

# A Report on the Environment and Sustainability in the City of Tel Aviv-Yafo

Tel Aviv-Yafo Municipality  
Environment and Sustainability Authority

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Sivan 5778 – May 2018

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# Preface

In December 2017, we approved the update of the Strategic Plan for Tel Aviv-Yafo. In the decade since the original Strategic Plan was approved in 2005, Tel Aviv-Yafo has become a sustainable city, a city whose residents and business establishments actively safeguard the environment and, by doing so, create a better quality of life.

Today, sustainability is a major strategic tenet of the updated City Vision document, which is translated every year into work plans, projects and a wide variety of activities. This report on the status of environmental protection and sustainability presents the work which has been done in the past two years, both by the Municipality as well as those operating within its jurisdiction. I wish to thank the staff of the Environmental Protection Authority for their important work in gathering the data, and my hope is that the report will help fine-tune and boost the city's efforts to enhance sustainability, environmental protection and the quality of life.

To promote sustainability, we need urging and inspiration and to take responsibility. To achieve that end, we embrace an optimistic and realistic view of the future, as it appears in the 2017 update of the Strategic Plan.

Now we need to strive to reach and implement it together.

Best regards,

**Ron Huldai**  
Mayor of Tel Aviv-Yafo



*"A green and Israeli city rooted in its natural environment, which it enjoys and cultivates. Nature blends in with the urban street, and the shade of the fig trees with the citrus aroma. The Yarkon and Ayalon rivers are recreational venues and charming spots for the enjoyment of residents and animals alike, and next to them are urban nature sites which are connected by ecological corridors. The city is pollution free above and below ground and in the air. The city's streets yearn for the sea and encounter it with restraint and serenity, and there is unobstructed access to the sea that is fed mostly by non-motorized transportation.*

*The city is Mediterranean in its character, climate and hues, and the shade on the streets and in public spaces comes from nature and from temporary or permanent artificial means. Environmental nuisances and hazards are monitored and treated at source using sustainable and local methods. Sustainability is the convenient and agreeable choice – simple and close to home. Urban environmental management is founded on partnerships and mutual responsibility. The residents of Tel Aviv-Yafo are able to lead a healthy and optimal lifestyle, at any age and in all neighborhoods in the city. Good neighborly ties and a common habitat underlie the relations with the authorities in the area, as well as the division of responsibility for safeguarding the environment and our shared commons.*

*Innovativeness is a vehicle for attaining sustainability in the city and a means for creating resilience in face of climate changes and environmental developments. Tel Aviv-Yafo shares the concern for the future of our planet and its inhabitants together with other cities across the globe."*



(An excerpt from the Updated Strategic Plan, 2017)

The Environmental Protection Authority at the Tel Aviv-Yafo Municipality has been in charge of environmental protection in the city since the 1970's. Its areas of responsibility include overseeing and monitoring pollution and pollutants, environmental planning and environmental education. In recent years, the Authority has also coordinated activities related to sustainability, including food and climate policy.

Our work continues to expand, embraces diverse fields and reaches new partners, and shapes and cultivates a "green and sustainable Tel Aviv-Yafo."

The more our activities have grown, so has the need to define standards and criteria in order to assess the progress made towards achieving significant climate and social change, which can be used to guide the existing urban sustainability policy.

This report on the status of environmental protection and sustainability provides an up-to-date picture of sustainability in Tel Aviv-Yafo. The report covers a two-year period and focuses on 2016 and 2017.

We organized the information according to five sections which describe the current state and the steps that have been taken in key areas:

**Section 1 - Sustainable Municipal Management**

**Section 2 - Urban Environmental Protection**

**Section 3 - Nature and Ecology**

**Section 4 - Infrastructures and Resources**

**Section 5 – A Sustainable Lifestyle**

The data presented in the report was drawn from multiple sources: the Environmental Protection Authority and various departments at City Hall, the Tel Aviv-Yafo Municipality's Center for Economic and Social Research, the Central Bureau of Statistics, the Ministry of Environmental Protection, and other government, public and private agencies.

I would like to take this opportunity to thank all the departments and all the people inside and outside the Municipality who helped us obtain and organize the data, present it graphically and produce the entire report.

**Eitan Ben Ami**

Director of the Environment and Sustainability  
Authority Sivan 5778 – May 2018

# Pertinent Facts

In 2017, somewhat less than 30% of Tel Aviv-Yafo's total area consisted of open urban spaces, amounting to roughly 16 square kilometers, of which 15% are green spaces cultivated by the Municipality.

## The Breakdown of Urban Spaces in the City



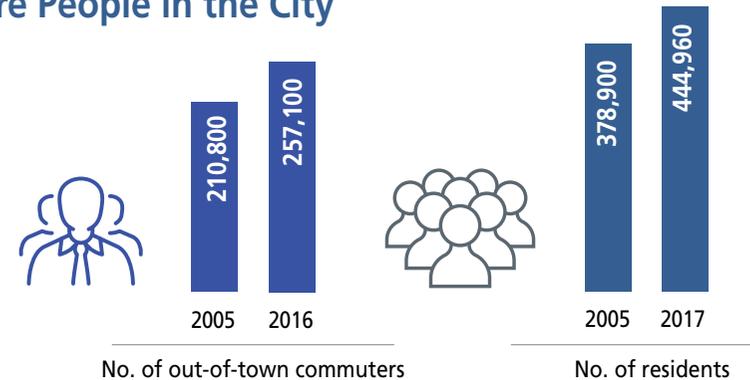
## More Traffic



## More Building



## More People in the City



In 2005, Tel Aviv-Yafo's environmental goal was defined in the city's strategic plan: to ensure a quality and green urban environment. This plan was updated in the last two years [2016-2017] and the environment and sustainability were redefined as key components of urban policy. The present report summarizes the current situation and charts a course for achieving future objectives.

The quality of the urban environment and associated infrastructures has improved in the past decade. Most factories have left the city and more professional inputs and resources are devoted to treating environmental issues. In Tel Aviv-Yafo, like other places around the world, the environmental concerns addressed in the city have branched out into new areas that affect lifestyle, businesses, consumption and health.



# Changes in the Last Decade



## Sustainability

A sustainable mindset has been adopted as a lead approach to municipal management



## Building

Green building has become the norm and is required in all new and public buildings



## Partnering with the Public

Collaborations and partnerships with the public to enhance the environment and sustainability are common and well-organized – ranging from community gardens to sustainable neighborhoods and sharing economy initiatives



## Transportation

Alternative modes of transportation have been greatly expanded: mass transit system (under construction), bikes and shared mobility



## Food and Health

The Municipality has become a stakeholder and player in these fields



## Green Businesses

Many businesses are involved or active in sustainability issues



## Urban Nature

The qualities of urban nature have been recognized and the legal standing of nature sites in the city has been defined



## Energy

Processes have been set in motion for managing and producing local energy from clean and renewable sources

In February 2008, the Tel Aviv-Yafo Municipality, together with 17 other cities in Israel, signed a global pact that calls for reducing air pollution and protecting the climate. Under that pact, the Municipality undertook to reduce 20% of its greenhouse gas emissions by 2020 and take steps to improve air quality in the city. The signing of that pact was a major milestone in turning Tel Aviv-Yafo into a sustainable city. For over a decade, the Municipality has advanced various initiatives that link urban quality of life with environmental protection, including more bike paths, energy efficiency in public institutions, environmental education programs at elementary schools, waste separation at source in residential neighborhoods, the development of open public spaces, and more.

The Tel Aviv-Yafo Municipality's approach to sustainability is founded on the One Planet Living<sup>1</sup> principles that rest on the following ten action areas:

**Energy** – energy efficiency in buildings and infrastructures and renewable energies.

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**Waste** – reducing waste, reuse and zero waste to landfill

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**Transportation** – reducing the need for motorized travel, promoting low carbon transport, encouraging walking, cycling and the use of public transportation

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**Building and materials** – using local and sustainable materials and products for new buildings and renovations

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**Education and community** – advancing sustainability education and training in the school system and informal educational frameworks, based on a multi-generational approach

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**Water** – conserving water and reducing consumption, preventing the pollution of water sources

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**Nature** – protecting nature and habitats, developing and cultivating new habitats

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**Food and health** – fostering a healthy community based on production and supply networks of local, seasonal and healthy food

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**Sustainable and local economy** – developing a local economy while making sure to safeguard the environment, fair trade and equality

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**Health and happiness** – promoting a healthy life in a quality, no-pollution environment, as well as social relationships that create wellbeing

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<sup>1</sup> An approach conceived by Bioregional which seeks to plan and develop sustainable way of life, achieved through a balanced ecological footprint and renewability of natural resources.



עשרת העקרונות "חיים של עולם אחד"

# Key Innovations in Enhancing Sustainability and the Environment in the City

## Environmental Protection

There is a steady improvement in the protection of the environment and its associated infrastructures. Most factories have left the city, pollution and pollutants are monitored and overseen and continue to decrease



A green wall at the entrance to the Environmental Protection Authority, 200 Dizengoff Street

### In the last two years:

- A survey was conducted and a pioneering procedure was established for dealing with asbestos in the urban space.
- A citywide GIS survey – the first of its kind in Israel – was conducted to map out contaminated land.
- A hazardous materials mobile unit was purchased to provide a quick and better response to hazards.

## Green Building

In 2010, the Municipality decided to explore this field through a pilot project that started with the construction of three schools. In 2011, the Local Building Commission determined that the Green Building Standard would be mandatory in the city.



Druyanov Elementary School on Florentin Street – earned two green building standard stars

### In the last two years:

- A pioneering plan in the northwestern part of the city [Zoning Plans TA/3700] based on the LEED ND rating system for sustainable neighborhoods.
- 4 zoning plans were advanced in line with the new Israeli "Neighborhood 360" rating system.

## Bicycles as a Mode of Transportation

Tel Aviv-Yafo is Israel's bicycle riding pioneer. About 30 kilometers of bike paths have already been paved throughout the city. To facilitate cycling mobility, the maximum speed limit on streets with little traffic is 30 km/h. The Tel-O-Fun bikesharing service has been in operation since 2011, with 207 stations around the city.



A Tel-O-Fun bikesharing station

### In the last two years:

- About 31,500 residents ride bikes to work or school every day.
- One million Tel-O-Fun rentals.
- Tel-O-Fun has branched out in the metropolitan area: 10 stations in Ramat Gan, 10 in Givatayim and 4 in Bat Yam.

## Nature in the City

A citywide nature survey [2012] identified 52 nature sites and 38 nature spots. The survey served as the basis of a master plan for conserving, remediating and even restoring natural assets. Ecological rehabilitation has already been carried out at 20 nature sites throughout Tel Aviv-Yafo, bringing back a variety of local species. These efforts have involved the community and educational institutions in the city.



The banks of the Yarkon River

### In the last two years:

- An urban nature master plan was published. One million Tel-O-Fun rentals.
- The principles underlying the master plan are implemented in the provisions of the TA/5000 Zoning Plan for Tel Aviv-Yafo.

## Sustainable Neighborhoods

The One Planet Living model was introduced in 2014 in the Bizaron and Ramat Israel neighborhoods and currently operates in seven neighborhoods throughout the city: Bizaron, Ramat Israel, Shapira, Yad Eliyahu, Maoz Aviv, Hadar Yosef and the Old North.



Neighborhood sustainability map, Ramat Israel and Bizaron

### In the last two years:

- Shapira and the Old North joined the Sustainable Neighborhood program. The program is continuing to expand and employs sustainability coordinators in the neighborhoods.
- Sustainability hubs were opened at the community centers in Hadar Yosef and Ramat Israel.

## Green Label for Businesses

Together with the Ministry of Environmental Protection, the Tel Aviv-Yafo Municipality developed a green certification program for businesses, focusing in the initial stage on the restaurant sector. A team of professionals from the Environmental Protection Authority accompany the businesses during the certification process. They provide them with training and support aimed at changing business management patterns and reducing the consumption of resources and materials. They also help them transition to the use of eco-friendly products.



### In the last two years:

- 40 businesses completed the efficiency process and received the Green Label [60 more are still in the process].
- An annual reduction of about 650 tons of greenhouse gas emissions was achieved.

## Urban Food Policy

In 2015, Tel Aviv-Yafo joined other cities around the world that are promoting healthy and sustainable food and signed the Milan Urban Food Policy Pact. Bon Appetit – an urban food policy program led by the Environmental Protection Authority aims to raise awareness among all the city's residents and increase the access to healthy and sustainable food.



### In the last two years:

- 8,000 members of youth movements have enjoyed healthy and appetizing food prepared in their summer camp field kitchens.
- Tel Aviv-Yafo was chosen to host the Milan Urban Food Policy Pact 4th Annual Gathering and Mayors' Summit, scheduled to take place in September 2018.

