PERIODIC REPORT No.2 TO ICLEI

The Convention of the Forum 15 For Reducing Air Pollution and for Climate Protection Implementation of the Planning Stage – Municipal Emissions Surveys

September 2010

Forum 15
The Israeli Forum of Self-Government Cities

Ashdod

Ashkelon

Beer-Sheva

Bat-Yam

Givatayim

Herzliya

Hadera

Holon

Haifa

Jerusalem

Kfar-Saba

Netanya

Petach Tikva

Rishon-Lezion

Rehovot

Raanana

Ramat-Gan

Tel-Aviv-Yafo

The Convention of the Forum 15 for reducing Air Pollution and for Climate Protection (CCP Israel)

The Convention of the Forum 15 for reducing Air Pollution and for Climate Protection is a local Israeli version of the ICLEI`s international convention for climate protection. The convention initiative is supported by the Forum 15, in collaboration with the Local Sustainability Center in Israel and the Ministry of Environmental Protection.

The Forum 15 Convention was signed on February 13 2008, by Israel's eighteen major cities. These cities include the fifteen members of the forum and three additional major cities – Jerusalem, Ashkelon and Bat-Yam. Under the Convention, the eighteen cities committed themselves to setting clear, quantitative goals for reducing urban greenhouse gas (GHG) emissions and air pollution, and preparing a municipal action plan to achieve those goals. The Convention contains a commitment to drawing up an urban master-plan according to clear and set in advance milestones, as detailed in the ICLEI international convention, as well as a commitment to set clear and quantitative reduction targets for each city, thus through a strategic sight to the year 2020.

Under the Convention, the municipalities have undertaken to reduce air pollution in a way that resembles that of the world`s leading cities, and to reduce GHG emissions by no less than 20% by the year 2020. It should be noted that the commitment undertaken in the Israeli Convention to reduce air pollution levels, as well as the statement regarding the percentages of reduction of GHG emissions, is an Israeli addition to the original text of the international charter, which does not relate to this subject.

The Forum 15 Convention is the first Israeli initiative of its kind, in which a governmental authority commits to a measurable and quantitative improvement in air quality for the citizens of the nation and for the reduction of greenhouse gas emissions. We believe that the implementation of the Convention will lead to a tangible and comprehensive improvement in quality of life and of the environment for the country's citizens in a wide range of spheres of life.

Each year, Forum 15 issues a comprehensive annual activity report to the general public and to the international ICLEI organization, as part of the commitment to maximum transparency to the public, which is characterizing the entire process.

Ron Huldai
Chairman of Forum 15
And Mayor of Tel Aviv-Yafo

Adv. Eitan Atia
General Director, Forum 15

Adv. Linor Sagi
The Convention's Project Manager
Forum 15

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September 2010

Forum 15
The Israeli Forum of Self-Government Cities

Contents

Executive Summary

A. Introduction

As last year, Forum 15 (hereafter: "the Forum") is once again publishing its annual report on implementation of the "Forum 15 Convention for Reducing Air Pollution and for Climate Protection" (hereafter: the "Forum 15 Convention" or "Convention"), which was signed on February 13th 2008 by 18 large and midsized municipalities in Israel. The Forum 15 Convention is the local Israeli version of the CCP (Cities for Climate Protection) initiative of **ICLEI**.[1]

The major part of 2009 was dedicated to carrying out municipal emissions surveys by the cities that signed the Convention, and providing support and professional guidance by Forum 15 and its consultants. Therefore, the report this year will focus on a presentation of the results of the urban emissions surveys carried out by the majority of the municipalities that have signed the Convention, as part of the 'planning stage' defined in the "Outline of Activities for Implementing the Convention"[2] (hereafter: "Outline of Activities"). In this report special attention will be given to analysis of the survey results and the conclusions to be derived from them.

The surveys, which are based on a reliable database, have established a strong basis for the continued implementation of the planning stage and will assist in defining the key trends in characterizing the greenhouse gas (GHG) emissions and air pollutants in the cities, trends that will serve as guidelines for the urban master plans, as well as for the Forum 15 definition of the central policies to be emphasized and advanced in coming years, in order to create a national and municipal support policy.

This year we had the welcome collaboration of the Ministry of Environmental Protection, as part of a recently approved joint venture in which the ministry supports Forum 15 in its management and guidance of the process of implementation of the Convention.

1 Local Governments for Sustainability- An international organization of local authorities and local organizations, working to implement the principles and planning of sustainable development programs.

2 "Outline of Activities for Implementing the Convention" – the paper serving as a guideline for municipal impl - mentation of the Convention. This outline details the process of implementation of the Convention in executable, uniform stages, set to schedules. This outline can be reviewed on the Forum 15 website at the following link: http://www.forum15.org.il/article_page.asp?id=82&scid=80

B. Outline of Activities for Implementing the Convention in the Municipalities

The following table reflects the degree to which the necessary steps have been implemented by each of the municipalities that have signed the Convention, in the **'preliminary' and 'planning' stages** as defined in the outline of activities, up to the date of this report.

Implementing the `Preliminary` and `Planning` stages – Status report

	Ashdod	Ashkelon	Beer Sheva	Bat-Yam	Givatayim	Herzliya	Hadera	Holon	Haifa	Jerusalem	Kfar-Saba	Netanya	Petach Tikva	Rishon-Lezion	Rehovot	Ramat-Gan	Raanana	Tel-Aviv-Yafo
Approving a budget for the process																		
Appointing a municipality steering committee																		
Appointing a municipal referent																		
Training the steering committee (workshop)																		
Contracting with a consultancy team																		
Performing immediate projects																		
Performing the Urban Emissions survey																		
Completion of urban master plan																		

C. Results of Urban Emissions Surveys

In the framework of the urban emissions survey, mapping and characterization of air pollutants, GHG, and their sources has been carried out in each of the signatory municipalities. The emissions survey serves as an essential tool for evaluation and forecasting in order to set the required reduction objectives and draw up the urban master plan. It is also used for verifying that objectives are being met, for examining success metrics, and as a basis for the repeat surveys to be executed in coming years. Emissions surveys have been carried out in each of the cities, on the basis of a uniform and professional methodology based on the international methodology of ICLEI which was adapted to local conditions in Israel, with an additional section discussing air pollutant emissions. This methodology was distributed by means of a detailed guide with accompanying calculation sheets for performing the technical calculations.

On completion of the survey by the municipality, it is presented to the Forum 15 Steering and Control head office for professional feedback, examination of the data sources, calculation methods, compliance with the guidelines, and the feasibility of the results. The professional feedback involves hours of work, and therefore the municipalities were advised that they should not delay proceeding with the process while waiting for feedback to the report, as in most cases, survey findings represent clear and unmistakable trends, which will doubtfully be affected by future amendments that are likely to be introduced as part of the professional feedback, in any case, any

comment can be implemented as the planning process progresses.

In parallel with implementation of the municipal surveys, Forum 15 is carrying out many activities in support of the process. These include updating the methodology, training and briefing the municipal referents and accompanying consultants, a constant supply of professional materials and information, regular response to questions, etc. In addition, Forum 15 is currently completing a large-scale project for the centralized collection and completion of the urban emissions survey data (see details in section F2 below).

The survey stage is vitally important as the formative stage of the entire process. The surveys enable all entities involved in this subject in the municipality to focus their efforts and activities in the direction outlined by the Convention. For the first time, implementation of the surveys offers municipalities a true picture of the situation in their cities, backed up by real data, enabling them to make enlightened and informed decisions of strategic and managerial consequence in their handling of the city environment, and allocation of municipal administrative and operational resources.

D. Results of the Urban Emissions Surveys

The results of the urban emissions surveys submitted to a professional evaluation of the Forum up until the writing of this report are presented in appendices B and C of this report:

Appendix B – Results of Urban Emissions Surveys- GHG

Appendix C – Results of Urban Emissions Surveys – Air Pollution

It should be noted that since some of the data has not yet been methodically evaluated, there may be some changes in the data and the results presented in the final surveys. The results presented in this report represent clear and obvious trends which are unlikely to be affected by any corrections that may be made to the surveys, and are in any event used solely for the purpose of the report.

No use should be made of the data presented here for any other purpose before final official publication of the reports on the Forum 15 website.

The professional principles by which the urban emissions surveys are carried out are given in detail in the body of the report (Section 6.1 of the report). Following are some of them, in brief:

In general, the survey examines the 'sources of emission' within the municipal boundaries of the city. The survey of greenhouse gas emissions was performed for the years 2000 (as a baseline), 2007 (the year for which annual data was available at the time that the cities signed up the Convention), and the forecast of 'business as usual' for the year 2020 (the target date). The survey of air pollutant emissions was performed for the year 2007 solely.

Examination of the sources, in the survey of GHG emissions, is divided into **two main sectors**: 'the municipality', that is: everything under the control and ownership of the municipality (such as the municipal fleet of vehicles, public buildings, streetlighting, municipal waste and the sewage and water treatment); and the 'community level', that is: all activities in the city that are neither controlled nor directly owned by the municipality (such as commerce, industry, domestic, public and private transportation, and community waste). The emissions sources reviewed as part of the air pollution survey are: transportation, industry, power stations, quarries, residence (fuel-based space heating), fuelling stations and large institutions/commercial stores.

E. Main trends derived from the results of the surveys

1. **The majority of greenhouse gas emissions derive from the resident level, necessitating increased public relations activities, information, education and incentives for the residents -** The component of emissions caused by the activities of the municipality itself is only between 2% – 9% of the total of all municipal emissions. This finding is not surprising, of course, and implies that the major activity required to decrease GHG emissions should involve the allocation of resources for influencing residents and the public, both through education and information, regulations and planning, and by means of incentives, in order to bring about a change of behavior and habits in wide sections of the population.
2. **In-depth and vigorous promotion of 'green building' is required** – the most significant source of GHG emission at the municipal level is the energy consumption of buildings of all kinds (municipal buildings, industry, commercial and dwellings). This source of GHG emission constitutes between 67% – 87% of all municipal emissions. The meaning of this is that promoting 'green building' must be the first in priority for the authorities, through the assimilation of green building standards in urban planning, incentives, information and more.
3. **There is considerable potential for reduction in the waste sector –** the share of community waste in the total emissions at the community level is between 9% – 21% for the year 2000 and between 6% – 17% in 2007. Although this is a sector whose relative contribution in percentage is not among the highest found in the surveys, the relevant solutions for reducing emissions are easier to implement, since the matter is relatively highly controlled by the municipality itself, with the support and cooperation of the government, and in principle comprises one central solution, that is, separation at source into two main waste streams (dry and wet) and the establishment of facilities for handling separated waste.
4. **Transportation is the main source of air pollution, and therefore requires increased government action to promote inner city public transportation and reduce the use of private cars -** The transportation sector has an influential contributing factor in the emissions of air pollutants in the cities, and is the source of more than 80% of most of the air pollutants tested in the survey. This sector contributes between 7% – 25% of GHG resulting from city activities, and in most cities around 16%. This matter requires intensive action to promote public transportation in metropolitan and city areas. Since this field is entirely under government control, massive government investment is required, by allocating budgets and resources to the national plan for the development and improvement of public transportation and the establishment of metropolitan transport authorities.
5. **Increase in the quantity of urban emissions –** There is an increase in the absolute quantity of emissions over the years. This is in line with the overall trend of increasing numbers of residents in all cities between the years 2000 - 2007.
6. **Quantity of emissions per resident –** A mixed trend has been noted. In the majority of cities there is a rise in the amount of emissions per capita, but in some cities there has been a decrease between 2000 - 2007. This component highlights the need to allocate resources for information, education and behavioral change in the public. However, it must be noted that this raw data must be used with caution, in conjunction with a general overview of all components and characteristics of the city.[3]

3 An oversimplified comparison that does not take into account the unique characteristics of the city could result in mistaken conclusions. A notable example is that of the city of Ashdod, in which the values for per capita emissions are very high. The high value stems from the fact that the city of Ashdod is industrial by nature and not due to the fact that each of the residents creates a larger amount of greenhouse gases. In comparison to other cities with considerably lower per capita values, we see that comparison of the residential segment alone shows that residents of other cities produce much higher emissions than the Ashdod resident.

