State Comptroller of Israel | Local Government
Audit Report | July 2025

Public Space

Shading of Urban Public Spaces

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Background

"One day he (Honi The Circle Maker) was walking along the road and saw a man planting a carob tree.
He asked him: How many years will it take for this tree to bear fruit?
He told him: Seventy years.
He asked him: Are you sure you will live seventy years and eat its fruit?
He told him: I found a world full of carob trees; just as my ancestors planted for me, so do I plant for my descendants."
(Babylonian Talmud, Tractate Ta'anit, 23a)

The State of Israel is characterized by high vulnerability to the expected impacts of climate change. These changes are expected to significantly affect all areas of life, and therefore require proactive preparation. In densely populated urban areas, a phenomenon known as the "urban heat island"[1] prevails, meaning that air temperatures within cities are approximately 2 to 12 degrees higher than in surrounding areas. The urban heat island effect is expected to prolong and intensify heatwaves in the future[2]. Proper and effective shading impacts the local economy, residents' health in terms of walkability, sun exposure, and use of public transportation, as well as the level of community engagement and sense of belonging. Shading through trees and other greenery also provides benefits by absorbing pollutants.

Cities are on the front lines of climate change adaptation. Currently, approximately 75% of Israeli citizens live in municipalities with 20,000 residents or more, and by 2050, this proportion is expected to reach 90% or even higher[3]. In this context, the built-up urban environment is especially vulnerable to the effects of densification, extensive coverage of concrete and asphalt, and the growing scale of human activity, all of which make shading of public space particularly vital. Local authorities therefore have significant potential to help

1 Studies show that during the 20th century, temperatures in city centers increased at a higher rate than in nearby open areas, effectively creating urban heat islands. The intensity of the urban heat island effect depends on several factors, such as the size of the city, its structure, energy consumption and transportation within it, building height, the proportion of green and open spaces, local topography, and the area's wind patterns. (Adapted from the Climate Change Preparedness Action Plan, Tel Aviv-Yafo, 2020, p. 37).

2 Low Carbon Living – CRC, Guide to Urban Cooling Strategies (July 2017).

3 Manuel Trajtenberg, Rachel Alterman, Dan Ben-David, Dan Perry, Shlomo Bechor, Shira Lev Ami, Iris Hahn, David Katz, and David Elkan, **A Dense Future – Israel 2050: Implications of Future Density Rates on Israel's Economy, Housing, Education, Open Spaces, Transportation, Health, Environment, and Water** (November 2018).

address the warming of public urban areas due to the climate crisis by implementing policies that respond to the challenges posed by climate change.

Despite the many benefits of natural shading in urban areas, many Israeli cities are characterized by a scarcity of street trees[4]. Shading the urban public space is particularly important in a hot, sun-drenched country like Israel, especially in light of climate change, which brings rising temperatures and more frequent heatwaves.

4 Street trees are all trees planted within the urban right-of-way or in public spaces, typically in areas characterized by hard ground coverings (asphalt, concrete, paving). They are an important component of the urban forest and have a significant impact in terms of shading heat-absorbing surfaces and reducing temperatures in the urban heat island.

Key Figures

70%

The national target for continuous tree shade coverage on sidewalks along streets with significant walkability[5] potential

Approx. 450,000

trees are to be planted by the year 2040, according to an estimate by the National Economic Council, in line with Government Decision No. 1022

Approx. NIS 142 million per Year

is lost to the public, inter alia, due to the absence of forest regulations. For illustration: with this sum, it would be possible to plant 40,570 trees, based on the average replacement value of a tree slated for felling, estimated at NIS 3,500 per tree

Only 1 inspector

has served in this role since 2022 to enforce the Forest Ordinance

21 local authorities

received support totaling approximately NIS 21.3 million through a call for proposals by the Ministry of Environmental Protection. Of these, 11 authorities received support for both the urban shading program and the pilot program, 7 were supported only through the urban shading program, and 3 received support only through the pilot program.

Only 9% of local authorities

had uploaded their tree survey to the national database for street trees in Israel – the "Digital Urban Forest" – as of January 2025. The database contains information on approximately 2.94 million trees.

761,782

Trees were felled with a permit in the years 2014- 2023. Of these, 443,154 trees (58%) were felled due to construction.

Approx. 70% of local authorities

cease the regular irrigation of trees in public spaces approximately three years after they are planted.

5 The degree of comfort and walking safety in a given urban area for pedestrians.

Audit Actions

In the months of August 2024 to January 2025, the State Comptroller's Office examined the efforts to promote the shading of urban public spaces through street trees and the measures taken to achieve the goals set in Government Resolution 1022, "Shading and Cooling of Urban Spaces through Street Trees as Part of Climate Change Preparedness" (January 23, 2022). The audit focused on the Ministry of Finance, the Ministry of Environmental Protection, the Ministry of Agriculture and Rural Development, the National Economic Council, the Ministry of Interior, the Planning Administration, and the Ministry of Construction and Housing, as well as the following entities: the Survey of Israel, the Federation of Local Authorities in Israel, Israel Railways, the Forum of 15 (independent cities), the Israel Electric Corporation, Fire and Rescue Services, the Water Authority, and Keren Kayemeth LeIsrael – Jewish National Fund. In-depth audits were conducted in the municipalities of **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** ('the audited local authorities'). Complementary audits were conducted in the municipalities of **Bnei Brak**, **Hadera**, **Yavne**, **Kfar Sava**, **Petaḥ Tikva**, **Ra'anana**, and **Tel Aviv-Yafo**, as well as the Israel Green Building Council (which is not an audited body).

The audit examined several topics, including policy, planning and regulation of shading in public spaces; enforcement of the Forest Ordinance; allocation of resources for public space shading; measurement, mapping, and target-setting for shading; knowledge development and information accessibility in the field of urban forestry and shading; and management of urban forests in local authorities.