## Implementing the Sustainability Approach at City Hall

A significant share of Tel Aviv-Yafo's success as a sustainable city depends on the standing and scope of its sustainability policy. As early as 2005, sustainability was defined as a municipal objective in the city's Strategic Plan and was placed under the responsibility of the Municipality's Deputy Director General.



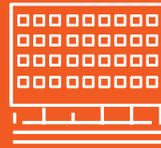
A poster announcing Tel Aviv-Yafo's membership in the C40 network

### In the last two years:

- The Urban Sustainability Forum convened four times, attended by around 100 city employees and stakeholders.
- Sustainability was chosen as one of the nine lead areas for the 2017 update of the Strategic Plan and was translated into four policy directions: environmental protection in the city, a sustainable lifestyle, management of natural and engineered infrastructures, and innovation and local resource production.
- International standing: Tel Aviv-Yafo was accepted to leading global networks that promote sustainability:
  - C40 – a network of cities around the world that lead climate protection policy and address climate change.
  - The 100 Resilient Cities Network pioneered by the Rockefeller Foundation, which supports the development of an urban resilience strategy.



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# Sustainable Municipal Management

# Section 1: Sustainable Municipal Management

Tel Aviv-Yafo has adopted sustainability as a strategic approach to municipal management.

Sustainability and environmental protection are incorporated in the update to the Strategic Plan [2017], in zoning guidelines [2016] and in the administrative structure under the responsibility of the Municipality's Deputy Director General.

The City Council has a Committee on Environmental Protection and Sustainability.

Information pertaining to the environment is accessible to the public on the municipal website, GIS, and the Green Tel Aviv-Yafo Facebook page.

Tel Aviv-Yafo is a member of leading global networks engaged in environmental issues and sustainability: the Milan Urban Food Policy Pact, 100 Resilient Cities and C40.



## Milestones:

- 2005** The "City Vision" is drafted – a strategic plan and municipal objective in the Environment and Sustainability Work Plan are approved
- 2008** The Forum 15-The Israeli Forum of Self-Government Cities Convention is signed
- 2011** The Urban Sustainability Forum is established
- 2013** The One Planet Living approach and the ten principles for neighborhood sustainability are adopted
- 2014** The city's ecological footprint is measured and the city's sustainability index is defined
- 2015** Roundtables dealing with development and sustainability issues are held on Rabin Square
- 2015** The Milan Urban Food Policy Pact is signed
- 2016** Reporting according to the CDP global disclosure system begins
- 2017** The city's Strategic Plan is updated, with a focus on resilience, growth, inclusion and sustainability
- 2017** Tel Aviv-Yafo joins the global C40 and 100 Resilient Cities networks
- 2017** Tel Aviv-Yafo wins second place in the Istanbul Environment Friendly City Award competition, conferred on Mediterranean coastal cities



## Urban Strategy

The city's zoning plan – TA/5000 – was approved in December 2016. The plan defines planning trends and the way in which the city will develop until the target year of 2025. The zoning plan is based on the City Vision and adopts the major strategic directions it stipulates. Additionally, the zoning plan incorporates principles from the urban nature master plan and Israeli Green Building Standard.

### The main topics included in the zoning plan:

- Devising a variety of housing solutions throughout the city for the different groups that reside in Tel Aviv-Yafo
- Greater building density and increasing the size of residential areas and employment districts in the city
- Preferring multi-mode and sustainable transportation, and in particular public transportation, walking and cycling
- Enhancing the urban qualities of Tel Aviv-Yafo by increasing a mix of land uses and adding commercial streets
- Developing a contiguous and quality public space – a network of urban streets, green thoroughfares and bike paths - and developing green resources in the city, such as the beaches, public parks and gardens, some of which were defined as urban nature sites
- All aspects of urban renewal, and in particular development in the southern and eastern parts of the city
- Preserving and retrofitting public buildings
- Defining areas for preservation, instituting urban design guidelines for hi-rise buildings and preserving urban fabrics
- Defining environmental guidelines governing building and development in the city

Over 1,700 residents, representatives of organizations and experts in different fields took part in the public participation process leading to the formulation of the zoning plan. The Strategic Plan approved in 2005 was updated in 2017 and is a direct continuation of the zoning plan. Sustainability was defined as one of the four strategic focuses – growth, inclusion, sustainability and resilience – and as one of the nine topics the plan deals with.

The updated plan was approved in December 2017 and includes the following policy directions relating to the environment and sustainability:





## Environmental Protection and Sustainability at the Tel Aviv-Yafo Municipality

The deputy director of the Operations Division leads the implementation of sustainability and environment-related matters in the municipal work plan. The City Sustainability Coordinator and the Environmental Protection Authority are part of the Operations Division.

- The Environmental Protection Authority, with a staff of around thirty, is entrusted with promoting environmental and sustainability-related issues.
- Environment and sustainability professionals are also part of the Engineering Administration, Operations Division, Transportation Authority and Community Administration.
- Five municipal and metropolitan corporations spearhead policy relating to sustainability and the environment: the Dan Cities Association for Sanitation, Igudan-the Dan Regional Association for Environmental Infrastructure, Yarkon River Authority, Yehoshua Gardens Company and Atarim Corporation.

### Environmental protection and sustainability - areas of responsibility





## Budget and Personnel

The budget earmarked for the Environmental Protection Authority alone, which is directly allocated by the Municipality, amounted to NIS 4,281,000 in 2017, compared to NIS 3,670,000 in 2016. The extraordinary budget also increased from NIS 600,000 in 2016 to NIS 800,000 in 2017.

The Environmental Protection Authority employs 24 city employees as well as 14 outside consultants and project coordinators. It is important to note that environmental budget items, both ordinary and extraordinary, are also directly allocated through other divisions and departments, such as the Planning Division, Beaches Division, City Beautification Division, and others.



## Mainstreaming and Formalizing Sustainability

The significant strides that have been made in advancing sustainability in Tel Aviv-Yafo are apparent from its standing both in the city and at City Hall and from the multiple stakeholders that are actively involved in sustainability and environmental issues. The municipal Sustainability Target is a foundation of annual work plans and is one of the performance targets that are set for departments across the Municipality. Apart from implementing work plans and targets, efforts are also made to impart and mainstream a sustainable way of thinking among all municipal departments and agencies.



**These are the major steps that have been taken to mainstream and formalize sustainability in the past two years:**

### **Urban Sustainability Forum**

The Urban Sustainability Forum, headed by the Municipality's Deputy Director General, consolidates the Municipality's extensive efforts to foster sustainability and serves as a leading professional platform.

The Forum has been in operation since 2011 and has met thus far 18 times. The Forum's members, managers at City Hall and professionals from environmental agencies and organizations convene to discuss actions and plans in their respective areas of responsibility. This way, the ongoing status of the work plans designed to encourage sustainability at the enterprise-wide level and the departmental level is monitored.

**2016**

Urban nature  
The Sustainability Forum is  
hosted by Yehoshua Gardens



**2017**

Update of the strategic plan for Tel Aviv-Yafo  
Shade and microclimate  
in a world that is getting hotter

Forum meetings in 2016 and 2017

### **Sustainability and Environment Training for City Employees**

The Municipality encourages professional development in subjects relating to sustainability and the environment. Continuing education sessions are held regularly and environmental themes are incorporated in all executive training courses – for all ranks of management at the Municipality. Environmental planning, green building, different aspects of meteorology, remote sensing, epidemiology, sustainable food, sustainable gardening and transportation are among the subjects that are taught. The trainings also include field trips in the city

## Procurement and Tenders

A periodic review of all the tenders that could potentially incorporate environmental requirements has been adopted. Following the review, discussions are held with the relevant departments, facilitated by environmental consultants who are conversant in the subject matter of the tender.

## Making the city's vehicle fleet eco-friendly –

including gradual replacement of all the trucks owned by the Municipality and making them compliant with the Euro 5/6 emissions standard by 2020. In 2017/2018, particulate matter sensors were installed in 22 Euro 2/3 vehicles and a vehicle driven by natural gas was purchased in 2016.

2007



773  
vehicles

46

of which are  
eco-friendly

5.9%

2009



796  
vehicles

51

of which are  
eco-friendly

6.4%

2017



780  
vehicles

64

of which are  
eco-friendly

8.2%



## Transparency and Public Participation

The Tel Aviv-Yafo Municipality set a goal to make the data produced and gathered by its different departments available to the public, including information pertaining to the environment and sustainability. The data is updated regularly on the municipal website and in the GIS and iVIEW mapping system. The data is available to a wide variety of users and needs and includes accessibility support for persons with disabilities. Information about the environment and sustainability is posted on the municipal website and on a dedicated Facebook page called

Green Tel Aviv-Yafo, which in 2017 had about 12,000 followers. Additionally, reports dealing with the implementation of policies and work plans are published periodically. The publications posted on the municipal website include:

Link	
Tel Aviv-Yafo Annual Statistical Abstract	<a href="http://www.tel-aviv.gov.il/Transparency/Pages/Year.aspx">www.tel-aviv.gov.il/Transparency/Pages/Year.aspx</a>
Minutes of the Environmental Protection Committee	<a href="http://www.tel-aviv.gov.il/Transparency/Pages/Workplan.aspx">www.tel-aviv.gov.il/Transparency/Pages/Workplan.aspx</a>
Report of Inquiries and Complaints Made by the Public	<a href="http://www.tel-aviv.gov.il/Contact/Documents">www.tel-aviv.gov.il/Contact/Documents</a>
TLV OpenData	<a href="http://www.opendata.tel-aviv.gov.il">www.opendata.tel-aviv.gov.il</a>



## Environmental Protection and Urban Nature Committee

In 2017, the Environmental Protection Committee operated in an expanded format and also included urban nature. The committee's meetings are open to the public and the minutes are posted on the municipal website.

### The committee's membership in 2017 was comprised of:

- The committee chairperson, a Tel Aviv-Yafo City Council member
- An additional member of the Tel Aviv-Yafo City Council
- The Director of the Environmental Protection Authority
- A representative from the Ministry of Environmental Protection
- 2 representatives from environmental organizations  
2 public representatives
- 3 residents

### The dates and agendas of the meetings held in 2016-2017

	Topics on the agenda
4.12.2017	Summary of 2017 activities and presentation of the work plan for 2018: the Environmental Protection Authority, the Department of Veterinary Services
18.7.17	Tree treatment in the public space
26.3.2017	Presentation of the zoning plan for the Sde Dov quarter (TA/4444)
28.12.16	Presentation of the organizational structure, operations and work plan of the Environmental Protection Authority and Sanitation Division for 2017
21.9.16	The condition of off-leash dog gardens in the city



## Global Networking

In 2008, together with the other members of Forum 15-The Israeli Forum of Self-Government Cities, Tel Aviv-Yafo signed an international convention for climate protection. By doing so, it undertook to meet the emission reduction targets adopted by other sustainable cities around the world. Global networking is an important means for achieving sustainability in the city and is a foundation for learning and inspiration as well as a vehicle for creating partnerships and special events. The global networks that Tel Aviv-Yafo belongs to and milestones relating to the environment and sustainability are outlined below.

### Twin Cities

Tel Aviv-Yafo has two sustainable twin cities: Freiburg and Essen, both of which are in Germany.

**Freiburg** – ties with Freiburg in matters relating to sustainability began in 2012 with the signing of a collaboration agreement. In June 2016, Dieter Salomon, the mayor of Freiburg, received an Award of Excellence from Israel's ambassador to Germany for his city's ties and collaboration with Tel Aviv-Yafo. Knowledge regarding sustainability is regularly shared, including delegation exchanges and participation in conferences and seminars. The key areas of mutual interest are bike paths, low-emission zones, renewable energy production, urban renewal, ecological streets and the Green Label for Businesses.

**Essen** – ties with Essen began as early as 1992 but received an environmental focus in 2017 after Essen received the European Green Capital Award that year. A delegation from Essen, which included the city's sustainability manager, came to Tel Aviv in 2017 to attend the Innovation Conference. Representatives from the Environmental Protection Authority went to Essen to take part in a major conference dealing with the environment, where they made a presentation and exchanged knowledge.

### Global Networks

International networking between cities is a proven means for advancing sustainability, primarily in the realm of climate policy. Tel Aviv-Yafo attaches importance to its membership in global networks for learning and knowledge sharing.



- 
- **A focus on sustainability in the updated Strategic Plan** – the framework of the Strategic Plan adopts sustainability as a focus as well as four policy directions relating to the environment and sustainability in the city
  - **Membership in the C40 and 100 Resilient Cities networks** – Tel Aviv-Yafo is accepted to leading global networks that drive state-of-the-art climate policy
  - **Tel Aviv-Yafo wins second place in the Istanbul Environment Friendly City Award competition**
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## Urban Environmental Protection

## Section 2: Urban Environmental Protection

Overall, environmental protection in the city is making strides and the Environmental Protection Authority's monitoring and regulatory capabilities have been significantly improved: a land survey was carried out, a new mobile tracking unit was purchased, an advanced noise survey was conducted and additional professionals have been hired.