F. Activities of the Forum 15 Steering and Control task force Accompanying the Planning Stage

1. **Professional training for implementation of the 'Planning Stage'** – 80 hour professional training for 38 municipality representatives, among them city engineers, environmental unit managers, and other municipal division managers. The training was intended to provide the municipal representatives with up-to-date, academic standard content in the four areas of the Convention activities4, with the accent on connection with the field and with the actual activities of the local authorities in Israel, emphasizing their empowerment as process managers and as leaders of change in the organization.
2. **The project of collecting and completing data for the urban emissions surveys –** As part of the data collection that the municipalities need in order to carry out the urban emissions survey, Forum 15 collected the data from all national entities operating in the cities, whose cooperation was needed in order to carry out the surveys (national bus companies, fuel companies, the Israel Electric Corporation, etc.). However, in a number of sub-topics included in the survey the forum encountered various problems in obtaining the data and information. It was therefore decided to carry out a 'Data Completion' project, in which information was collected from each entity possessing information in the specific area, and estimations and approximations were made. In addition, economic models were constructed for each of the missing areas (especially regarding transportation and fuels)[5].
3. **Publication of guidelines for the urban master plans, including analysis of examples from around the world** – In order to establish a minimal and uniform standard for writing plans among the different local authorities (similar to the uniform standard maintained in preparing the Urban Emissions Surveys), Forum 15 has drawn up 'Guidelines in principle for Urban Master Plans for reducing emissions'.
4. **Establishment of the Municipal Forum for Green Building –** In light of the conclusion reached above[6] that Green Building is one of the key focal areas for reducing emissions, it has been decided to establish the Municipal Forum for Green Building, under the umbrella of Forum 15 and the Cities Engineering Association. The goal of this forum is to assimilate uniform standards of green building at all levels of planning and regulation in the large cities.
5. **Continued accompaniment of the municipalities in implementing the Convention –** The Forum has provided daily support and response to the tens of professional questions asked by the local authorities on a variety of issues related to implementation of the Convention, and has dealt with continued assimilation of the process at various levels at the municipalities.
6. **Networking of information between municipalities** – The municipalities that have signed the Convention are working to develop incentives and to promote and assimilate the various subjects included in the Convention. Forum 15 is monitoring these activities and ensuring that the knowledge acquired on different subjects is made accessible to the other municipalities.

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4 Transport and fuel, waste and recycling, green energy and construction, use of the municipal open space and greening the city.

5 The 'Data Completion' project is in its final stages. The draft report is ready and is currently being processed for final validation and compatibility testing prior to its publication and distribution. The full report will be available for review in a few weeks on the Forum 15 website.

6 section E2

7. **The Forum 15 meeting with professional consultation teams –** In March 2010, Forum 15 held a meeting with the consultation teams accompanying the local authorities in implementing the Convention, in order to sum up the stage of the Urban Emissions Surveys and to share the insights and conclusions reached by the consultation teams and by the Forum itself in accompanying the process.
8. **Forum activities for advancing the objectives of the Convention in the framework of other entities –** In the body of the report are details of the Forum's activities in other entities, aimed at advancing the objectives of the Convention, and the main trends derived from the results of the Urban Emissions Surveys.
9. **It is important to note** that in parallel with all the activity progressing at the municipal level, both on the part of the municipalities themselves and with the assistance of Forum 15, **the various matters being handled under the Convention require increased and focused activity from the national government; otherwise the Convention's goals will not be met.** The reason is that municipal authority over many matters is quite limited, while other matters depend chiefly on primary legislation or on economic tools that are mainly in the hands of various government ministries. Examples include the encouragement and upgrading of public transportation, incentives for Green Building and mandatoring it through Green Building standards for new buildings and renovations, construction of waste-treatment terminals, etc. Forum 15 is taking action through various channels to advance these matters at the relevant government ministries, with the intent that alongside the intensive activities of the municipalities, the various priorities mentioned above will also enjoy governmental support that will increase and will lead to dramatic change at the national level, in turn helping the goals to be achieved on the municipal scale.

G. Planned activities for the rest of 2010.

We anticipate that by the last quarter of 2010, the majority of municipalities will have completed their preparation of urban master plans for reducing emissions, and that by the end of the year these plans will have been approved and budgeted in order to implement and execute them during 2011.

At the same time, Forum 15 plans to complete a variety of activities during the rest of 2010 and the beginning of 2011, including: formulating an information and communication program for promoting the Convention among the city's residents in order to drive a process of behavioral change; continuing to promote the statutory status and expand the authority of the municipalities in regulating public transportation within the cities; and continuing to promote Green Building and to lead the process of achieving a uniform municipal standard for Green Building, etc.

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A. Introduction

As last year, Forum 15 is once again publishing its annual report on implementation of the Forum 15 Convention for Reducing Air Pollution and for Climate Protection which was signed on February 13th 2008 by the 18 large and midsized municipalities in Israel. The Forum 15 Convention is the local Israeli version of the 'International Convention for Climate Protection' initiative of ICLEI.[1] **The Israeli version of the Convention is attached as Appendix A of the report.**

The previous report, the first, was published in April 2009 and reviewed the preparations made by the municipalities for implementing the Convention, according to the Outline of Activities undertaken by them upon signing, as well as the professional support and accompaniment provided by Forum 15 to the municipalities. The report focused on implementation of the 'preliminary stage' as defined in the outline of activities for implementation of the Convention.

The Outline of Activities is the applicable document which serves as a guideline for the local authorities in implementing the Convention. This outline details the process of implementation of the Convention in executable, uniform stages, according to a timetable.

The 'preliminary stage' includes a number of binding steps, already taken by the majority of the municipalities in the course of 2008. These include: setting up a municipal steering committee; professional training courses for the steering committees; approving a budget for implementation of the planning stage; and selecting a professional consultation team to accompany the municipality in drawing up the urban master plans based on the Urban Emissions Surveys.

The report also reviewed a long series of practical projects carried out by the municipalities in the course of the year, in the framework of 'Low hanging Practicable Projects'. We attribute great importance to implementation of these available projects, as a practical and immediate expression of the principles of the Convention and the master plan derived from it. The municipalities are still continuing with the intensive implementation of dozens of practical projects in the various areas with which the Convention deals. We hope that we will be able to devote a separate report to this subject during the current year, in which we will review the municipal activities in the different spheres.

Further to the previous report, this Periodic Report continues to review the activities of the municipalities and of Forum 15 in implementing the Convention. This year, the report will focus on implementation of the first part of the 'Planning Stage', as defined in the Outline of Activities. **The 'Planning Stage' includes the following steps: conducting an urban survey to map and characterize air pollution, GHG, and their sources; defining the guiding vision and policy; defining quantitative reduction targets and developing an Urban Master Plan.**

The major part of 2009 was dedicated to carrying out Urban Emissions Surveys in the municipalities. This unique process, which was actually carried out for the first time in Israel, was complex and

1 ICLEI– Local Governments for Sustainability – an international organization of local authorities and organiz - tions working towards incorporation of the principles and plans for sustainable development. For further details: http://www.iclei.org

required special attention and many resources, both from the municipalities and the consulting teams accompanying the process, and from Forum 15, which provided the municipalities with ongoing professional consultation on the subject, as will be detailed below.

At the same time, it may be said that the process of preparing the surveys, which has been completed to date by most of the signatory municipalities (and is in an advanced stage in the remainder of the municipalities), has laid a solid foundation for continued implementation of the Planning Stage. The surveys, based on a reliable database, assist in defining the key trends characterizing greenhouse gas emissions and air pollutants in the cities, trends which now provide guidelines for the local authorities in setting sector-based reduction targets, formulating the municipal vision, and setting ways in which the Urban Master Plans can be implemented. They also help Forum 15 to define the main policy areas to be promoted more vigorously in the coming years, in order to help create supportive national and municipal policy. A major section of this report will be devoted to the results of the surveys performed so far, and to their analysis and an understanding of the key trends derived from them.

This is the place to mention that this year we were privileged with the collaboration of the Ministry for Environmental Protection, as part of a recently approved joint venture in which the ministry supports Forum 15 in leading and managing the process of implementing the Convention. We thank them for their cooperation and believe that this will serve as a successful example for the manner in which the local and central authorities in Israel should collaborate to advance objectives whose national contribution is undoubtedly in the common interest of all levels of government in Israel.

B. Status Report on the Implementation of Urban Emissions Surveys

The following table reflects the degree to which the necessary steps have been implemented by each of the municipalities that have signed the Convention, within the **'Preliminary' and 'Planning' stages** as defined in the outline of activities, up to the date of this report.

Implementing the `Preliminary` and `Planning` stages – Status report

	Ashdod	Ashkelon	Beer Sheva	Bat-Yam	Givatayim	Herzliya	Hadera	Holon	Haifa	Jerusalem	Kfar-Saba	Netanya	Petach Tikva	Rishon-Lezion	Rehovot	Ramat-Gan	Raanana	Tel-Aviv-Yafo
Approving a budget for the process																		
Appointing a municipality steering committee																		
Appointing a municipal referent																		
Training the steering committee (workshop)																		
Contracting with a consultancy team																		
Performing immediate projects																		
Performing the Urban Emissions survey																		
Completion of urban master plan																		

C. Results of Urban Emissions Surveys

The results of the Urban Emissions Surveys are presented in Appendices B and C of the report.

Appendix B – Results of Urban Emissions Surveys – GHG

Appendix C – Results of Urban Emissions Surveys – Air Pollution

1. Introduction

The Forum 15 Convention for reducing GHG emissions and air pollution defines five milestones for implementation. The first milestone in the process is to carry out an inventory survey and urban emissions forecast. The survey is an essential basis for all the following stages (establishing reduction goals and a municipal vision, drawing up an urban master plan, implementing the plan, monitoring and controlling). In the survey air pollution, GHG and their sources are mapped and characterized.

The emissions survey serves as an essential tool for making assessments and forecasts in order to set the required reduction targets, for the Urban Master Plan, and as a means of verification whether the targets have been met and examining the indices of success. It also provides a basis for the repeating surveys to be carried out in the years that have been planned as milestones. The objective of the survey is to enable the local authorities to obtain a full picture and an understanding of the best and most efficient areas in which to invest in order to achieve an effective and significant reduction in the quantity of emissions. Special emphasis is placed on the process of analyzing the results of the survey and the key trends that emerge from analysis of the data, as well as drawing interim conclusions from the process so far.

The emissions inventory survey is carried out on the basis of a methodology whereby each of the signatory municipalities carries out a survey of emissions within its boundaries. This is based on the ICLEI international methodology, adapted to local conditions in Israel by Forum 15 and the Heschel Center, with an additional section discussing air pollution emissions. The methodology was distributed by means of a detailed guide, accompanied by calculation sheets for technical calculations.

This methodology has been updated and is constantly being revised since first being written, in accordance with the queries and clarifications that arise during the process, changes in ICLEI methodology, and as a result of additional material that accumulates.

The guide has been assimilated in the municipalities by means of training days held for the municipal mediators and the consulting teams accompanying the process at the municipalities, and by ongoing professional support provided to the municipalities and the consulting teams by the professional consultants of Forum 15.

Execution of the survey in accordance with a uniform methodology facilitates a uniform and accepted standard for implementing the surveys, and helps the municipalities to promote the survey more quickly and deal with the professional queries that arise during its preparation. The uniform methodology also facilitates comparison between the different local authorities on a uniform basis, and control of the results of the survey.

2. The survey approval procedure

On completion of the survey by the local authority, it is presented to the Forum 15 Steering and Control HQ for professional feedback. As part of this professional feedback, the sources of the data, the method of calculation, compliance with the guidelines and feasibility of the results obtained are examined. In addition, due to it being a primary process, the objective of the feedback is to ensure that the methodology has indeed been assimilated correctly by the municipalities and the consultancy teams. Comparison of the data from the municipalities exposes possible points of error and helps to improve preparation of the surveys, enhance the data used, and improve the methodology and its assimilation. After receiving the professional feedback, the municipality submits the amended survey to the Forum for re-examination. In the final analysis, the municipality decides at its discretion the extent to which it is interested in incorporating the comments made by the Forum.

3. Support system for the execution of the survey

In parallel with the conduction of the in the municipalities, there are many activities designed to support the process. These include updating the methodology, briefing of the municipal referents, constant provision of materials and information to the municipalities and the consultancy teams, and providing regular professional responses to questions from the municipalities and consultancy teams that arise in the course of the survey.

In addition, Forum 15 is currently completing a concentrated large-scale project for the centralized of collection and completion of data for the surveys phase, in conjunction with the Union of Local Authorities Economic and Information Department **(see details of the project in section D2 of the report)**

4. The survey as a tool

Both the municipalities and Forum 15 have invested considerable resources in the optimal implementation of the Urban Emissions Surveys. The survey stage is of great importance as a formative stage for the entire process. The surveys enable all entities involved in it at the municipal level to focus their efforts and activities in the direction outlined by the Convention. Implementation of the survey offers the municipalities, for the first time, the opportunity to obtain a status report which is backed up by true data with regards to what is happening in their city, and on this basis make informed decisions and comprehensions of strategic and administrative importance in dealing with the environment issues of the city and allocating the administrative and operational resources of the municipality.

It was important for Forum 15 to hold this process, which is unique and the first of its kind in Israel, in such a way that will enable to maximum drawing of conclusions and allow the improvement of the methodology and its manner of performance right from this stage. This will facilitate easier and more accurate implementation of repeated surveys in the coming years, and not the least due to the high importance we attribute to the survey as a learning tool and as the basis for a wide range of topics, as detailed below:

1. **The survey as a means for developing a municipal vision** – The aim of the survey is to provide an objective status report and to serve as a tool for quantitative and qualitative calculations of greenhouse gas emissions in the urban area, providing an understanding of the sources of urban

emissions – their quantity, concentration, the ratio between different sources, etc. The survey must provide a sufficiently broad picture to allow an Urban Master Plan to be created, including the choice of specific actions. In addition, it must provide clear understanding of the existing trends at the municipal level.