Key Findings

Government Resolution 1022 of January 22, 2023 – The audit found that despite the shading targets outlined in the resolution, its ability to compel local authorities to take action in this area remains limited. The wording of the resolution indicates that its provisions are not binding on local authorities, leaving their participation to their discretion. Moreover, many of the resolution's clauses lack defined budgets for their implementation.

Lack of Mandatory Shading Guidelines in Planning or Construction – The audit also found that although some recommendations from the National Strategic Plan for Urban Shading and Cooling through Trees (the National Shading Plan) have been partially implemented, Israel currently lacks binding shading guidelines for the planning of streets

and open public spaces or for construction in built-up areas as a whole. Consequently, there is no adequate framework to ensure improvement of thermal comfort during the hot season in Israel's public urban spaces.

- **Regulation of the Protection of Mature Trees –** The audit found that despite the legal authority of the Tree Officer to approve or reject requests to cut down mature trees, and despite their significant involvement in issuing opinions during planning and construction processes, this is not always sufficient to protect tress designated for preservation from being felled. In more severe cases, violations of felling permit terms were found, in which trees designated for preservation were cut down or damaged. The audit also revealed that the preparation and finalization of professional opinions for plans and permits involves multiple review cycles, resulting in delays in the planning and construction processes.

- **Conflict Between Above- and Below-Ground Infrastructure and Trees –** The audit found that some of the municipalities examined – specifically the cities of **Dimona** and **Jerusalem** – encounter difficulties in planning tree plantings and in addressing damage caused by tree roots. In Dimona, for example, tree roots have damaged sidewalks, while in Jerusalem, the dense concentration of underground infrastructure and the challenge of coordinating with utility providers complicate efforts to preserve tree habitats in new development projects. Further difficulties arise from tree pruning activities carried out near facilities belonging to the Israel Electric Corporation (IEC), which are not always coordinated with the municipalities. Moreover, the contractors hired by the IEC to perform pruning are not required to be certified arborists, and as a result, trees may be harmed during the pruning process. Hundreds of mature trees were felled as part of urban renewal projects due to fire safety requirements stipulated in the Planning and Building Law, 1965, which mandate the establishment of a fire access zone and the clearing of trees along the route between that zone and the buildings. This is in addition to restrictions on planting trees due to expansion requirements. Despite the new regulations approved by the National Planning and Building Council – which allow for the consolidation of fire access zones for adjacent buildings and the designation of roadways and sidewalks as such zones – there is still no effective solution for the common patterns of urban renewal. These often do not permit synchronized planning and implementation in neighboring buildings. In the absence of uniform guidelines, coordination between the needs of various urban infrastructure systems and the conditions required for tree planting and healthy growth is handled differently by each local authority, and in some cases, inconsistently from one plan to another. This inconsistency has led to a marked reduction in planned tree plantings and makes it difficult for trees to grow properly, as the available space for their root systems is often insufficient.

- **Enforcement of the Forest Ordinance –** It was found that there is a significant lack of oversight regarding the enforcement of the Forest Ordinance. A substantial gap exists between the scope of supervisory and enforcement tasks and the number of inspectors available to carry them out. Moreover, the number of inspectors has declined, and since 2022, only one inspector has been operating in this field. The situation is so dire that in

2022, no inspection activities were carried out in the central region, and no investigation files were dealt with. Enforcement actions by the government forest officer in relation to violations of directives issued under the Forest Ordinance – such as the unlicensed felling or transplanting of mature trees in private or public urban areas, forests, agricultural lands, nature reserves, or national parks – are conducted retroactively and only upon random reports. In addition, the government forest officer does not possess information on the number of replacement trees actually planted, if any, in accordance with felling licenses. Furthermore, guidelines in regard to working near trees are not actively enforced by the forest officer and instead serve as general limitations on actions that may harm trees, with no systematic follow-up on compliance. Although the full scope of damage to mature trees resulting from non-compliance with these guidelines is unknown, this issue appears to be a key contributor to tree mortality in urban public spaces. It was also found that local authorities generally do not enforce guidelines for work conducted near trees as part of their construction oversight.

- **Estimation of Revenue From Monetary Levies for Landscape Compensation –** The audit revealed that over the past decade, the number of tree-felling permits increased by 45%, without a significant change in the average number of trees felled per permit (from an average of 8 trees per permit to 9). Overall, there was an 86% increase in the number of trees felled in Israel (from 47,488 in 2014 to 82,658 in 2023). In other words, the number of authorizations for tree felling rose significantly, and the number of trees felled increased accordingly. Most of the trees (58%) are felled due to development and construction constraints driven by population growth and its needs. Furthermore, as of December 2024, requests for felling permits involving a large number of trees are not recorded at all in the Ministry of Agriculture's computerized system. This suggests that the average replacement value of trees designated for felling, originally estimated by the Forest Commissioner at approximately NIS 3,500 per tree, is significantly lower than the actual average value of such trees (an underestimate), since the data extracted from the system indicate that the actual value of a tree is approximately NIS 4,500.

- **Landscape Compensation as a Funding Source for Government Resolution 1022 and the National Shading Program –** It was found that the draft Forest Regulations (Licensing), 2022 (hereinafter: the Forest Regulations), intended to regulate the collection of levies, were published in March 2022 and approved by the Ministers of Interior and Environmental Protection, but not by the Ministry of Finance; as a result, the Regulations have not yet been published in accordance with Section 15A(e) of the Forest Ordinance. Since the Regulations have not been published, there is no regulatory framework enabling the collection of landscape compensation levies, which, according to an estimate by the Forest Commissioner, amounted to approximately NIS 227.5 million. Consequently, public institutions – local authorities, municipal corporations, government companies, and government ministries – are required to submit a letter of commitment for the payment of the financial levy to the Forest Commissioner. However, the validity of this commitment is limited, and it is not fully realized. Furthermore, no

