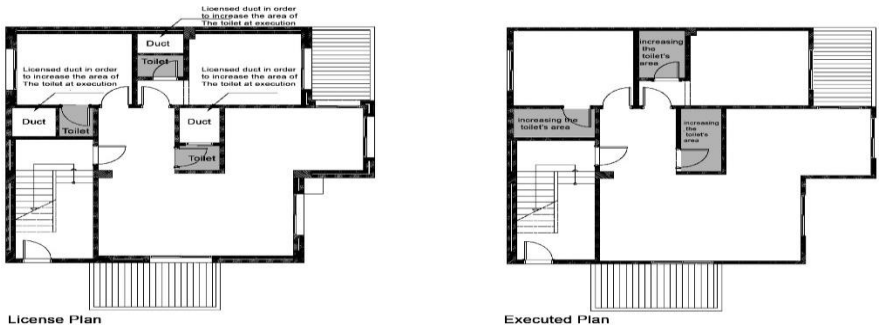


Figure 8: Changing the function of shafts (author)

As a result of the lack of interior shafts, the electricity cables and water buckets spilled across the façade, and water tanks surrounding the structure were strewn around, making the facade seem flabby and in need of maintenance. The rehabilitation procedure will become more challenging as a result of these impediments. The owners would have replaced the existing extensions with new ones if this building had an internal shaft. The relevance of executing the building legislation in its spirit and within the future vision of the building's landscape and the surrounding neighborhood, as well as the culture of living in it, becomes apparent.

We give a concept At the bottom of (Figure 9) [7] that aims to depict the building's vision to show how the shafts would have served the purpose of masking random expansions and allowing the facade to regenerate and avoid future damages.

Figure 9: model of a building façade with no shafts and the solution proposal (In *IOP Conference Series: Earth and Environmental Science*)

4. Conclusions and recommendations

Urban agglomerations are undergoing an urban movement that is developing and at times accelerating in response to economic and social changes.

[7] Wannnous, H. M., & Jishi, M. H. (2021, April). Role of Architecture in overcoming visual distortions. In the context of needs and social changes. In *IOP Conference Series: Earth and Environmental Science* (Vol. 754, No. 1, p. 012023). IOP Publishing.

In light of the weakness of urban governance and the use of primitive means in monitoring the application of laws in the age of digitization and smart management, Actions should be taken into consideration:

- The legislative movement in regulating the process of urban extensions came slow, sterile, weak, and full of explanations when applied, which are exploited for profit purposes.
- It should consider "land sustainability," landscapes, and public places as drivers of social connections and cohesiveness. It also comes in response to Lebanon's vow to adopt the United Nations' 2030 Agenda for Sustainable Development. Legislation, especially aims 11, 11.2 and 11.7, remains far from the spirit, goals, and purposes of such development.

The real estate development industry is governed by a "culture of pure profitability," which ignores the negative effects of this culture on people's quality of life and the aesthetic landscape of metropolitan areas.

- A study of several articles in the Lebanese building legislation is required, particularly those relating to investment factors and how to oversee their application.
- Despite the holding of these buildings on lease licenses, it is obvious from the field research that the licensed structures and legal documents do not match what is implemented. This is a concerning trend that must be addressed since it is putting a strain on the city's service infrastructure.
- Some of the provisions of the building legislation 646, as well as its implementing decrees, should be re-examined for flaws that only become apparent with time and implementation. In this context, the articles of balcony investment can be amended, for example, so that the incorporation of these balconies into the interior space of residential units becomes legitimate, as it becomes clear day by day that the family grows, and thus the incorporation of balconies will be a growth of the apartment to keep pace with the family's growth and the growing needs of its members.

Because of the importance of adjusting visual distortions, protecting the environment from emissions, and providing a bill of consumption waiting for the owner throughout the period of occupancy of the dwelling, law enforcement authorities should increase their scrutiny when granting an occupancy permit and

- ensure that areas that have been excluded from public and surface investment have been implemented, especially with regard to shafts and double exterior walls.
- Lebanon's civil organization agencies, as well as the responsible authorities in the country's major cities, require a thorough digital and technological development process, as well as the upgrading of human knowledge and capacities.
- The remaining agricultural plains around cities, particularly those around Beirut, should be preserved from urban growth since they are the sole remaining food basket for the city's people, and compensated by a high production bill.
- References:

    - Council for Development and Reconstruction (CDR), National Physical Master Plan For The Lebanese Territory, November 2005, www.cdr.gov.lb
    - Conference on "migration among Mediterranean cities" organized by the municipality of Beirut (November 9, 2017) in partnership with the United Nations housing organization and the International Center for Migration Policy Development (ICMDP) link: http://www.al-akhbar.com/node/286129 (November 9, 2017).
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