2. **The survey as a basis for future surveys –** The survey also serves as a point of reference for future monitoring and control of activities and as a basis for continued action to create a municipal vision and strategy. This initial survey will be the basis for future surveys and is to lay down the groundwork for them.
3. **The survey as an internal organizational tool –** In many ways, the survey can reflect the lateral and organizational behavior of the municipality in the framework of the master plan. The survey can be used by the municipality for an internal examination of itself, as an organization, with regard to a wide range of subjects, such as:
    - The information that it does / does not have in its possession.
    - Existing means for collecting data on ongoing regular basis – are they sufficient / do they need improvement?
    - Its zones of supervision and knowledge – are they sufficient / do they need expansion?
    - Gaps in information and knowledge between different divisions in the municipality
    - Municipality's conduction as an organization :
        - » Contact with different entities operating in the city (industry, commerce, residents) and its ability to gather data and information from these entities.
        - » The communication existing between different divisions of the municipality.
        - » The level of inclusion in the municipality between the different entities and departments – limits of responsibility, transmission of information, promotion of lateral processes, etc.
        - » Methods of collection and retention of data and information.

The Forum's recommendation to the municipalities is that the verbal report accompanying the emissions survey should include conclusions and recommendations regarding the above mentioned topics.

5. Status report – implementation of the Urban Emissions Surveys (also see the table in section B of the report)

When writing the professional methodology in 2008, a pilot survey was held in the city of Raanana, for greenhouse gases only, for the year 2000, accompanied by the Good Energy Initiative and the Heschel Center. This survey was an excellent basis for studying, updating and improving the methodology when it was published in 2008.

Until the time of writing this report, thirteen municipalities have completed their Urban Emissions Surveys.

Ten surveys have been submitted so far for the Forum's examination (from Hadera, Netanya, Ramat-Gan, Ashdod, Jerusalem, Kfar-Saba, Raanana, Tel-Aviv-Yafo, Herzliya and Rishon-Lezion).

Four of the ten surveys have now received professional, in-depth and comprehensive feedback (Hadera, Ramat-Gan, Netanya and Ashdod). One municipality, Ramat-Gan, has already submitted its survey for

final feedback after implementing the corrections suggested by the Forum's consultants.

The professional feedback entails hours of hard work, and therefore the municipalities were advised not to delay proceeding with the process while waiting for feedback to the report. Most of these municipalities are already implementing the next stage of the process – preparation of the Urban Master Plan.

In the following sections we will relate to the data presented in the emissions surveys of ten of the municipalities whose surveys have been submitted. It should be taken into account that since some of the data has not yet undergone an orderly evaluation process, there may still be changes of the data and results presented in the surveys. The data presented in this reports represent definite and clear trends, which are unlikely to be affected by any future changes that may be made in the surveys, and in any event are being used merely for the purpose of this report.

No other use should be made of the data presented in this report before official publication of the final reports on the Forum 15 website.

6. Principles of the Survey

In general, the survey examines the 'sources of emissions'. This is due to the desire to isolate those sources of emissions that are within the municipal boundaries and which can be dealt with or influenced by the municipality.

6.1 GHG emissions inventory survey

The years survey was carried out – GHG emissions inventory has been calculated for the baseline year 2000 and the target (forecast) year 2020. In the first stage three calculations were made: for the base year 2000, for the year 2007 (the year for which the annual data was available at the time that the municipalities signed the Convention) and for the target year of 2020 (forecast). Later in the process, it is anticipated that a repeated survey will be carried out every two years.

The Sectoral Approach –

The emissions inventory is divided into two main sectors:

1. The Local Government (municipality)
2. The Residents (community)

Each of these levels is **divided into segments as follows**:

The Local Government Level:

- Public municipal buildings
- Municipal vehicle fleet
- Street lighting
- Water operation- water and sewage treatment
- Municipal waste
- Other (gases and sources that are not mandatory)

Community Level:

- Domestic
- Commercial
- Industrial
- Public and private transportation
- Community waste
- Other (gases and sources that are not mandatory)

The GHG which are mandatory in emissions calculations -

The methodology of the survey requires the measuring of two main greenhouse gases:

1. **Carbon dioxide (CO_2)** being emitted from fossil fuels combustion.
2. **Methane (CH_4)** being emitted from waste landfills and wastewater treatment.

The rationale is that these gases are by far the most significant in contribution to urban emissions, and the municipality has wider influence over them.

Comments:

a. Despite the fact that there is no requirement to calculate Nitrous oxide (N_2O) emissions in the urban area, the quantification spreadsheets automatically calculate the emissions of this gas.

b. The methodology encourages the examination of four additional greenhouse gases, as defined in the Kyoto Protocol: Sulphur hexafluoride (SF6), Hydrofluorocarbons (HFC) Perfluorocarbons (PFC).

The "Business as Usual" Forecast – is carried out in accordance with the rationale of the survey. The forecast is based on an estimation of the quantity of GHG emissions anticipated in a future year, 2020, in a situation of "business as usual", without applying any measures to reduce the emissions. These forecasts are made for all segments and sectors composing the inventory survey. The calculation is carried out in the same way as that performed in the survey itself, and uses the same emission coefficients as used in the baseline year (2000).

Summary and presentation of the findings – After completing collection of information, the data are entered into the quantification spreadsheets, separately for each year in which the survey is performed. The full data, along with other data collected by the local authority that are not induced into the quantification spreadsheets (such as: the source of the data, data collected beyond the mandatory basis, additions from the public transportation segment, data regarding water depreciation, etc.), and details of those instances where the municipality exercised discretion in implementation of the methodology / the choice of a particular methodology from a number of possible options, and so on, are included in the comprehensive verbal document which the municipality attaches to the quantification spreadsheets. Supplementary material used in carrying out the survey, such as questionnaires, surveys, etc, are attached to the report as appendices. At the end of each report is an analysis of the findings, insights, and conclusions connecting it to the next stage of the planning process. The insights also include the analysis of the municipality's ability to influence the segments and sectors surveyed.

6.2 Air pollutant inventory survey

The year of surveys – The survey was performed only for the year 2007(in certain cities the survey was performed for the year 2008.) There is no need for a baseline year survey or for a forecast. Here too it is anticipated that a repeated survey will be carried out every two years.

Air pollutants included in the survey –

1. Total suspended particles (TSP)
2. Hydrocarbons (HC) – volatile organic compounds (without Methane)
3. Nitrogen oxides (NO_x)
4. Carbon monoxide (CO)
5. Sulfur dioxide (SO_2)

Emission sources included in the survey –

1. Transportation
2. Industry
3. Power stations
4. Quarries
5. Residence
6. Fueling stations
7. Large institutions (hospitals, universities, swimming pools, etc.)

7. Main trends

The main trends emerging from the surveys submitted to Forum 15:

A. The relative share of emissions at the community level in comparison to the municipality level – most of the GHG emissions originate at the community level

In general, the share of the municipality level emissions in the total urban emission calculation is significantly lower than the share of emissions at the community level. **The emissions component caused by local authority activities is between 2% – 9%.** This finding is naturally not surprising, and implies that the **greater part of activities intended to reduce GHG emissions should be carried out at the community level, and that municipality action alone, with regard to its facilities and activities, will not be sufficient.**

In the framework of the Urban Master Plans, considerable resources need to be directed towards influencing measures among the residents themselves, at the level of information and education, regulation and planning, and also incentives. However, instigating changes and reducing emissions in the municipality itself and its facilities is highly important, both for reducing emissions whose source is almost entirely under the control of the municipality, and as an **example and an incentive** for the residents of the city. It is also important for the learning process, drawing conclusions and accumulating knowledge in the different areas.

Table no.1: Percentage of the municipality level compared to the community level in total urban emissions.

Municipality	Year 2000		Year 2007	
	Local Municipality	Community	Local Municipality	Community
Ashdod	4%	96%	4%	96%
Herzliya	**9%**	**91%**	5%	95%
Hadera	7%	93%	4%	96%
Jerusalem	**2%**	**98%**	5%	95%
Kfar-Saba	**9%**	**91%**	**6%**	**94%**
Netanya	4%	96%	4%	96%
Rishon-Lezion	5%	95%	4%	96%
Ramat-Gan	3%	97%	3%	97%
Raanana	6%	94%	**6%**	**94%**
Tel-Aviv-Yafo	3%	97%	**2%**	**98%**

(Those marked in bold are the extreme percentiles, lowest and highest, in each of the years)

B. The building segment – 'Green Building' must be promoted seriously and vigorously

The most significant source in terms of their contribution to GHG emissions at the urban level are buildings – mainly as a result of their electricity consumption. 'Buildings' include the following: local authority buildings, the domestic segment, the commercial segment and the industrial segment.

Looking at the total electricity consumption in buildings at the community level (domestic, commercial and industrial) shows that **GHG emissions from buildings represents between 58% – 87% of total urban emissions.** In the majority of the cities the relative share of this source has increased between the years 2000 and 2007. **The meaning is that promoting 'Green Building' must get a priority in the environmental and planning activities promoted by the municipality.** In order to bring about a significant reduction in GHG emissions at the urban level, the element of Green Building must be massively assimilated in urban planning and construction, with an emphasis on energy efficiency. **See further information on this topic in section D4 of the report.**

C. The waste segment – considerable potential for reduction

The share of residents waste in total community level emissions varies between **9% – 21% in 2000 and between 6% – 17% in 2007.** Despite the fact that this is a segment whose relative contribution in percentage is not among the highest in the surveys, the relevant solutions for reducing the related emissions are much simpler to implement since it is relatively highly controlled by the municipality itself, and in principle consists of one central solution. On the other hand, the issue of Green Building, for example, comprises a wide range of elements, many solutions and players are involved in it, and hence the municipality is relatively limited in its ability to control its advancement.

Though, the promotion of this subject, especially in regards to the construction of end use infrastructure to treat the separated waste, has to be backed up and promoted by the different ministries offices headed by the ministry of environment, whom has the ability to bring to the motivation of the subject on a national level.

It can also be seen that between the years of 2000 and 2007 there is a considerable reduction in GHG emissions from the waste segment, despite the fact that there is an overall absolute increase in the quantity of municipal solid waste disposed in in landfills. The reason for the reduction in GHG emissions is the decrease in the emission coefficient value per ton of waste, as a result of the introduction of the 'methane recovery' process[2] at landfill sites between the years 2000 - 2007, at a rate of approximately 40% of all Methane emissions from landfill sites.[3] **In light of this, it is important to emphasize that there is still considerable potential for reduction in this segment, and wide scope for possible actions.**

D. Transportation – the main source of air pollution

The transportation segment (public and private) is one of the most difficult to quantify, especially with regard to the share of private transportation. This is due to the lack of real data regarding the use of private cars in cities, the refuse of the large public transportation companies to provide data on city bus travel, the inability to differentiate between the different types of vehicles, and the difficulty in acquiring satisfactory data for 2000, the baseline year of the survey. For this reason, most of the municipality surveys are based on transportation model data. This matter has also received attention in the Forum 15 data completion project (see section D2 of the report). The interim conclusion is that **the transportation segment contributes significantly to air pollution emissions** (see Appendix C of the report). This segment's relative share in total urban GHG emissions **is between 7% – 25% of urban activity, with the average in most cities being around 16%.** It should be noted that this sector has maintained a relatively constant share over the years, with just a slight rising trend. However, in terms of the absolute quantity of emissions generated by this segment, there has been an increase in all cities between 2000 - 2007 (other than Jerusalem, for which there are no data for 2000). In most cases, this absolute increase is characterized by a correlation with the absolute increase in all other segments at the community level, stemming, among other things, from an increase in population and in the scope of urban activity in general. If there is an absolute increase that is not solely due to the increase in population, it will be expressed in an increase in the transportation segment of just a few percent between these years.

E. Water and Sewage segment – comprises a significant share of total municipality emissions

The emissions arise mainly from electricity consumption at the pumping and treatment facilities, and where the local authorities have provided data – also stems from wastewater treatment. This segment does not exhaust all the environmental implications relating to the water segment, and it was therefore

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2 Methane gas is generated by the process of anaerobic decomposition of vegetative materials in urban landfills. This gas is a major contributor to the greenhouse effect. The Methane capturing process involves capturing the Methane produced by the anaerobic decomposition of waste in the landfill and using it for energy, or incineration. The advantage of this process is that it reduces the emissions of Methane gas into the atmosphere. The 'Methane recovery' process at landfills is the result of a change in the Ministry of Environmental Protection instructions for operating landfill sites.

