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Research Article

EFFECTS OF PLANNING AREA ACT PURSUANT TO THE PLANNING LAW NO. 3194 AND DEVELOPMENT PLAN NOTES ON BUILDING DENSITY

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ABSTRACT

The decision-making authority in urban regions was primarily the central government until the promulgation of Planning Law No. 3194 dated 03/05/1985, at which time local governments acquired the authority to make decisions. The legislative power of the central government's Ministry of Environment and Urbanization and other concerned ministries is based on the constitution, international agreements, resolutions of the presidency, and laws, while executive power is based on by-laws, resolutions, larger scale plans, and legislations. In addition, the powers of the local governments are formed on the basis of development plans and plan notes, local legislations, and resolutions of commissions. Decisions made and put into practice by central/local governments should be consistent with legislation, execution, and implementation processes to secure the unity of the planning. This study investigated the impacts of increased building density levels by examining the implementary development plans, zoning regulations, and reports made by local governments in reference to the Municipal Typical Development Legislation (MTDL) promulgated on 02/11/1985, the Planning Area Act (PAA), and the Legislation on Altering the Planning Area Act (LAPAA). For the study, a field survey was conducted on a multistory residential building in Kayseri. The findings revealed that the building densities, from building plots to settlement patterns, determined with the implementary development plans increased at different scales and have negatively influenced the current and prospective physical environment, infrastructure/superstructure, and urban life style.

Keywords: land development legislation, zoning regulation, building density, precedent ratio increase

1. INTRODUCTION

Humankind was able to at first survive in nature with hunting-gathering, followed by agriculture, stock farming, and nomadism before evolving into a sedentary life style over time. This sedentary lifestyle and the production methods that accompanied it led to unhealthy spatial organizations in physical environments and corrupted relations in societies. However, on the positive side, land development activities went on to sustain healthy and regular spaces for sedentary societies, which eventually resulted in the current urban patterns, where social, economic and physical activities take place despite the increasing population.

The legislation, execution, and implementation decisions that went into the Planning Law and land development legislation have served as guides for solving the complex problems related to land development activities and urbanization. The Planning Law and land development legislation regulate the urban formation process, particularly the legal and physical transformation processes of urban lands as they related to legal sequential decisions.

Carmona (1999) points out that the local planning authorities are under pressure from the central government and the construction sector. Central and local government plays an important role in the production of the built environment (Balta, 2012). "Although the Planning Law gives the planning rights to the local governments, it also provides the basis for many central government institutions to be entitled to exercise the planning authority." (Ünsal, 2019). In the Presidential Decree No.1, the duty of the Ministry of Environment and Urbanization is to prepare the zoning, environment, building and construction legislation regarding the settlement, environment and building. The central government directs urban planning through regulations. Entrepreneur, contractor and professional practitioners expect to be informed of the requirements for the implementation of planning from local administrations in accordance with planning decisions (Balta, 2012). However, changes in the regulations cause changes in the requirements for planning in the implementation of the buildings. Thus different results are emerging in the production of the urban built environment. According to Balta (2012) and Ersoy (2015), implementary development plans include the data on the urban block, plot, density, number of floors, building layouts, ground-coverage ratios, floor area ratios, and roads.

Kalabalık (2017) stated that in addition to the countrywide legal regulations, such as the Planning Law, guideline, legislation and memorandums, the local regulations developed by municipalities that refer to the authority granted by the Planning Law to manage their own borders and adjacent areas are among other significant legal sources.

The definition of legislation is as follows: “*Law, executive order, guideline, legislation, decision of the Council of Ministers, additional decisions, and other regulative operations (article 3/e of the Legislation on the Principles and Procedures for Issuing Legislation, promulgated on 19.12.2005, Official Gazette, 2006)*”.

The hierarchy of norms for operating the Planning Law and Legislation as noted in the database of the Ministry of Environment and Urbanization, following the new constitution dated 26/06/2017, includes resolutions of the president, presidency by-laws, laws, executive orders, decisions of the Council of Ministers, legislations, declarations, memorandums, directives, instructions, and principal decisions (Official Gazette, 2017).

Implementary development plans are ineffective in the case of the lack of related legal regulations, while land development legislations are also meaningless unless local configurations exist (Last, 1994).

Local development plans not only implement the land development legislation in a physical environment but also determine the principles and methods for implementation of spatial configurations to help people live together.

Hence, the goal of the Planning Law No. 3194, promulgated on 03/05/1985 and still in effect, in Turkey is “*to sustain and form residential areas and building activities in harmony with planning, science, health, and nature*”, while its area of influence extends to “*all plans, all official and private buildings to be built inside/outside of the municipal regions and adjacent areas*”.

The stages of the spatial plans, clarified in Article 6 pursuant to the amendment made to the Planning Law in 2018, are reported to be as follows: “*Spatial plans constructed in harmony with spatial strategy plans with regard to their objectives and contexts constitute the stages of environment configuration plans and development plans. Development plans are set as land use plans and implementary development plans, where each plan should be consistent with an upper scale plan. Spatial strategy plans are developed according to the development plan, regional plans –if present, regional progress strategies, and goals defined in other strategy related documents.*” (Official Gazette, 2014)

Moreover, article no. 4/h, promulgated on 14/06/2014 within the scope of the same law (the Planning Law No. 3194), states: “*The spatial plan is prepared as per the Planning Law no. 3194, and its order from top to bottom is the spatial strategy plan, the environment configuration plan, and the development plan, according to their contexts and objectives.*” (Official Gazette, 2014)

The section of definitions in Article 5 of the Planning Law No. 3194 states the following: “*The Land Use Plan holistically indicates the plan provisions and reports which were drawn on existing maps and cadastral layouts in accordance with the general principles of spatial and environment configuration plans of regions –if present– and organized to indicate the generic use of pieces of land, the dimensions and expansion directions of settled zones, population densities and limits, and transportation systems, and to constitute a basis for land use plans.*”

“*Additionally, the implementary development plan is a plan that is drawn based on the land use plan with cadastral layouts on existing approved base maps and shows application stages and other details that will constitute a basis for the land use programs that are necessary for urban blocks in diverse regions, their densities and patterns, roads, and implementation stages.*” (Official Gazette, 1985)