Altogether, there are fewer factories in the city, resulting in less pollution and reduced hazards. Gas station contamination, hazardous materials and specific pollutants have also decreased. However, there are more vehicles in the city, owned by locals or commuters, and traffic congestion has become one of the main sources of air and noise pollution. Furthermore, the works on the planned light rail are creating additional air pollution and noise.



### Milestones:

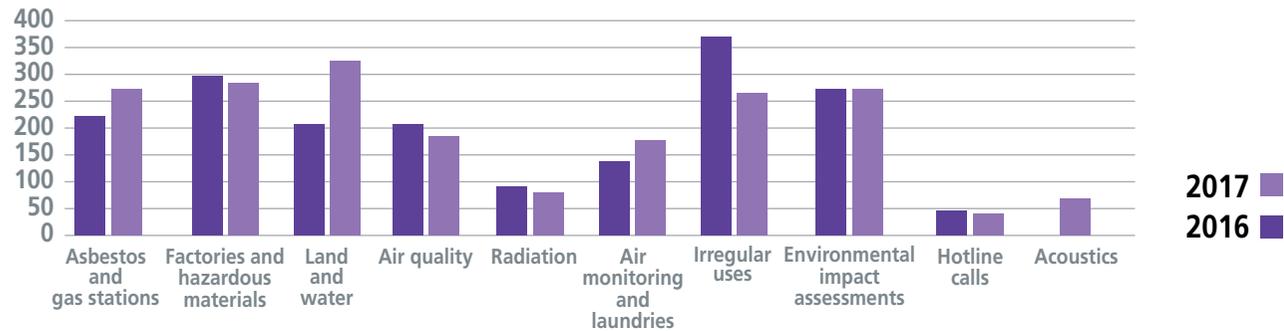
- 1998** The Hiriya landfill ceases operations
- 2006** The Reading power plant converts to natural gas and the fresh produce wholesale market is closed
- 2007** A master plan for reducing air pollution is drafted
- 2009** All gas stations in the city are required to transition to the use and sale of low-sulfur diesel
- 2012** Clean air regulations go into effect
- 2015** Works on the light rail begin
- 2016** The noise map is updated
- 2016** A comprehensive land survey is conducted



## Handling and Addressing Problems

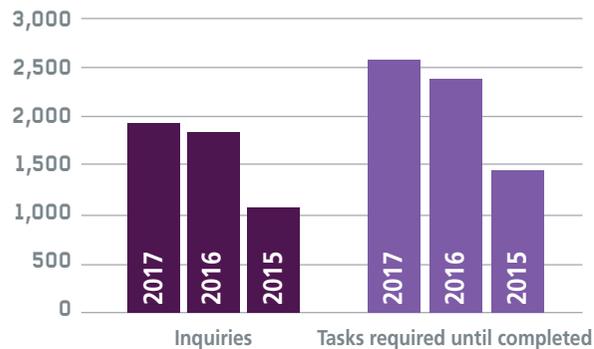
The Environmental Protection Authority is in constant contact with the public, whether when responding to inquiries and complaints or as part of its efforts to advance environmental issues and sustainability in the city. As seen in the graph below, most of the inquiries received by the Authority deal with pollutants, asbestos, radiation and hazardous materials.

Number of Inquiries by Subject and Year



Every inquiry is handled and the time it takes to resolve the issue is recorded. As seen in the graph below, the handling of inquiries dealing with impact assessments and business licensing requires an average of 1.6 tasks until completed, whereas the handling of inquiries dealing with pollutants requires an average of 2.2 tasks until completed.

Number of Inquiries Received and Handled by the Environmental Protection Authority





## Air Quality

The Air Quality Department consists of two employees. Air quality data is published in periodic and thematic reports and also in an annual report, in addition to being posted on the municipal website.

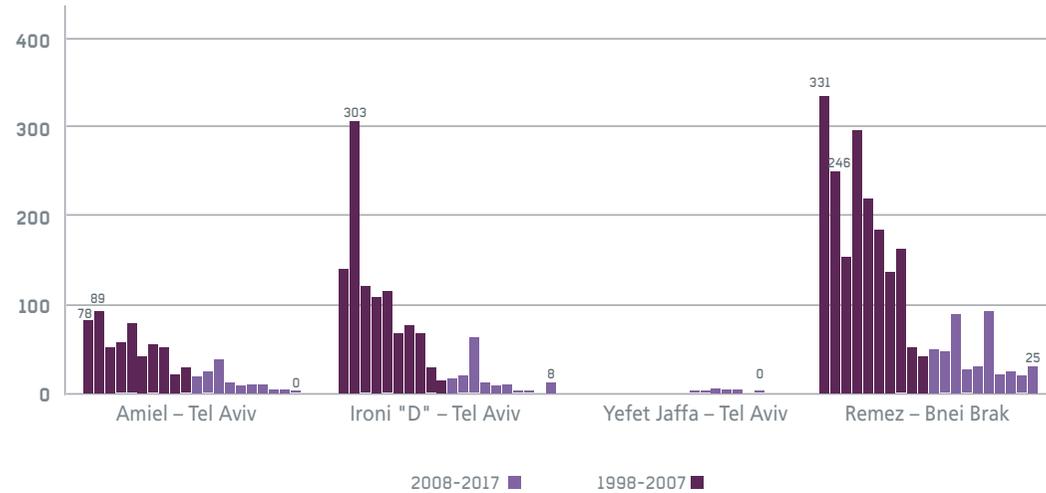
Together with the Ministry of Environmental Protection and the Ministry of Transportation, the Tel Aviv-Yafo Municipality formed a steering committee to address the reduction of air pollution from transportation. 13 permanent stations monitor air quality, in addition to some mobile stations that are activated when needed [such as the Allenby and Holtz stations] and the monitoring stations installed on Israel Railways platforms. Furthermore, another 12 stations operate in the Dan metropolitan area that regularly supply data to the monitoring system in Tel Aviv-Yafo.

The following is a list of the permanent stations in the city:

Station Name	Station Type	Year Opened	Air Pollutants
Yad Avner, Afeka	General	1999	CO, NO <sub>2</sub> , NO <sub>x</sub> , ozone, SO <sub>2</sub> , PM <sub>10</sub>
Antokolsky Street	General	1991	NO <sub>2</sub> , NO <sub>x</sub> , ozone, PM <sub>2.5</sub>
Petach Tikva Road	General	1988	NO <sub>2</sub> , NO <sub>x</sub> , ozone, SO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>
Amiel Elementary School	Transportation	1997	CO, NO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub>
Ironi "D" High School	Transportation	1998	CO, NO <sub>2</sub> , NO <sub>x</sub> , PM <sub>2.5</sub> , benzene, toluene
Yefet Street, Jaffa	Transportation	2010	CO, NO <sub>2</sub> , NO <sub>x</sub> , PM <sub>2.5</sub>
New Central Bus Station	Transportation	2006	NO <sub>2</sub> , NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>
Givat HaTachmoshet, operations suspended	Transportation	-	PM <sub>2.5</sub> Upgrade under review
Lamed neighborhood	General	1992	PM <sub>10</sub> , SO <sub>2</sub>
Bavli neighborhood [operations suspended]	General	1987	SO <sub>2</sub>
Bizaron neighborhood	General	2008	SO <sub>2</sub> Meteorological tower operations suspended
Plant nursery compound	General	1991	SO <sub>2</sub> Meteorological tower

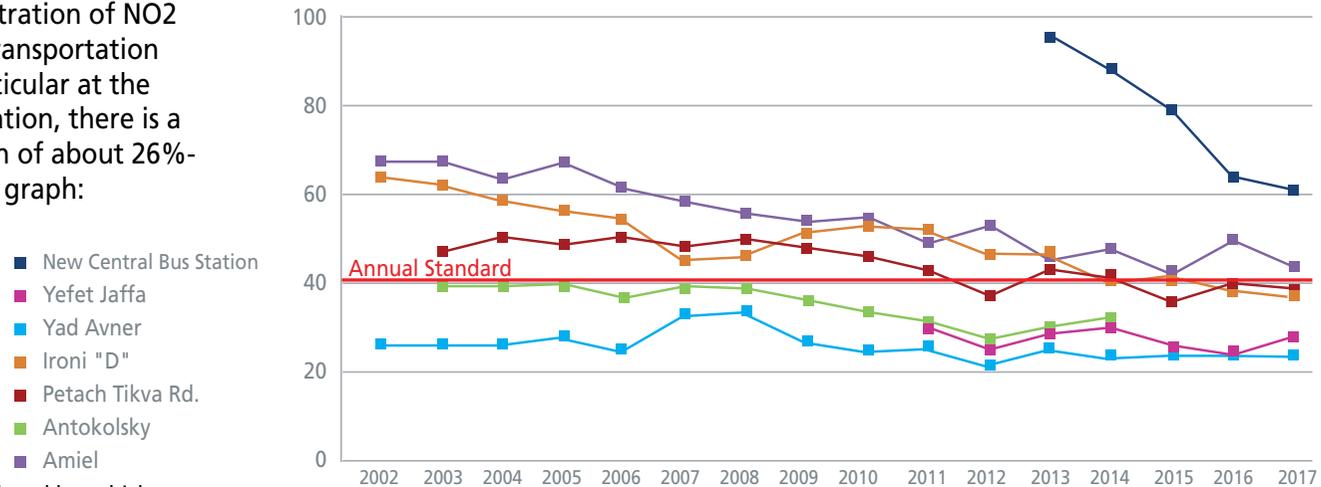
Air quality monitoring in Tel Aviv-Yafo is carried out on a large scale compared to other cities in Israel. As seen in the graph, air pollution data improved overall at all the stations in the last decade and at the transportation stations, in particular.

**Number of Half-Hour Irregularities of All Nitrogen Oxides at the Transportation Stations, 1999-2017**  
(Micrograms per M<sup>2</sup>)



At the general stations, one can see a reduction of about 9%-22% in the average concentration of NO<sub>2</sub> pollutants. At the transportation stations, and in particular at the New Central Bus Station, there is a significant reduction of about 26%-43%, as seen in this graph:

**Average Annual Concentration Levels of Nitrogen Dioxides, 2002-2017**  
(Micrograms per M<sup>3</sup>)

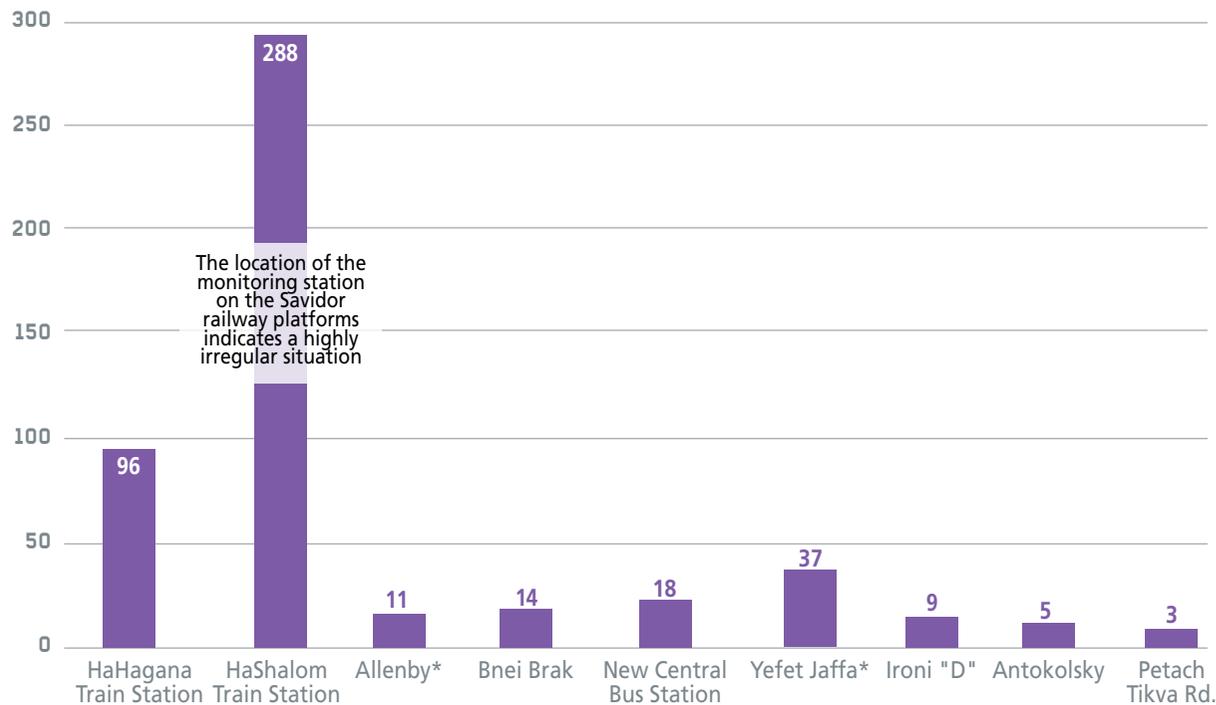


NO<sub>2</sub><sup>1</sup> - a pollutant produced by vehicles powered by internal combustion engines

In addition to the permanent stations, mobile stations are also instated for periodic monitoring. In 2016, a mobile station was installed on Allenby Street in response to a public demand. Based on a comparison with select transportation monitoring stations in the Dan metropolitan area, it was found that the NO<sub>2</sub> averages at the Allenby station were 1.3 to 4 times higher than the levels at the other stations [few deviations from the hourly standard]. With regard to PM<sub>2.5</sub>, however, the levels do not differ substantially [0.5 to 1.7 times higher]. On the other hand, as seen in the following graph, the monitoring at the railway platforms indicates especially high levels of air pollution adjacent to the platforms.