3 A notable example of the Methane recovery process at landfill sites is the project established by the Dan Municipal Sanitation Association in 2003 – a system for the collection of biogas at the Hiriyah site. This project is in fact the first in Israel and was awarded funds from the UN's Clean Development Mechanism (CDM). These were used to set up a complete array for collecting bio-gas from the waste heap and removing it to the Offis Textile factory, where it was used for boiler heating. At the weekends, when the factory is closed, the gas is burned on the waste heap. The project was registered in the CDM in 2006 for a period of 7 years, with an option to extend for an additional 14 years. The project accumulates about 50,000 reduction credits a year. These credits are sold to the French Electric Company, EDF, which has purchased the Hiriyah project reduction credits. Since the beginning of the project there has been a reduction of around 200,000 tons ECO2 a year.

recommended to include in the report data regarding the water consumption (broken down by source), the quantity of treated wastewater, and the percentage of municipal depreciation. There are vast differences between the cities in this segment. **Percentages range between 14% – 62% in 2000 and 8% – 60% in 2007, and in each of these years, there is an extreme case of 4%.** It should be noted that if this segment were to be included in the residents' level, it would constitute only a small percentage of the sector as a whole.

F. Fuel other than electricity

The data for fuels other than electricity are difficult to quantify and have been included in the data completion project **(see section D2 of the report)**. The subject is quantified satisfactorily in the industrial segment, but lacks data relating to the commercial segment (which could be significant, depending on the type of commerce operating in the city) and in the domestic segment (where this constitutes a smaller share of total consumption). The difficulty in quantification is a result of the lack of available data at the urban level, as well as the lack of raw data and relevant measures at the national level. In addition, it is problematic to draw conclusions regarding urban measures by deduction from national ones.

G. Total urban emissions

There is a wide-ranging increase in the absolute quantity of emissions over the years (except for the city of Ramat-Gan, the only city in which there is an absolute decrease of 2% in the quantity of emissions). This correlates with the wide-ranging increase in the number of residents in all of the cities during these years (2000 - 2007).

H. Emissions per capita

As mentioned, all municipalities registered an increase in population between the years 2000 and 2007. In a similar way, with the exception of the Ramat-Gan municipality, there has been an absolute increase in all the cities in the quantity of GHG emissions during these years. However, in terms of per capita increase there is a mixed trend **– in most of the cities there is an increase in per capita emissions, but there are cities in which a decrease has been observed between these years.** In general, the picture varies considerably between the cities, due to their different characters, distribution, type of population, socio-economic status, urban fabric, nature of urban activities, local services provided, etc.

The emissions per resident value in the Convention cities ranges from a value of 5.1 ton equivalent Carbon dioxide (eCO_2) to 12.7 eCO_2 (2000) and a value of 5.4 eCO_2 to 11.7 eCO_2 (2007). The exception is the figure in the city of Jerusalem, where GHG emissions per resident are characterized by a much lower value than the national average, between 3 eCO_2 (2000) and 3.3 eCO_2 (2007).

An important note: these raw data must be used with great caution and in the broader perspective of all the elements and characteristics of the city. The Forum emphasizes to the municipalities, the accompanying consultancy teams and the relevant government ministries that a comparison of raw data alone between the cities must be avoided. Any comparison must be made with reference to all the urban characteristics, which are not expressed in the raw data, and must include a verbal explanation of the significance of the data. A simplistic comparison is liable to lead to fundamentally incorrect conclusions, or to the wrong source with regard to the nature of the difference. A prominent example of this is the city of Ashdod, where the emissions value per resident is very high - 10 eCO_2 (in 2000)

and 10.6 eCO_2 (in 2007). The high value stems from the fact that Ashdod is an industrial city by nature (60% – 62% of the urban GHG emissions are a result of industrial activity in the city), and are not due to individual residents generating more GHG. By comparison with other cities with far lower values per resident, we will find that comparing domestic activity alone with other cities shows that residents of other cities actually create a higher level of GHG emissions than the residents of Ashdod. This is not the only example. This matter can be analyzed in many ways, and the importance of the analysis lies in taking all factors into consideration in the context of the absolute data.

I. The "Business as Usual" Forecast

This section has not yet been satisfactorily implemented in the surveys submitted so far, and feedback from Forum 15 has been sent to the municipalities with the aim of improving it. In light of this, the conclusions for this section will be deferred to a date after the surveys have been updated on the basis of the feedback. However, it should be noted that in all the cities, **the absolute significance of meeting the 25% reduction goal by the year 2020 means a real reduction of more than 20%, which could even reach 50%. In other words, the reduction target is very ambitious, especially taking into account the population growth and the intensive development characteristic of the Forum cities. It appears that the Forum cities will have to act in a more comprehensive manner than their European counterparts.**

It should also be taken into consideration that the current methodology for drawing up the forecast involves making use of the emission coefficients of the baseline year. That is, they do not take into account potential technological improvements and changes, nor the possible introduction of country-wide measures, laws and stryctyres. For this reason, the values of the forecast should be examined in an additional manner at a later stage, including all the additional parameters which, for the most part, are not under the control of the local authorities, and in which technological changes and national developments may bring about considerable reduction of emission coefficients and quantities of emissions in the different segments at the municipal level. This upgraded forecast will give a status report supplementary to that of the "Business as Usual" forecast.

8. Main guidelines for analysis of the survey results

1. **In analyzing the data, it is necessary to look in parallel both at the percentages represented by the particular segment and at the absolute numbers of the source.** The fact that there is a similar breakdown of percentages in different cities does not necessarily lead to the conclusion that the same solutions should be applied. The components and characteristics of each of the cities must be examined in order to decide on the requisite action. There may be similar segmentation in different cities, but the absolute data may be substantially different in scope, indicating the need for different types of solutions. On the other hand, it is possible that a comparison of percentages may show great variation between cities, and yet the absolute numbers themselves may be found to be identical. **Therefore, the importance of looking at both components together.**
2. **Where there is a higher value in a comparison between different cities, this does not necessarily mean that the city with the higher consumption characteristics is less economical in its energy use.** The difference may also stem from the differences in urban characteristics, generating different absolute numbers. For example, higher electricity consumption per resident in the comparison between two cities does not necessarily indicate lower energy efficiency in the city with the higher

value, but could be a result of more extreme weather conditions in that city, requiring greater use of electrical cooling or heating systems. That city could actually be more economical in its use of energy than the other city that has less need for means of heating/cooling.

3. **Emissions per resident –** see sub-section 7 H above.
4. **It is important to analyze the existing trends over the years** and not just the absolute numbers. Trend analysis can be extremely helpful in understanding urban measures and means for reducing emissions.
5. **If there is a reduction in GHG emissions between the years of 2000 and 2007,** the reason for this reduction should be analyzed to see whether it is a result of inner- municipal factors or external municipality factors.
6. Analysis of the alternatives also necessitates **an economic and social analysis of the trends** and not only an environmental analysis.
7. It is clarified once again **that these are preliminary data only**. The majority of the surveys have not yet been through the process of amendment and/or approval, Therefore, at this stage it is mainly the trends reflected by the data that should be considered.

D. Forum 15 Steering and Control task force Activities Accompanying the Planning Stage

1. Professional training for implementation of the 'Planning Stage'

As the cities that have signed the Convention begin implementation of the 'Planning Stage', the need has arisen to provide the municipalities, and especially the referent in charge of promoting the project in their city, with tools that will enable them to transform the picture as it emerges from the urban emissions surveys into successful strategic plans, practicable targets, and actions that will indeed be put into practice.

The work of the municipal referent in charge of promoting the plans in the city presents complex challenges. These include dealing with objections within the municipality, various kinds of obstacles, issues regarding budgeting the process and the ensuing projects, the attempt to assimilate a different organizational and administrative approach in the municipality, and coordination between multiple entities in the municipality and outside it, etc.

For this purpose, between December 24, 2009 and February 25, 2010 Forum 15 held an 80 hour professional training course for 38 municipality representatives, amongst them city engineers, environmental department managers and other municipal division managers.

The training course was held in conjunction with the Union of Local Authorities' training division, the Ministry of Environmental Protection (which subsidized half of the cost of the training), and with the advice and academic support of Ms Valery Brachya, former Senior Deputy Director General for Policy and Planning in the Ministry of Environmental Protection, and today Director of the Environmental Policy Center at the Jerusalem Institute for Israel Studies. In compiling the training content we were greatly assisted by Ms Tammy Gavrielli, Director of Strategic Planning at the Tel-Aviv-Yafo Municipality Engineering Administration.

The training was intended to provide the municipal representatives with current, academic standard information, emphasizing the connection with the field and with practical action in the municipalities in Israel.

The stated objective of the training course was to train municipal referent to accompany, implement and assimilate the 'Planning Stage' correctly in the municipalities, including: accompanying the professional consultancy teams, guiding them and monitoring their work; guiding the city steering committee and coordinating its activities; pooling resources, creating collaborations and connections between the different entities in and outside the municipality in order to develop an integrative and successful Urban Master Plan that will incorporate tools and mechanisms to ensure its successful implementation; transforming the course participants into change agents and promoters of plans for air pollution reduction and climate protection in the municipality; analyzing the obstacles and opportunities for action in the four 'basket areas'[4] of the Convention and enriching the professional knowledge of the municipalities in these areas; developing the ability to import and assimilate activities, innovations,

4 The four basket areas of the Convention are: Transportation and fuel, energy and green building, open spaces and the greening of the city, waste and recycling. In the municipal reductions plans being drawn up by the municipalities are creating, all of the above four issues must be included.

mechanisms and projects which are implemented by local authorities in Israel and around the world, and facilitating personal familiarity among the active figures in the Convention, leading to a reciprocal exchange of information, cooperation on a regional basis, and dialogue between the course participants even after its conclusion.

2. The Data Collection and Completion Project for the Urban Emissions Surveys

In order to execute the Urban Emissions Surveys, in accordance with the professional methodology under which the municipalities are required to carry out these surveys, the municipalities were required to collect a wide range of data regarding their own activities (for which the information was largely accessible and could be collected relatively quickly and easily), as well as all activities taking place in the city, which are not directly under their control. In these cases, the information was held by various private bodies functioning within the city, such as: bus companies, fuel companies, the Israel Electric Corporation, industrial plants, etc. In light of the fact that many of these are country-wide entities operating in all the cities, and also in order to expedite and facilitate the process of data collection, Forum 15 began to operate in a concentrated manner to collect information from all the national organizations whose cooperation was needed for implementation of the surveys. So, for example, Forum 15 contacted the Central Bureau of Statistics, the NTA (Metropolitan Mass Transit System Ltd), national bus companies, the Israel Electrical Corporation, fuel companies, and others, to collect the consolidated data needed for carrying out the Urban Emissions Surveys in each of the eighteen cities of the Convention. The data obtained were handed to the municipalities along with explanations regarding their nature and the manner in which it met the requirements of the survey. However, in a number of sub-topics included in the survey, the Forum encountered various problems in obtaining the information for the municipalities. This was mainly due to the lack of cooperation of some of the non-municipal bodies approached by the Forum for data, while in some cases the information given by different entities was partial and deficient as a result of a lack of information in the cross-sections and at the resolution required by the cities, or a lack of documentation of data for the year 2000 (the reduction baseline year).

The main areas where a lack of data was found

- **Private mileage of cars within the city –** data regarding annual mileage within the local authority area according to vehicle type, for calculating fuel consumption for transportation.
- **Public transportation mileage within the local authority area –** consumption of fuel by public transportation according to mileage, within the city boundaries only. The national bus companies refused to cooperate and pass on information regarding bus mileage within the cities.
- **Fuel consumption in the local authority area, broken down into domestic, commercial and industrial use –** the main problem is the difficulty in obtaining data regarding industrial and commercial fuel consumption from factories and the commercial bodies. In addition, there is a lack of data regarding the use of fuel in the domestic sector.
- **Emission of gas fumes from fueling stations operating in the cities** – the fuel companies refused to provide data regarding the annual quantities of fuel sold in the city, on the grounds that it is a commercial secret.

The lack of information in the above areas has caused delays in completing the urban surveys and is an obstacle in obtaining a full picture regarding the contribution of major sectors to the emissions of

pollutants and GHG in the cities. It was anticipated that the problem of the lack of data would continue to hinder the cities in implementing the Convention when carrying out future emissions surveys. This led Forum 15 to search for other methods and statistical and methodological means for overcoming the lack of data.

In light of the situation described above, Forum 15 decided to carry out the data completion project with the help of an economic-environmental consultant from the Economics and Information Department of the Union of Local Authorities, Mr. Ziv Lazar. The project was supported by the Ministry of Environmental Protection, and a 'coordination and monitoring team' within the Forum 15 Steering and Control task force accompanied the project through its various stages.

The project included the following components:

1. Accurate mapping of the gaps between the existing data and the ideal data required for calculating GHG and air pollution emissions.
2. Comprehensive research of existing methods, in Israel and around the world, for calculating emissions in the categories detailed above, as carried out by other entities in the private and public sectors, and finding the optimal method in terms of the quality of data and the input required in order to obtain them.
3. Collection of data from any entity holding information in the theme, as well as producing estimations and approximations based on the connection between the missing data and other parameters that are known for their highest possible accuracy. The data collection method and the use of models or statistical tools were documented in a manner that will enable reconstruction of the work procedure in the future by each of the municipalities independently.
4. Construction of a model for each of the groups of emissions, and feeding it into the calculation tool in order to obtain results for each of the cities implementing the survey, while performing various sensitivity analyses to facilitate examination of changes in emissions as a function of the parameters that determine its extent.
5. At the end of the process the professional team accompanying the implementation of the Convention will be trained regarding the manner of operating the process in order to enable its reconstruction and completion in the future, upon need.

