Urban Renewal or Earthquake Preparedness: Lessons from Israel's National Master Plan for Earthquake Preparedness (TAMA 38)

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Abstract

TAMA 38 is a national master plan for reinforcing existing structures against earthquakes and has been Israel's flagship urban renewal policy during the past decade. This study analyzes the effect of TAMA 38 at both the national and local levels. At the national level, we analyze the spatial distribution of TAMA 38 projects and the plan's pace of implementation. At the local level, we examine the influence of extensive TAMA 38 redevelopment on a neighborhood's diversity and the local authority's infrastructure and budget. The research findings and the lessons that can be learned from the Israeli case may assist decisionmakers elsewhere seeking new policy tools for addressing the need to reinforce buildings against earthquakes and the emerging need for urban renewal of city centers.

Introduction

TAMA 38—Israel's national master plan for reinforcing existing structures against earthquakes—has been the country's flagship urban renewal policy for the past decade. Under TAMA 38, the state offers incentives to developers and property owners to turn old residential buildings into earthquake-resistant ones (GAUR, 2018; Geva and Rosen, 2018; Margalit and Mualam, 2020; Shamai and Hananel, 2021). This concept makes TAMA 38 an interesting, unorthodox plan in the fields of earthquake preparedness and urban renewal because it reduces the state's role to mere regulator and leaves the initiative to the private market. The plan is even more intriguing because it applies to individual buildings yet is a national master plan; thus, instructions and regulations that are typically part of detailed local plans are national in scope, enabling developers to bypass

district and local planning bodies and increase the economic feasibility of TAMA 38 projects (NPBC, 2004b).

In the context of a housing affordability crisis, TAMA 38 is a popular way to enlarge the housing stock and a synonym in Israel for urban renewal (Geva and Rosen, 2018). However, its popularity has also generated a critical discussion of its main cumulative outcomes—increasing population density and overloading existing infrastructure—and its budgetary ramifications for municipalities (Margalit and Mualam, 2020; Shamai and Hananel, 2021; Tzur, 2019). The opposition of some mayors and planning officials has resulted in a decision to end TAMA 38 in October 2022 in favor of an alternative urban renewal plan that is to be defined by comprehensive local planning based on complexes, not individual buildings (Melenitzky, 2019; Mirovsky, 2019).

The purpose of this paper is to present the cumulative ramifications of TAMA 38 at the national and local levels, to discuss the plan's pros and cons, and to point out its relevance to decisionmakers elsewhere. At the national level, we review the evolution of TAMA 38 since its adoption in 2005 as a national master plan for earthquake preparedness, and we examine the plan's pace of implementation. We focus on the spatial distribution of TAMA 38 projects and their degree of compatibility with earthquake-prone areas. At the local level, we evaluate TAMA 38 as an urban renewal strategy. We focus on a specific neighborhood in the municipality of Holon (bordering on Tel Aviv, in the center of Israel) and examine the influence of extensive TAMA 38 redevelopment on the neighborhood's diversity and the municipality's infrastructure capacity.

The findings of the study are different at each level. At the national level, we found that the pace of implementation of the projects and their geographical dispersion do not lie close to the original goal of TAMA 38—reinforcing buildings against earthquakes in high-risk areas—and that makes the plan increasingly an urban renewal plan in economically viable areas. We found that intensive implementation of TAMA 38 in a small area can significantly change the housing stock, housing tenure, and population mix at the local level. The plan, therefore, also has significant implications for the municipal budget and the supply of infrastructure and public services to the neighborhood. Understanding those findings may assist decisionmakers in the United States and elsewhere in seeking new policy tools for addressing the need to reinforce buildings against earthquakes and the emerging need for urban renewal of city centers.

The article's structure is as follows: The second section introduces the evolution of urban renewal as a planning strategy, as seen from a global perspective, and the third section reviews the evolution of urban renewal in Israel. That section is followed by a brief review of the urban diversity framework and its core principles. The fifth section outlines the methodology of the research, its challenges, and its obstacles. The sixth and seventh sections present the research findings at the national and neighborhood levels. The last section presents the pros and cons of each level of analysis, summarizes the lessons that can be learned from the Israeli case, and concludes with policy recommendations.

Exhibit 1 summarizes the lessons drawn from our study and the 15 years of experience of the plan's implementation.

Exhibit 1

Summary of the Pros and Cons of TAMA 38

	Pros	Cons
Earthquake Preparedness	• Succeeded in reinforcing hundreds of buildings and thousands of housing units at a growing pace	• Buildings were reinforced mainly in the center of major cities, especially in the Tel Aviv metropolitan area, not where reinforcement was most needed (earthquake-prone areas).
Urban Renewal	• Improved the appearance of urban areas throughout Israel • Increased the supply of housing units in urban populated areas • Improved the housing conditions of the original tenants • Created a win-win situation: a joint undertaking of residents and developers that benefits both	• The program's benefits were concentrated unevenly in areas of high demand. • The plan increased the existing disparities between the center and the periphery. • TAMA 38 disregarded the interests of the local authorities. • The plan regenerated areas in the city that initially had rising demand.
Population Mix	• Diversified the neighborhood (in the short term) by attracting more affluent population groups (mainly families with children)	• In the absence of regulation, the incoming population was homogeneous and more affluent than the local population. • TAMA 38 increased the probability of gentrification.
Planning Procedures	• Shortened the planning process by eliminating planning authorities' approval and instead requiring only a building permit for a single building	• The plan blocked local authorities from promoting a comprehensive urban renewal plan. • TAMA 38 took little account of its surroundings.
Government Role	• Reduced the state's role to that of a regulator	• Complementary measures that require central government funding were neglected by the government.
Policy Costs	• Required no governmental investment	• TAMA 38 mandated and increased local authorities' investment in urban infrastructure and services without increasing their budgetary resources.

Source: Authors' research findings

Urban Renewal: A Historical Overview

Throughout history, urban areas have had various functions whose importance is constantly bound to change (Roberts, 2000). The traditional specialization (industrial, residential, retail) of an area may become obsolete, and failure to adapt can have harsh consequences for the local environment and residents.

The theoretical literature does not provide a single, agreed-upon definition of urban renewal. The term is generally associated with any development occurring within the city (Tallon, 2013). Very narrow definitions regard it as merely a physical process of slum-clearance redevelopment (Couch, Sykes, and Börstinghaus, 2011), specifically tying it to U.S. policies of the mid-20th century. A broader definition sees it as "the process of adapting the existing built environment, with varying degrees of direction from the state" (Jones and Evans, 2008).

The literature offers various classifications of urban renewal policies and changes to this concept over time. Scholars have examined urban renewal using different time periods (Roberts, 2000) by referring to the initiating level (local or central government) (Tallon, 2013) or by the themes and aspects in focus (Turok, 2005). In this study, we have chosen a time-based classification that sorts urban renewal policies by "generations" (Carmon, 1999). We look at three different eras, each defined by typical urban renewal policies that have been common in Western societies.