### Number of Daily Deviations in PM<sub>2.5</sub> Breathable Particles, 2017

(Micrograms per M<sup>3</sup>)



#### Notes:

- The Allenby monitoring station is still in operation
- The Yefet monitoring station is deviation-biased due to nearby construction

The results of air quality monitoring in Tel Aviv-Yafo, both at permanent and mobile stations, indicate that transportation is a major contributor of pollutants. These pollutants registered significant deviations from the required standards.

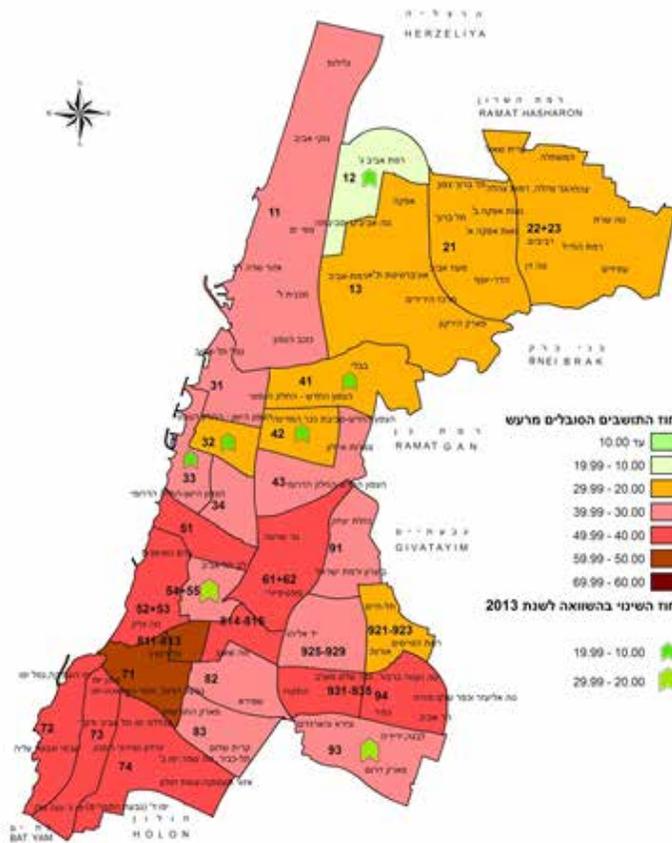
PM<sub>2.5</sub><sup>1</sup> - fine breathable particles, pollutants which are primarily produced by vehicles powered by internal combustion engines



## Noise

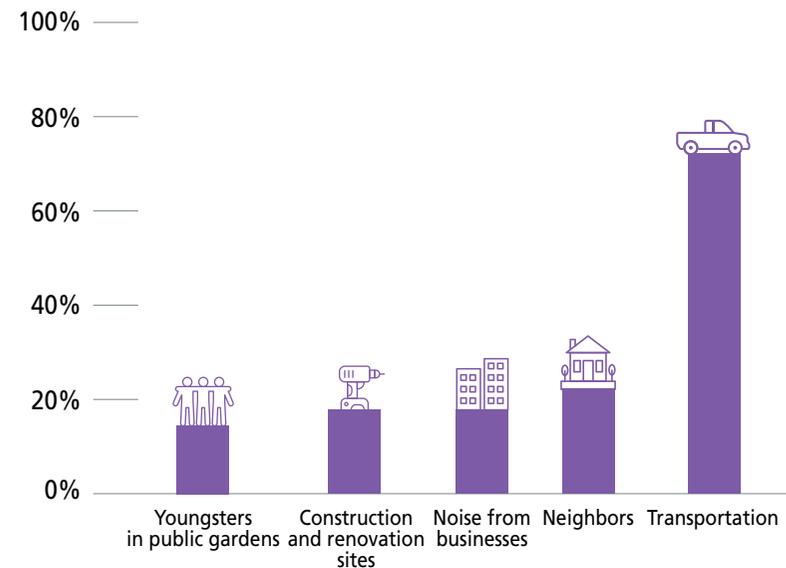
Most of the efforts made by the Tel Aviv-Yafo Municipality to reduce noise pollution focus on monitoring, analysis and supervision of the exposure to noise from transportation - and on formulating planning principles and regulations pertaining to development and construction in the city.

In 2016, the Operations Division conducted a survey to ascertain the number of residents who suffer from harmful effects of noise. The survey indicates that 36% of all residents suffer from noise [another 18% noted that they suffer to a moderate degree]. Most noise-related complaints pertain to transportation, which increased compared to an earlier survey from 2013. The highest percentage of residents who complained about noise from transportation live in downtown Tel Aviv and in Jaffa. There is also an increase in the percentage of residents who suffer from noise from construction and renovations.



Percentage of Residents Who Suffer from Noise by Sub-Quarter

[Operations Division 2016 Survey, The Center for Economic and Social Research]



The Major Causes of Noise

[Operations Division 2016 Survey, The Center for Economic and Social Research]



## Asbestos

An asbestos survey was conducted in 2016-2017 at 951 public buildings and municipal facilities as follows:



**559**

Educational, community, youth and sports facilities



**150**

Facilities that provide municipal services: Social Services Administration, Culture Division, Municipal Inspection, Educational Psychology Service and Sanitation Division



**242**

City shelters

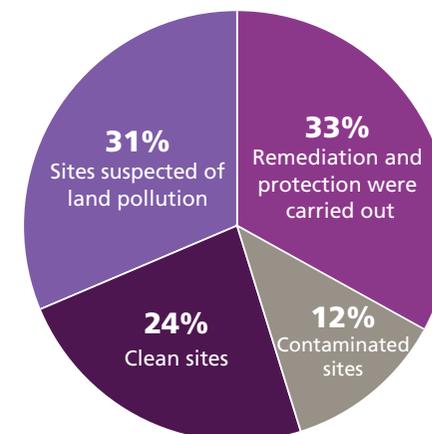
Type of Treatment	Removal of Asbestos Cement	Painting of Asbestos Panels	Normal Status	Treatment Pending
No. of buildings	15	3	9	2
M <sup>2</sup>	2,200	380	180	465



## Contaminated Land

Together with the Tel Aviv-Yafo District Management of the Ministry of Environmental Protection, the Environmental Protection Authority initiated a comprehensive land mapping project in 2014. Based on national standards, this is a pioneering project that provides extensive and in-depth data about all the land in the city, coupled with information about the steps that have been taken to treat and remediate over 620 sites.

After adding the findings to the municipal GIS database in 2016, they are now available to the public and updated on a regular basis.





## Electromagnetic Radiation

Efforts to reduce electromagnetic radiation [as of January 2016] include monitoring 974 cell phone towers and wireless access points dispersed around the city, in addition to 675 broadcast towers, both civilian and military [transmission and relay antennas, radio and television broadcasts, taxicab stands, etc.].

200 inquiries dealing with radiation were received in 2017.



## Environmental Planning

Environmental planning facilitates the internalization of environmental considerations in city plans and in the management of local businesses, mainly through licensing. Environmental planning is a factor in all municipal plans and affects multiple issues: environmental impacts, noise hazards, radiation and air pollution. The standing of environmental planning has improved in recent years, witnessed by the increased activity outlined in the following table. Emphasis has recently been placed on the Red Line light rail stations, impact assessments and guidelines for issuing permits to work at night, aimed at preventing noise and air pollution.

Issues handled through environmental planning:

	2016	2017
Hotline calls	3	2
Monitoring of the Ben Gurion Airport zoning plan	5	16
Environmental consulting [town planning]	16	32
Environmental consulting [opinions, examinations, by phone]	91	174
Building permit opinions	145	174
Blueprint assessment	3	49



- Issue of a municipal procedure governing asbestos treatment – the first in Israel. The procedure covers the asbestos treatment process from the receipt of the inquiry by the municipal hotline to its resolution.
- Purchase of state-of-the-art software for predicting radiation exposure – and training its users.
- Purchase of a new and cutting-edge mobile unit for treating hazardous materials incidents, including a mobile laboratory.
- Issue of a new procedure governing the removal of hazardous materials and offering it to other local authorities as well.
- Formation of a joint team with the Ministry of Environmental Protection and Ministry of Transportation in order to formulate an air pollution treatment policy.
- Requiring parking garages to use automated ventilation.
- The contaminated land survey was updated and is available on the municipal GIS.



# 3



## Nature and Ecology

## Section 3: Nature and Ecology

In recent years, urban nature has become an important topic on the city agenda. The amount of cultivated open spaces maintained by the Municipality increased from around 250 acres in 2000 to close to 600 acres in 2017.

The water quality of the Mediterranean and local rivers is also improving, despite some specific setbacks, especially as regards the Yarkon River due to growing strains on wastewater facilities.

The ecological approach, which underscores the conservation of natural assets and the environment, has been incorporated in public gardening and in the maintenance of urban open spaces. Use of non-ecological pest control is prohibited, local vegetation is being restored and trees are being planted, increased carrying capacity of the urban environment is encouraged, the staff is more ecologically proficient, and urban nature sites are conserved and cultivated – all as a routine part of the Municipality's work and policy.



### Milestones:

- 2005** The "City Vision" is drafted – a strategic plan and municipal objective in the Environment and Sustainability Work Plan are approved
- 2012** The first urban nature survey is conducted in the city
- 2014** Tel Aviv-Yafo is designated the city of swifts and dozens of nesting boxes are spread around the city
- 2016** A master plan for urban nature is approved; the plan serves as a benchmark against which detailed plans dealing with nature in the city are assessed
- 2016** Zoning plan TA/5000 includes a 3-level hierarchy of urban sites in the city: urban nature areas, urban nature sites and specific urban nature spots
- 2013-2018** Steps are taken to rehabilitate and establish the urban nature sites that appear in the urban nature survey
- 2017** Spraying of groves in the city is discontinued

The city of Tel Aviv-Yafo has been endowed with diverse natural assets and habitats: the beach and coast, Yarkon River, Ayalon River, the sandstone ridge and hills, seasonal humid habitats, sand dunes, gardens and groves.

In the past decade, the Municipality has promoted widespread efforts to conserve nature in the city and make it more accessible to the public for their enjoyment and edification: urban nature sites, community gardens, parks, gardens and groves.

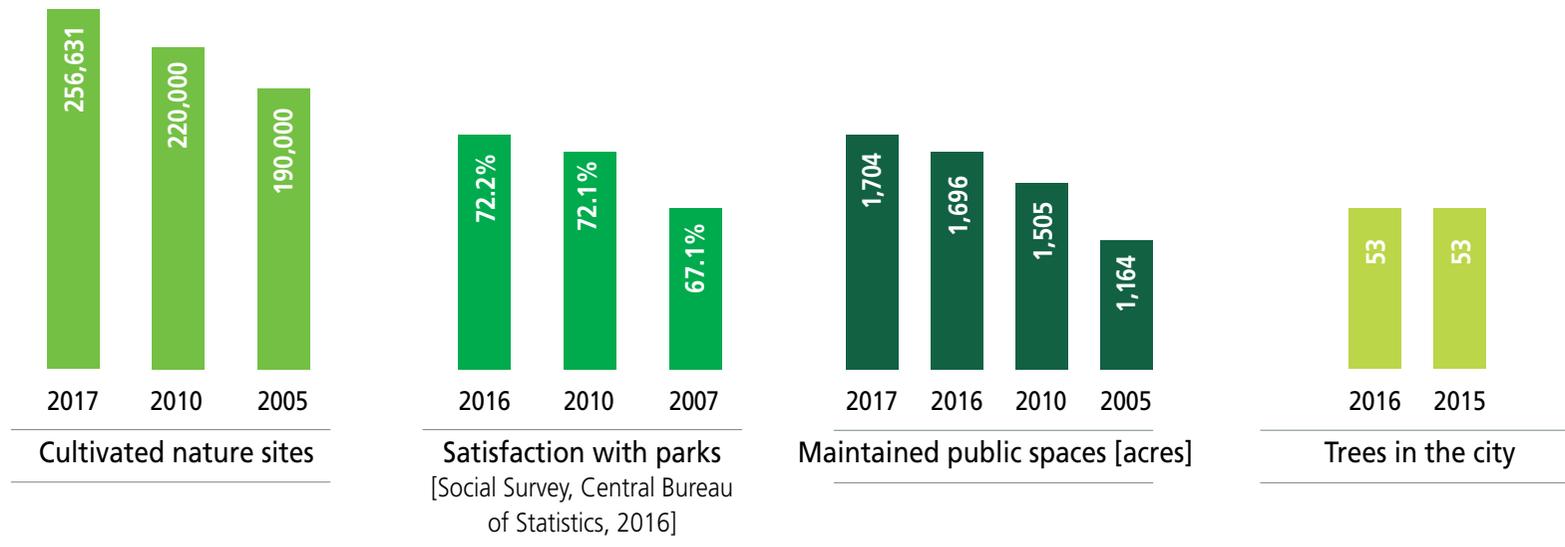


## Nature Sites and Open Public Spaces

The City Beautification Division and the Environmental Protection Authority continue to expand their operations to conserve open spaces in the city, both in terms of scope as well as implementation of the ecological approach.