The data completion project is now in its final stages. A draft of the report is ready and is currently undergoing final examination for validation and compatibility, before publication and distribution.

3. Publication of guidelines for preparing Urban Master Plans, including an analysis of examples from around the world

The primary of the initiative for reducing emissions in Israel and developing Urban Master Plans for emissions reduction being done within it is first of its kind, and the willingness of Forum 15 to create, as far as possible, a minimum, uniform standard for drawing up plans between the different local authorities (similar to the uniform standard maintained in preparing the urban emissions surveys), has brought the Forum to prepare aprinciples and guidelines document for the development of an Urban Master Plan for Emissions Reduction.

This paper has been prepared in two formats: one for the use of the professional consultancy teams accompanying the municipalities in implementing the 'Planning Stage', and the other, with a slightly different focus, for the municipal referents monitoring the process.

The guidelines include the following section headings:

1. Completion of information regarding the characteristics of the city (in addition to the emissions survey).
2. Definition of a vision and policy.
3. Definition of quantitative reduction targets.
4. Elaboration on the components and subjects of the Urban Master Plan – this is the central and most detailed section of the guidelines.
5. Method of submitting the plan and the required content.
6. Emphasis and significant message.
7. Appendices presenting examples with extensive information on action being taken in cities around the world, as a source of inspiration and learning.

In order to ensure that the plans do not remain only at the strategic level, the municipalities are required to prepare practical plans of action / practical projects to be carried out under section 4 above, in a uniform format including, among other things, reference to the components of the project, the required partners, indicators for success, expected yields, cost estimates, sources of funding, etc.

We believe that the presentation of plans of action in a consistent format will, among other things, help in making informed decisions for promoting the components of the plan for reducing emissions, and also in coping with public pressure to promote one project or another. For the same reason, the Forum 15 has instructed that the plan should include a structured set of criteria for ranking and prioritizing promotion of the components of the plan. In addition, the Forum intends to assemble the plans of action / projects and network the information among the municipalities that have signed the Convention, for their reciprocal enrichment.

4. Establishment of the Municipal Forum for Green Building

Since the surveys carried out by the municipalities show that approximately **60% – 70% of GHG emissions in the cities are a result of electricity consumption in buildings** (domestic, commercial and industrial) (as presented in appendix 7 B of the report), there is no doubt that one of the central areas of focus for the municipalities in their master plans is the area of Green Building, with the aim of incorporating its principles at all levels of urban planning. This must be done both with regard to new buildings, and with regard to renovation of buildings and the development of infrastructure, with the emphasis on energy efficiency.

Since there are currently no binding mechanisms for implementing the principles of Green Building in Israel, some cities have begun taking independent actions to create an urban green building code, mainly by means of guidelines for urban building plans and building permits. Kfar-Saba Municipality was a pioneer in writing a comprehensive code on the subject, in the framework of the 'Urban Green Building Binder`. Other cities have followed suit, and some are in the process of drawing up files and guidelines (Tel-Aviv-Yafo municipality is in an advanced stage of preparing a guideline binder, and has already decided on setting Green Building standards in new urban building plans; and Raanana municipality is now requiring that new urban building plans comply with the terms of the existing voluntary Israeli standard[5]). The cities' investment of resources in this area are large – promoting the

5 Israeli Standard 5281- Buildings with Reduced Environmental Impact ("green buildings") is a voluntary standard for office and residential buildings. The standard is under revision, among other reasons in order to expand it to include additional land uses, and will relate to a wider range of issues. The current standard is in force. When the revision is approved, it is intended to replace and expand the current standard.

subject, hiring consultants, legal advice, developing methodologies, coping with obstacles vis-a-vis the various parties involved, etc. although in most cases they are facing similar issues. In light of the above, it has been decided to establish the 'Municipal Forum for Green Building' (hereinafter: the "Municipal Forum") under the umbrella of Forum 15 and the Association of City Engineers. The Municipal Forum is coordinated by Architect Uriel Babchik, a representative of the Tel-Aviv-Yafo Municipality Engineering Administration, and its members are representatives of cities engineers.

The Municipal Forum's main objective is to pool the resources of the municipalities and to network information, identify obstacles, and work together when dealing with government ministries in order to expedite the assimilation of Green Building in the urban planning procedures, as well as handling other subjects requiring special attention such as building renovation, developing incentives to encourage Green Building, etc. Another objective in establishing the Municipal Forum is to put across a clear message that Israel's major cities are working together to require Green Building as a standard for urban construction. Recommendations and guidelines on this topic will be published in all cities in the coming weeks by the Municipal Forum.

5. Continuance of Routine Accompaniment of Municipalities in the Implementation of the Convention

Forum 15 has provided daily support and responses to dozens of professional questions posed by the local authorities on a variety of issues connected to implementation of the Convention: the Urban Emissions Survey, queries concerning implementation of legislation relating to the Convention, municipal bylaws, individual consultation on promoting topics and projects, etc.

In addition, the Forum has been acquainting the new city mayors who have been voted into office in the interim with the Convention, in order to ensure continuation of activities in the municipalities and guarantee the continued endorsement of the process in all municipalities.

6. Municipal incentives and the Networking of information between municipalities

From the detailed analysis of incentives, prepared by Forum 15 in the past, examining possibilities for providing incentives in various processes involved in the Convention initiative, it appears that due to the centralization of the national government in Israel there are relatively few incentives that can be implemented on a municipal level. Nonetheless, the municipalities that have signed the Convention are trying to generate incentives to promote assimilation of the different issues among the public, and the Forum is following closely and making the successes available to other municipalities, along with other topics that have not yet matured. Networking of the information enables the municipalities to focus and develop activities in areas where there is greater likelihood of implementation, and as far as possible saves them from dealing individually with the bureaucratic and legal barriers which are common to all municipalities.

Following are a number of examples of incentives and recommended activities in which the Forum has been involved this past year:

1. **Parking benefits for environmental friendly vehicles** – an initiative of the cities of Petach Tikva and Raanana. The Forum has studied the procedures for promotion of the initiative and prepared a

document of milestones for implementation in other municipalities.

2. **Guidelines for weighting components of polluting emissions in municipal tenders** – this document, prepared by the Forum together with the Air Quality Division at the Ministry of Environmental Protection, aims to include the subject of reducing air pollution emissions from vehicles among the considerations in winning tenders. This refers to tenders for vehicle purchase and for vehicle operator services, such as garbage disposal services and school transportation.
3. **Promoting hybrid taxis –** an initiative of Tel-Aviv-Yafo Municipality. After in-depth analysis it became clear that the subject required the government involvement. The matter was presented to the relevant government ministries and is being supervised by the Forum.
4. **Legislating municipal bylaws limiting the entry of non-hybrid buses into city centers** - an initiative of Jerusalem Municipality. A legal opinion has ruled out implementation of the initiative at this stage; however the Forum is investigating the possibility of promoting it with the relevant government ministries.
5. **Reductions in municipal rates for properties in which PV cells have been installed –** an initiative of Rishon-Lezion Municipality, which has submitted a petition for approval to the Ministry of Interior. A response is anticipated in December 2010.
6. **Urban Carpooling –** an initiative of Jerusalem Municipality, implemented at this stage only for city employees. The feasibility of expanding the scope of the project is still being examined, due to security objections encountered by the municipality. At the same time, Netanya Municipality has launched the 'Together in Traffic' project, intended to be a social website where people can find a partner to travel with on a specific website created for this purpose. The Forum is following the development of this project, and based on its success will distribute and recommend it to other municipalities.
7. **Recycling gas fumes at fuelling stations** – an initiative of Tel-Aviv-Yafo Municipality. It has been successfully implemented in the business license conditions. The Forum will recommend that all municipalities act in a similar manner, and the matter is also included in the recommendations of the survey data completion project report.
8. **Encouraging a social-environmental project based on renovating and recycling electronic waste through associations for sheltered community** – a project implemented in the cities of Rishon-Lezion and Raanana. The Forum has distributed orderly guidelines in order to expand the project to all the municipalities affiliated with the Convention.
9. **Guidelines for the optimal implementation of amendment 84 to the Road Traffic Act, connecting the subject to the Urban Master Plans currently being prepared under the Convention** – Amendment 84 to the Road Traffic Act encourages municipalities, and even enables the Ministry for Environmental Protection to compel them, to take steps to prepare a plan to reduce air pollution resulting from transportation. In this amendment to the law, the local authorities have been given a degree of authority that they lacked prior to its validation, enabling them to advance plans for regulating transportation in the cities. An order has recently been issued under this amendment by the Minister of Environmental Protection to five of the municipalities that have signed the Convention (Jerusalem, Tel-Aviv-Yafo, Ramat-Gan, Holon and Petach-Tikva), instructing them to prepare a plan for reducing air pollution resulting from transportation in accordance with the provisions of the amendment. In the framework of implementing the Forum 15 Convention, the municipalities are required to draw up plans for reducing air pollution and GHG emissions from transportation, which are in line with

the requirements of the amendment. They have been recommended to use the data collected in the Urban Emissions Surveys, and also to consider extending their engagement, if necessary, with the transportation experts included in the consultancy teams, with which the municipalities are working, in order to provide a full response to the requirements of the amendment. Forum 15 has distributed guidelines on this matter to the municipalities and is a member of the 'Accompanying Team for the urban plans for reducing air pollution from transportation' established by the Ministry for Environmental Protection.

10. **Guidelines for reducing emissions from [6]Lag b'Omer bonfires –** following an initiative by the mayor of Raanana, who published a request to parents in the city to avoid lighting bonfires on Lag b'Omer due to the considerable environmental damage they cause, the Forum published environmental guidelines for lighting bonfires in a manner that will reduce the damage they cause to a minimum.

It should be emphasized that the activities detailed above are just a small sample of the dozens of similar activities carried out by the Forum municipalities to encourage and promote environmental measures among city residents and in the framework of the activities of the municipalities themselves. In this selection we have focused only on those activities that the Forum initiated or in which it has been directly involved during the past year, but it does not represent a full list of the municipalities' activities.

7. Forum 15's meeting with the professional consulting teams

In March 2010, the Forum 15 held a meeting with the consultancy teams accompanying the municipalities in the implementation of the Convention. The purpose of this meeting was to sum up the stage of implementing the Urban Emissions Surveys, to discuss the procedure as viewed by the professional consultancy teams that carried it out in practice, and to share the insights and conclusions reached by Forum 15 in accompanying the process. During the meeting the participants all presented the conclusions they had drawn from the process, and their recommendations for incorporating changes and the emphasis required in the future, for next surveys to be performed by the municipalities. They related to points such as: the working process with the municipality (the municipal referent, the various divisions, and the municipal steering committee), the process of working on the survey itself (collection of data, methodology, the quality of the data), assimilation of the process by the consultancy teams and the municipal employees, etc.

Forum 15 also presented its guidelines in depth to the consultancy teams with regard to the Urban Master Plans for reducing emissions.

6 Lag b'Omer is a Jewish holiday during which it is customary, among other things, to light bonfires that commem - rate the revolt of Bar Kochba against the Romans. In recent years, voices have begun to be heard to minimize the bonfires, or cease them entirely, because of the damage they may cause to public health and to the environment.

8. Forum 15 activities for advancing the Convention's objectives in additional bodies

1. **"National Sustainability and Green Building Forum" (hereinafter: 'Sustainability Forum') headed by the Israel Planning Administration –** The Sustainability Forum is a body made up of representatives of planning and governmental entities, with the aim of promoting dialogue, the exchange of opinions, transfer of information, learning lessons, and cooperating in promoting sustainability and Green Building in Israel's planning agencies. This forum promotes a policy that will be relevant in real time for the requirements of the planners and authorities, and discusses, among other things, new issues and procedures in Israel (for example, planning guidelines for the placement of PV cells and urban wind turbines; the re-use of grey water), as well as initiatives for promoting policies that will trickle down through the planning avenues and relevant legislation in Israel.

2. **Participation in the 'Israel Green Building Council' –** the Israel Green Building Council is a relatively new organization in Israel, affiliated with the World Green Building Council, through which similar councils operate in other countries, gaining much knowledge in advancing green building through their cumulative experience. The aim of the council is to create a sustainable built environment, by establishing platforms for change based on a broad, democratic, transparent and purposeful coalition of all partners in planning, design, development, approval and use of the buil environment and wide open space in Israel. The council's objectives are in line with those of the Forum 15, in promoting Green Building, as one of the cornerstones for reducing emissions. It has therefore been decided that the Forum would be a member of the Council's Founding Board In addition to its membership in the founding board, the Forum is also active in a sub-committee, the Regulation Committee, whose purpose is to promote legislation and regulation supporting and advancing Green Building in Israel.