Article no. 4/k of the Spatial Plans Development Legislation (SPDL) defines the implementary development plan as follows: “*The plan, which is developed according to the principles of the land use plan, conditions of the territories, generic properties of the regions, functions and needs of the structures, accessibility, sustainability, and environmental impacts, indicates the urban blocks, functions, building layouts, heights, ground-coverage ratios, floor area ratios or precedent ratios, setback distances, front yard setbacks, plot lines, level limits, urban block lines, vehicle-pedestrian-bicycle routes, transportation patterns, parks, squares, and urban social-technical infrastructures, and displays dimensions - facade – depth of plots, backyard setbacks, road elevation and allowable stories under this level, and number of independent divisions, when required. All these data related to building and implementation processes are plotted on approved existing base maps in 1/1.000 scale with cadastral layouts –if present – to create a base for programing the implementation stages, with the addition of a detailed report and plan notes.*” (Official Gazette, 2014)

Article No. 69/1 of the Typical Zoning Regulation promulgated on 03.07.2017 sets out the details of territorial planning legislations and resolutions of commissions under the authority of local governments as follows: “*Considering the historical and territorial features of the towns, metropolitan and provincial municipalities can develop planning legislations for matters outside of the scope of the second sub-article, which contains unalterable orders, to be approved by the ministry. These legislations are effective for implementations until the planning legislations of the authorities are put into practice.*” Additionally, Article No. 66/1 states the following: “*The relevant authorities can set up commissions with experts on architectural aesthetics and with concerned public institutions, when required.*” (Official Gazette, 2017)

The operational process of land development legislation involving the legislative and executive powers of central governments as well as the implementation-based decisions of local governments, with regard to the definitions provided above, is shown in Figure 1.

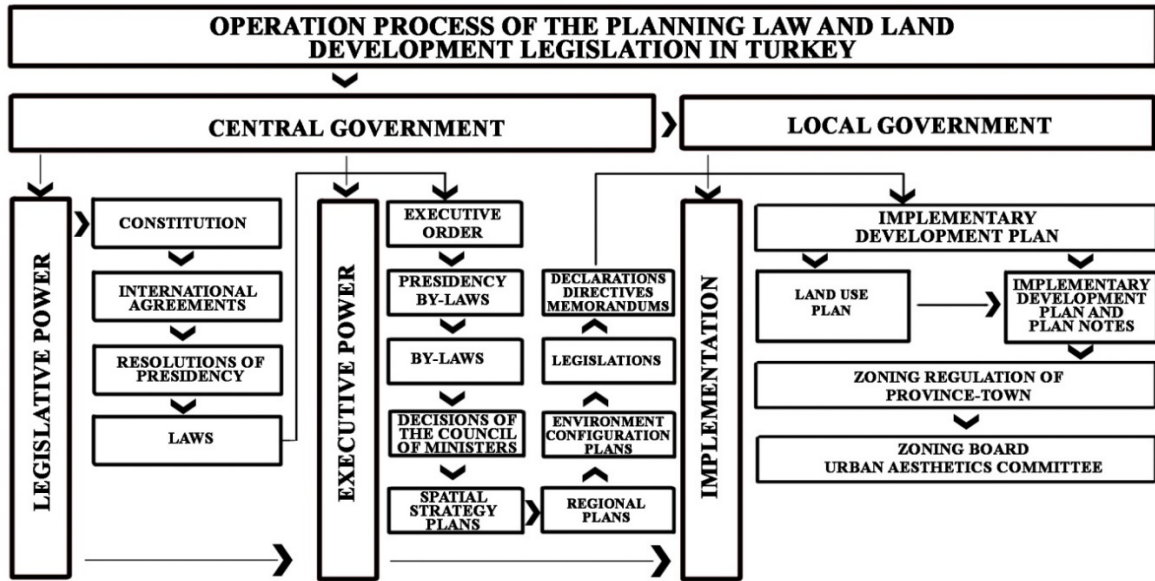


Figure 1: Operational Process of Land Development Legislation

2. CHANGE OF BUILDING DENSITIES IN THE SCOPE OF ZONING REGULATIONS AND PLAN NOTES

The Planning Law promulgated on 03/05/1985 continues to be in force. Building densities were described in terms of building area (Precedent ratio = Floor Area Ratio), taking excluded and included zones into consideration, as shown in Figure 2 and 3.

2.1. Change of Building Densities in the Scope of Zoning Regulations of the Central Government

The zones that are included in/excluded from the Floor Area Ratio (Precedent ratio = FAR) are shown in Figure 2, and these were defined in the Municipal Typical Development Legislation (MTDL), the Planning Area Act (PAA), and the previously published Legislation on the alteration of the Planning Area Act (LAPAA) and remain in force under the Planning Law No. 3194. According to the following legislations defining the Floor Area Ratio (Precedent ratio = FAR),

- MTDL No. 1, promulgated on 02/11/1985
- MTDL No. 2, promulgated on 13/07/2000

the zones that are excluded from the precedent ratio are half (50%) of the occupied zones in basement floors, open protrusions, installation galleries or floors with ceiling heights of less than 1.80 m, fire-escape stair, elevator, skylights, housekeeper's flat, carparks, and technical rooms.

According to the definitions regarding the exclusion from the precedent ratio in PAA No. 3 (01/06/2013) and LAPAA No. 4 (08/09/2013), 5 (03/07/2017), and 6 (30/09/2017),

- as per the PAA No. 3 dated 01/06/2013, in addition to the zones defined in MTDL No. 1 and 2, ground floor terraces, shafts and chimneys, social spaces below the ground level, open protrusions that are not larger than 25% of the floor area, floor gardens, terraces, and 20 m² of the closed stair were excluded from precedent ratio (Official Gazette, 2013).
- as per the LAPAA No. 4 dated 08.09.2013, entrance halls, halls on floors, and open and closed stairs including floor/sub-floor landings were excluded from the precedent ratio, provided that they were less than 20% of the total area included in the precedent ratio (Official Gazette, 2013).
- as per the LAPAA No. 5 dated 03/07/2017, fire-escape stair and its hall (off precedent ratio), obligatory spaces of socio-cultural buildings, technical, social-cultural and independent additional zones on basement floors, two floors of the obligatory carparks, and 100 m² of the masjid in residences, and 200 m² of the masjid in non-residential buildings (as shared zones) were excluded from the precedent ratio, provided that the total area of the spaces outside of the precedent ratio was less than 30% of that included in this ratio (Official Gazette, 2017).
- as per the LAPAA No. 6 dated 30/09/2017, the total area of the spaces outside of precedent ratio, excluding fire-escape stair and its hall, as declared in Legislation No. 5, should be less than 30% of the plot area, the masjid (as shared zone) can be 150 m² in residences and 300 m² in non-residential buildings, and 100 m² of children's playgrounds and care rooms are excluded from the precedent ratio (Official Gazette, 2017).