There is greater professionalization among the staff responsible for this matter and the teams now include an ecologist and a marine ecologist.

More public spaces are cultivated, the number of trees in the city has increased, and specific steps are taken to conserve and nurture existing ecosystems.



The state of open spaces and residents' satisfaction in 2005/7, 2010, 2016 and 2017



## Natural Flora in the City

Over the years, natural flora in the city was adversely affected by urban development and urbanization. In the past decade, there is growing awareness of the importance of protecting natural flora both in the acknowledged nature sites and in open spaces throughout the city. In 2013, the first fallow field was dedicated in Maoz Aviv, which is an urban grove where pest control is prohibited and endemic species of vegetation were restored. The success of the pilot in Maoz Aviv led to the conversion of additional plots into fallow fields and, as of 2016, the use of pesticides is totally banned in urban groves. A new project was launched in 2017 that includes seeding wild plants around tree bases on different streets in the city [Ibn Gabirol, Kaplan, Aliyat HaNoar and others] and wildflowers along major thoroughfares, like on Namir Road.



## Fauna in the City

The Tel Aviv-Yafo area is home to a variety of habitats: red loam, sandstone, sand dunes, diverse moist habitats such as winter pools and the beds of perennial and seasonal streams. Animals that have managed to survive and adapt to the urban environment are for the most part found in the outskirts of the city or on the remaining islets of nature at urban nature sites.

- Stable population** } **Mammals and rodents:** Eastern European hedgehogs, long-eared hedgehogs, field mice, Tristam's jirds, Allenby's gerbils, Greater Egyptian gerbils, lesser shrews, Etruscan pigmy shrews, bicolored shrews, porcupines, red foxes, golden jackals, Cape hares, vesper bats
- Increasing population** } **Invasive species:** black rats, brown rats, house mice, nutrias, flying foxes
- At risk of extinction** } **Amphibians:** Middle East tree frogs, common tailorbirds, southern branded newts, Levant water frogs, European green toads



## Birds

**Songbirds:** European greenfinches, goldfinches, Palestine sunbirds, bulbuls, great tits, common blackbirds, Sardinian warblers

**Aquatic and wading birds:** squacco herons, night herons, great egrets, white-throated kingfishers, pied kingfishers

**Thicket birds:** reed warblers, eastern olivaceous warblers, graceful prinias, Cetti's warblers

**Diurnal and nocturnal birds of prey:** common kestrels, long-eared owls, barn owls

**In the built sections of the city:** common swifts, barn swallows, house martins

During the migration period and winter months, one can observe scores of additional species, including aquatic and shoreline birds which stop in various locales around the city. Overall, the number of birds in the city has increased. There are more trees and more places to nest, both for local and migrating birds. This trend is even more pronounced following the rehabilitation of the winter pools and the inauguration of the new birdwatching park. In 2016, the Municipality, together with residents and the Society for the Protection of Nature in Israel, began distributing nesting boxes for birds around the city, intended for local birds.





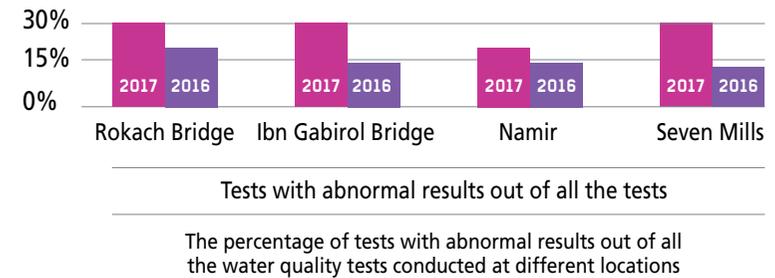
## Butterflies

In 2015, a first-time butterfly survey was conducted at the main urban nature sites in the city. A total of 22 different species were identified. The largest concentration of species and individuals was observed at the Reading boardwalk and Pardesim River. Out of all the city gardens, the largest concentration of species and individuals was observed on HaHaskala Boulevard.



## Yarkon River

The rehabilitation of the Yarkon River continued in the last decade, coupled with the development of Yehoshua Gardens and an important ecological hub that includes the birdwatching park and the agricultural farm. Despite monitoring efforts and considerable investments, water quality is not up to par. At the beginning of 2017, water quality in the middle section of the river declined due to the flow of wastewater and low-quality reclaimed water from the Kane River and wastewater treatment facility in the southern Sharon district.



## The Beach and the Mediterranean

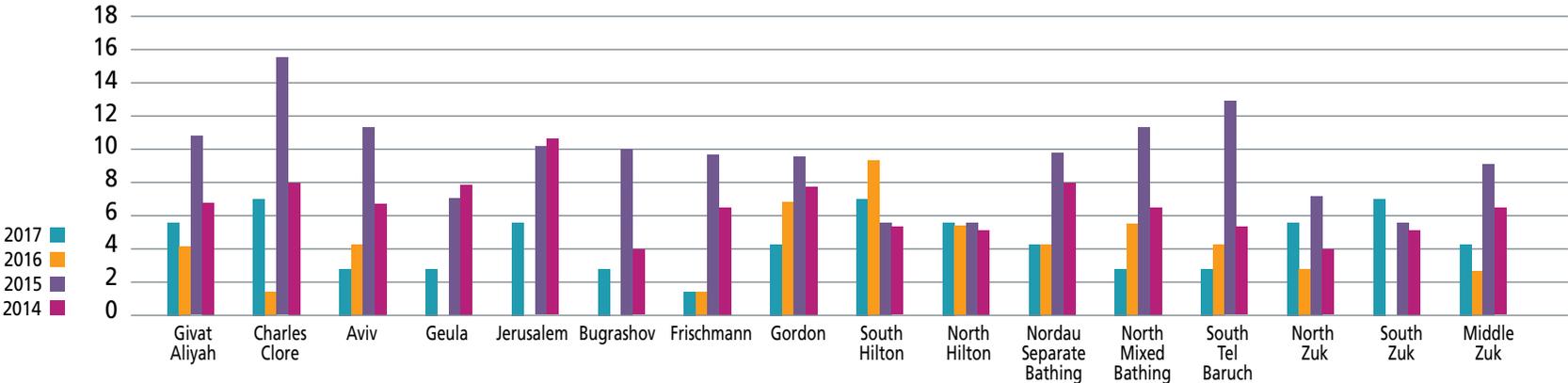
In the past decade, substantial resources have been invested in developing the coastline and in establishing it as a recreational venue for the community and a tourism asset.

In 2017, ten municipal beaches and the marina were certified as Blue Flag sites. Blue Flag is an international program that assesses and promotes protected and clean beaches. Zuk Beach also won the Ministry of Environmental Protection's clean beach measure.

	2005	2010	2017
<b>Pedestrian boardwalk length</b>	6.8	8.5	18
<b>Bike boardwalk length</b>	1.6	5.6	16

Nevertheless, the water quality of the Mediterranean is still at times below par, due to the flow of wastewater which may lead to the closure of the beach. Compared to 2015, there has been a significant improvement in the last two years, apart from the Zuk beaches and Hilton Beach.

### Percentage of seawater tests with abnormal results





- 
- **Rehabilitation of nature sites** - seeds were planted at 25 of the city's urban nature sites in 2017
  - **Tree plantings at Yehoshua Gardens** - including around 500 indigenous trees and local fruit trees; the vegetation in the botanical garden at Yehoshua Gardens was also restored and new information signage was installed
  - **Agamon Yarkon pilot project** - bank vegetation typical of the Yarkon River was planted and areas where aquatic birds can nest were defined
  - **Enhancing ecological corridors in the city** - guidelines were included in a tender for nature site maintenance
  - **New birdwatching park at Yehoshua Gardens** - a place where local birds and migrating birds passing over the region can stop, eat, drink and nest
  - **Edible trees** - the planting of fruit trees and indigenous trees in open spaces such as Polity Garden, Dubnov Garden, and Wolfson Garden was encouraged; at those gardens, areas were defined where wild shrubs that attract pollinators and songbirds were planted
  - **Installation of information signage** - dealing with the urban nature site and special signage about certain elements of the ecosystems, such as signs describing the birds, flora and fauna at Yehoshua Gardens, and information posts with barcodes that facilitate easier access to information
  - **Renovation of the agricultural farm and converting it into a community nature center** - which offers quality recreation in the heart of nature and diverse activities like an animal farm, ficus tree maze, pick-your-own fields, a carpentry and ecological wood playroom, musical garden made of recycled materials, plots for growing your own vegetables, and more.
-



4



## Infrastructures and Resources

## Section 4: Infrastructures and Resources

Numerous resources are invested in upgrading timeworn municipal infrastructures and environmental considerations play a greater role in their retrofiting. In 2016 and 2017, 600,000 m<sup>2</sup> of construction were approved that are compliant with the Green Building Standard.

The city's impact on the environment derives primarily from the way it consumes and uses resources – land, water, energy and food. In the last few years, efforts have been made to improve resource use and advance local treatment and production.

The amount of waste produced in Tel Aviv-Yafo in 2016 amounted to 412,284 tons, of which 83% was sent to a landfill site.

In the middle of 2016, an RDF facility for producing refuse-derived fuel was opened, which treats 3,976 tons of waste a day.



### Milestones:

- **2011** - Municipal green building guidelines for all uses are introduced [for residential buildings with more than 12 floors]
- **2014** - A master plan for drainage is approved, which incorporates principles of sustainable stormwater runoff management
- **2015** - The services of TMIR are commissioned and recycling bins for plastic packaging start to be deployed
- **2016** - Green building is ratified as a condition for obtaining a building permit under Amendment 101 to the Planning and Building Law
- **2016** - A master plan for waste treatment that incorporates sustainable management principles

One Planet Living depends to a great degree on the way humans manage and consume resources. The more natural and more local the resources are, the less their impact on the environment. On the municipal level, sustainable resource management depends on establishing suitable municipal infrastructures. The Municipality does not bear sole responsibility for infrastructures within its jurisdiction. Some are managed by the central government, some by public corporations, and some by intercity partnerships.

Five infrastructure areas that have a direct connection with urban sustainability, and primarily with greenhouse gas emissions in the city:



## ELECTRICITY

**Impact on the environment** – carbon dioxide emissions from fossil fuel power plants – gas, coal  
**Sustainable management** – transitioning to electricity produced from renewable sources

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## WASTE

**Impact on the environment** – transporting waste for treatment, disposal in landfills and production of methane gas from organic waste  
**Sustainable management** – a circular economy: changing production and consumption, treating waste close to source, recycling, producing electricity and composting

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## WATER

**Impact on the environment** – investing energy in production, pumping and conveyance  
**Sustainable management** – reducing consumption, preventing wastage, managing stormwater runoff, and optimizing and conserving water sources

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## TRANSPORTATION

**Impact on the environment** – using land for roads, air pollution and greenhouse gas emissions from vehicles  
**Sustainable management** – reducing mileage and use of fossil fuels, transitioning to public transportation

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## CONSTRUCTION

**Impact on the environment** – using land, transporting materials, greenhouse gas emissions during production processes, consuming resources while living in the buildings  
**Sustainable management** – local materials, waste management in the buildings, green building, composting

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Living according to One Planet Living criteria and striving for urban resilience are geared towards local production of most resources and local treatment of most pollutants. The local production approach is increasingly becoming a strategic means in the way the Municipality conducts itself. With regard to water and waste, processes governing supply, consumption and waste treatment are being streamlined. In the last two years, the Municipality has taken steps to manage energy and food sources.



## Green Building

The Tel Aviv-Yafo Municipality was a pioneer in recognizing and implementing the Israeli Green Building Standard, which was adopted in 2011. Together with Forum 15-The Israeli Forum of Self-Government Cities, the Tel Aviv-Yafo Municipality spearheaded compliance with the standard in public buildings and new buildings. The Municipality is now at an advanced stage of drafting guidelines pertaining to renovations and energy efficiency.



# 80

### Public buildings

Schools, kindergartens, sports facilities, etc.