dedicated budget has been allocated for urban forestry, and the proposals by the Forest Commissioner and the Deputy Head of the National Economic Council to establish a designated fund that would pool the compensation levy funds for the expansion, development, maintenance, and management of urban forests in local authorities were not accepted by the Ministry of Finance. Moreover, in municipalities where a municipal forester has been appointed, landscape compensation is collected in return for tree planting and is deposited into a designated budget, with each municipality using the funds in accordance with its own policy. For example, in the city of **Hadera**, the collected landscape compensation levy was allocated for the supply and planting of trees, conducting surveys of hazardous trees, establishing a fruit tree forest, and removing trees infested with the red palm weevil. In the city of **Yavne**, the funds were used to conduct tree surveys, and the municipality of **Ra'anana** purchased thousands of new trees for planting, planted over 500 trees in 2024, rehabilitated tree irrigation infrastructure, conducted tree inspections, and purchased watering bags. In the absence of a comprehensive overview of the revenues collected for landscape compensation across all local authorities, inconsistencies and a lack of transparency have emerged in the use of these funds. There is concern that the funds were not used for their intended purpose; namely, the development, expansion, maintenance, and management of the urban forest in the municipalities. It is worth noting that in 2024, the revenues collected by the following municipalities were as follows: Bnei Brak (NIS 380,466), Hadera (NIS 46,434), Yavne (NIS 14,834), Ra'anana (NIS 503,618), and Tel Aviv–Yafo (approximately NIS 7 million).

- **Funding the Shading of the Public Urban Space through Calls for Proposals –** The National Shading Program states that its success depends on long-term cooperation between the government and local authorities, as well as on government involvement through the publication of calls for proposals to fund tree surveys, urban forestry action plans, the development of digital tools, and more. It was found that, apart from a call for proposals issued by Israel Railways, only one government ministry issued a call for proposals since Government Resolution 1022: in August 2022, the Ministry of Environmental Protection published a call to support the preparation of municipal shading and cooling plans using trees and to carry out pilot projects for operational shading initiatives, aimed at promoting the implementation of the National Shading Program. Notably, the Ministry of Environmental Protection issued this call outside the scope of its formal assignment under Government Resolution 1022, in order to bridge the gap until the relevant regulations are enacted and to enable, in the meantime, the generation of insights that would support the implementation of the Ministry of Agriculture's program once the regulations are enacted.

- **Funding of Shading Efforts in the Local Authorities Reviewed –** The four local authorities examined in the audit – Eilat, Bet Shemesh, Dimona, and Jerusalem – submitted applications for support through the call for proposals issued by Israel Railways. Additionally, the municipalities of Eilat and Jerusalem also submitted applications in response to the call for proposals by the Ministry of Environmental

Protection. The **Bet Shemesh** municipality did not submit an application because it was unaware of the call's existence, while the **Dimona** municipality was ineligible to apply, as the call was open only to localities with over 50,000 residents, and Dimona has approximately 40,000. The audit also found that none of the four municipalities – **Eilat** (whose gardening maintenance budget stands at NIS 19.8 million), **Bet Shemesh** (approximately NIS 13.5 million, with an overrun of approximately NIS 2 million), **Dimona** (NIS 570,000), and **Jerusalem** (NIS 41.6 million) – has the ability to monitor the budget allocated specifically for tree planting and maintenance. This is because they do not earmark a dedicated budget for this purpose, separate from the general gardening maintenance budget. Furthermore, none of the municipalities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, or **Jerusalem** – has a long-term plan for the maintenance of urban trees in public spaces.

- **Organizational Support Infrastructure – Appointment of an Urban Forest Officer** – It was found that the Ministry of Interior had not considered the need to define the required expertise for local authorities in the field of urban forestry and was entirely unaware of it, though nearly two years had passed since it had been tasked by a government resolution to define the role of an Urban Forest Officer. This occured despite the fact that a representative of the Ministry was involved in drafting the National Shading Plan. As a result, no recommendations were formulated for defining the professional expertise required by local authorities in urban forestry, including the assessment of related budgetary costs. In the municipalities of **Eilat**, **Bet Shemesh**, and **Dimona**, there is no single person in charge of coordinating tree care. This is in contrast to the **Jerusalem** Municipality, where the Head of the Sanitation and Maintenance Division, already in charge of the public domain, was appointed as the Forest Officer. Consequently, responsibility for this area is divided among numerous entities, and this lack of coordination could undermine proper care of street trees. Moreover, those maintaining street trees as part of their work on other public-space issues are not specialists in urban forestry. This may impair the quality and effectiveness of tree growth and preservation efforts in the urban forest, efforts that require specific expertise and have a critical impact on tree care quality.

- **Measurement, Mapping, and Target Setting for Shading –** Government Resolution 1022 established that "for municipalities interested in doing so… a national target of 70% tree shade coverage (continuous tree canopy) shall be set for sidewalks on streets with significant walkability potential – that is, streets with public transportation routes or commercial activity – by the year 2040." According to data from the Survey of Israel, as reported in the media[6], only 7.6% of streets provide partial shade (20%–50% of their area). The majority of streets (54%) offer very little shade (5%–20%), and more than one-third of streets (37.5%) lack shade entirely, including 2,500 main streets. In

[6] Lior Yaron, The rich in the shade, the poor exposed: A new map shows that the sun doesn't beat down on everyone equally. Haaretz Online – Environment and Climate, May 4, 2023. Retrieved from: https://www.haaretz.co.il/nature/2023-05-04/ty-article-magazine/00000187-d6b8-d9b4-abaf-febe57220000

other words, approximately 90% of urban space in Israel is characterized by a lack of shade. There is currently no binding standard for required shading levels in public spaces, particularly on streets with high walkability potential – specifically central, well-connected streets with many intersections, as referenced in Government Resolution 1022. It was found that the method developed by the Survey of Israel, based on recommendations by the steering committee for measuring tree canopy coverage in urban areas using geographic data, does not provide a reliable picture of actual shading. This is because it does not account for shade cast by buildings and other artificial shading elements, and it lacks accurate data on street and road layouts. Moreover, it must be recognized that shading conditions in the urban environment are dynamic, especially in light of accelerated urban development. The target of 70% continuous tree canopy coverage was the result of professional discussion during the drafting of the government resolution, led by the National Economic Council. However, this target was not based on comprehensive research, nor was its feasibility under current urban conditions in Israel examined. In addition, local authorities do not have measurable targets for tree canopy coverage tailored to the characteristics of different areas within their jurisdiction, broken down by street. Setting a single citywide target for tree canopy coverage does not reflect the variation in required canopy coverage across different parts of the city, streets, and intersections.