The first generation, "the era of the bulldozer" (Carmon, 1999: 145), was defined by an aspiration to redeem lands in the poverty-stricken inner cities—with their crowded, decaying old buildings—to revitalize the central business district (CBD) (Fainstein, 1991; Hyra, 2012; Musterd and Ostendorf, 2008). It was characterized by "slum clearance" (Couch, Sykes, and Börstinghaus, 2011): mass demolitions of dilapidated housing units and displacement of their residents to inadequate complexes of public housing (Carmon, 1999; Goetz, 2010, 2011; Hyra, 2012). The first generation can be traced back to the 1930s in the United Kingdom and the United States (Carmon, 1999; Roberts, 2000). Others (Hyra, 2012) mark the Housing Act of 1949 as its beginning in the United States. This generation was a national effort in scope and with respect to the leading role of national governments (Carmon, 1999; Roberts, 2000).

The second generation emerged in the United States in the 1960s. It was defined by comprehensive urban renewal policies that aimed to correct past mistakes. Unlike the first-generation policies, those of the second generation were designed to benefit the residents of distressed neighborhoods and even tried to involve them in decisionmaking (Carmon, 1999). Alongside physical renewal—implemented on site, without evictions—the policies included social rehabilitation programs for the targeted populations (Couch, Sykes, and Börstinghaus, 2011; Roberts, 2000). It was a costly approach that was publicly acceptable in a time of economic growth in Western societies, but after a deep recession in the 1970s, public opinion changed, and those policies were abandoned (Carmon, 1999).

Unlike the state-led plans that characterized the previous generations, the third generation began from bottom-up gentrification, mainly in the 1980s. Gentrification is "a class-based process of neighborhood transition in which affluent residents move into and upgrade lower-income neighborhoods, primarily through improvements in a neighborhood's housing stock" (Moore, 2009: 118). Once started, gentrification usually does not go unnoticed by local authorities, which tend to support it through regulations, tax discounts, subsidized loans, and improvements to the environment as means to disperse concentrations of poverty and revive decaying neighborhoods (Carmon, 1999). Many distressed areas have been "brought back to life" through gentrification, but this process often takes its toll on the areas' long-time low-income residents, drawing broad criticism that identifies the term with displacement (Marcuse, 1985), loss of political power (Hyra, 2015), class conflict, and often, racial segregation (Goetz, 2011; Hyra, 2012; Moore, 2009).

The growing prevalence of gentrification was accompanied by an increasing perception that the complexity of urban problems had to be addressed by collaborations between the public and private sectors, known as public-private partnerships (PPPs) (Carter and Roberts, 2000; Fainstein, 1991). Such partnerships characterize the policy of the third generation and largely result in commercially oriented urban renewal (Couch, Sykes, and Börstinghaus, 2011; Fainstein, 1991).

Projects such as shopping and convention centers, hotels, and luxurious residences are executed as "planning deals," in which authorizations are given in exchange for high taxation and provision of public benefits (Margalit and Alfasi, 2016). It has become a way for municipalities to increase their economic growth and competitiveness vis-à-vis other cities, locally and globally (Harvey, 1989; Musterd and Ostendorf, 2008; Smith, 2002).

Examinations of the distribution of benefits from urban renewal PPPs have shown a contribution to the gap between the "haves" and the "have nots" (Carmon, 1999) and increasing segregation (Margalit and Alfasi, 2016) because improvements have been made mostly in similar areas and have mainly served elite markets (Margalit, 2014).

Urban Renewal in Israel

The three-generation classification (Carmon, 1999) is suitable for describing the evolution of urban renewal policies in Israel. The following review is essential for understanding what led to TAMA 38.

Israel's declaration of independence in 1948 was followed by a massive wave of immigration. The immigrants settled wherever possible, including in deserted homes and temporary accommodations in poor condition. A decade later, their outcry for better housing led the government[1] to adopt a typical first-generation policy of slum clearance, including evacuation of the residents to newly built accommodations on the assumption that physical improvement of their housing conditions would have a positive effect on all aspects of their lives (Carmon, 1999; King et al., 1987). However, the assumption was proven wrong, and the policy was abandoned after only a handful of projects were completed (Carmon, 1999).

The second generation began in the mid-1970s, with limited urban renewal programs that included housing improvements, such as repairs and apartment expansions, in several older neighborhoods (King et al., 1987). Those programs set the ground for a far more ambitious plan known as the Neighborhood Rehabilitation Project, which was launched in 1977. It was a comprehensive national program aimed at alleviating social distress by physical means and improving social services. The physical renewal focused on the renovation of the existing environment (Carmon, 2001; Geva and Rosen, 2018; King et al., 1987). Together with the emphasis on participation of local residents in the process (Carmon, 1999), those features made the program a typical second-generation plan of urban renewal. Despite having a largely positive effect, the policy has seen frequent budgetary cuts and an increase in the number of its target areas, significantly diminishing its effectiveness (Carmon, 1999).

In the 1980s, Israel's political economy changed from that of a social-democratic welfare state to that of a globalized state, relying mainly on the private market (Azary-Viesel and Hananel, 2019). That change has dramatically affected Israel's housing policy, leading, for example, to a significant reduction in its public housing stock (Hananel, 2017, 2018; Hananel, Krefetz, and Vatury, 2018). Since the 1980s, Israel has seen urban renewal efforts that can be classified as part of the third generation, particularly within the Tel Aviv area, the country's economic center. That process

[1] The government body in charge of this action was the newly established Authority for Redevelopment and Demolition of Slum Areas.

has intensified since the 1990s, turning formerly low-demand neighborhoods into buzzing real estate scenes that have drawn large private investors and entrepreneurs (Carmon, 1999; Geva and Rosen, 2018; Margalit and Alfasi, 2016). Israel's major cities have started collaborating with private developers in commercially oriented projects to achieve urban renewal goals. Tel Aviv Municipality has been responsible for numerous such PPPs, yielding similar projects of luxurious residences, office towers, hotels, and structures for other commercial uses (Darel, 2018; Margalit, 2014; Riba, 2018).

Since the turn of the millennium, Israel's urban renewal policy has focused on residential redevelopment and has left the local authorities only marginal influence. The policy promotes, almost exclusively, physical and economic goals (Geva and Rosen, 2018)—adding housing units—and does not address social issues (such as mitigating segregation, an aim common in other countries).

To promote urban renewal projects, in 1999, the government launched a new policy, known in Hebrew as *pinui binui* (evacuation and construction), which offered increased construction rights and tax exemptions to developers and property owners. Under that scheme, entire complexes are temporarily evacuated, demolished, and reconstructed (Geva and Rosen, 2018). In 2005, while *pinui binui* was facing implementation difficulties, it was joined by TAMA 38, which was designated for single buildings rather than complexes. It did not require going through the entire statutory planning process to obtain a building permit (NPBC, 2004b). This planning "shortcut" has made TAMA 38 a favorite solution for the renewal of residential buildings, which has become more evident following the 2011 housing-affordability mass protest (Charney, 2017; Eshel and Hananel, 2019; Feitelson, 2018; Mualam, 2018; Schipper, 2015).

Urban Diversity Framework

In recent decades, urban renewal has become closely linked to the theory of urban diversity. The theory grew out of criticism of modernist planning approaches, mainly the zoning approach, which had intentionally promoted segregation (Fainstein, 2005; Talen, 2012). Urban diversity emphasizes the importance of different types of diversity and heterogeneity in a given urban area for achieving successful urbanism and, consequently, vital and just cities (Fainstein, 2010; Haramati and Hananel, 2016; Talen, 2012).