# 7,500

### Housing units

Built and/or approved building permits



# 600,000

### M2 commercial buildings

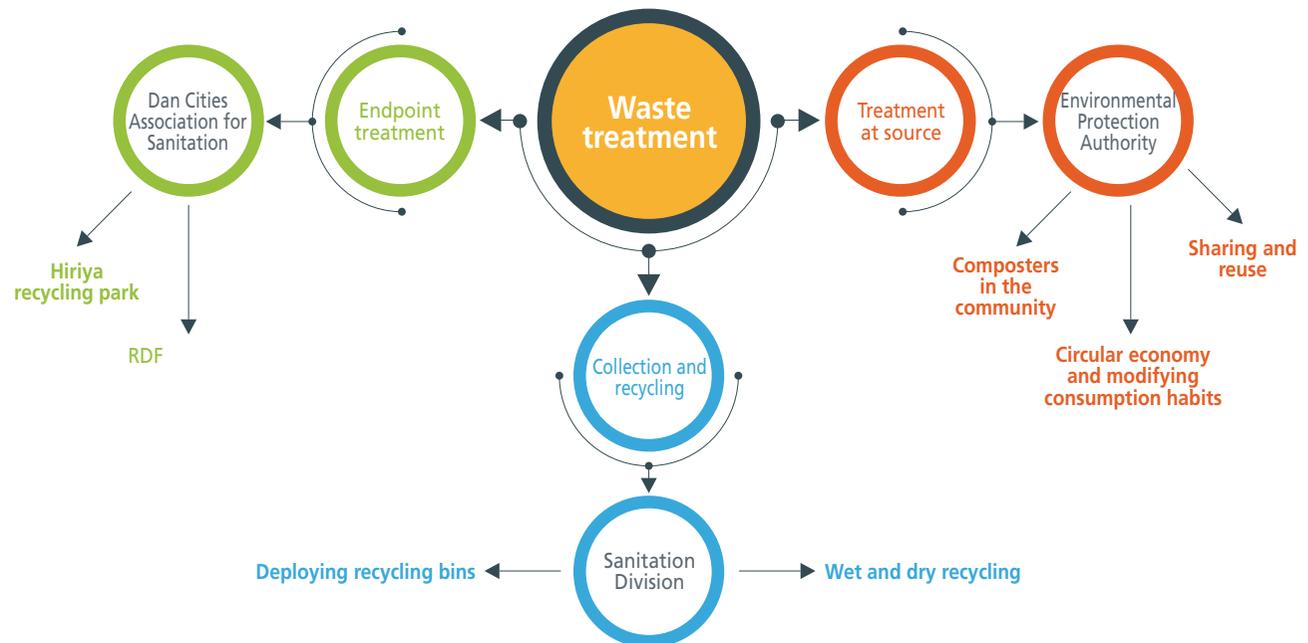
Built and/or approved building permits

The number of buildings built thus far in accordance with the Green Building Standard



## Waste

The Tel Aviv-Yafo Municipality has adopted an integrated waste treatment approach and set a target to reduce the percentage of disposed waste to 40% by 2030. Waste treatment is jointly managed by two municipal departments - the Sanitation Division and the Environmental Protection Authority – in cooperation with the Dan Cities Association for Sanitation.



Structure of the integrated waste treatment approach

The amount of waste in the city is increasing, but the amount per capita has remained relatively stable in the past decade.

	2009	2013	2015	2017
Waste per resident per day	2.6	2.7	2.6	2.7
Disposed waste	342,765	355,381	345,262	283,952
% disposed	88%	88%	85%	67%
Recycled waste	48,871	49,767	61,939	140,581

Municipal waste treatment data for 2009-2017



## Recycling Bin Deployment and Recycling Facilities in the City

Tel Aviv-Yafo set a recycling target of 40% by the year 2030. In 2017, 33% of all waste was sent for recycling.

The annual amounts of waste sent for recycling are outlined below. One can see more recycling of all types of waste and an especially high increase in energy waste, yard waste, carton, and construction waste, where the treatment is more efficient and sustainable endpoint solutions have been devised.

	2009	2011	2016
<b>% recycled out of total waste</b>	<b>12%</b>	<b>14.2%</b>	<b>16.7%</b>
Organic waste	6,780	9,192	10,277
Paper	15,501	7,522	5,155
Cardboard		7,718	13,270
Newspaper	6,547	13,241	8,095
Yard waste	9,313	5,679	15,137
Deposit containers	7,910	7,446	7,081
Waste for fuel	-	-	3,976
Used oil	1,260	1,227	1,584
Packaging	-	-	1,760
Plastics	815	872	956
Metals	656	733	809
Other	89	1,912	755





## Electricity

Most of the electricity used in the city is currently supplied by the Israel Electric Corporation through the national electricity grid. In 2006, the Reading "D" power plant, which is located in the city and produces roughly 5% of all electricity output in Israel, transitioned to natural gas [reducing air pollution created by the plant]. Legislative changes in the last two years have resulted in local energy production by private producers. The Municipality is in the process of advancing a renewable energy production plan, primarily under Zoning Plan TA/3700. Large spaces in the city are being examined as potential sites for local energy production powered by natural gas [Ichilov Hospital, the Kirya government complex, Sarona, office towers, new neighborhoods that are being planned, etc.].

Additionally, electricity use is much more efficient and consumption is decreasing.

	2005	2010	2014
Household electricity consumption in Tel Aviv (kWh)	6,196	6,361	6,017
Household electricity consumption in Israel (kWh)	6,775	7,182	6,968
Total consumption in the city	222,983	233,002	238,414

Electricity consumption by different users in the city in 2005, 2010 and 2014

[Israel Electric Corporation data were provided up to 2015]



## Energy Efficiency

Since establishing the Lighting Control Center in 2005, the Municipality has advanced an electricity conservation and efficiency plan. It entails the upgrade of systems in the public space and in public buildings, coupled with information and education campaigns for employees and users. The steps taken as of the end of 2017 are detailed below.

**300**

Traffic lights use energy-saving lighting

**2000**

Street lights use energy-saving lighting

**38**

PV panels have been installed at public buildings [including schools]



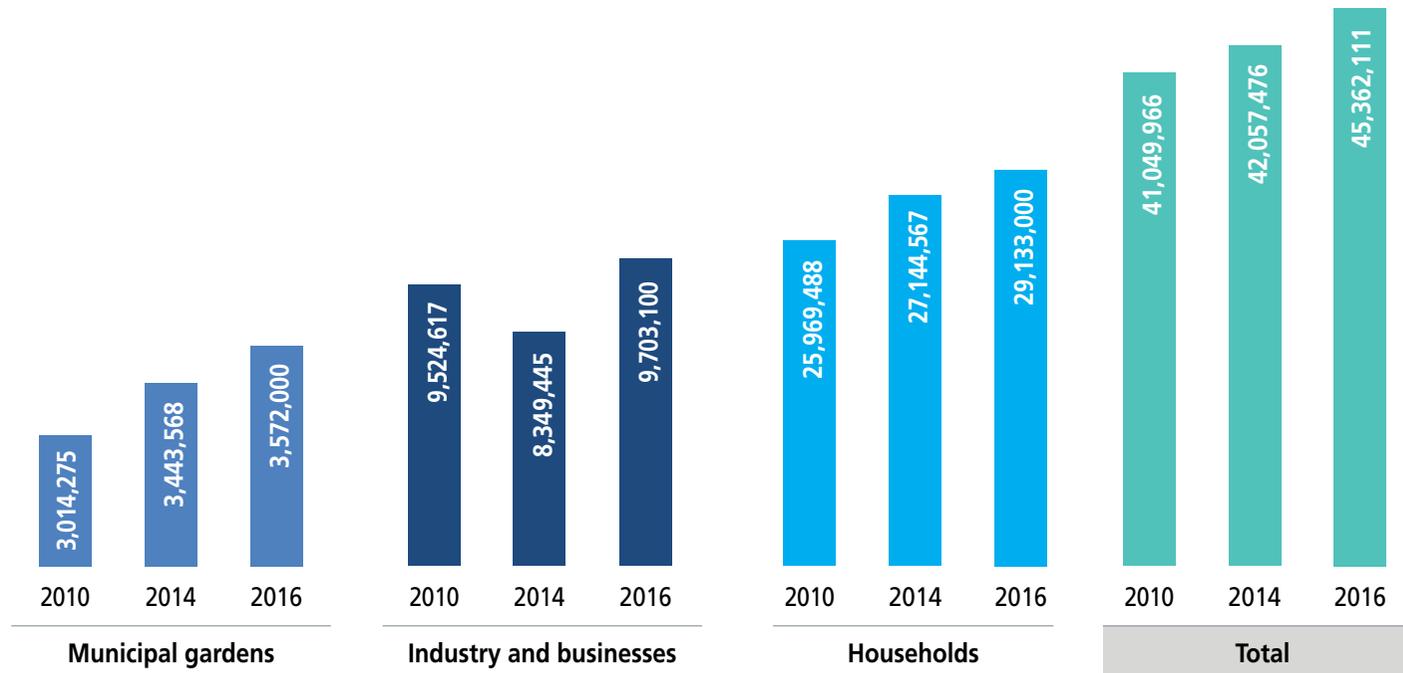
## Water

Because local and national water sources are drying up, the demand is being increasingly met by desalinated water and the use of reclaimed water.

Supply	2005	2010	2017
Total water supplied	46,128	45,282	51,148
Of which from Mekorot – the National Water Company	87.8%	93.8%	94%
% of desalinated water out of the water supplied by Mekorot	1.5%	20.9%	52%
Wastage	6.1%	9.1%	10%

The amount of water supplied in the city and its sources in 2005, 2010 and 2017

Water resource management in the city is divided into three areas: supply sources, supply efficiency and wastewater treatment. A reduction in water consumption for household purposes can be seen, coupled with decreased usage in public gardening, which has remained stable despite the increase in the number of cultivated areas.





## Wastewater

Igdan-the Dan Regional Association for Environmental Infrastructure purifies wastewater from the Dan region at its wastewater treatment plant ("Shafdan") for reuse by agriculture. Shafdan is the largest water recycling facility in the world and the largest wastewater treatment plant in the Middle East. Wastewater from Tel Aviv-Yafo accounts for roughly 40% of all the wastewater treated at Shafdan.



- **Energy innovation center at Jaffa Port** – Atarim, together with the Municipality, opened a pilot site for new energy technologies at Jaffa Port. Two pilot projects are in operation: one for producing energy from ocean waves, and the other is an urban wind turbine.
- **RDF facility** – a Refuse-Derived Fuel facility was opened in April 2017 at the Hiriya Recycling Park. The facility sorts mixed city trash and produces solid fuel from it for use by the cement industry. The facility is the first of its kind in Israel and one of the largest in the world, marking the transition from waste as a nuisance to waste as a resource.





5



A Sustainable Lifestyle

## Section 5: A Sustainable Lifestyle

Life in Tel Aviv-Yafo is becoming increasingly sustainable. By 2016, there were 30 community gardens in the city and 6 more were added in 2017. The school system offers dozens of programs that encourage a sustainable and healthy lifestyle and stress the importance of nutritional and sustainable food. Furthermore, the Sustainable Neighborhood program operates in 7 neighborhoods around the city. In 2017, two local sustainability hubs were opened in the Ramat Israel and Hadar Yosef neighborhoods and a first library of things was dedicated in Florentin. The city's residents are relatively satisfied with the supply of public transportation and bike riding options. In Tel Aviv-Yafo, the percentage of households that own a car is lower than the rest of Israel. In the last two years, the number of traffic accidents in which bicycles were involved declined.

The city is becoming a national sustainability center. Over 25 local and national environmental organizations are active in Tel Aviv-Yafo. In the last two years, more than 80 restaurants joined the Green Label for Businesses initiative, of which 40 have already been certified.



### Milestones:

- **1998** - The first "Biking Critical Mass"
- **2005** - David Yellin elementary school is certified as a green school
- **2006** - CityTree - an ecological apartment on Bialik Square - takes part for the first time in Open Houses weekend
- **2007** - The first community garden is established in Tel Aviv-Yafo
- **2010** - Tel Aviv-Yafo is designated the city of swifts and dozens of nesting boxes are spread around the city
- **2012** - The main event marking Earth Hour is held on Rabin Square
- **2013** - A manual dealing with sustainable neighborhoods is published and a pilot project is launched in the Bizaron and Ramat Israel neighborhoods
- **2013** - The Kiryat Sefer garden is dedicated following a 15-year long public campaign
- **2015** - Dizengoff Center adopts urban sustainability and launches an urban agriculture initiative – Green in the City – on its roof
- **2016** - The field kitchens at the Israel Scouts summer camps adopt healthy and sustainable food plans

To a large extent, a sustainable city is dependent on the lifestyle of its residents, their civic engagement, and the type of dialog conducted between the municipal institutions and residents. Civic partnership and sustainability go hand in hand by sharing both the responsibility and the decision-making. The local authority plays a key role in creating a climate that facilitates and encourages residents to lead a sustainable lifestyle. The Municipality is responsible for public spaces, is the one that supplies infrastructures and services, and is able to foster and incentivize sustainable conduct. All these bring sustainability into the residents' daily lives and lower the barriers to adopting a sustainable lifestyle.