- **Measurement, Mapping, and Target Setting for Shading in the Reviewed Municipalities –** The audit found that three of the four reviewed local authorities – **Eilat**, **Dimona**, and **Jerusalem** – have mapped urban heat islands within their jurisdictions, while the municipality of **Bet Shemesh** has not. The shading coverage maps created by the municipalities of **Eilat** and **Jerusalem**, which include shading from buildings, trees, and artificial elements (such as shade canopies), reveal the poor state of shading in these cities. In **Eilat**, the mapping of tree canopy coverage showed a severe lack of shading across nearly all street segments and public open spaces, especially along the city's main streets, which separate residential neighborhoods. The data indicate that only 32% of walking paths are shaded, with just 9% covered by tree canopies. This falls far short of the municipality's target of 50% canopy coverage – an alarming gap of 41 percentage points. In **Jerusalem**, the total tree canopy coverage within the city's statutory boundaries – including natural forests and wooded areas surrounding neighborhoods – is 25%, with only 19% in public spaces. **Bet Shemesh** has not developed an urban shading map and is reportedly unaware of the mapping tool developed by the Survey of Israel, which, as previously noted, has its limitations. Furthermore, none of the four municipalities – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – has mapped their streets based on the benefits of shading for walkability or based on the feasibility (technical or budgetary) of implementing shading solutions.

- **Knowledge Development and Information Accessibility in Urban Forestry and Shading –** No comprehensive and up-to-date tree maintenance guide authored by the Ministry of Agriculture was found. As a result, local authorities lack current and complete knowledge on the subject and tend to manage tree care based on their own

understanding and capabilities. The Ministry of Agriculture did not conduct training sessions in alignment with the plan formulated under the government resolution. It also failed to coordinate with the Ministry of Interior on this matter, despite having been assigned under the resolution to carry out training and formulate a program to strengthen professional capacity in local government in collaboration with the Ministry of Interior. For its part, the Ministry of Interior neither took the initiative to contact the Ministry of Agriculture nor was it aware of the task assigned to it. Consequently, the advancement of knowledge in the field of urban forestry was not incorporated into the Ministry of Interior's mandatory training programs. Additionally, the dissemination of knowledge on urban forestry to local authorities is not carried out according to any structured and consistent national plan. Instead, various actors – including the Ministry of Agriculture, the Derech Tzel (Shading) Center, and the Forum of 15 (a consortium of major cities) – have provided content with varying levels of depth and consistency. Two of the four municipalities examined – **Dimona** and **Jerusalem** – reported difficulties in tree planting and maintenance processes, partly due to a lack of professional expertise among personnel, or due to extended periods of trial-and-error learning. It was further found that most of the professional training for local authority employees in the fields of gardening in general, and urban forestry in particular, is conducted by the Ministry of Agriculture or in collaboration with it. Some of these training sessions require attendance at Ministry facilities. The fact that the training sessions are held in central Israel, combined with the absence of a digital training system, makes it difficult for employees of the remote municipality of Eilat to participate.

- **Urban Forest Management by Local Authorities –** The audit found that the four reviewed municipalities – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – possess only partial information regarding the number of trees within their jurisdictions, their species, and their condition: The **Eilat** Municipality estimates there are approximately 10,750 trees within its area but has not yet conducted a tree survey; the **Bet Shemesh** Municipality estimates approximately 20,000 trees and had just begun initiating a tree survey at the time of the audit; the **Dimona** Municipality estimates approximately 18,000 trees but has not conducted a tree survey; the **Jerusalem** Municipality estimates there are about 150,000 trees and holds more detailed data on approximately 57,000 of them. Among the four municipalities examined in the in-depth audit, only **Jerusalem** had an Urban Forest Officer appointed by the Minister of Agriculture (in August 2022), whereas in **Eilat**, **Bet Shemesh**, and **Dimona** no such dedicated official had been appointed. The audit revealed that the reviewed local authorities are not operating according to a standardized national protocol for the maintenance and monitoring of trees in urban public spaces. Instead, each of the four municipalities – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – manages the matter according to its own discretion: **Eilat**, **Bet Shemesh**, and **Jerusalem** defined maintenance specifications within their municipal gardening tenders. **Bet Shemesh** and **Jerusalem** also have weekly or monthly work plans in place. **Dimona** was found to have no formal maintenance work plan. **Eilat** employs six inspectors; **Bet Shemesh** previously employed two inspectors but had none

at the time of the audit; **Dimona** did not provide any information about how tree conditions are monitored; **Jerusalem** conducts monitoring through supervision staff within the horticultural maintenance department.

- **Public Attitudes Toward Street Trees –** In all four municipalities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – residents frequently file complaints through municipal hotlines about damage caused by trees. In some cases, residents have even harmed trees, either unintentionally or deliberately. Two of the four municipalities – **Bet Shemesh** and **Dimona** – failed to engage the public in discussions on promoting or improving urban forestry: **Bet Shemesh** took no action to advance the issue, while **Dimona** stated its intention to publish a public participation questionnaire.