The literature on urban diversity can be sorted roughly into three categories: economic, social, and physical (Fainstein, 2005; Haramati and Hananel, 2016), each describing a different form of mix. In the 1960s, Jacobs (1961) called for planning to be inspired by "livable" cities, defined by high density, multiple interactions between strangers, short streets, and a variety of uses in a given area. According to this approach, as a neighborhood fulfills more functions, it becomes more attractive for residents and visitors and brings more economic value to local businesses (Alfasi and Ganan, 2015; Jacobs, 1961). This view was later supported from an economic perspective, which recognized the linkage between diversity and economic growth (Florida, 2002).

Social mix, in the sense of different population groups living in the same area, is perceived as important for achieving equity goals (Fainstein, 2010; Talen, 2005, 2012). Diverse cities facilitate frequent contacts between residents from different social groups, which, according to

urban diversity advocates, eases tensions and suspicion among them, thus encouraging tolerance (Sandercock, 1998; Young, 1990).

Physical diversity refers to different building types, architectural styles, and streetscape designs (Fainstein, 2005). Buildings and housing units may differ in size, floor area, housing standard, price, and type of tenure (owner occupied or rented). Scholars link housing mix to social mix because of its influence on diverse populations' ability to reside next to each other (Bolt, Phillips, and Van Kempen, 2010; Cho and Kim, 2017; Galster, 2007; Kleinhans, 2004).

Research Methodology

This study examines the influence of TAMA 38 on urban diversity in Israel. To that end, we designed a multilayered research methodology, which is based on varied methods and sources of data. The study has two levels of analysis: national and local/neighborhood, each containing both quantitative and qualitative analyses.

The section on the national level provides background and infrastructure for subsequent neighborhood-level analysis. This section includes an introduction to TAMA 38 and its modifications over the years and presents a content analysis of laws and planning institutions' protocols. The second part of this section presents a quantitative analysis of the implementation of TAMA 38 over time and by district. Because no comprehensive repository for the subject data are available, we created a database using the data from the Madlan website. To that end, we listed nearly every completed TAMA 38 project in each municipality in Israel, creating the first comprehensive database of its kind regarding TAMA 38. We also examined the pace of implementation over time (2005–2018), using annual reports of the Government Authority for Urban Renewal (GAUR). Finally, based on the dataset we created, we examined the spatial distribution of TAMA 38 projects and their degree of compatibility with earthquake-prone areas. The aim was to see whether the plan solves the problem for which it was originally designed—reinforcing structures against earthquakes in high-risk areas.

On the local/neighborhood level, we analyzed the urban diversity of a specific neighborhood that experienced extensive TAMA 38 development. We chose to focus on the Kiryat Sharet neighborhood in Holon (a medium-sized city adjacent to Tel Aviv). Within the neighborhood, we located a specific area that had undergone extensive redevelopment under TAMA 38 and examined its social mix and housing mix before and after the redevelopment. We chose to focus on the original form of TAMA 38, with its relatively modest incentive package. The cumulative influence was not clear or widely known in advance (unlike the second, newer course of TAMA 38), and dramatic changes to the area and the neighborhood were not foreseen.

We focused on three indicators that are common in the literature and on which we had data. First, we examined the housing stock changes in terms of apartment size as square meters and the number of rooms of the apartment units in the selected area, the neighborhood, and the entire city. Second, we examined changes in housing tenure in the selected area, the city, and the country. In both cases, we used data on the city and the country as controls. Finally, we examined changes in the distribution of children and adults in the selected area and compared it with that in the neighborhood and the city.

Analysis of TAMA 38: The National Level

TAMA 38 was approved by the government in April 2005 and has since undergone significant changes that have had a major impact on the plan's implementation and spatial deployment. We briefly present the plan and the major changes that have taken place over the years, followed by an analysis of its implementation.

The Evolution of TAMA 38

TAMA 38 was conceived and formulated in the early 2000s, when authorities and decisionmakers in Israel were concerned with the possible repercussions of a devastating earthquake that might strike the country following the fatal earthquake in Turkey in 1999 (Israel Mapping Center, 2019). After 5 years of discussions in various government ministries and planning institutions, the plan was finally approved in April 2005. Its official goal was to establish a statutory framework to permit and encourage the issuance of building permits for reinforcing buildings built before 1980, when a strict construction code for earthquake resistance was introduced (IPA, 2005).

During the discussions before its approval, the plan and its objectives were criticized. A major criticism was that the plan does not prioritize earthquake-prone areas, such as the peripheral regions in the east of the country, which are close to the seismically active Jordan Rift Valley (NPBC, 2004b). Stakeholders further argued that the economic incentives that the plan offered developers were relevant particularly to high-demand areas in central Israel and not to the peripheral regions where seismic reinforcement is most needed (NPBC, 2004a). As we shall see in the following discussion, those concerns turned out to be justified.

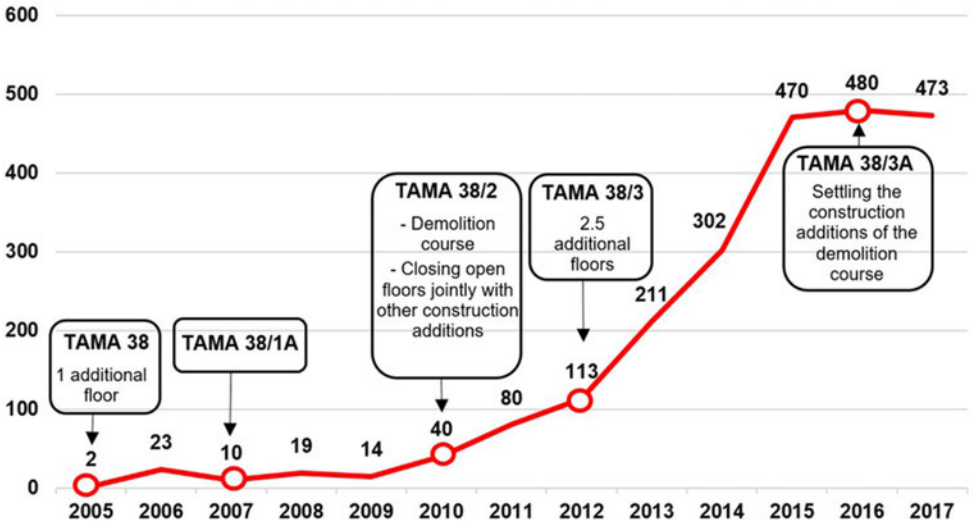
Another concern was that the desire to expedite construction, which had led to the decision to bypass the usual planning hierarchy, would lead to problematic implementation: The process would lack the local perspective and control and might lead to planning anarchy and overload of the local infrastructure (NPBC, 2004b). Those concerns became a catalyst for the mayors' protest of 2019 that ultimately led to a decision to end TAMA 38. Following those criticisms, the plan was amended to enable a local authority to deny a permit request that includes construction additions on the condition that it justifies its refusal. Another amendment (No. 23) enabled local authorities to design and promote a plan to reinforce structures on their behalf, designated for areas or neighborhoods and based upon the TAMA 38 provisions (IPA, 2016a).