The Floor Area Ratio (Precedent ratio = FAR) definitions made in zoning regulations demonstrated that the spaces/units excluded from the precedent ratio in MTDL, promulgated on 02/11/1985 and 13/07/2000, are limited to the open protrusions for regular, above-ground floors; whereas PAA (01/06/2013), LAPAA (08/09/2013), and LAPAA (30/09/2017) specified that 25%, 20% and 30% of open/closed spaces are excluded from the precedent ratio serving to increase the precedent ratio.

AVAILABLE FLOOR AREA RATIO (PRECEDENT RATIO=FAR) DEFINITIONS IN THE ZONING REGULATIONS WITHIN THE SCOPE OF THE PLANNING LAW NO 3194	
ZONES INCLUDED IN FLOOR AREA RATIO AND PRECEDENT RATIO	ZONES EXCLUDED FROM THE FLOOR AREA RATIO AND PRECEDENT RATIO
<p>1</p> <p>ARTICLE NO. 4/21</p> <p>DATED 02.11.1985</p> <p>It is the area constituting a total of 50% of the occupied zones on basement floors and all inhabitable zones without skylights, including suspended floors, penthouse floors and attics. The floor area ratio includes closed protrusions, open and closed stairs or open corridors, excluding the ground floor that provides access to buildings.</p>	<p>ARTICLE NO. 4/21</p> <p>Open protrusions, installation galleries or floors with a ceiling height of less than 1.80 m, installation galleries hosting the installation, fire-escape stairs, and other premises (carparks, boiler room, coal cellar, housekeeper's flat, shelter, etc.) are excluded from the floor area ratio.</p>
<p>2</p> <p>ARTICLE NO. 6/4</p> <p>DATED 13.07.2000</p> <p>The total area of all inhabitable zones, including basement floors, suspended floors, penthouse floors, attics and closed protrusions, except skylights.</p>	<p>ARTICLE NO. 6/4</p> <p>Open protrusions, installation galleries or floors with ceiling heights of less than 1.80 m, installation galleries hosting the installation, floors/units having noncommercial carparks serving the inhabitants of the building, fire-escape stairs, elevators, boiler room, coal cellar, shelter, water storage, and water booster are excluded from floor area ratio.</p>
<p>3</p> <p>ARTICLE NO. 14/3</p> <p>Planning Area Act (PAA) promulgated on 01/06/2013</p> <p>The total area of zones in basement floors, suspended floors and attics, roof or floor gardens, terraces on roofs, floors and ground level, balconies, open protrusions, shared zones, except skylights, courtyards, and interior gardens are included in floor area ratio.</p>	<p>ARTICLE NO. 14/4</p> <p>Canopies, entrance eaves, courtyards, ground terraces related to independent unit, roof terraces and roof gardens, arcades, garden and retaining walls, 75m2 of house keeper's and gardener's houses, 9 m2 of total guard rooms and control towers, shelters and shared carparks, technical zones, elevator shafts, landings, skylights, shafts for garbage/waste and air, shafts and chimneys of technical galleries, underground shared storages, social/sport facilities, shared gardens, masjids, noncommercial kindergartens, zones not exceeding 5% of the total areas of the floors or 750 m2, balconies with less than 25% of that floor area, open protrusions, floor gardens and terraces, fire escape stairs and their halls, and 20 m2 of open /closed stairs are excluded from floor area ratio.</p>
<p>4</p> <p>The Legislation on Altering the Planning Area Act (LAPAA) promulgated on 08/09/2013</p>	<p>ARTICLE NO. 8/4</p> <p>Roof terraces and roof gardens, canopies, entrance eaves, courtyards on modified or natural ground levels, ground floor terraces connected to individual shelter unit, arcades, garden and retaining walls, shared gardens, 75 m2 of the house keeper's room, 9 m2 of total guard rooms and control towers, masjid, shelter zones not exceeding more than 30% of the minimum shelter area required for that building, noncommercial kindergarten and children care rooms that are not larger than 5% of all floor areas or 750 m2, underground carparks serving the building's inhabitants and open terrace carparks for public buildings; 6 m2 of the shared zones for elevator shafts and fire escape stairs/halls, skylights, rooms for garbage and garbage sorting, air shafts, installation shafts and chimneys, installation floors of less than 3% of the whole area of the floor, shared storages with less than 5% of the whole floors' area and technical zones of that building; social/sport facilities with less than 10% of the whole underground floor area or 3000 m2, storage additions that are less than 20% of the independent gross area of storages in basement floors, balconies, including those closed with demountable/foldable glass panels and that are less than 20% of the in-precedent ratio area of that floor, open protrusions, floor gardens and terraces, winter gardens, interior gardens, installation zone, fire escape hall, entrance halls, halls on floors, landings in front of elevators, floor and sub floor landings, and open/closed stairs are excluded from floor area ratio.</p>
<p>5</p> <p>LAPAA promulgated on 03/07/2017</p>	<p>ARTICLE NO. 5</p> <p>The total of areas to be excluded from precedent ratio that can be used by concerned directorates with reference to Article No. 22 or zoning regulations cannot be more than 30% of the total precedent ratio of the plot. On the other hand, the zones excluded from the precedent ratio according to the decision of the Council of Ministers No. 2007/12937 promulgated on 27/11/2007 with regard to the Legislation on Fire Protection of Buildings are: minimum area of the fire-escape stairs (different from proof/non-proof regular stairs) and spaces in special-purpose public buildings, such as conference centers, sport facilities, cinemas, and theater halls; other zones on basement floors of the buildings that are to be excluded from the precedent ratio are: a) 2 stories of obligatory carparks, b) shelter, elevator shafts, chimneys, shafts, skylights, heating and installation centers, water storage, energy room, coal cellars, and minimum area of house keeper flat, calculated using concerned legislation, regulation or standard, c) storage additions of up to 10% of the independent residential unit's net area and up to 50% of the independent commercial unit's net area, ç) 100 m2 of shared masjid and premises in residential buildings and 200 m2 in nonresidential buildings, d) shared spaces and carparks, for which all façades are totally embedded below ground floor level, as declared in Article No. 22.</p>
<p>6</p> <p>LAPAA promulgated on 30/09/2017</p>	<p>ARTICLE NO. 2</p> <p>Sub article No.8 of Article No.5 in the same legislation was revised as follows:</p> <p>“(8) The total of areas to be excluded from the precedent ratio that can be used by concerned directorates with reference to Article No. 22 or zoning regulations cannot be more than 30% of the total precedent ratio of the plot. On the other hand, the zones excluded from the precedent ratio according to the decision of the Council of Ministers No. 2007/12937 promulgated on 27/11/2007 with regard to the Legislation on Fire Protection of Buildings are: minimum area of the fire-escape stairs and fire proof corridors (different from proof/non proof regular stairs) and 6 m2 of fire safety hall, shared roof terraces over the highest story, open carparks in gardens serving the inhabitants of the buildings; other zones on to be excluded are: a) 2 stories of obligatory carparks, b) shelter, elevator shafts, chimneys, shafts, skylights, heating and installation centers, water storage, energy room, coal cellars, minimum area of house keeper flat, calculated using concerned legislation, regulation or standard, c) storage additions of up to 10% of the independent residential unit's net area, and up to 50% of the independent commercial unit's net area, ç) 150 m2 of shared masjid and premises in residential buildings and 300 m2 in nonresidential buildings, d) shared spaces and carparks, for which all façades are totally embedded below ground floor level, as declared in Article No. 22, e) 100 m2 of noncommercial children playgrounds and children care rooms.</p>