- **Irrigation Infrastructure in Local Authorities –** The audit found that in three of the four municipalities reviewed – **Bet Shemesh**, **Dimona**, and **Jerusalem** – one of the key barriers to the healthy development of trees in public spaces is the lack of adequate irrigation infrastructure. Establishing or rehabilitating such infrastructure is often difficult due to high costs and conflicts with existing underground utilities. Specifically, the shading plans promoted by the **Eilat** Municipality as part of its climate change adaptation strategy include the planting of approximately 21,000 trees by the year 2045. This increase in the number of trees will require a substantial rise in water consumption for irrigation, in addition to the city's already elevated irrigation needs due to its desert climate.

- **Soil Treatment, Tree Diseases, and Pest Control –** The audit found that despite efforts by local authorities to invest in the urban tree resource, including soil treatment, acclimatization processes where needed (as done in **Eilat**), treatment of tree diseases, and pest monitoring, in addition to routine maintenance and irrigation, these actions are not always sufficient to ensure proper root establishment and tree vitality. For example: in **Eilat**, approximately 350 to 500 trees were "scorched" due to heat radiation during the summer of 2024; in **Bet Shemesh**, Populus Canadensis (Canadian poplar) trees were damaged and died before treatment could be completed; and in **Jerusalem**, some mature trees exhibit poor growth and development.

- **Tree Preservation in Public Transportation Development Projects –** The audit found instances in which, during the planning of public transportation projects, collaborative efforts were made between the Forest Officer and planning authorities to preserve existing trees or enable new tree planting near renewed transportation routes. For example: in Tel Aviv, a decision was made to prohibit private vehicle access to the section between the intersections of Arlozorov Street with Ibn Gabirol and Ben Yehuda Streets. As a result, the traffic lane previously designated for private cars was canceled, eliminating the need to fell an existing row of trees. On the Green Line of the light rail in the Holon area, a solution was reached in cooperation with the Israel Electric

Corporation: instead of using an overhead power line as originally planned, the power supply would be routed through the roadway itself. This adjustment spared the mature ficus trees that stood adjacent to the planned overhead line route.

Tree Preservation in the Statutory Planning Stage at the Ministry of Construction and Housing – The Ministry's guidance to conduct tree surveys in the pre-planning stage contributes to preserving trees in public spaces.

Issuance of Binding Provisions Regarding Trees in Private Spaces The audit found that among the four local authorities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – only **Eilat** and **Bet Shemesh** included binding provisions on tree planting in private spaces within a municipal policy document (or equivalent). In doing so, they contributed to encouraging the planting and care of trees in the private domain, in line with the guiding principles adopted in the government resolution.

National Tree Removal Information System – A centralized information system for tree removals in Israel was established and became operational in September 2024.

Israel Railways Public Call for Proposals – Israel Railways published a call for proposals aligned with the principles of the National Shading Plan, as compensation for the anticipated removal of 38,000 trees as part of the Haifa–Rishpon rail line project.

Identifying Streets for Shading Coverage – The **Dimona** Municipality is making efforts to identify streets and areas with low shade coverage, with the aim of addressing them as soon as possible.

Public Engagement in Promoting Urban Forestry – The municipalities of **Eilat** and **Jerusalem** have involved the public in discussions on advancing urban forestry and in actions to improve it.

Key Recommendations

- It is recommended that the Planning Administration, in addition to providing planning committees with a package of recommendations for possible methods of tree preservation and planting, instruct the committees – in consultation with the Government Forest Officer – to include binding shading requirements in planning documents where appropriate, with an emphasis on natural shading from trees. Furthermore, it is recommended that the Planning Administration develop mandatory construction guidelines to promote tree planting and the preservation of mature trees throughout the public space, with the goal of maximizing natural shading.
- It is also recommended that the Ministry of Agriculture explore ways to streamline the process of issuing opinions on plans or permits, to avoid significant delays in planning and

construction processes. Additionally, it is recommended that the Planning Administration establish a joint working group composed of representatives from local authorities as well as district and local planning committees, with the aim of providing practical tools and solutions to support committees in preserving shading in the urban public realm through the conservation of street trees – particularly in the face of pressure from permit applicants. Finally, it is recommended to raise awareness among local planning departments and district planning offices about the importance of reducing tree removals, by offering specific training for committee members on this topic.

- The Planning Administration and the National Economic Council should take steps to advance the achievement of the target set by the government resolution, including the establishment of a team to examine ways to coordinate green infrastructure with engineering infrastructure. This coordination should prevent these systems from obstructing one another and ensure that public space can efficiently and optimally accommodate the widest possible range of public uses. It is further recommended that the Planning Administration and the National Economic Council take measures to enhance infrastructure coordination. The Planning Administration, in collaboration with the Ministry of Finance, the Ministry of Construction and Housing, and key infrastructure bodies – including the Israel Electric Corporation, gas companies, and telecommunications providers – should promote the use of utility tunnels wherever feasible, in light of their clear advantages. The local authorities reviewed in the audit are advised to strengthen coordination with infrastructure providers operating within their jurisdictions, in order to ensure access to infrastructure mapping that reflects, as accurately as possible, actual field conditions.

- It is recommended that local authorities in general, and particularly those reviewed in the audit, carry out tree pruning near Israel Electric Corporation (IEC) facilities in public spaces on their own, to the extent possible, in order to ensure the quality of the pruning. Authorities should also enhance coordination with IEC personnel regarding the timing and quality of pruning operations and plan the planting of new trees in public spaces with consideration for nearby electrical infrastructure, such that planting sites are located as far as possible from these facilities. The Israel Electric Corporation is advised to include in its contracts with pruning contractors a requirement to employ a certified pruning specialist, and to ensure that its contractors coordinate pruning work with local authorities – so that the latter can, when necessary, supervise the work with the assistance of tree experts.

- It is recommended that the municipalities of Dimona and Jerusalem publish municipal policy documents as soon as possible that include guidelines regarding trees on private plots, with the aim of improving the public realm used by all city residents. It is also recommended that the Planning Administration encourage local planning and building committees to publish municipal policy documents on trees in private spaces, in order to maximize the planting potential within the multifunctional urban environment.