The essence of the plan is that it grants the developer or apartment owner additional construction rights in exchange for reinforcing the building. The original version of TAMA 38, which came into force in May 2005 (see exhibit 2), enabled owners and developers to add one story to the preexisting structure. The developer could sell new apartments added in this story to cover construction costs and ensure profitability. The existing residential units in the building were entitled to an expansion of up to 25 square meters per unit, including constructing a security room (IPA, 2005).[2]

[2] Buildings of up to two stories with a floor area of up to 400 square meters were entitled to different incentives.

Exhibit 2

Building Permits Issued Under TAMA 38 per Year and Major Amendments to the Plan



Source: Authors' research findings

Over the years, the plan was changed several times, expanding its incentive package. As will be demonstrated (exhibit 2), the changes in the incentives are correlated to the pace of the plan's implementation. The plan was amended as early as 2007 (amendment TAMA 38/1A), to include clarification of some legal and technical issues (IPA, 2007).

In 2010, amendment TAMA 38/2 allowed the granting of incentives in projects that include demolishing a building and rebuilding it from the ground up, creating a new course for TAMA 38. It also encouraged the reinforcement of open-floor buildings, which are considered more hazardous, allowing closure of the open floors alongside the other additional construction rights (IPA, 2010).

In 2012, amendment TAMA 38/3 extended the incentive package by allowing the addition of two and a half stories on top of the existing structure. It also allowed the granting of additional construction rights on a different site in exchange for reinforcement of a building (IPA, 2012). An amendment to the Planning and Construction Law 1965 eliminated the condition that parking spaces be created in TAMA 38 projects. Instead, the applicants were required to participate in creating parking spaces in public parking lots (Ministry of Justice, 2012).

In late 2016, amendment TAMA 38/3A determined that the level of incentives for demolishing and rebuilding projects via TAMA 38/2 were to depend on the height of the preexisting building: owners of one-story buildings could add one and a half additional stories; owners of two-story buildings could add two and a half additional stories; owners of three-story buildings could add three extra stories; and owners of buildings of four or more stories could add three and a half additional stories (IPA, 2016b).

The incentives package also included tax benefits for the developers and the property owners and, to accelerate development, a reduction in the majority of tenants needed for project approval. In 2008, the lands law was amended to require a two-thirds majority of the owners to start a TAMA 38 project of the common property (Ministry of Justice, 2008a). The real estate taxation law was amended to grant exemption from betterment tax, sales tax, and acquisition tax in sales transactions whose exchange was influenced by rights under TAMA 38 (Ministry of Justice, 2008b). In 2011, the Planning and Construction Law 1965 was amended to include exemption from payment of betterment levies on real estate improvements resulting from TAMA 38. The amendment also mandated the Minister of the Interior to approve essential discounts on building permits in this program in various areas (Ministry of Justice, 2011). In 2012, an amendment to the Land Law 1969 determined that the consent of at least 80 percent of the property owners was required for a demolition-and-rebuilding project under TAMA 38/2 (Ministry of Justice, 2012). In 2017, an amendment to the Planning and Construction Law 1965 allowed a municipality to collect a quarter of the betterment levy for building additions that exceeded two and a half stories under TAMA 38 (Ministry of Justice, 2017).

In 2019, the National Planning and Building Council (henceforth, NPBC)—Israel's highest planning authority—decided that TAMA 38 would continue until October 1, 2022, thus creating a transition period for the real estate market to adjust and for a new model of urban renewal to be adopted (Mirovsky, 2019; Petersburg, 2019). The new model was to be based on detailed local plans that lay out the regulations for urban renewal in specific areas (complexes and neighborhoods) (Melenitzky, 2019; Petersburg, 2019). The local planning committees would be granted extended powers, enabling them to approve mixes of land uses, merge lots, and expand roads and public spaces (Melenitzky, 2019).

The decision was adopted after months of public discussion critical of the cumulative impact of TAMA 38. Several mayors began limiting the plan implementation in their municipalities by reducing the number of building permits for TAMA 38 projects (Mirovsky and Tzur, 2019). They complained that TAMA 38 had caused crowding in their municipalities. The tax exemptions it granted had undermined their ability to provide proper solutions to the growing demand for services and the overburdened infrastructure (Petersburg, 2019; Tzur, 2019). The protesting mayors were joined by the Israel Planning Administration (IPA) (Gazit, 2019), the government body responsible for formulating the national planning policy. Its spokespersons had also mentioned the failure of TAMA 38 to meet its reinforcement goals in peripheral regions (Frenkel, 2019). Initially, the IPA had intended to recommend ending the plan within a year, drawing fierce opposition from real estate developers, who raised concerns about the perilous impact of instantly revoking TAMA 38 without adopting an alternative (Frenkel, 2019; Gazit, 2019). After a series of discussions among the relevant bodies, the date of October 1, 2022, was recommended (Petersburg, 2019).

In September 2020, the Minister of the Interior ordered the promotion of a bill that would include planning reforms—among them, regulations intended to replace TAMA 38. Although the new policy has not yet been finalized (as of the time of writing), reports indicate that it will include provisions similar to those of TAMA 38 but will give more power to the local authorities

and be better suited to their interests (Tsion, 2020). The equivalent of the original reinforcement aspect of TAMA 38 thus requires stricter engineering scrutiny of the developers, it will allow additional construction rights of 200 percent, and open ground floors will be closed and rebuilt for commercial and public uses (not for housing units). The bill suggests a reduction in the additional floor area be given as an incentive. The number of additional housing units and the addition of a balcony will be determined per project on the basis of the lot size. The equivalent of the second version of TAMA 38 is designed to allow for more extensive additional construction rights (up to 350 percent), but it will require that vast parts of the projects be allocated for commercial and public uses. The bill also recommends canceling the exemption from the betterment levy, but the decision is still pending. The challenge of earthquake preparedness in the peripheral regions seems to be on the agenda as well. A special team, appointed by the Ministry of the Interior, is promoting the establishment of a governmental fund that will accumulate benefits from improvement levies—once again collected from urban renewal projects under the new policy—to subsidize the reinforcement of buildings in the periphery (Melenitzky, 2021).

Implementation of TAMA 38

To examine the implementation of TAMA 38, we first examined the number of building permits issued per year under the plan. Building permits are a good indication of the plan's implementation because they are the last step in the authorization process before construction begins. A correlation exists between the evolution of the additional construction rights under TAMA 38 and the pace of implementation in building permits issued per year.

As shown in exhibit 2, during the first 5 years (2005–2009), the number of building permits issued per year was minor and stable. However, starting in 2010, a significant increase occurred over 6 years. This trend can be explained by combining several factors pertaining to the plan itself and Israeli society. Regarding direct changes to the plan, one must refer to the extension of the additional construction rights, which began with the approval of TAMA 38/2 in 2010. That amendment coincided with the social protests of 2011, which brought housing issues to the fore. Especially important was increasing the supply of housing units, which could also be accomplished through TAMA 38.

An examination of the distribution of building permit requests, the number of buildings, and the number of housing units by district—presented in exhibit 3—reveals the nationwide geographical distribution of the plan.