3. **The Local Authority Steering Committee for revising the National Outline Plan 35 –** "TAMA" 35 is the national outline plan shaping the contours of Israel, and the actions of its planning institutions. According to the provisions of the plan, a team for updating, monitoring and supervising the Ministry of Interior's planning administration began operating about a year ago. Forum 15 and the Union of Local Authorities were asked to express their position regarding the plan and its implementation. For this purpose, a professional steering committee was set up to accompany the procedure. The Forum 15 is coordinating this activity for the entire urban sector (municipalities and local authorities, all members of the Israel Union of Local Authorities). The team is preparing a professional document which will be presented to the government revision team. The objectives of this document that are relevant to the Convention include: finding a formula for 'successful urbanism in Israel' and the expansion of sustainable development in the framework of the plan. For this purpose Forum 15 distributed a questionnaire to the local authorities in Israel, analyzed it, and is now in the process of formulating the final document.

4. **Assisting the Israel Union of Local Authorities with regard to preparing for waste separation and promoting the Packaging Law –** The waste treatment policy being led by the Ministry for Environmental Protection, the local government and green organizations involves the separation of waste at source into two streams: "dry" and "wet". Packaging waste, which is in the dry stream, will be handled by the packaging manufacturers under the 'Packaging Law' which is now being drawn up, and under the 'Deposits Law' on beverage containers. Organic waste will be directed to various treatment plants by the local authorities, to create compost or energy. Recycling centers for

other materials will be a complementary procedure in this field. Some of the Forum's municipalities have already begun separation at source pilots in their areas of jurisdiction, in the framework of the Urban Master Plan for waste, even though the legislation has not yet been approved, and despite the severe lack of facilities for the treatment of separated waste. The Forum is accompanying and partnering the various procedures for promoting this topic, as part of the activities of the Israel Union of Local Authorities with the Ministry for Environmental Protection and representatives of the packaging manufacturers.

5. **Collaboration with the voluntary mechanism for recording GHG emissions –** the global economy is preparing to restrict GHG emissions as part of worldwide activities for preventing climate change and global warming. An important aspect of this global policy is in creating mechanisms for emissions trade and encouraging other reduction initiatives. Israel too, is preparing to establish a national system for registering GHG emissions, led by the Ministry of Environmental Protection, and sees this as an essential condition for implementing policy tools in the framework of the post Kyoto agreements. Forum 15 is a member of the working team for setting up a voluntary mechanism for recording GHG emissions.

6. **Lectures and exposing the Convention initiative to a wide range of organizations –** the Forum sees exposure of the Convention initiative to additional organizations as a means of increasing public awareness and generating professional collaboration. In light of this, Forum 15 makes every effort to participate and lecture at conferences dealing with topics tangential to the Convention. Among others, the Forum made a presentation at the Israel Electric Corporation conference on energy efficiency, at the Technion Energy Forum, at professional courses for municipal representatives, etc.

7. It is important to note that in parallel with all the activity progressing at the municipal level, both on the part of the municipalities themselves and with the assistance of Forum 15, **the various matters being handled under the Convention require increased and focused activity from the national government; otherwise the Convention's goals will not be met.** The reason is that municipal authority over many matters is quite limited, while other matters depend mainly on primary legislation or on economic tools that are mainly in the hands of various government ministries. Examples include the encouragement and upgrading of public transportation, incentives for Green Building and mandatoring Green Building standards for new buildings and renovations, construction of waste-treatment infrastructure, etc. Forum 15 is taking actions through various channels to advance these matters at the relevant government ministries, with the intent that alongside the intensive activities of the municipalities, the various priorities mentioned above will also gain governmental support that will increase and will lead to dramatic change at the national level, in turn helping the goals to be achieved on the municipal scale.

E. The Planned activities for the rest of 2010.

We anticipate that by the last quarter of 2010, all the municipalities will have finished preparing their Urban Master Plans for reducing emissions, and that by the end of the year, plans will have been approved and budgeted for active implementation in 2011.

At the same time, Forum 15 plans to complete the following activities during the remaining part of 2010 and the beginning of 2011:

- Finalizing the Data Collection Completion project, publishing the final report, sending the relevant data to the municipalities and training the referents in continuance use of the data.
- Formulating an information and communication program for promoting the Convention among the residents of the cities in order to motivate processes of behavioral change.
- Examining the feasibility of developing a professional guide to emissions reduction.
- Continuing to promote measures to strengthen municipalities" statutory status and expanding their authority in regularization of the public transportation system in the cities.
- Continuing to promote the topic of green building and lead a process of establishing a uniform municipal standard for green building.
- Continuing to provide focused support to the municipalities in their ongoing implementation of the Convention.
- Continued networking of information and knowledge from Israel and the world.

Forum 15 will continue to act vigorously to promote the Convention and its implementation in practice, and will continue to update the relevant bodies and the general public on the progress of implementation of the Convention, with transparency and full disclosure.

For information and further details please contact Advocate Linor Sagi, Project Manager, by email: linor@forum15.org.il or telephone: 972-3-6844236, or Idit Hod, Forum Consultant for Environmental Protection and Sustainability, at idithod@013.net or telephone: 972-52-2454058.

Participants in writing this report:

Idit Hod, Forum 15 Consultant for Environmental Protection and Sustainability.

Michal Biterman, Forum 15 professional consultant regarding the methodology for reducing greenhouse gases

Linor Sagi, Forum 15 Project Manager.

APPENDIXES

Appendix A

Forum 15
The Israeli Forum of
Self-Government Cities

The Convention of The Forum 15 for reducing air pollution and for climate protection

"Be mindful that you do not ruin and devastate my world, for if you ruin it, there is no one to repair it after you"
(Ecclesiastes Rabbah 7:13 a)

Introduction

Modern living in recent decades has led to a worrying increase in pollution levels and a sharp rise in greenhouse gas (GHG) emissions. The implications for humanity and for the planet as a whole are dire. A direct relationship exists between levels of air pollution and diseases such as cancer and lung diseases. In addition, air pollution and GHG is causing irreversible damage to ecological systems and bringing about global climate change, as witnessed in extreme weather conditions and in an increasing number of "natural disasters" that are resulting in environmental, economic and social problems on a global scale.

Israeli cities are already beginning to feel the price of environmental damage, but we are yet to experience the full wrath of the ramifications from a rise in sea levels, northward expansion of the desert belt, and emergence of extreme precipitation regimes.

A special report published by the UN in 2007 states that humanity is responsible for global warming and that humanity has the ability to stop a deteriorating situation. Hundreds of scientists who drew up the report estimate that there is a narrow window of opportunity to turn the situation around; the technology required is already at our disposal; however, economic, technological and human resources need to be channeled to this matter, in order to utilize the short time that we, leadership and public, have, to stop the situation deteriorating.

The cities that we lead can spearhead a change in these trends, and effectively alter the situation within a very short time. To this end, courageous decisions must be taken to leverage our public influence and our ability to act effectively within the boundaries of our cities into a resolute force that can help to shape the issues on the national agenda.

A. Objectives and targets

As part of global efforts to address this reality, and out of a sense of responsibility towards the cities' residents, towards the entire population of Israel, towards our neighbors and towards the inhabitants of the planet, we hereby sign the convention and will act to achieve the following objectives:

- To safeguard the health and quality of life of residents in the cities that we lead.
- To join in the efforts of cities throughout the world in climate protection.
- To protect the environment, natural resources, ecological systems and biodiversity, for the sake of this generation and of generations to come, and to take their needs into account.

To achieve these objectives, we undertake:

A. In each city that we lead, to promote an urban master plan for climate protection and air pollution reduction, that includes the following five milestones:

- Defining a basic inventory and forecast of the main sources of air pollution and GHG emissions in the city.
- Defining targets for the reduction of air pollution and GHG emissions.
- Developing and adopting a short to long term Local Action Plan to reduce air pollution and GHG emissions.
- Implementing the Local Action Plan and all the measures presented therein.
- Monitoring and controlling the levels of air pollution and GHG emissions, and reporting regularly on the actions and measures taken in the framework of the Local Action Plan.

B. To join the CCP (Cities for Climate Protection) initiative led by the ICLEI (International Council for Local Environmental Initiatives) and to adopt targets to reduce air pollution and protect the earth's climate in the spirit of the targets that other large cities around the world have set themselves, including a reduction of no less than 20% in GHG emissions by the year 2020.

C. To act to achieve preliminary results on the five milestones in the plan within three years of signing the convention.

Follow-up and Control

To ensure full and effective implementation of the convention and the urban plans based on it, we are establishing a task force in the framework of The Forum 15, to promote the efforts of the cities in this direction, and to control and follow up their results. The task force will act to advance information networking, to pool resources and to coordinate between the municipalities, Government Ministries, and other relevant bodies.

We call on other local authorities to join our initiative by signing this pact. We, the undersigned

Chairman, Forum15
& Mayor of Tel Aviv-Yafo

Mayor of Jerusalem

Mayor of Haifa

Mayor of Rishon Lezion

Mayor of Ashdod

Mayor of Beer Sheva

Mayor of Netanya

Mayor of Holon

Mayor of Petach Tikva

Mayor of Ramat-Gan

Mayor of Bat Yam

Mayor of Rehovot

Mayor of Herzliya

Mayor of Ashkelon

Mayor of Hadera

Mayor of Kfar-Saba

Mayor of Raanana

Mayor of Givatayim

General Director, Forum15

Appendix B

Results of municipal emissions surveys – greenhouse gases

This appendix presents a summary of the results of the ten surveys submitted to the Forum of 15 by the date of drawing up the report, for the greenhouse gases section.

The data are presented in the following manner (all the data presented are for the years 2000 and 2007) -

1. Results at municipal level – a table summarizing the quantities of emissions by source and a graph showing the percentage of each segment.
2. Results at the level of the residents - a table summarizing the quantity of emissions by source and a graph showing the percentage of each segment.
3. A summary of the total - total quantity of emissions by levels, total number of residents, and breakdown of emissions between local authority level and residents level.
4. A graph representing the quantity of emissions per resident.

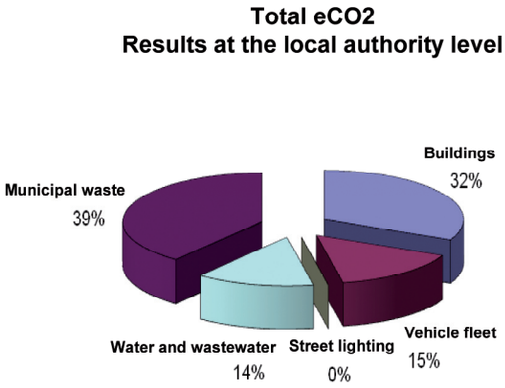
Jerusalem Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

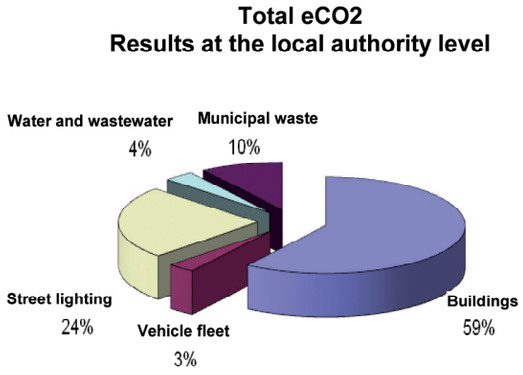
Segment	Total eCO2 (ton)
Buildings	14,934
Vehicle fleet	6,952
Street lighting	0
Water and wastewater	6,358
Municipal waste	18,389
Total	46,633



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	76,314
Vehicle fleet	4,082
Street lighting	31,096
Water and wastewater	4,537
Municipal waste	12,331
Total	128,359

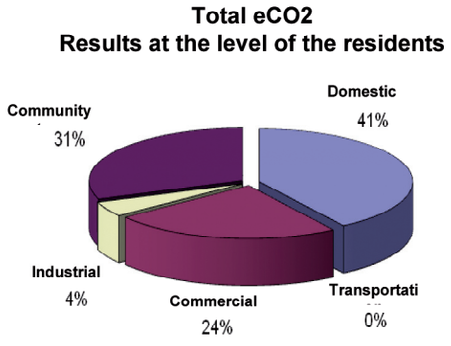


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

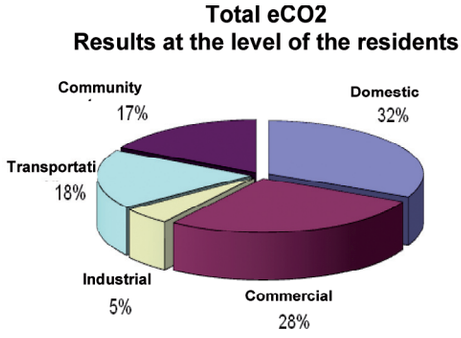
Segment	Total eCO2 (ton)
Buildings	796,644
Vehicle fleet	469,582
Street lighting	88,811
Water and wastewater	[1] 0
Municipal waste	599,685
Total	1,954,722



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	756,146
Vehicle fleet	651,499
Street lighting	120,310
Water and wastewater	426,292
Municipal waste	398,709
Total	2,352,957