- It is recommended that the Government Forest Officer establish a mechanism for obtaining information on the number of replacement trees planted in accordance with issued felling

permits. Although the scope of inspection and enforcement duties is extensive, there is a mismatch between the scale of oversight required and the personnel allocated to carry it out. It is further recommended that the Government Forest Officer map the inspection tasks, assess existing and required resources, and take proactive steps – beyond sending letters and offering suggestions for improved oversight – to reduce the gaps. In light of the longstanding complexity of the situation, it is expected that the Government Forest Officer will engage the Ministry of Agriculture in this matter and take action to expand the scope of proactive enforcement activities. This should include increasing the number of inspectors in charge of monitoring the implementation of individual felling permits and placing particular emphasis on cases in which a large number of trees are felled under a single permit. These measures are essential to safeguard the public interest in preserving trees in the public domain and to ensure the proper use of public funds. In addition, it is recommended that the Government Forest Officer, in coordination with the Ministry of the Interior and local authorities, develop mechanisms to enhance enforcement of the Forest Ordinance by utilizing municipal inspectors and leveraging their familiarity with local conditions.

It is recommended that the Government Forest Officer formulate a structured annual work plan that includes proactive inspection activities at the necessary frequency, with particular attention to projects for which a felling permit has been granted for a large number of trees. It is further recommended that the Forest Officer ensure the effectiveness of existing guidelines concerning work taking place near trees, and establish mechanisms to guarantee their implementation, such as training sessions for local authorities explaining the intent of the guidelines and how violations can be reported. It is recommended that local authorities monitor compliance with guidelines for work near trees at sites where development and construction activities are taking place, using building inspectors or municipal enforcement officers. In cases of non-compliance, they should report violations to the Government Forest Officer.

It is recommended that the Government Forest Officer establish a tree felling policy grounded in measurable data, to help maintain the balance between preservation and development and to ensure that, even as cities grow and public needs evolve, long-term sustainability and responsibility to future generations are preserved. Such a policy could, for example, stipulate enhanced compensation, whereby the felling of a mature tree would require the planting of several young trees, given that it takes approximately ten years for a young tree to reach full canopy size, and even then, there is no certainty it will reach full maturity. It is further recommended that the Government Forest Officer complete the data collection in the digital tracking system to include comprehensive information on all trees that have been felled. This database would enable accurate valuation of felled trees based on their characteristics and allow for precise determination of the required compensation.

The Ministry of Agriculture should act, in coordination with the Ministries of Finance and Environmental Protection, to regulate the Forest Ordinance provisions as soon as possible. This is especially urgent given that far more than 180 days have passed since Government

Resolution 1022 directed the Minister of Agriculture to publish a memorandum to amend the Forest Ordinance, enabling the government to collect a levy that a local authority has failed to collect. This amendment is intended to ensure that landscape compensation levies collected by the state can be allocated to increase the budget designated for supporting local authorities in planting and maintaining trees. Once the regulations are enacted, it is recommended that the Government Forest Officer set out the reporting procedures for local authorities that collect landscape compensation levies, and collect the relevant data in order to monitor how the funds are used and ensure they are directed toward their intended purpose; namely, new tree plantings or other designated uses. If he is unable to carry this out himself, he may seek the assistance of the Ministry of the Interior, which conducts financial audits in local authorities. It is also recommended that local authorities authorized to collect funds once the regulations are enacted, provide appropriate transparency to the public regarding how these funds are used. The purpose of the landscape compensation levy is to bridge the gap between the need to fell trees and the obligation to offset the resulting environmental damage. From the outset, the goal of this levy has been to fund tree planting, not other uses. Therefore, it is recommended that the Ministry of Finance and the Ministry of Agriculture establish a dedicated fund to pool the collected levies and integrate them into the budget base for implementing the government resolution. This is particularly important in light of the fact that the Ministry of Finance has neither allocated a budget for this purpose nor put in place a system for monitoring or tracking the accumulated funds.

- Since the government has defined urban forestry as a national objective, it is recommended that the Ministries of Finance, Agriculture, and Environmental Protection, each of which is directly involved in the issue, allocate a dedicated budget alongside a structured action plan to support the shading of public spaces through street trees. It is further recommended that they consider allocating resources to raise public awareness on this issue even without requiring matching funds from local authorities, at least from those ranked in lower socio-economic clusters, to help achieve the goal of expanding shade in public spaces. Because the benefits of trees become evident only about a decade after planting, it is advisable to begin implementing the proposed measures as soon as possible. It is also recommended that the municipalities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – distinguish between budget items allocated for general landscaping and those designated for the care of street trees, and maintain a separate and clearly defined budget for the planting and maintenance of trees in the urban environment. In addition, they should develop an updated, forward-looking maintenance cost estimate for the municipal tree resource. Routine activities such as tree care and inventory maintenance require a stable funding source. Therefore, the reviewed local authorities should examine potential funding sources for street tree maintenance and determine both the sources and the scale of funding for the various activities.

- The Ministry of the Interior, in coordination with the Ministry of Agriculture, should consider formulating recommendations for defining a professional role within local

authorities that aligns with the required expertise in urban forestry, as stipulated in the government resolution. This process should be carried out in collaboration with representatives of local authorities, familiar with the needs emerging from the field. It is also recommended that the Ministry of the Interior assess the composition of human resources necessary for managing the tree resource within local authorities. Furthermore, the four municipalities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – are advised to treat the urban tree resource as distinct from other municipal landscaping activities. In particular, they should define a coordinating body or position within their organizational structure with authority over all matters related to public tree care and responsible for liaising with other municipal departments involved in this domain. It is also recommended that these municipalities identify the need for professional roles not typically employed on a routine basis within the local authority, such as agronomists, arborists, or other relevant experts who could contribute to improving tree management.