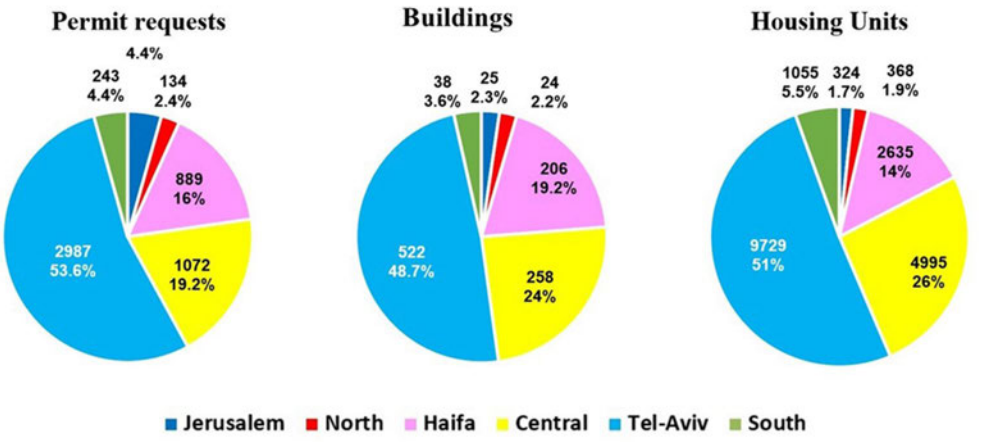
As can be seen in exhibit 3, the distribution is almost identical concerning the three variables. Most of the construction (72.8, 72.7, and 77 percent) is in Tel Aviv and the Central districts, which together constitute the Tel Aviv metropolis—the social and financial "heart" of the country—where the demand for housing is generally high. However, in the peripheral regions of the country (North and South districts), the plan has hardly been implemented.

A comparison of the geographical distribution of TAMA 38 with the location of Israel's most earthquake-prone areas shows clearly that no connection exists between the levels of threat and the levels of redevelopment (and reinforcement) as part of the plan. Map 1 demonstrates that

the minimal execution of TAMA 38 projects in the North district—where only 1.9 percent of the housing units that have been reinforced as part of the plan are located—overlaps a significant portion of the most threatened areas in the country. The Tel Aviv and Central districts, by contrast, are located at a considerable distance from the seismically active areas.

Exhibit 3

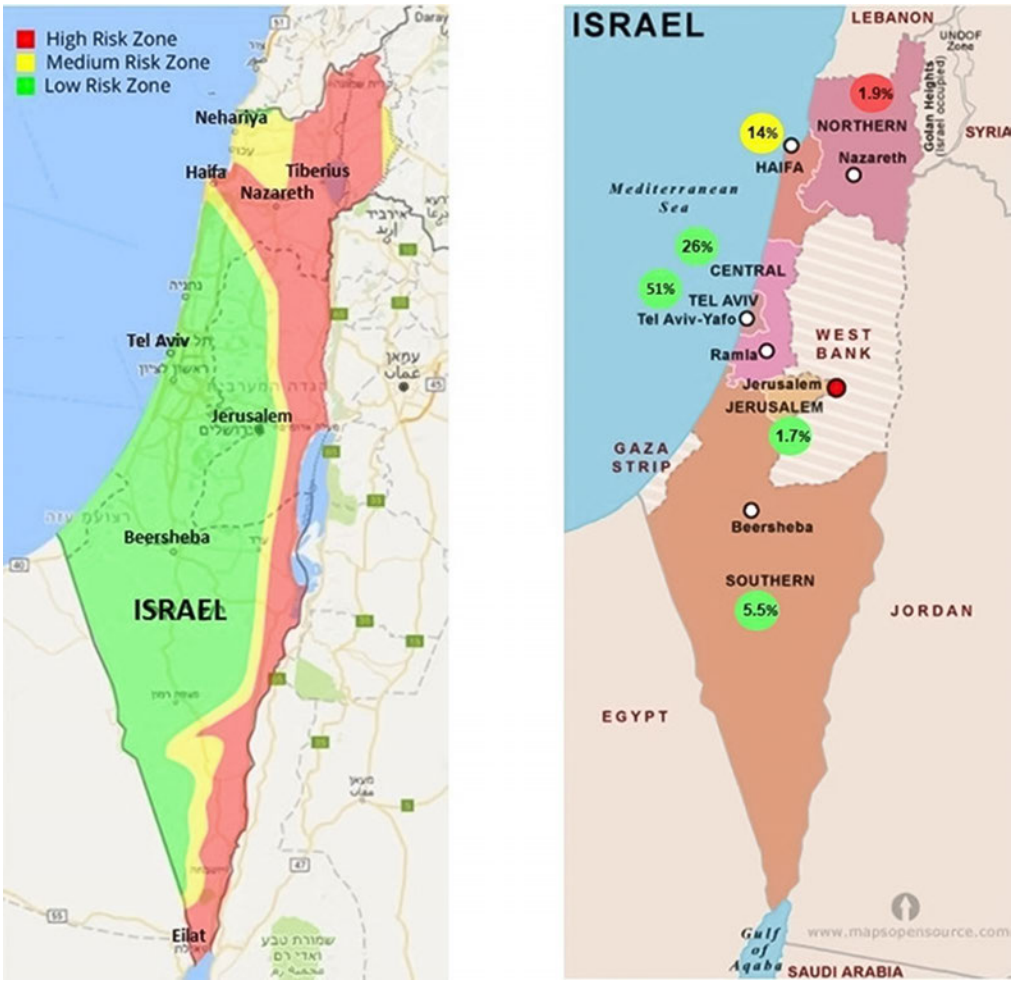
TAMA 38: Implementation per District, 2005–2018



Source: Analysis by the authors, based on data from the Madlan website

Map 1

Israel's Seismic Threats Compared with TAMA 38 Implementation (2005–2018 Housing Units), by District



Sources: https://www.ynetnews.com/articles/0,7340,L-5305088,00.html; http://www.mapsopensource.com/israel-districts-map.html

Local/Neighborhood Level Analysis: Kiryat Sharet, Holon

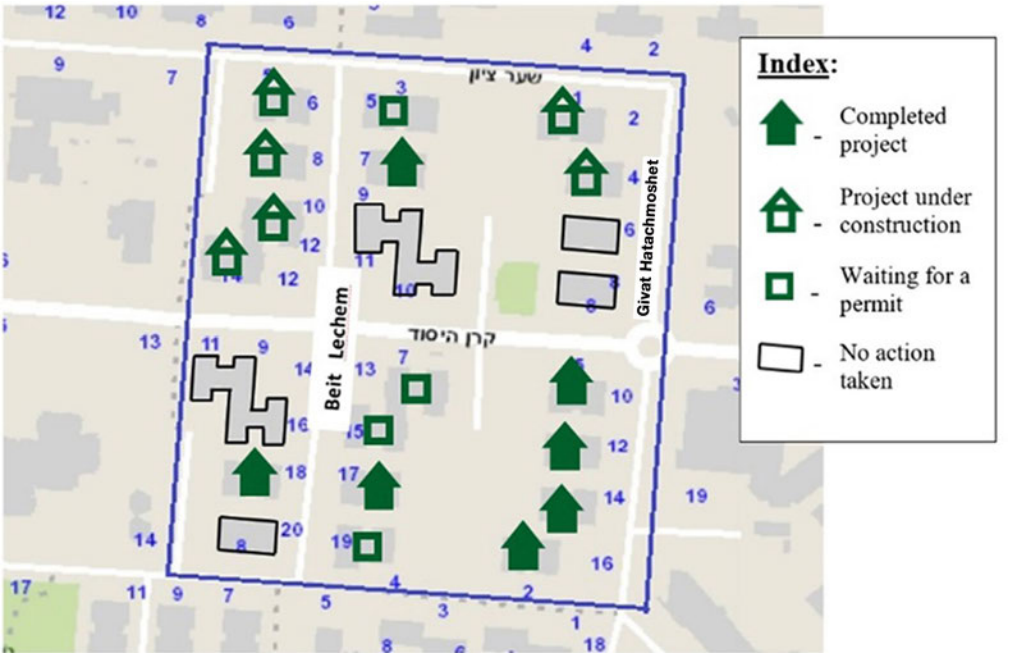
TAMA 38 is a national master plan that authorizes construction permits for individual buildings. It is a unique, hybrid system that deals with both the national and local levels. What happens, though, when a large number of TAMA 38 projects are concentrated in a small area? To answer that question, we had to find a location with a relatively high concentration of TAMA 38 projects on a small amount of land. Because the plan is relatively new and has seen significant rates of implementation only in recent years, locating a suitable area for analysis was not simple.