Figure 2: Floor Area Ratio (Precedent ratio=FAR) definitions in the zoning regulations from the Planning Law No. 3194 onwards

2.2. Change of Local Governments' Zoning Regulations and Plan Notes

The zones included in/excluded from the Floor Area Ratio (Precedent ratio = FAR), which were promulgated by the central government, MTDL and local government, and defined in the Zoning Regulation by the Kayseri Metropolitan Municipality (ZRKMM) and in LAPAA legislations, of the Planning Law No. 3194, are shown in Figure 3.

FLOOR AREA RATIO (PRECEDENT RATIO=FAR) DEFINITIONS AND PLAN NOTES IN THE ZONING, (REGULATION BY KAYSERİ METROPOLITAN MUNICIPALITY) ZRKMM FROM THE PLANNING LAW NO. 3194 AND ONWARDS			
YEAR	ZONES INCLUDED IN FLOOR AREA RATIO AND PRECEDENT RATIO	ZONES EXCLUDED FROM FLOOR AREA RATIO AND PRECEDENT RATIO	DEVELOPMENT PLAN NOTES FROM 1987 TO 2013
A	Zones included in floor area ratio and precedent ratio are shown in Figure 3 (1)	Zones excluded from floor area ratio and precedent ratio are shown in Figure 3 (1)	1987-1991-1992-1994-1997, Development plan notes
1985 MTDL			
B	Article No. 5 Construction area Construction area is the total area of the occupiable zones on basement floors, as well as suspended floors, penthouse floors, attics, and all other floors. Closed protrusions, open and closed stairs or open corridors providing access to buildings, except ground floors, are included in this construction area. Skylights, empty spaces between the stories of duplex independent units, open protrusions, installation galleries and floors with ceiling heights of less than 1.80 m, fire-escape stairs, required premises (carparks, boiler/utility room, housekeeper's and furnaceman's flat, shelter, etc.) are excluded from the construction area. Occupiable zones are considered to be those that are suitable for habitation and entertainment and can include the floors with residences, business places, and entertainment/resting facilities.		
1990 ZRKMM	Article No. 3 Spaces like residences, business places, and entertainment/resting zones that are built to be occupied for housing, working and entertaining on the mezzanine floor, penthouse (attic) and roof space; 50% of the inhabitable zones below the ground floor level formed due to the slope of the plot and satisfying the regulations set by the legislation, and total of all floor areas. Closed protrusions, entrance hall, open/closed stairs, stair halls, elevator shafts, open/closed corridors providing access to buildings on the floors, except ground floors, and buildings with outside terraces (for terraced construction type), interior gardens in independent unit, except balcony, skylights, all chimneys, fire-escape stairs, premises, eaves, pergolas, installation slabs, installation galleries or floors with ceilings heights of less than 1.80 m, power distribution unit, generator, rooms for installations and machines, galleries and stair spaces between the floors in independent multi-story units, terraces, balconies, open protrusions, shared wet-cores (toilet and lavatory) housing up to 10% of the gross area (except balcony's area) of that independent unit, administration rooms, air conditioning rooms up to 2.00 m2 for per independent unit, ground floor carparks and shelters according to the specific legislations, and shared zones for the common needs of that building in roof spaces (meeting halls, masjid, etc.) are excluded from the floor area ratio.		
1997 ZRKMM	Article No. 15/3 Inhabitable zones below the ground floor level, formed due to the slope of the plot, and 50% of roof spaces properly built according to their definitions; mezzanine floor, suspended floor, and total of all floor areas. Skylights, chimneys, eaves, pergolas, fire-escape stairs, elevator shafts, installation galleries or floors with ceiling heights of less than 1.80 m, premises (boiler/utility room, coal cellar, housekeeper's flat, shelter, power distribution unit, generator, electrical panel rooms), main entrance hall of the stairs and stair spaces, transition areas of passages, terraces, balconies in the form of open protrusion and housing up to 10% of the gross area of that independent unit, shared wet cores (toilet and lavatory), administration rooms, air conditioning rooms up to 2.00 m2 per independent unit, meeting hall for the common needs of that building, masjid, underground carparks, and underground commercial as well as storage areas are excluded from floor area ratio. Definition of inhabitable spaces refers to floors built to serve housing, working and entertaining, such as residences, business places, and entertainment/resting spaces		
D	Article No. 12: Free implementations, according to precedent ratio obtained by multiplication of GCR and number of stories, are applicable in all urban blocks that are adjacent to roads defined in the development plan and that are over 10m in width, including gardens and allow for three or more stories in the development plans, as long as total ground coverage and total construction areas are not exceeded and other decisions in relevant legislation and its plan notes are sustained. Article No. 50: The buildings cannot be over 15 stories high within the borders of Kayseri Province Municipality, unless revisions are made in the development plan.		
2001 ZRKMM	Article No. 65, Free Implementations, Free implementations, according to the calculation of transformation into density system, are applicable in all urban blocks where three or more stories are allowed in the development plans (dimensioned/non-dimensioned buildings; urban blocks with defined GCR, FAR and precedent ratio; and those with alphabetic building layout) as long as total ground coverage area and total construction area limits are not exceeded and other decisions in relevant legislation and its plan notes are sustained.		
E	They are demonstrated in (3-4-5-6) in Figure 3.	Valid for the implementations after 01/06/2013	
01.06.2013 PAA30 09 2017 LAPAA			