- It is recommended that the National Economic Council inform local authorities of the existence of the national tree database infrastructure, potentially through the Ministry of Interior, as the regulator of local authorities, or through the Federation of Local Authorities in Israel. It is further proposed that local authorities receiving support through calls for proposals – such as the Israel Railways call for conducting tree surveys – be required to share and publish the data they collect using the established infrastructure. The four municipalities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – are encouraged to complete their tree surveys and upload the data to their municipal GIS systems. This will enable more effective management of their tree resources.

- It is recommended that the Survey of Israel periodically update its maps and incorporate three-dimensional mapping that accounts for the full extent of shadow projections, in order to improve the tool and methodology it developed for mapping tree canopies. It is further recommended that the Survey of Israel adopt a standardized method for as accurately as possible quantifying the cumulative shading effect of buildings, trees, and other environmental elements. The Planning Administration is advised to consider setting recommended standards for differentiated shading levels across the public space as a whole. Having defined targets would enable local authorities to develop policies that promote broader shade coverage and improve the quality of the environment and public realm.

- It is recommended that the National Economic Council reconsider the national tree canopy coverage target established in Government Resolution 1022. This target should be set based on a structured process grounded in reliable data and realistic assessments, particularly in light of the fact that in countries with climates similar to Israel's, national canopy coverage targets are often lower, in some cases significantly so.

- It is recommended that the Municipality of **Bet Shemesh** map urban heat islands across the city in order to prepare for future climate change challenges, especially given that

spatial climate risk maps published by the Ministry of Environmental Protection already indicate the presence of numerous heat islands within its jurisdiction. Since the municipalities of **Eilat** and **Jerusalem** have mapped total shading coverage from buildings and trees, i.e., the shadow envelope, it is recommended that they identify weak points in the urban street network and use those findings to prioritize actions and set realistic tree canopy coverage targets for shading. It is further recommended that the Municipality of **Bet Shemesh**, which has a high concentration of heat islands, at the very least make use of the mapping tool developed by the Survey of Israel.

- Differences in building density and the presence of shade trees or other shading elements in the public space necessitate mapping total shade coverage. It is recommended that the municipalities of **Bet Shemesh** and **Dimona** map shading coverage from buildings, trees, and artificial elements (the shadow envelope) within their public spaces, as this is the first step in developing an urban shading strategy and in identifying climate vulnerability points in the urban street network. It is further recommended that **Bet Shemesh** and **Dimona** engage a professional body to carry out this task, as it requires expertise and technical knowledge. Once full shade envelope mapping has been completed, the municipalities of **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** are advised to assess the feasibility of tree planting along city streets. This assessment should be conducted in parallel with a municipal infrastructure mapping process, which can help accurately identify optimal locations for planting new trees. Finally, it is recommended that **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** set shade coverage targets for each street and neighborhood, with particular focus on central areas with high walkability potential, tailored to the unique characteristics of each location.

- In order to preserve existing tree infrastructure and ensure the vitality of both mature and newly planted trees in the urban public space, it is recommended that the Ministry of Agriculture develop an up-to-date street tree care guide for local authorities; establish a team to coordinate the dissemination of knowledge on urban forestry to local authorities – including representatives from the Ministry of Interior, the Derech Tzel Center, the Federation of Local Authorities in Israel, and other relevant stakeholders – with the aim of pooling resources and presenting municipalities with a comprehensive, diverse, and accessible annual learning program from which they can select the training and skill sets most relevant to their needs; facilitate peer-learning sessions to encourage those in charge of tree planting and maintenance in local authorities to share their experiences with one another; and include fully or partially digitized access to seminars and courses for municipal staff, either through live online participation or on-demand viewing afterward.

- It is recommended that the Minister of Agriculture and the Government Forest Officer consider appointing an Urban Forest Officer for the city of **Bet Shemesh**, which has a population of approximately 155,000 and is classified as a large municipality, particularly in light of the city's rapid development and the expansion of its public spaces. It is further recommended to formulate nationwide criteria for the appointment of Urban Forest Officers and to work toward their implementation accordingly.

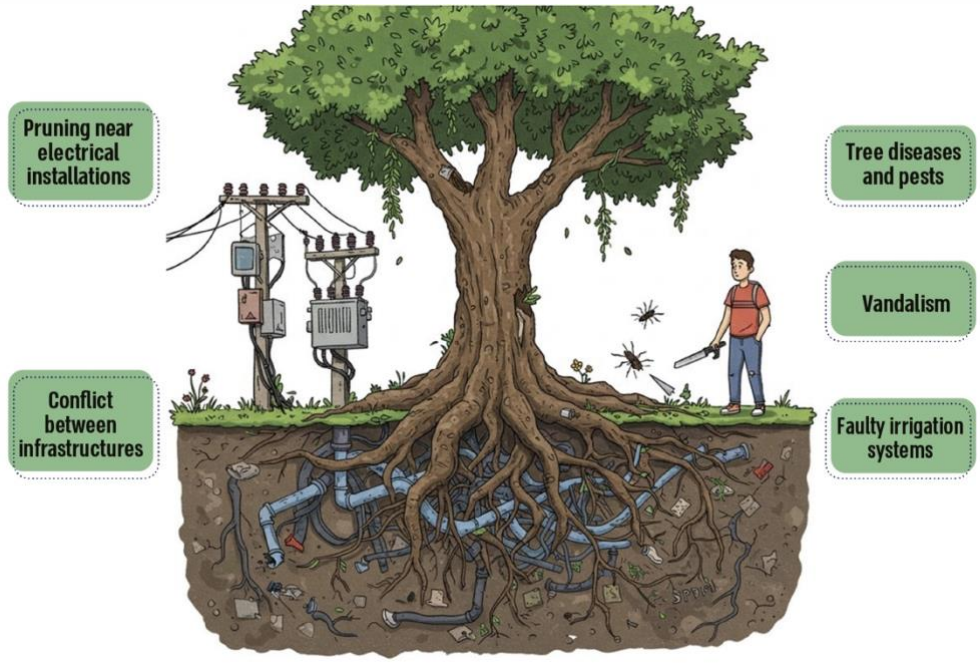
- The local authorities reviewed – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – are advised to ensure regular tree pruning in residential areas and public walkways in a manner that preserves tree health and their potential aesthetic value, while minimizing, to the extent possible, disruption to residents. It is recommended that the National Economic Council and the Ministry of Agriculture work to implement Government Resolution 1022 in the area of community engagement, by encouraging local authorities to conduct public participation processes at various stages – from the vision-setting stage, through planting, to receiving assistance with maintenance and information about tree conditions; promoting local and community events aimed at connecting the public to the program; and adapting Ministry of Agriculture courses to be accessible to the general public.