Of the few possible locations, one was the Kiryat Sharet neighborhood (henceforth, the neighborhood) in Holon (hereafter, the city), a mid-size municipality bordering Tel Aviv from the southwest (see Map 1). Holon differs from other potential locations in having a lower socioeconomic rank (6 on a scale of 1–10, where 1 is the lowest), implying the presence of a large lower-middle class, which made it more interesting for us to study. Kiryat Sharet, built in the early 1970s, has undergone a substantial renewal process in recent years, spearheaded by a growing number of TAMA 38 projects.

Within the neighborhood, we located a six-block area (Givat Hatachmoshet and Beit Lechem streets) with 24 residential buildings, 17 of which are in various stages of TAMA 38. Seven have already completed renovations, six are in the midst of construction, and four have filed requests for building permits. As of the time of this study, no TAMA 38 action had been taken regarding the remaining seven buildings, as shown in Map 2.

Map 2

Selected Area and the Status of Its TAMA 38 Projects



Source: Map cropped from Holon Municipality's GIS map: https://v5.gis-net.co.il/v5/Holon

According to planning documents in Holon's municipal archive, each of the 24 buildings originally included 16 apartments, totaling 384 housing units in the selected area before TAMA 38. As of December 2018, after completing only seven projects, the area already had 451 housing units. An additional 126 units have already received or are waiting for building permits, yielding a total potential addition of 193 units, which would increase the number of units in the selected area to 577—150 percent of the original number. It is particularly interesting to examine the influence of such intensive redevelopment on the mix of housing and population in the selected area. Before we

present an analysis of the neighborhood changes following the implementation of TAMA 38, we present some pictures for illustration. As the pictures in exhibit 4 show, the new buildings are very different from the old ones.

Exhibit 4

New vs. Old in the Selected Area

Each photo presents on its left a renovated building that experienced TAMA 38 alongside an old, formerly similar, building on the right.

Source: Photos taken by the authors

Housing Stock

First, we examined the impact of TAMA 38 on the housing stock in the selected area, looking at the physical aspects of this transformation. Our focus was on housing size, a common indicator of housing diversity, but we also checked other factors. We analyzed hundreds of real estate transactions in the selected area before and after introducing TAMA 38[3] and compared the results with those in the entire neighborhood, the city, and the country. We found that the selected area had experienced a disproportionate rise in housing costs. Prices there rose by 400 percent, compared with an increase of 256 percent in the entire neighborhood (and with similar rates throughout the city and the country). They went from being the lowest of the four (compared with housing prices in the entire neighborhood, the city, and the country) until 2012—when the first TAMA 38 projects in the selected area were launched—to the highest by the time this study was conducted. How did such a change occur? By sorting the housing transactions in the selected area by the number of rooms in the sold housing units,[4] we found that the bulk of transactions each year were two-

[3] The analysis was conducted by measuring the annual average cost of housing transactions between 2005 and 2018.

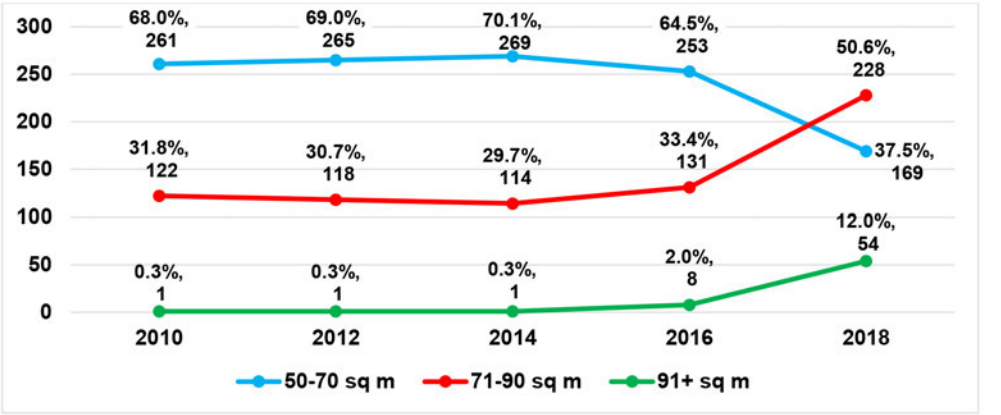
[4] Transactions occurred between 1998 and 2018 and were retrieved from Madlan and WinWin web platforms.

bedroom apartments before TAMA 38 but three-bedroom apartments in the following years. Four-bedroom apartments began to appear in our data only in 2012 (Shamai and Hananel, 2021).

The implications of this transformation in the housing sizes in the selected area are presented in exhibit 5. An examination of the housing stock changes there over the years, using the floor area of the apartments, demonstrates the extent to which those units grew following TAMA 38. Whereas in 2014, housing units smaller than 70 sq m constituted 70.1 percent of the housing stock, their share declined to 37.5 percent in just 4 years, as the share of larger apartments grew significantly (91+ sq m, from 0.3 percent in 2010 to 12 percent in 2018; 71–91 sq m, from 31.8 percent in 2010 to 50.6 percent in 2018).

Exhibit 5

Housing Units in the Selected Area, by Floor Area, 2010–2018



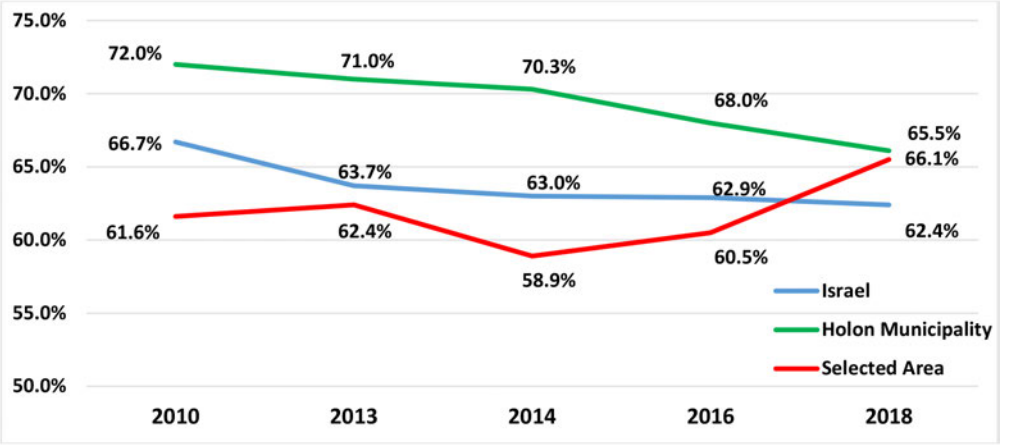
sq m = square meters.
Source: Shamai and Hananel, 2021

Housing Tenure

Type of housing tenure is a common indicator of housing mix because it is a feature of the housing unit itself (owner occupied, privately rented, rented with subsidy), but it also indirectly indicates social mix levels, assuming differences exist between renting and owner-occupying households (Kleinhans, 2004). We examined the ratio of those households in the selected area from 2010 to 2018 and compared it with that in the city and the country as control groups (exhibit 6).