Figure 3: Floor Area Ratio (Precedent ratio = FAR) Definitions and Plan Notes in ZRKMM since the Planning Law No. 3194

Kayseri Municipality implemented MTDL (dated 02.11.1985 according to the Planning Law No. 3194 promulgated on 03.05.1985) until acquiring the Metropolitan status in 1989. The first zoning regulation was put into practice later in 1990.

The spaces/units excluded from the Floor Area Ratio (Precedent ratio = FAR) were gradually increased in the definitions specified in the ZRKMM dated 1997 and 2001, as shown in Figure 3. The definitions and plan notes of these spaces/units are related to distinct properties, as detailed below:

- Plan notes from the development plan in 1987 allowed free-height constructions up to 15 stories for building plots/urban blocks that are larger than 2500 m² and permit buildings with 3 or more stories. Additionally, the decisions in MTDL No. (A) dated 02/11/1985 was implemented in ZRKMM No. (B) dated 1990.

The zones that were excluded from FAR in the MTDL dated 02/11/1985 were half (50%) of the occupied zones on basement floors, open protrusions, installation galleries or floors with a ceiling height lower than 1.80 m, fire-escape stairs, elevators, skylights, housekeeper's flat, carparks, and technical rooms.

- In addition to the zones defined in MTDL published on 02/11/1985 and in ZRKMM published in 1990, 50% of attic spaces and penthouses, floor areas constituting up to 10% of independent zone (with regard to gross area), open protrusions, shared administration rooms, wet cores, 2.00 m. air conditioning rooms per open protrusion, independent balcony, meeting halls in roof spaces, shared zones (e.g. masjid), and ground floor carparks were excluded from FAR in the ZRKMM No. (C) in 1997.
- In addition to the zones defined in ZRKMM No. (C) in 1997, the main entrance hall of staircase and staircase areas and the carparks on basement floors were excluded per the ZRKMM No. (D) dated 2001. Moreover, the plan note published in 1987 on free-height constructions up to 15 stories was included as article No. 65 in the Zoning Regulation, which remained in force until the promulgation of PAA dated 01/06/2013.
- The decision on free-height constructions up to 15 stories was included in article no. 50, along with the revisions made to the plan notes via the central government's regulation provisions, starting from PAA No. (E) in 01/06/2013 to LAPAA in 30/09/2017.

An investigation on the density of buildings according to central/local governments' regulations on spaces included in/excluded from precedent ratio showed that excluded spaces gradually increased from the first legislation onwards, as shown in Figure 2 and 3. A comparative illustration of these spaces is presented in Figure 4.

THE SPACES INCLUDED IN/EXCLUDED FROM FLOOR AREA RATIO (PRECEDENT RATIO = FAR) IN EFFECTIVE ZONING REGULATIONS OF CENTRAL/LOCAL GOVERNMENTS, STARTING FROM 02/11/1985 AND ONWARDS.	02.11.1985 MTDL	1990 ZRMM	1997 TZRMM	13.07.2000 MTDL	2001 TZRMM	01.06.2013 PAA	08.09.2013 PAA	03.07.2017 LAPAA	30.09.2017 LAPAA
	1	B	C	2	D	3	4	5	6
PARTS AND UNITS OF THE SPACES									
<ul style="list-style-type: none"> 50% of the occupied zones on basement floors chimneys, shafts 150 m² of shared masjid and premises in residential buildings and 300 m² in nonresidential buildings, 									
<ul style="list-style-type: none"> Open/closed stairs 100 m² of noncommercial, shared children playgrounds and care rooms 									
<ul style="list-style-type: none"> Suspended floor Attics Elevators 									
<ul style="list-style-type: none"> Penthouse Closed protrusions 									
<ul style="list-style-type: none"> open corridors providing access to buildings, except ground floors 									
<ul style="list-style-type: none"> stair space, main entrance hall of the stair 50% of the attic and penthouse 									
<ul style="list-style-type: none"> 10% of the independent unit, open protrusion balcony, air conditioning rooms up to 2.00 m² 									
<ul style="list-style-type: none"> carparks on the ground floor roof, façade and 50% of the main floor 									
<ul style="list-style-type: none"> technical spaces, central heating fuel/water storage, water booster generator, energy room heating and installation centers coal cellar, shelter, housekeeper's flat open protrusions proof/non-proof fire-escape stairs and fire safety hall, skylights, premises, fire-escape stairs 									
<ul style="list-style-type: none"> storage additions that are less than 10% of the independent gross area of residence spaces (basement floor) open area in the garden carpark/garage shared storage areas shared terrace roofs storage that is less than 50% of the independent commercial space (basement floor) 									

● Zones included in precedent ratio ○ Zones excluded from precedent ratio — Not defined

Figure 4: The spaces included in/excluded from Floor Area Ratio (Precedent ratio = FAR) in effective zoning regulations of central/local governments, starting from 02/11/1985 and onwards.

3. THE FORMATION OF BUILDING DENSITIES IN A CASE OF A RESIDENTIAL BUILDING IN KAYSERI IN THE SCOPE OF MTDL DATED 02/11/1985 AND LAPAA DATED 30/09/2017

The following section investigates the increase in building density, with regard to Floor Area Ratio (Precedent ratio = FAR) definitions related to the included/excluded zones in the legislations, on a selected residential building plot. The official parameters of plot No. 5 on city block No. 12024 in Kılıçarslan, Melikgazi, Kayseri are as follows¹: 921 m² building plot area, 0.33 ground-coverage ratio, and 1.98 precedent ratio = FAR. Accordingly, the parameters were calculated as follows: area of ground-coverage ratio (GCR) – 0.33*921 m² = 303 m², area of precedent ratio (= FAR) – 1.98*921 m² = 1874 m², Story height = precedent ratio (=FAR) / ground-coverage ratio – 1.98 / 0.33 = 6, as shown in Figure 5.