- It is recommended that the National Economic Council invite representatives of the Ministry of Finance to the administration's status meetings for the implementation of the government resolution on public space shading and urban forestry, in order to consider allocating resources for investment in irrigation infrastructure in local authorities, such as through funding calls.

- Given the anticipated impacts of climate change in Israel, local authorities in general and particularly the municipalities reviewed in this audit – **Eilat**, **Bet Shemesh**, **Dimona**, and **Jerusalem** – are advised to consider the water consumption characteristics of trees when formulating recommended planting lists for their jurisdictions, and to prioritize species that require minimal irrigation.

- The audited municipalities are further advised to operate in accordance with the Urban Tree Risk Management Guide published by the Ministry of Agriculture, which provides guidance for the care of street trees and effective monitoring of their condition, in order to preserve the existing tree infrastructure and ensure the vitality of both mature and newly planted trees in the urban public space. In addition, they should systematically monitor the health status of all public trees, to enable early detection of trees in need of urgent or preventive care. Such monitoring will be significantly facilitated once a tree survey has been completed in the municipality.

Key Barriers to the Development of Street Trees in the Urban Public Space



Prepared by the State Comptroller's Office (with the assistance of AI tools).

Summary

Efforts to promote shade in public spaces have become critically important in light of projected global warming by the end of the century. This is expected to lead to a rise in the frequency and intensity of heatwaves and a significant increase in the number of hot days. In Israel, the forecast anticipates a temperature increase of approximately 3.5°C by the end of the 21st century compared to the average over the past two decades. Under such conditions, walking in the street will become increasingly difficult, and people will desperately seek refuge in cooler areas. Cities are expected to be even more severely affected than surrounding areas due to their extensive coverage of concrete and asphalt.

Although Government Resolution 1022 set specific targets for urban shading, its ability to drive implementation – primarily through local authorities – remains limited. The resolution's wording suggests that its provisions are not binding on local governments, and many of its clauses lack designated budgets for implementation. The primary mechanism envisioned for financing the resolution was the collection of alternative planting levies, their pooling in a dedicated fund, and calls for proposals following a matching-funds model. However, the forest regulations intended to authorize these levies have yet to be approved, despite first being proposed in 2012. To date, apart from a call for proposals published by Israel Railways, only a single call has been issued – in August 2022 by the Ministry of Environmental Protection – to support implementation of the National Shade Program. The available funding, approximately NIS 21.3 million, is limited and significantly lower than the estimated NIS 150 million needed annually to support urban forestry initiatives. As a result, it falls far short of meeting the demand for planting the hundreds of thousands of trees required in Israel's urban public spaces.

In climate adaptation plans around the world, shading of public spaces is typically considered a complementary, non-mandatory measure. In Israel, there are currently no binding shading requirements for planning or construction that apply to the public space as a whole, and methods for measuring shading in the urban public space are inadequate. It was found that existing standards and policy documents lack guidelines grounded in systematic and quantitative considerations regarding required shading levels in public areas.

The shading value of a mature tree is particularly significant, making its preservation just as important as the planting of new trees. However, the authority of the Government Forest Officer to approve or reject requests for felling mature trees is not always sufficient to prevent the removal of trees designated for preservation. Furthermore, the Government Forest Officer lacks data on the actual number of replacement trees planted under felling permits. Oversight and enforcement responsibilities are extensive, but the personnel allocated to carry them out is insufficient.

Key barriers to tree planting and maintenance identified in the audit include: difficulties and inconsistencies in coordinating between urban infrastructure needs and tree-related needs; damage to trees located near Israel Electric Corporation facilities due to pruning work; fire safety requirements under the Planning and Building Law mandating emergency access areas that limit available space for planting trees, even though the law allows a shared access area for two adjacent buildings, in practice it is often difficult to synchronize planning and construction to enable this; insufficient irrigation infrastructure and the difficulty of establishing or restoring such systems due to high costs and conflicts with underground infrastructure; challenges related to tree diseases and pests; and a lack of public awareness in some communities regarding the value of trees in the urban public space, which in some cases has led to deliberate damage.

Despite the many benefits of urban forests in general, and of street trees in particular, many cities in Israel have relatively few street trees. This significantly diminishes quality of life in urban environments. Street trees are the most effective means of cooling city spaces, and the shade they provide can play a critical role in addressing the impacts of climate change and in improving thermal comfort in Israel's public urban areas. Given that the benefits of tree planting materialize only about a decade after planting, achieving the targets set in the government resolution by 2040 will require initiating the proposed urban shading measures in the short term.

The State Comptroller's Office draws the attention of the ministers responsible under Government Resolution 1022 to the urgent need to advance its implementation within their respective spheres of authority, as detailed in the resolution, and in light of the findings and recommendations presented in this report: the Minister of Finance, the Minister of Construction and Housing, the Minister of Environmental Protection, the Minister of Agriculture and Rural Development, the Minister of Interior, the Head of the National Economic Council, and the Head of the Planning Administration.