From the perspective of the Municipality, sustainability has become one of the more important community undertakings in the past decade. The municipal focus was triggered by the growth of the sustainability community in the city. Tel Aviv-Yafo is home to a large number of local and national environmental organizations, which work out of the city and are active in it. Alongside those organizations, a community of residents has also evolved who are promoting a sustainable lifestyle in the form of bike paths, nature conservation, community gardens, give-and-take exchanges, and more. In light of the success of various initiatives, such as community gardens, community fallow fields and composting, the Sustainable Neighborhood program was launched as a comprehensive framework for advancing sustainability in the community.

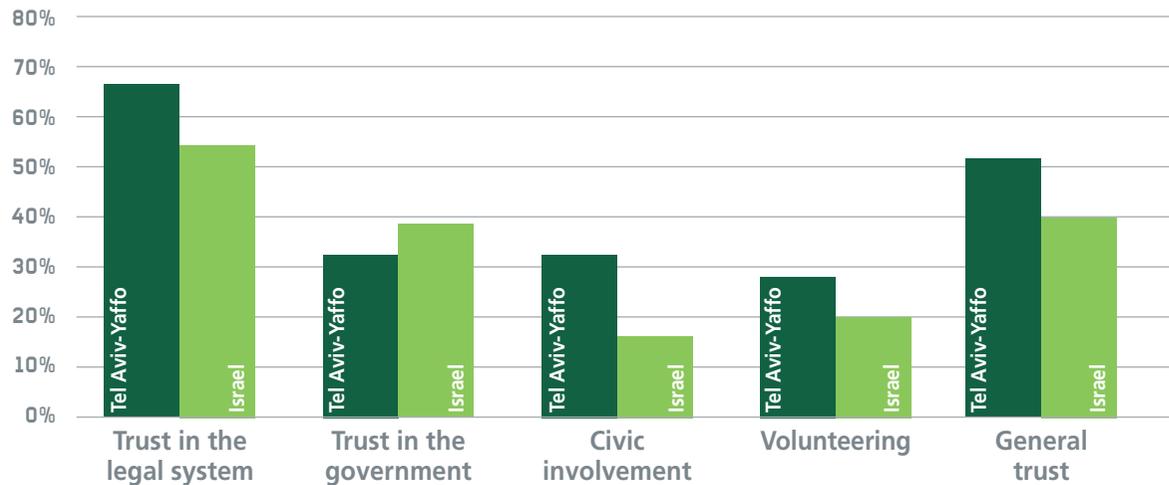
	<b>Urban Space</b>	<b>Community Life</b>	<b>Civil Society</b>	<b>Businesses</b>
<b>Circular economy and waste</b>	Recycling centers Composters Hiriya Educational Center		Composter network	Second hand stores
<b>Sharing</b>	Library of things	Give-and-take exchanges	Rebooks Misha's Toy Lending Warehouse	
<b>Food and health</b>	Food forest and spice gardens Greenhouse on the boulevard Food sold at the beach	Nutrition program Healthy food at educational institutions	Less food waste Meatless Monday	Food markets Food cooperatives Restaurants that are Green Label certified
<b>Happiness and friendship</b>	Sustainability hubs	Sustainable neighborhoods	Levinsky Kitchen ZeZe The Women's Courtyard	
<b>Getting around</b>	Bike paths Tel-O-Fun Autotel	Walking to school	Israel Bicycle Association Pedestrians Front Shabus – buses on Saturday	Pink Parking Movit
<b>Nature</b>	Urban nature sites Parks and gardens Coast and beach	Gardening in the community course	The Green Forum Swifts Association HaYarkon Neighbors	
<b>Consuming resources</b>	Green public building Energy production at public institutions	Tel Aviv-Yafo roofs	1000 Solar Roofs	Green Label businesses
<b>Life in the city</b>	Shade Street libraries	Sustainability Month	CityTree Porter School of Environmental Studies	EcoTower

Sustainable lifestyle activities in the city organized by topic and lead agency



## Community Characteristics

- More overweight children in south Tel Aviv and Jaffa<sup>1</sup>
- A high percentage of single-parent families
- A high percentage of young adults aged 25 to 35 compared to the national average, a high percentage of seniors over the age of 65 compared to the national average, and a low percentage of children under the age of 18 compared to the national average
- Tel Aviv-Yafo surpasses other cities in civic involvement and volunteering<sup>2</sup>
- The city's residents trust the legal system in general and specifically more than residents of other local authorities, but have less trust in the central government<sup>3</sup>



<sup>1</sup>According to 2016 data published by the Ministry of Health and processed by the Center for Economic and Social Research

<sup>2</sup>Living Measures in the Large Cities, Central Bureau of Statistics, 2018

<sup>3</sup>Ibid.

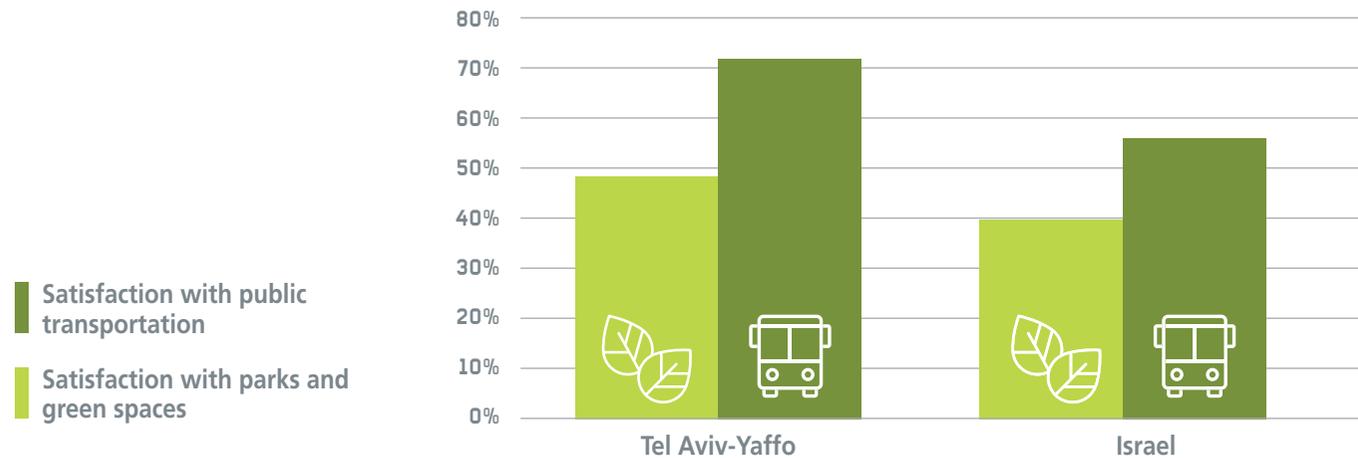


## A Sustainability-Enhancing Urban Space

Urban sustainability relies on the opportunities and options that the public space contains and offers. Tel Aviv-Yafo's environmental footprint depends on the way its residents conduct themselves – what food they consume, how they get around the city, and to what degree their homes conserve resources and enable efficient management of energy, water and sustainable waste treatment.

Urban activity aimed at promoting a sustainable lifestyle and creating a facilitating space began to emerge as early as 15 years ago: ranging from bike paths and recycling centers to a shared mobility system. Municipal guidelines increasingly reflect sustainability principles, primarily as a result of the Green Building Standard and the subsequent adoption of the ten One Planet Living principles.

As a rule, the city's residents feel comfortable in their public space and express growing satisfaction with its environmental qualities, including the number of parks, public transportation and bikes. However, the degree of satisfaction with the city's cleanliness is not high or better than the national average.



Satisfaction with various aspects of life in the city compared to the national average



## Community Gardens

The first community garden in Tel Aviv-Yafo was established in the Maoz Aviv neighborhood at the beginning of the 2000's. By the end of 2017, there were 38 community gardens in which groups of residents, seniors, asylum seekers, migrant workers, families, teens, and civic organizations are active.

The gardens are established at the initiative of residents with support from the Municipality.

There is a municipal procedure in place for establishing and managing a community garden in cooperation with the Environmental Protection Authority and the City Beautification Division. The procedure stipulates how to establish and run a community garden and outlines the different types of support that can be received from the Municipality.



The number of community gardens in different parts of the city

### New gardens in 2017:

Ziso – Rembrandt Street

Gonda – 29 HaHayal Boulevard

HaNevi'im, Menashiya

Ramat HaHayal

LGBT Community Center, Gan Meir

The Urban Agriculture Greenhouse in Yad Eliyahu





## A Healthy and Active Lifestyle

The Tel Aviv-Yafo Municipality encourages all its residents to lead a healthy lifestyle by raising awareness about nutritious and sustainable food, fostering an active lifestyle, creating a vibrant and healthy urban environment free of hazards, and facilitating multiple and diverse opportunities for adopting a healthy lifestyle at parks, gardens and the beach.

**13**  
Authorized  
beaches



**3,000** beach chairs  
**5,000** umbrellas  
**4,000** reclining  
beach chairs

**7**  
beaches with  
access to  
marine sports



**18**  
Outdoor  
gyms

Recreational areas along the coast



Outdoor gyms in the urban space



## Getting Around the City

Sustainable modes of transportation are more common in Tel Aviv-Yafo than in most cities in Israel, but use of them is limited when compared to major cities in other OECD countries. A master plan for bike paths was introduced in 2013, and work on a plan that encourages walking in the downtown area was completed in 2017. In that same year, the Municipality launched the Autotel carsharing service which complements the Tel-O-Fun bikesharing service.

### Bicycles and Tel-O-Fun

**130 kms of bike paths + 8.5 kms added in 2016-2017**

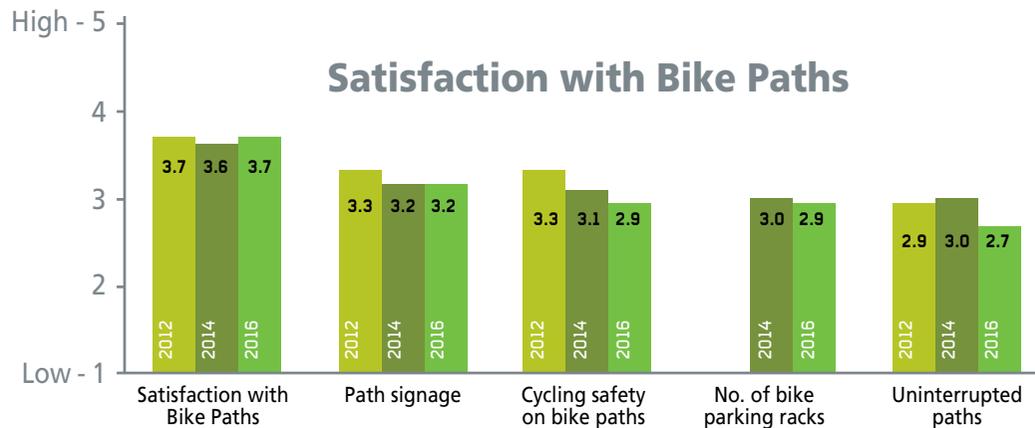
**18% ride bikes to take their kids from place to place**

**20% ride to get to school**

Tel Aviv-Yafo is Israel's pioneer in encouraging bike riding within the city. In 2011, the first separate bike lane was introduced on Bloch Street and since then the master plan for bike riding has been implemented in stages every year. One-third of the adult population in the city ride bikes, but in the last few years less use has been made of bikes to get around the city. The growing encounter with e-bikes may have affected the preference for bikes as a mode of transportation in the city.<sup>1</sup>

	2010	2012	2014	2016
<b>The way to get to work</b>	<b>6.5</b>	<b>10.6</b>	<b>16.1</b>	<b>16.8</b>
<b>Satisfaction with bike paths in the city</b>	<b>19</b>	<b>26</b>	<b>42</b>	<b>28</b>
<b>Strongly agree that Tel Aviv-Yafo is a bike city</b>		<b>50%</b>	<b>54%</b>	<b>44%</b>

Changes in transportation mode supply, satisfaction with bike paths and the degree to which the city is cycling friendly in 2010, 2012, 2014 and 2016



<sup>1</sup> Modal Split and Bike Riding Survey, Center for Economic and Social Research, 2016



## Walking

Because Tel Aviv-Yafo is a flat and relatively congested city, walking is a popular and easy way for both adults and children to get around the city. Walking also provides access to other modes – to and from bus stops or parking lots. Walking is an important factor in commercial activity, services and recreation, which includes strolling around the streets of the city.