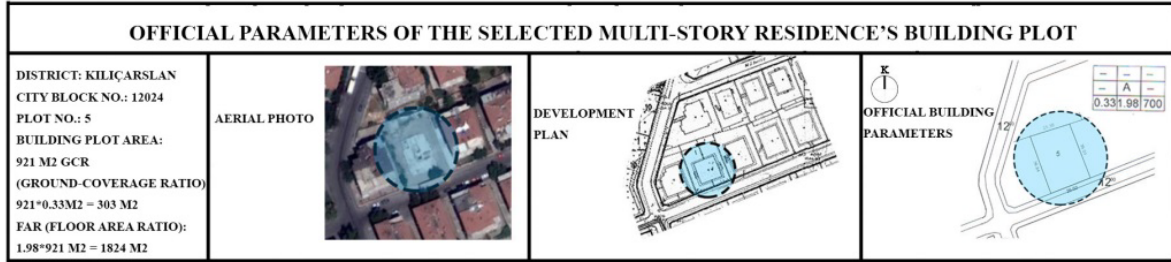


Figure 5: Official parameters of the selected building plot

The plan notes in the Development Plan by Kayseri Metropolitan Municipality (DPKMM) from 1987 onwards allow construction of 15-story high buildings, provided that setback distances, ground-coverage ratio, and precedent ratio are suitable.

The existing official parameters of the plot (GCR:1.98 and FAR:0.33) were investigated on the basis of the first MTDL dated 02/11/1985 and the last LAPAA dated 30/09/2017, which were promulgated in the scope of the Planning Law No. 3194, to determine the increase in building density. The formation of the residential building with regard to these two legislations is presented in a comparative manner in Figure 7.

The rate of increase in the number of floors, increase in gross amount of above-ground built floor area (precedent ratio=FAR), the rate of increase in the number of houses (the housing typology with a living space and three bedrooms), increase in the number of inhabitants (assumed as 5 inhabitants per housing unit on average), and the building density definitions specified in two legislations and their plan notes were taken into consideration.

Additional assumptions about the probable formation of the building shown in Figure 7 are as follows:

- Function of ground floor for A1 and A2: social space (children's playground and meeting hall),
- Function of ground floor for B1 and B2: commercial space.

Moreover, similar to the data governing the formation in Figure 7, a parallel figure is presented by the Development Directorate of Kayseri-Melikgazi District Municipality on a sample residential building, as shown in Figure 6, in accordance with the LAPAA promulgated on 30/09/2017 (Melikgazi District Municipality, 2017).

¹ This work is a part of the research project numbered 052374 which has been approved by Erciyes Technopark.

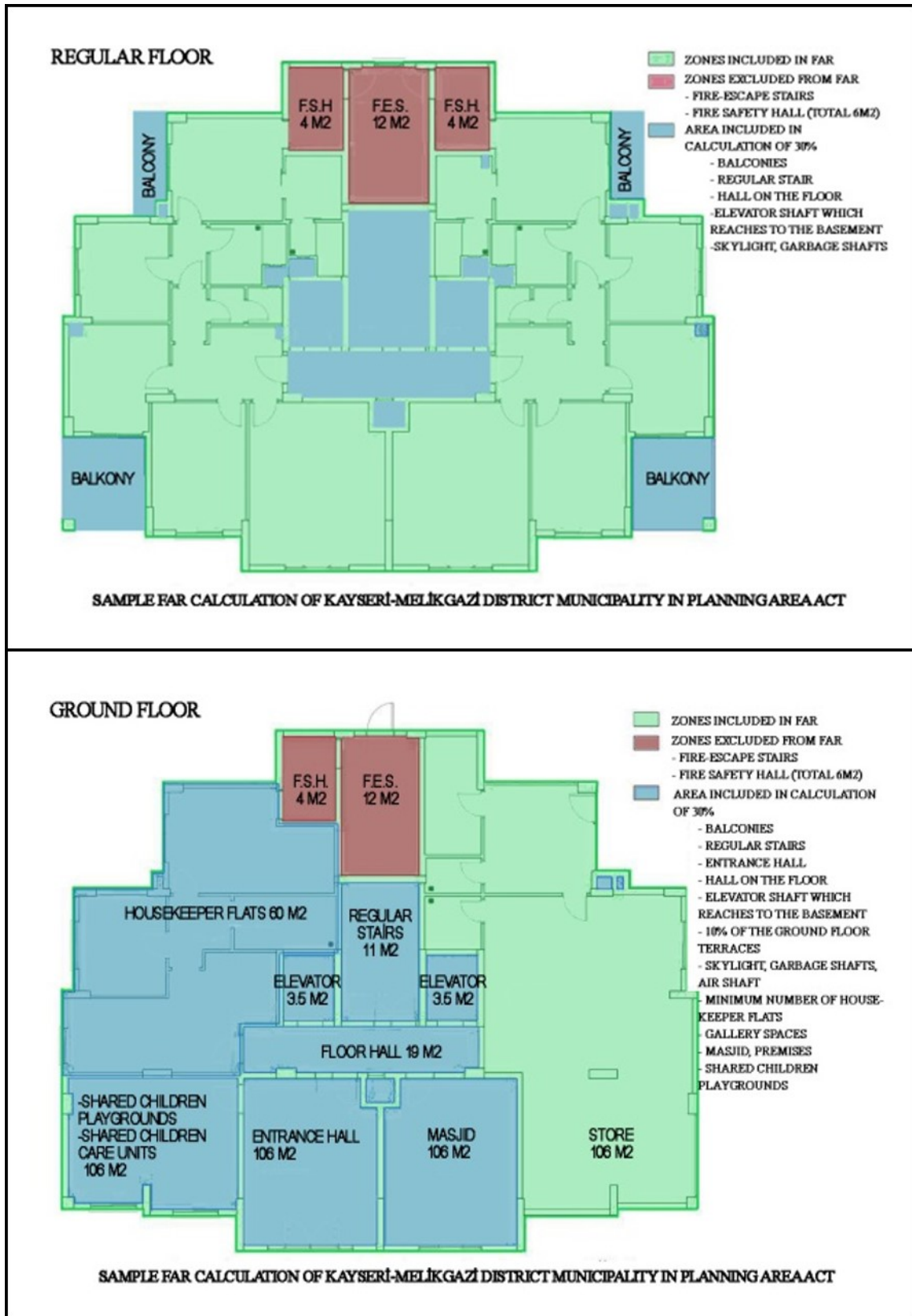


Figure 6: Calculation of the spaces included in/excluded from the precedent ratio (=FAR) depicted on a sample residential building by the Development Directorate of Kayseri-Melikgazi District Municipality in the scope of LAPAA dated 30/09/2017