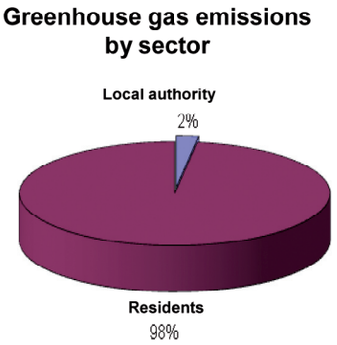
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	46,633
Residents	1,954,722
Total	2,001,355

Number of residents – 657,700

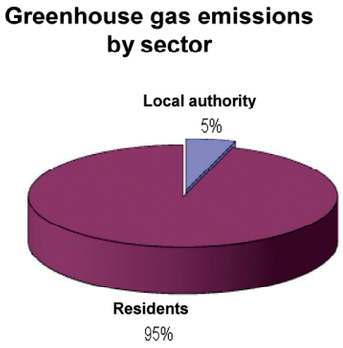


Year 2007

Greenhouse gas emissions by source

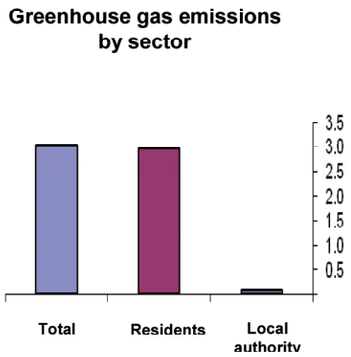
Sector	Total eCO2 (ton)
Local authority	128,359
Residents	2,352,957
Total	2,481,316

Number of residents – 747,600

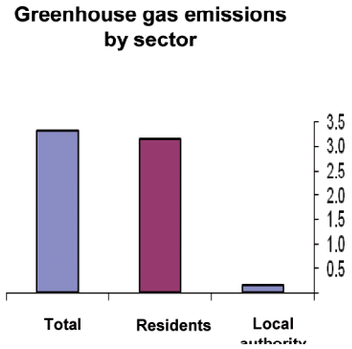


Total emissions per resident

Year 2000



Year 2007



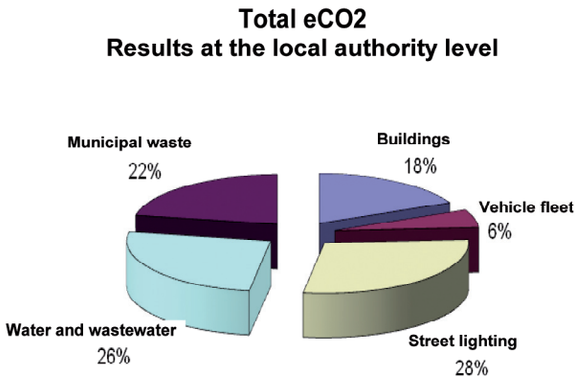
Tel-Aviv-Yafo Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

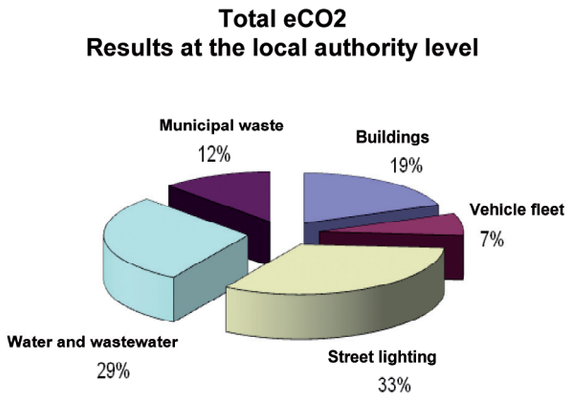
Segment	Total eCO2 (ton)
Buildings	22,038
Vehicle fleet	7,292
Street lighting	34,841
Water and wastewater	31,363
Municipal waste	26,967
Total	122,501



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	20,544
Vehicle fleet	7,501
Street lighting	34,834
Water and wastewater	31,119
Municipal waste	13,299
Total	107,297

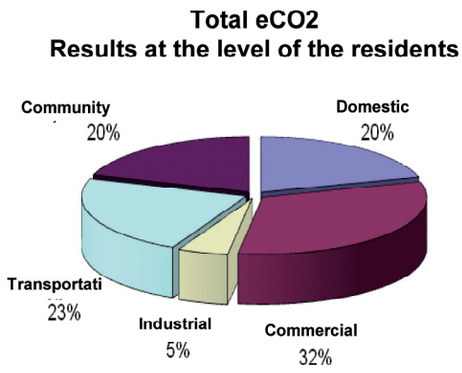


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

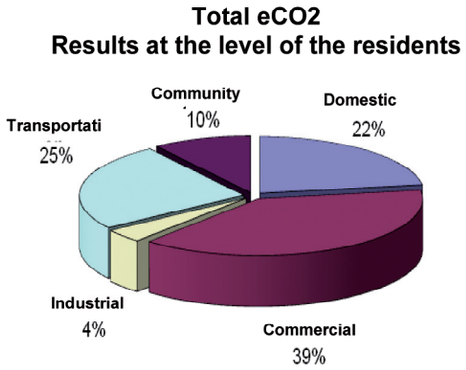
Segment	Total eCO2 (ton)
Buildings	898,932
Vehicle fleet	1,397,019
Street lighting	217,572
Water and wastewater	998,043
Municipal waste	871,918
Total	4,383,484



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	1,001,937
Vehicle fleet	1,730,649
Street lighting	170,449
Water and wastewater	1,110,025
Municipal waste	430,006
Total	4,443,066



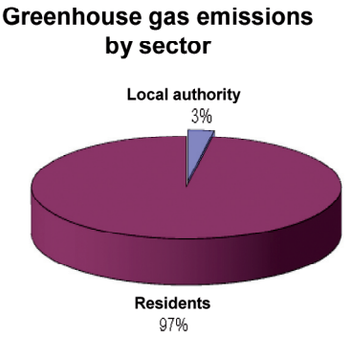
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	122,501
Residents	4,383,484
Total	4,505,986

Number of residents – 354,428

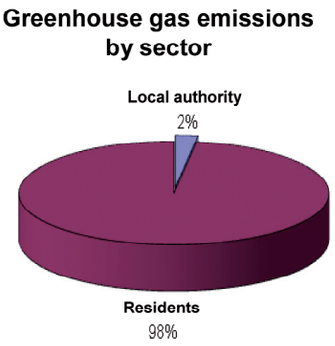


Year 2007

Greenhouse gas emissions by source

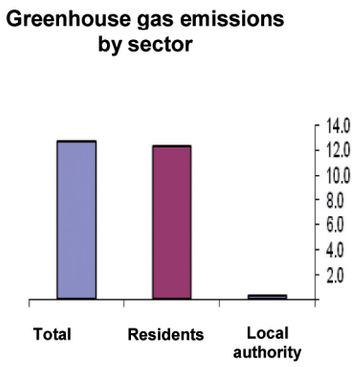
Sector	Total eCO2 (ton)
Local authority	107,297
Residents	4,443,066
Total	4,550,363

Number of residents – 390,400

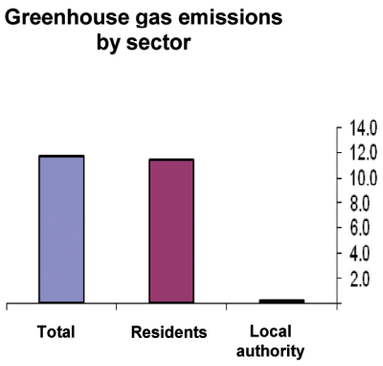


Total emissions per resident

Year 2000



Year 2007



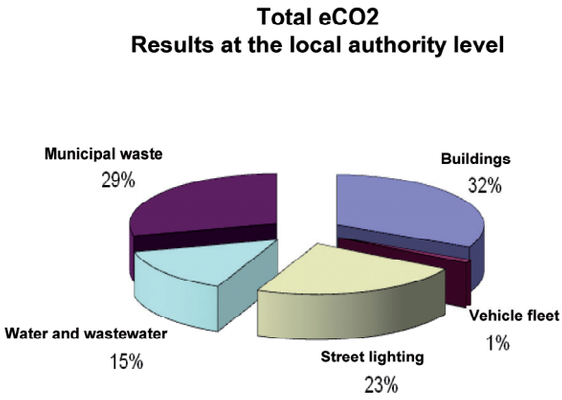
Rishon-Lezion Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

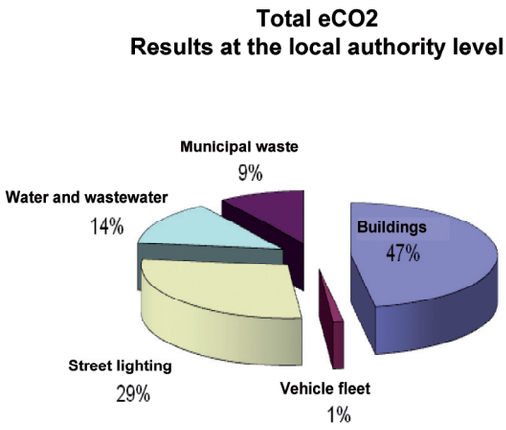
Segment	Total eCO2 (ton)
Buildings	18,614
Vehicle fleet	599
Street lighting	13,513
Water and wastewater	8,396
Municipal waste	16,668
Total	57,791



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	24,396
Vehicle fleet	599
Street lighting	14,666
Water and wastewater	7,017
Municipal waste	4,857
Total	51,535

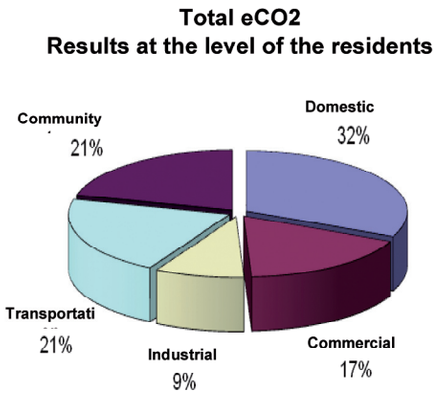


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

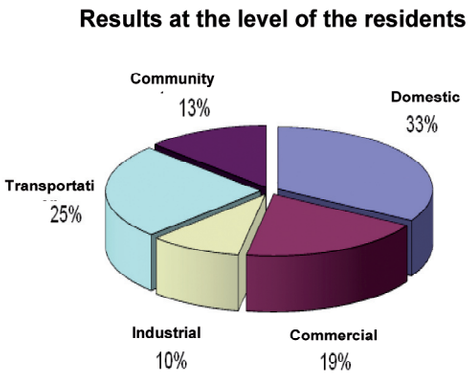
Segment	Total eCO2 (ton)
Buildings	362,602
Vehicle fleet	198,794
Street lighting	102,496
Water and wastewater	238,154
Municipal waste	238,721
Total	1,140,767



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	412,536
Vehicle fleet	238,240
Street lighting	118,570
Water and wastewater	305,223
Municipal waste	157,676
Total	1,232,245



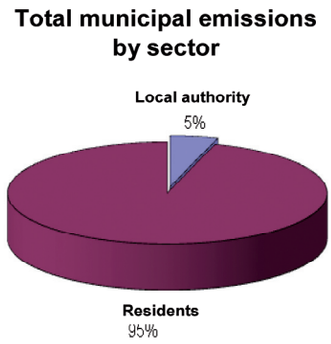
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	57,791
Residents	1,140,767
Total	1,198,558

Number of residents – 202,209

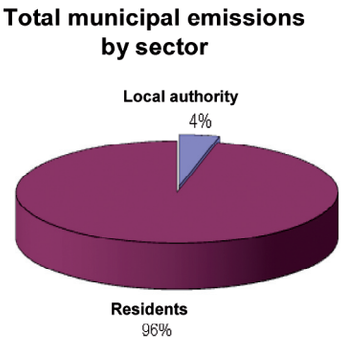


Year 2007

Greenhouse gas emissions by source

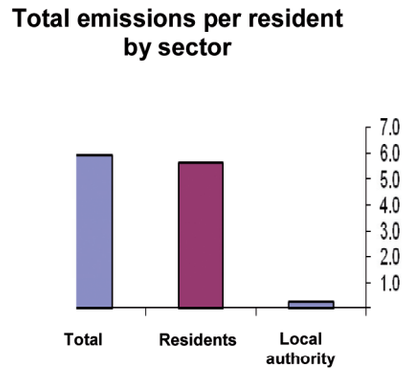
Sector	Total eCO2 (ton)
Local authority	51,535
Residents	1,232,245
Total	1,283,781