Exhibit 6

Homeownership Ratio: Israel, Holon, and the Selected Area, 2010–2018



Source: Data provided by Holon Municipality's department of strategic planning

We found trends in the selected area that were contrary to those in Holon and the country. The number of homeowners in the selected area spiked between 2016 and 2018 (when TAMA 38 projects there began to reach completion), raising their proportion among the total number of households (from 237 in 2016 to 295 in 2018). That spike occurred while the proportion of homeowners had been declining in the city since 2010, meaning that newcomers to the city of Holon during that period were mainly renters, whereas newcomers to the selected area between 2016 and 2018 were owner occupiers.

Contrary to the trend in the selected area, the national rate of homeownership has decreased significantly over the years: from 73 percent in 1995 to 69.5 percent in 2003 and to 62.4 percent in 2018. The percentage of households in owner-occupied dwellings in Israel in 2018 was lower than the average in European Union countries (69.3 percent) (CBS, 2020; Svirski and Hoffmann-Dishon, 2015). This trend is in stark contrast to Israel's longstanding policy, since the state's inception, of encouraging homeownership (Carmon, 1998). Moreover, unlike other countries in the European Union and the Organisation for Economic Co-operation and Development until recently, Israel's housing policy has not addressed long-term rental housing and has hardly regulated the private rental market. Currently, no Israeli policy protects or encourages long-term tenancy.

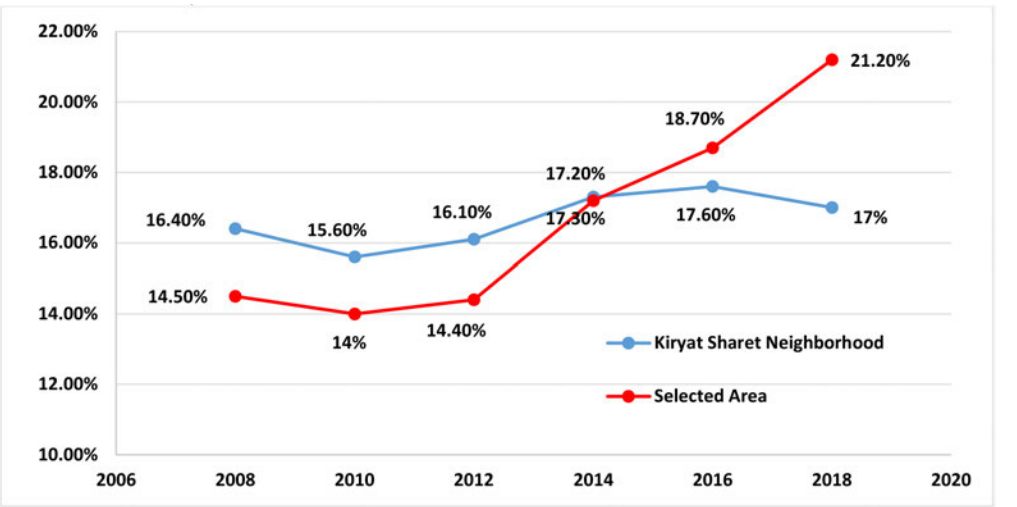
Population Mix

Finally, we wished to examine changes in population size and distribution by age group in the selected area, but those data were available only for the entire neighborhood, not just for the selected area. The available data show that over the years (2010–2017), the neighborhood's population size remained unchanged, at approximately 14,000. Those findings surprised us, given the addition of new housing units to the selected area, which is part of the neighborhood.

To understand population change in the selected area, we used data regarding the number of pupils (aged 3–18) in public schools and their distribution by educational stage (kindergarten, primary school, and high school). Exhibit 7 shows contrary trends regarding the number of pupils in the selected area and in the entire neighborhood.

Exhibit 7

Annual Percentage of Pupils in Public Schools: Kiryat Sharet Neighborhood and the Selected Area, 2008–2018



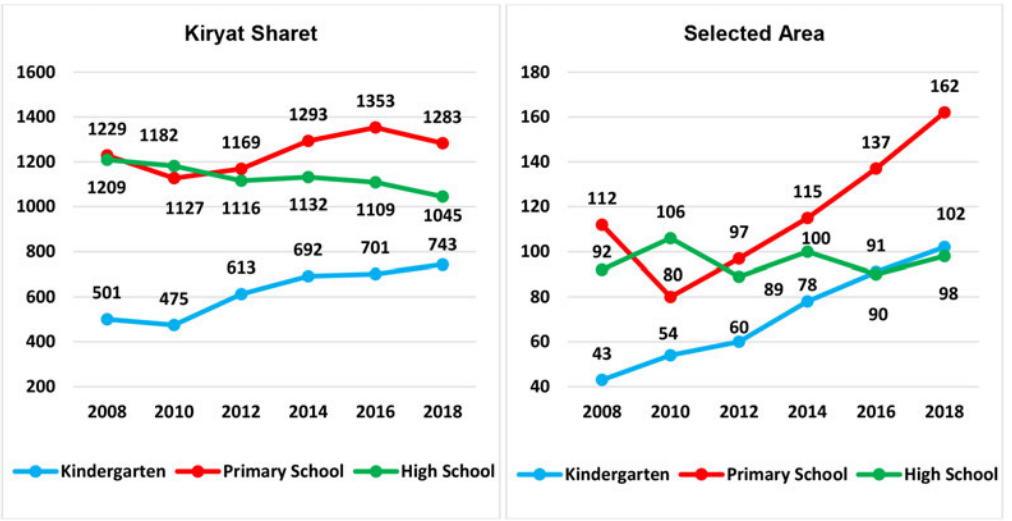
Source: Data provided by Holon Municipality's department of strategic planning

Whereas both areas began with a minor decrease in the number of pupils between 2008 and 2010, followed by an increase between 2010 and 2014, in 2014 they parted ways. As the number of pupils in the Kiryat Sharet neighborhood attending public schools stabilized (2014–2016) and decreased (2016–2018), in the selected area, it continued growing (from 293 in 2014 to 318 in 2016 and to 362 in 2018). During that time, around 2014, TAMA 38 projects in the selected area were beginning to be completed, and the new housing units that the first projects had added to the area were inhabited. By 2018, the total number of pupils in the neighborhood was 4.5 percent higher than their number in 2008 (2,939 in 2008, 3,071 in 2018) compared with a 46.5-percent increase in the selected area (247 in 2008, 362 in 2018).