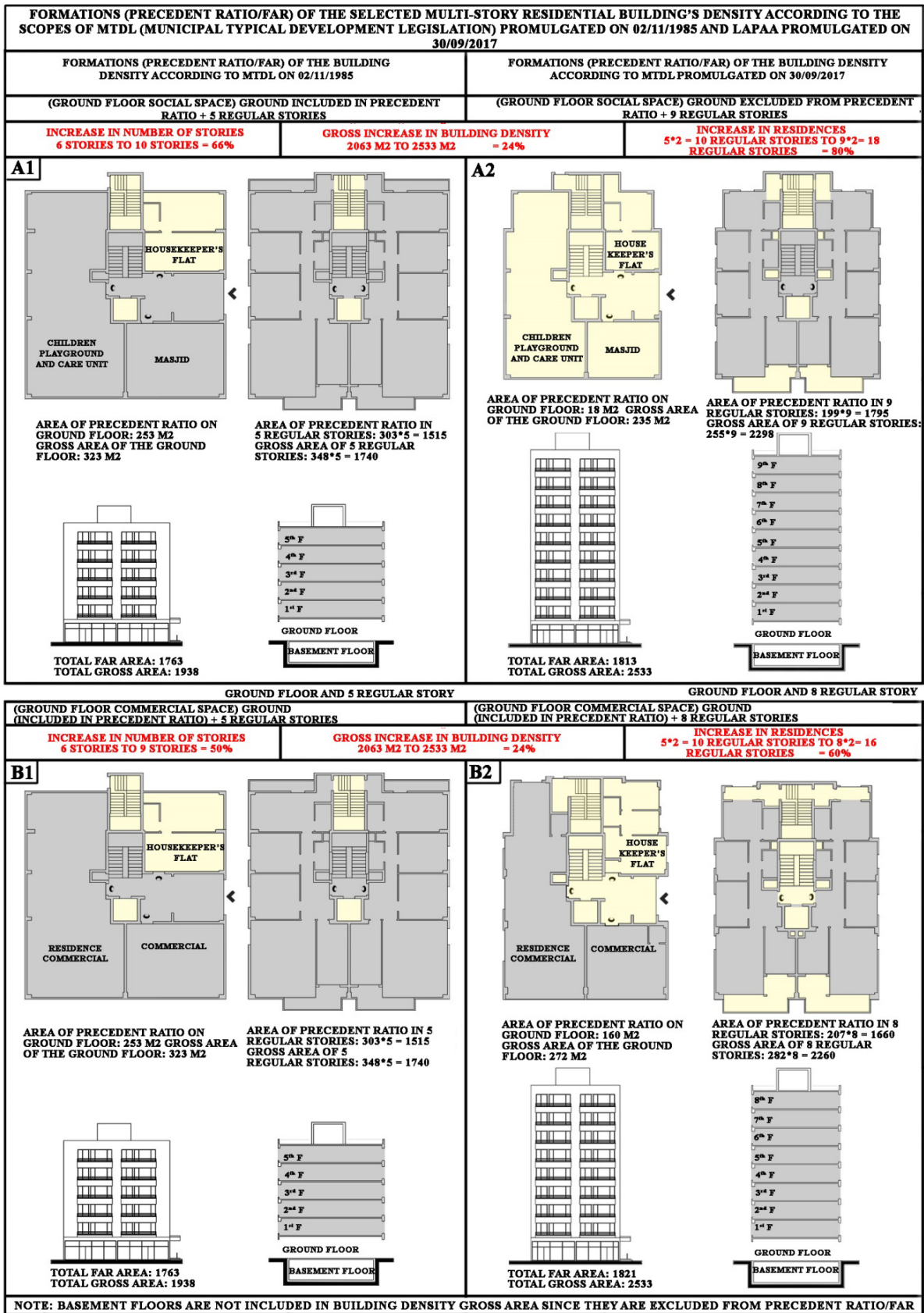


Figure 7: Formations of the selected multi-story residential building according to the scopes of MTDL dated 02/11/1985 and LAPAA dated 30/09/2017

Probable 3D formation alternatives of the building plot/urban block pursuant to the first and last legislations are illustrated in Figure 8. Accordingly, the first legislation (02/11/1985, MTDL) allowed for the construction of 6-story high buildings until the promulgation of plan notes and building density data in 1987, whereas the last legislation (30/09/2017, LAPAA) allowed 9-10 stories with alterative formations (Figure 8).

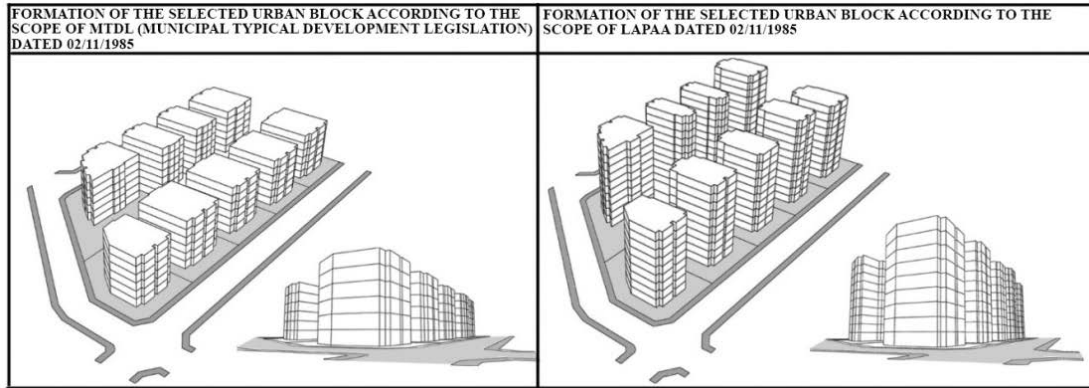


Figure 8: Probable reformation of a 6-story building per MTDL and LAPAA

In addition to the increased number of newly-started multistory residential building constructions, the number of selected multistory residential buildings constructed in accordance with the current development data is also increasing (Figure 9 a-b).