**Even though many children walk to school, no change in that percentage has been observed and most children are still driven to school.**

39.4%  
2016

37.8%  
2014

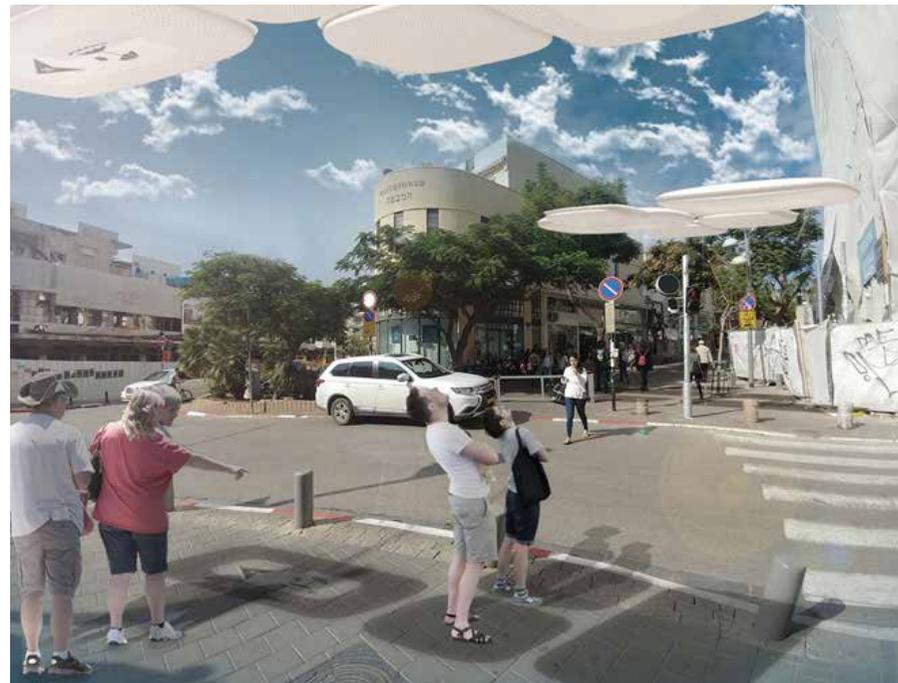
Percentage of children who walk to school<sup>1</sup>



## Shade in the City

The importance of shade as a key contribution to urban sustainability and quality public spaces has been recognized in the last two years. The first research study on the subject was conducted in 2016, after which shade became a standard consideration in the design of habitats for street trees in order to increase shade tree cover in the city. The first pilot project was introduced in 2017 on HaHagana Street and Dizengoff Square.

A design contest sponsored by the City Architect's office was held in 2017 to obtain ideas for overhead shade at intersections. The winning proposal is shown here [Peri-Davidovich Architects].



<sup>1</sup>Modal Split and Bike Riding Survey, Center for Economic and Social Research, 2016



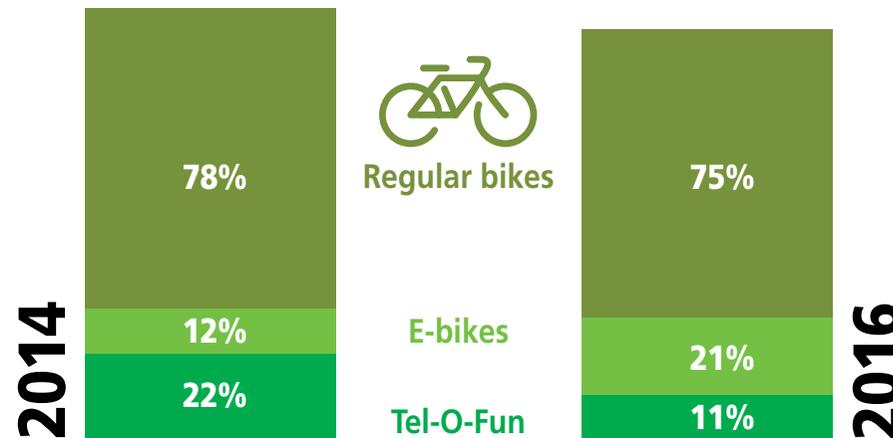
**Shared Mobility**  
**Tel-O-Fun**

**207**  
Stations

**2,070**  
Bike parking racks

**8,500**  
Subscribers

Tel Aviv-Yafo launched the first carsharing initiative in Israel – Tel-O-Fun – that began operating on May 1, 2011. The service was extended to the nearby cities of Givatayim in 2015, Ramat Gan in 2016, and Bat Yam in 2017. As of 2017, there has been a decline in Tel-O-Fun use, as seen in the graph below:



<sup>1</sup>The percentage of bikes in use by bike type and year

<sup>1</sup>Modal Split and Bike Riding Survey, Center for Economic and Social Research, 2016

## Autotel

**19 kms**

Average daily trip length

**5,533**

Subscribers

**927**

Average daily reservations

**260**

Vehicles

The Tel Aviv-Yafo Municipality's carsharing service was launched in 2017 and is intended for use within the city. There are parking spots reserved solely for Autotel users, who can also park in all other permitted spots (with blue and white markings) for a monthly fee or the going minute rate.



## A Sustainability-Enhancing Community

To a great degree, a sustainable lifestyle is dependent on the willingness and readiness of residents to actively promote sustainability and a better quality of life in their personal and communal surroundings. For about a decade, the Municipality, through the Environmental Protection Authority, Education Administration and Community Administration, has been implementing large-scale programs designed to provide information and recruit residents for local and community activities.

### The "From an Existing Neighborhood to a Sustainable Neighborhood" Program



**4**

Sustainability leadership development programs in the last two years



**50**

course participants in the last two years



**600**

residents actively involved in promoting sustainability and the environment, including cleanliness trustees

The Sustainable Neighborhood program has been in operation since 2014. It supports neighborhood activities that promote sustainability based on the 10 principles of One Planet Living. Following the positive results of the sustainable neighborhood pilot implemented in Bizaron and Ramat Israel, a decision was made to extend the initiative to all the neighborhoods in the city. The program presently runs in the following neighborhoods:

**Shapira – Shapira Community Center**

**Yad Eliyahu – Bat Zion Community Center**

**Ramat Israel and Bizaron – Ramat Israel Bizaron Community Center**

**Maoz Aviv and Hadar Yosef – Beit Frankfurt Community Center**

**Old North – Maggid Community Center**



## Sustainability and Environmental Education

25 schools in Tel Aviv-Yafo received green school certification

3 schools received steadfast green school certification

53 elementary schools take part in the green environmental leadership program

25 students at each school in the program belong to the green leadership group and disseminate information about the subject

9 high schools are active and receive professional mentoring about the environment and sustainability

Kindergartens in the city take part in the "Yarokchik" program and receive environmental training

6 environmental education coordinators work with the schools

A child who grows up in a sustainable culture becomes an adult who takes responsibility for his or her environment. Accordingly, the Tel Aviv-Yafo Municipality initiates and runs environmental education activities starting at the kindergartens with the "Yarokchik" program, at the schools by establishing and supporting groups of students who are green leaders, and at informal educational frameworks. Environmental education in the city serves as a foundation for sustainability activities in the community, which are held at schools and community venues.

The Education Administration at City Hall has developed special programs that deal with the environment and sustainability. Those programs and the number of schools they operate at are detailed below:

Program Name	Years of Operation	No. of Schools in 2016-2017 [each year]
A Little Bit of Conservation	2010 - 2014	50
I'm Waking Up Nature in the City	2004 - 2016	55
One Planet for All of Us and That's It	2017 - present	55
Get Going to School	2017	10
Going for Clean - Beaches	2008 - 2016	8
Going for Clean – Less Dog Poop	2005 - present	16
Fashion and Sustainability	2017 - present	13
Nutrition and Sustainability	2017 - present	18



## Bon Appetite Program

The Tel Aviv-Yafo Municipality joined other leading cities in the world that are advancing healthy and sustainable food by signing the Milan Urban Food Policy Pact (MUFPP). Bon Appetite, the municipal food policy program led by the Environmental Protection Authority, aims to increase awareness and access to healthy and sustainable food for all residents in the city. The program implements MUFPP principles such as wellness and food security, access to healthy food, sustainability education, food waste reduction, and a healthy and active lifestyle. The program is run in cooperation with civil society organizations, residents and government offices.

### Major Activities in 2016-2017



**Monthly workshops on preparing healthy food**  
Community centers



**Manuals and menus**  
Access to healthy food



**Lectures for women on maternity leave**  
Baby carriage tour



**"Tipale" – workshops for parents and children aged 4 months to 3 years**  
Digichef



**Preparing a basket of products for food service providers at the high schools**  
Cafeterias



## An Active Civil Society

Involved residents are usually a product of an active and aware civil society. Awareness of environmental and sustainability-related issues in Tel Aviv-Yafo is an example of that. Tel Aviv-Yafo is home to a large number of national and local environmental organizations, which work out of the city and are active in it.

The environmental organizations' umbrella organization – Life & Environment – has its offices in Tel Aviv-Yafo at the NGO House. The headquarters of the larger national environmental organizations are all located in Tel Aviv-Yafo:

Local	National
Community Gardens in Israel	Adam Teva V'Din
The Tel Aviv-Yafo Green Forum	Greenpeace Mediterranean
HaYarkon Neighbors	The Israel Society of Ecology and Environmental Sciences
CityTree	The Israel Association of Landscape Architects
Green Course - Tel Aviv University	The Society for the Protection of Nature in Israel
Urban Nature Forum	Israeli Green Building Council
Pedestrians Front	The Council for a Beautiful Israel
The Tel Aviv-Yafo Community of the Society for the Protection of Nature in Israel	The Society for Sustainable Economics
	The Association for Environmental Justice
	Israel Energy Forum
	Israel Bicycle Association
	Green Course
	Merhav – Movement for Israeli Urbanism
	The Heschel Center for Sustainability
	GreenAction
	Kayama – the Center for Sustainable Design and Planning in Israel

The Environmental Protection Authority promotes widespread collaborations with environmental organizations, including events and activities, trainings, projects and research studies. Every year, the Municipality grants about NIS 500,000 to environmental organizations operating in the city. Those supports are detailed below:

<b>Organization</b>	<b>Regular Support</b>	<b>City Tax Support</b>	<b>Total</b>
Adam Teva V'Din	21,636	30,000	51,636
The Israel Society of Ecology and Environmental Sciences	15,274	7,747	23,021
The Society for the Protection of Nature in Israel	21,636		21,636
Israel Bicycle Association	21,636		21,636
Green Course	21,636	5,808	27,444
The Heschel Center for Sustainability	21,636	11,561	33,197
Transportation Today and Tomorrow	16,546		16,546
SOS Pets	10,000	6,519	16,519
The Israeli Society for Prevention of Cruelty to Animals	5,000	14,821	19,821
The Society for Prevention of Cruelty to Animals in Tel Aviv-Yafo	5,000	167,000	172,000
Let the Animals Live	60,000		60,000
<b>Total</b>			<b>463,456</b>



## Sustainable Businesses in the City

### Green Label for Businesses

- The Tel Aviv-Yafo Municipality awards the Green Label to businesses in recognition of their ecofriendly business management. The Green Label links the city's green agenda with business efficiency, thereby creating an appealing program that helps business owners adopt solutions that contribute to their profits as well as the urban quality of life and environment. The Green Label was developed together with the Ministry of Environmental Protection and the certification and monitoring are carried out by Sekal Ltd. In 2017, 40 businesses completed the efficiency process and received the Green Label [60 more are still in the process].

#### Every year, the certified businesses save:

- Over NIS 850,000 in electricity and water consumption – by taking simple steps that produce considerable profits, such as transitioning to energy-saving lighting, water-saving faucets or preferring the use of energy-saving appliances in the kitchen
- Roughly 2.5 million disposable products – by improving the management of products such as napkins, straws, beer coasters, takeaway packaging, etc.
- Around 3,700 deliveries of merchandise to the business – thereby reducing costly labor hours and the entry of trucks into the city's congested streets
- About 25 tons of leftover food and organic waste – by streamlining inventory management and reducing depreciation
- Around 650 tons of greenhouse gas emissions

And reinforce their ties with the community – by donating leftover food, promoting local produce, collaborating with a variety of nonprofits and social organizations, and more.



- Sustainability Month – the Environmental Protection Authority started Sustainability Month in 2016, which is a citywide celebration of sustainability in Tel Aviv-Yafo. Over 60 events were held throughout the city.
- Repair Café – launched in 2017, residents are invited to an event where broken chairs and bicycles are repaired, clothes are mended and participants learn how to fix things using DIY methods.
- Climate March – this major event held on Earth Day was introduced in 2017. The event is organized by Green Course in cooperation with all the other environmental organizations and the Tel Aviv-Yafo Municipality.
- Urban agriculture greenhouses – two urban agriculture greenhouses were opened – one at the end of Rothschild Boulevard and the other at the Bat Zion Community Center. They hold trainings, tours and events for the general public.





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