Finally, we zoomed in on the number of pupils in the selected area who attend public schools to determine how the pupils are divided by the type of school they attend (exhibit 8). We discovered that, whereas the number of high school pupils—the oldest group—had alternated since 2010 between minor increases and decreases, the number of those attending kindergartens and primary schools had grown steadily since 2008 and 2010, respectively. Their growth rates are remarkable: 137.2 percent in the number of kindergarten children between 2008 and 2018 and 102.5 percent in the number of primary school pupils between 2010 and 2018. Those findings indicate that the total number of pupils in the selected area between 2010 and 2018 rose because of an increase in the number of younger pupils in the early stages of education.

Exhibit 8

Annual Number of Pupils (Aged 3–18), Divided by Type of School: Kiryat Sharet and the Selected Area, 2008–2018



Source: Data provided by Holon Municipality's department of strategic planning

Comparing those findings with equivalent data for the entire neighborhood reveals clear differences. First, the annual number of high school students in Kiryat Sharet has decreased by 13.5 percent since 2008. Their number in the selected area has largely remained steady. Second, the growth rate of the number of kindergarten children in the neighborhood (56.4 percent) is much lower than in the selected area. Moreover, most of the growth occurred between 2010 and 2012. It was then followed by a much slower growth rate (21.2 percent) until 2018, a significant part of which is attributable to the selected area. Third, unlike the impressive and continuous increase in the number of primary school pupils in the selected area, their number in the neighborhood grew by just 20 percent between 2010 and 2016 and then decreased until 2018.

Conclusions and Discussion

TAMA 38 is a national master plan that addresses the need to both reinforce structures against earthquakes and renovate old buildings. This study examines the influence of this plan on various parameters.

Regarding the plan's official objective of earthquake preparedness and its execution, the findings demonstrate that the expansion of the incentives it grants has led—with high probability—to an acceleration of its pace of implementation throughout Israel. As the plan has been amended to grant more construction rights, so has the number of new TAMA 38 projects grown each year. The program's spatial implementation has been uneven, however: Almost 75 percent of the renovated buildings are in the Tel Aviv metropolitan area (Tel Aviv and the Central Districts), with only 1.9 percent in the North district, which is Israel's most earthquake-prone area. As we have seen, no relation exists between the level of earthquake threat and the level of redevelopment

(and reinforcement) under the plan. The formulators of TAMA 38 correctly foresaw its future geographical distribution, and their efforts to make the plan seem more lucrative to the public have borne fruit. However, the growing appeal of TAMA 38 to the housing market has distanced the plan from its original purpose—earthquake preparedness. Instead, it has become a way to meet the challenge of an ongoing housing crisis, a popular tool for urban renewal and enlarging the housing stock.

As an urban renewal program, TAMA 38 has prepared more than a thousand buildings for a possible earthquake without relying on public funds. The completed projects seem to significantly improve the quality of life of the tenants, whose dilapidated buildings are renovated and homes enlarged. Large families from low socioeconomic backgrounds, in particular—who can afford to own only small, old apartments—benefit from TAMA 38 because it reduces crowding in their homes (Malchieli, 2019). Aging tenants benefit from the addition of an elevator. The new housing units have increased the percentage of homeowners in the selected area. By contrast, their percentage in the city and the country has declined. TAMA 38 projects have also contributed to an increase in the number of young children in the selected area. The annual number of pupils has grown there, whereas their number has declined in the entire neighborhood.

Concerning population mix, TAMA 38 projects have added new and spacious apartments next to old compact ones, ostensibly diversifying the housing stock in the selected area. However, if this process continues in the same direction, replacing all the small, old compact apartments with spacious new ones, it is bound to bring to the selected area a homogeneous population—in our case, families with young children. This outcome is interesting because young families are usually associated with smaller and rented housing units. However, it corresponds to a recent internal migration trend in Israel. In light of the housing affordability crisis, middle-class families with children are moving into less affluent municipalities, where they can afford better housing (Azary-Viesel and Hananel, 2019; Mann and Hananel, 2021). The entry of young families with children has a dual meaning for local authorities. On one hand, those authorities yearn for a population that can stop the aging of old neighborhoods. On the other hand, these families are larger households that require the expansion of existing local infrastructure and services.

On the planning level, our findings have shown that TAMA 38 is a short-sighted plan that does not consider the built environment but clearly affects it when implemented extensively. The opposing mayors' assertion that the plan has overloaded the infrastructure of their municipalities without providing the planning or budgetary means to meet the increased demand makes sense in this context. The plan significantly shortens and speeds up the planning procedures. Builders do not have to obtain approval of a plan through the regular, hierarchical planning process; all that is needed is a building permit for a single building. However, the focus on the individual structure means that TAMA 38 disregards its surroundings, which is an obstacle to local authorities' attempts to promote a comprehensive urban renewal plan that must consider the addition of the public services, public areas, and infrastructure that should accompany residential development.

The last two points—the government's role and the policy cost—are interrelated. TAMA 38 is a market-led program. The government functions only as a regulator, and no public money is invested. On the other hand, the regulatory role has caused the government to neglect

complementary measures that require central government intervention, such as urban renewal and reinforcement of buildings against earthquakes in peripheral and other areas where no economic viability exists for the private market. Lack of government budgeting requires local authorities to invest in additional urban infrastructure and services without increasing their budget.

Above all, Israel's experience of TAMA 38 shows that under certain conditions—suitable incentives and a bustling housing market—the private market will gladly take upon itself to promote national goals as part of urban renewal efforts, but that response is liable to lead to unequal and uncontrolled development. To avoid such consequences, we recommend that the following be considered:

- The state must be involved in the process, not just as an observer and regulator. Harnessing the capabilities of the private market must not obscure the need for governmental interventions and budgeting, necessary complementary measures, and steps to counter market failures. Such interventions include designated programs funded by government allocations—in the Israeli case, for the periphery or wherever market-led urban renewal is not economically viable.

- National goals other than earthquake preparedness could be better suited to the mechanism of TAMA 38.

- Urban renewal should be initiated and led by local authorities. As such, urban renewal must be planned at the local level. It cannot exist spontaneously and sporadically and be led only by market forces, potentially preventing comprehensive urban renewal that would better serve local interests.

- The policy should be flexible and hybrid. Perhaps a better alternative would be to design a plan that offers a hierarchy of incentives, such as increased construction rights for developers and residents in projects that include more construction for the public's benefit. Perhaps the more public goals a project promotes (land-use mix, public buildings and grounds, housing mix, affordable and public housing), the more incentives it may receive. Also worth considering is whether complex-based planning would be suitable in each case in which reinforcement and renewal are needed.

- In Israel, the establishment of local urban-renewal administrations in various municipalities has helped improve the engagement between residents and developers.

The lessons and conclusions from the Israeli case clearly show the need for decisionmakers at all levels—mainly at the local level—to be proactive in developing and promoting comprehensive urban renewal plans that consider infrastructure development (including transportation, education, and health services) in addition to residential development and that do not leave that development entirely to the goodwill of the private market. A more hands-on approach is essential for preserving the interests of the state and local authorities in the process and for better representing the public's interests. Ultimately, more engagement is expected to maximize the public benefits of working through the private market and to distribute those benefits more evenly.

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