Figure 9a: Location of the selected multistory residential building / Figure 9b: Alteration of the existing building pattern

Per the GCR, building density, precedent ratio, and FAR defined in the scopes of MTDL and LAPAA, studies on the selected residential buildings revealed:

- 50-66% increase in the number of stories in urban pattern,
- 24% increase in the gross building density excluded from precedent ratio,
- 60-80% increase in urban residences and inhabitants.

Additionally, the proportion of building density levels defined in complementary development plan to the zoning regulations and plan notes, with the transfer and increase of zones from in-precedent ratio definition to gross off-precedent ratio, is as follows:

- Zones included in precedent ratio definition was 1824 m², which was changed, increasing to 2063 m² gross area excluded from precedent ratio and hence, resulted in a 13% increase. Therefore, initial precedent ratio grew from 1.98 to 2.24 gross precedent ratio per the first legislation (MTDL in 02/11/1985).
- Zones included in precedent ratio definition were 1824 m², which were changed, increasing to 2533 m² gross area excluded from precedent ratio and hence, resulted in a 39% increase. Therefore, initial precedent ratio grew from 1.98 to 2.75 gross precedent ratio with the last legislation (LAPAA in 30/09/2017).

These statements reveal that the precedent ratio definition in the complementary development plan resulted in a tripling, from the precedent ratio, of the gross area for excluded zones, on the basis of the zoning regulations and the plan notes governing the space of time between the first and the last legislations. Therefore, it is fair to state that building densities significantly increased with the revisions of the development plan, which increased the precedent ratio and number of stories before the enforcement officially started.

According to Sancakdar: “Planning procedures resulting in building density increase as a result of development plan alterations should be regarded as being outside of the scope of plan revisions. Such procedures include increasing the number of stories, and converting green areas, parks and children playgrounds into residential, commercial and industrial zones, all of which eventually result in elevated density. They affect the major planning decisions and hence, they should be regarded in the scope of the revised development plan, which necessitates the reevaluation and alteration of the land use plan” (Akış, 1998; Sancakdar, 1996).

According to Article No. 26/4 of the Spatial Plan Development Legislation (SPDL); “*Development plan changes related to increased number of stories and building heights should be performed only after making certain that local settlement characteristics, patterns and identities do not adversely affect the silhouette of the cluster and the city, and that façades are oriented towards the sun.*”

According to Article No. 26/5 of the SPDL; “*Development plan changes related to increased population densities due to altered precedent ratios, number of stories, and plot conditions should be performed according to the following conditions:*

a) *Social and technical spaces should be separated to serve the needs of increased populations in plots, according to the standards.*

b) *In the case of increased building stories, independent of population density, the minimum distances between the opposing façades on each road should be calculated using the following formula to determine the number of stories:*

$$K = [(Y1 + Y2)/2] + 7.00 \text{ m,}$$

where *K* is the distance between the opposing façades (meter), *Y1* is the height of the building on one side of the road, and *Y2* is the height of the building on the other side.

c) *The formula noted above should also be used in plot unifications, and elementary development plan revisions related to building layout changes and increased number of stories”* (Spatial Plan Development Legislation, 2014).

Considering the conditions for plan alterations and development plan revisions noted above in the scope of SPDL, the following explains the impact of the provision on disrupting the unity of the plan as it relates to building heights of up to 15 floors, which was stated in GCR, and precedent ratio= FAR:

Official parameters of the plot are as follows: plot area: 921 m², GCR: 0.33 (921m²*0.33) = 303 m², and FAR: 1.98 (921 m²*1.98) = 1823 m². The decrease in the ground-coverage ratio (GCR) and the revised definition of zones excluded from the precedent ratio in the setback zone allows for the free construction of buildings with 6 to 15 stories, which should have had only 6 floors (Number of stories=FAR:1823 m² / GCR:303 m²= 6). This can be a part of the solution for not restricting the right of building while at the same time allow for rational spatial proposals and applications, as opposed to rigid planning implementation rules.

However, decisions on the number of stories and building heights can also lead to positioning problems between the side, rear, and neighboring buildings, insufficient roads between the opposed buildings, and ill-matched patterns for the urban aesthetic. They can also encourage maximizing the building right and associated economic benefits.

4. CONCLUSION

Land development legislation in Turkey should be consistent with the hierarchical-ordered sub-decisions corresponding to the supreme decisions. Thus, development plans should be implemented by taking into consideration the central and local zoning regulations and plan notes. On the other hand, in the investigation of the central governments' zoning regulations and the revisions on local plan notes, it was revealed that the elementary development plans strongly deviated from the original goals on building densities/inhabitants and the urban pattern.

Although it can be asserted that the revisions made to the zoning regulation on the increase of building densities are decisions that do not affect the plan unity on a single urban parcel scale, they nonetheless still carry the risk of destroying the urban environment on account of the urban practices specified in the elementary development plans.

In the other words, disregarding the original plan goals and unity is likely to cause spatial configuration problems in the following systems:

- Potable water, tap water, waste water, rain water, electricity and telecommunication, natural gas, etc. in technical urban infrastructure.
- Accessibility, recreational zones, physical built environment, lighting, cleaning, transportation, etc. in technical urban superstructure.
- Urban identity, sustainability, education, health services, administration, and commercial, social, resting, entertainment, and sport activities in urban socio-cultural structure.

The recommendations derived from this study can be summarized as follows:

- The implementations of the central and local government based on the Planning Law and land development legislation should be consistent for major and minor decision to prevent contradictions. To ensure this, a strong surveillance system should be implemented for monitoring inter and intra-institutional applications in the land development legislation process.
- The increase in densities that result from practices like rebuilding, urban transformation, etc. should be taken into consideration. Thus, the development, planning and implementation processes related to urban infra/super structures and social-cultural requirements should be of first priority.
- During the development of implementation plans for new urban zones, suggestions for maintaining the unity of the plan, in terms of the density increase that can result from zoning regulations and plan notes, should be developed by local governments and project designers.
- Solutions on integrating the building densities defined in the implementary development plans with the density definitions in zoning regulations should be developed to serve as a guide for construction activities in the future.

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