Number of residents – 224,300

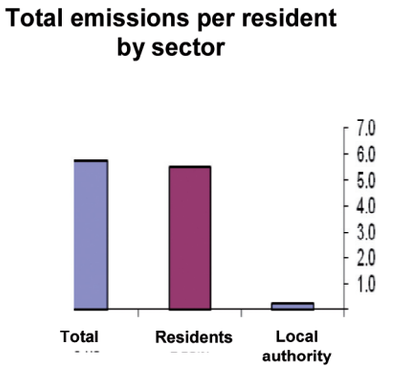


Total emissions per resident

Year 2000



Year 2007



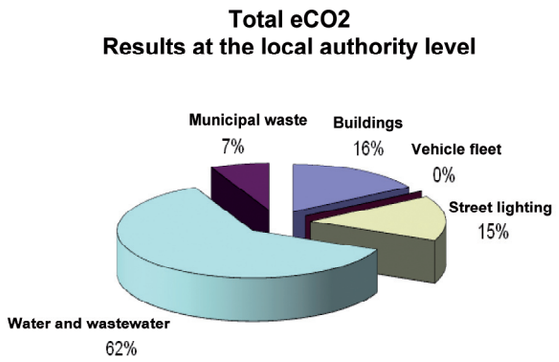
Ashdod Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

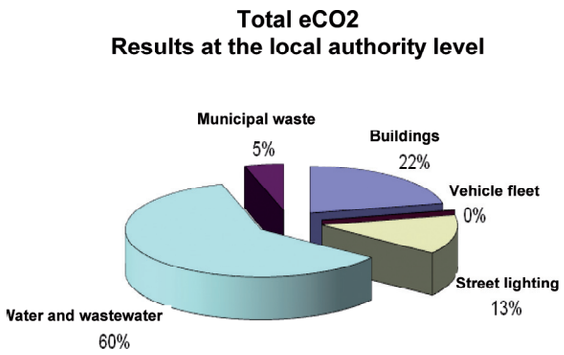
Segment	Total eCO2 (ton)
Buildings	10,327
Vehicle fleet	20
Street lighting	9,655
Water and wastewater	38,897
Municipal waste	4,435
Total	63,334



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	17,313
Vehicle fleet	40
Street lighting	10,574
Water and wastewater	48,340
Municipal waste	3,736
Total	80,003

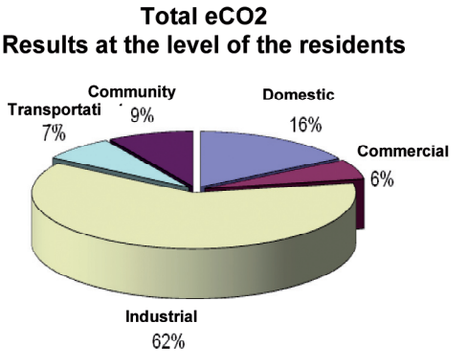


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

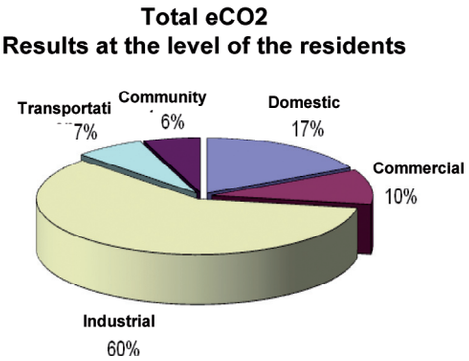
Segment	Total eCO2 (ton)
Buildings	272,344
Vehicle fleet	97,347
Street lighting	1,036,861
Water and wastewater	122,066
Municipal waste	143,392
Total	1,672,009



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	367,403
Vehicle fleet	214,141
Street lighting	1,260,854
Water and wastewater	147,487
Municipal waste	120,804
Total	427,471



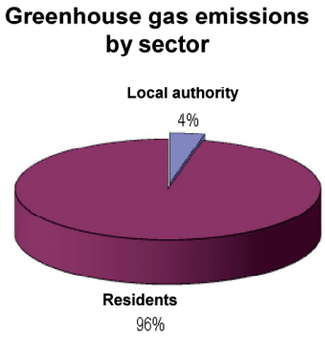
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	63,334
Residents	1,672,009
Total	1,735,343

Number of residents – 174,300

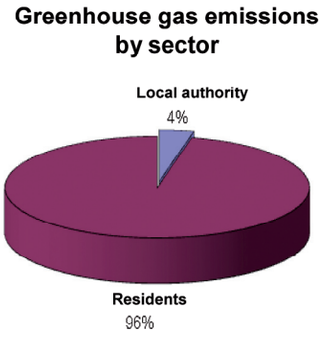


Year 2007

Greenhouse gas emissions by source

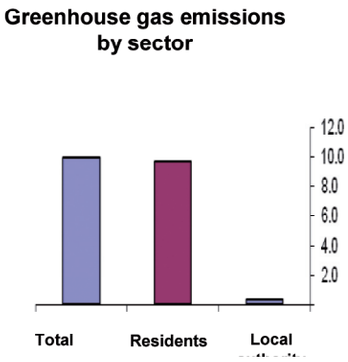
Sector	Total eCO2 (ton)
Local authority	80,003
Residents	2,110,689
Total	2,190,692

Number of residents – 207,000

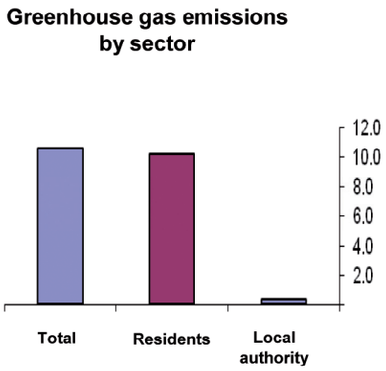


Total emissions per resident

Year 2000



Year 2007



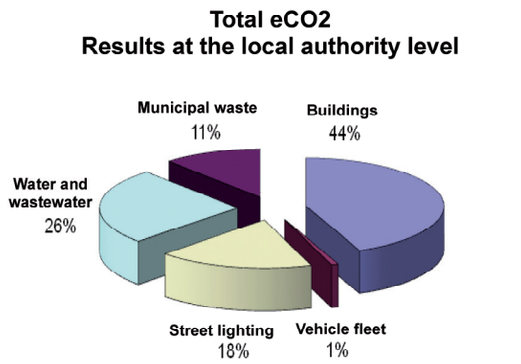
Netanya Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

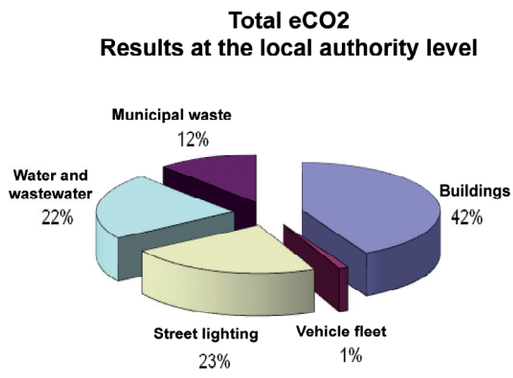
Segment	Total eCO2 (ton)
Buildings	17,493
Vehicle fleet	322
Street lighting	7,313
Water and wastewater	10,334
Municipal waste	4,590
Total	40,052



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	19,569
Vehicle fleet	510
Street lighting	10,394
Water and wastewater	10,329
Municipal waste	5,444
Total	46,246

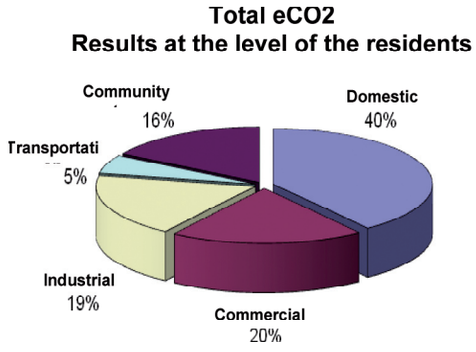


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

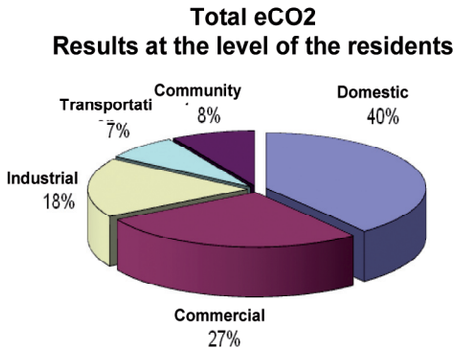
Segment	Total eCO2 (ton)
Buildings	360,344
Vehicle fleet	176,930
Street lighting	168,197
Water and wastewater	48,746
Municipal waste	148,408
Total	902,626



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	448,835
Vehicle fleet	307,087
Street lighting	199,393
Water and wastewater	84,238
Municipal waste	96,604
Total	1,136,157



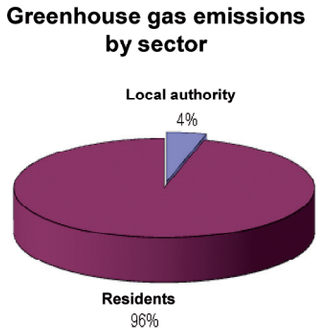
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	40,052
Residents	902,626
Total	942,678

Number of residents – 161,600[*1]

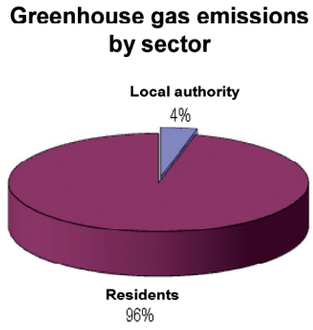


Year 2007

Greenhouse gas emissions by source

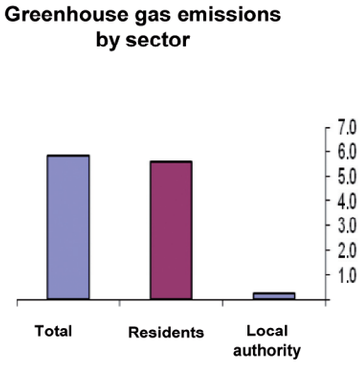
Sector	Total eCO2 (ton)
Local authority	46,246
Residents	1,136,157
Total	1,182,403

Number of residents – 176,500

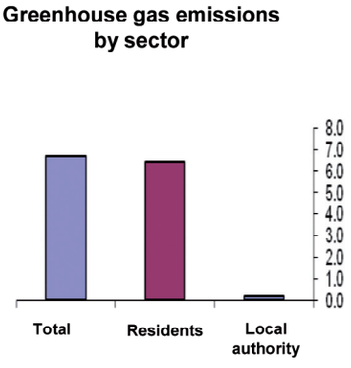


Total emissions per resident

Year 2000



Year 2007



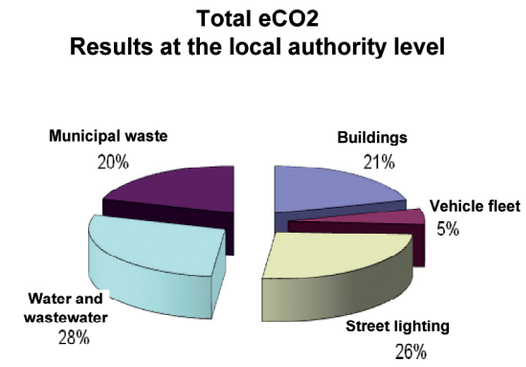
Ramat-Gan Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

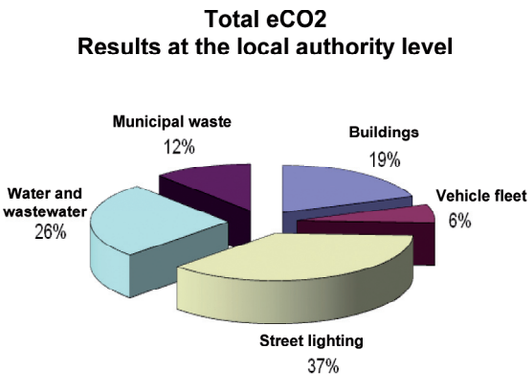
Segment	Total eCO2 (ton)
Buildings	4,999
Vehicle fleet	1,323
Street lighting	6,209
Water and wastewater	6,812
Municipal waste	4,926
Total	24,269



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	4,999
Vehicle fleet	1,323
Street lighting	6,209
Water and wastewater	6,812
Municipal waste	4,926
Total	24,269

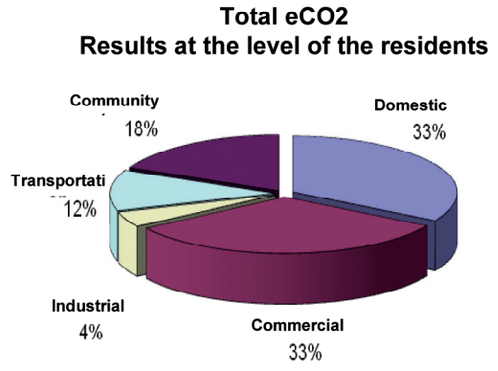


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

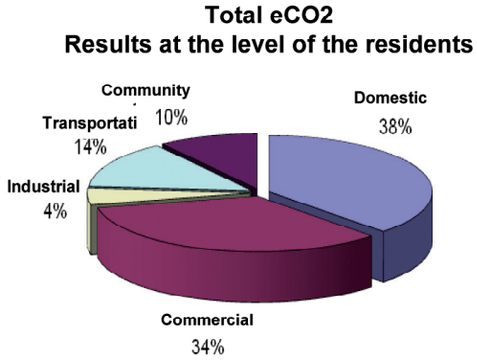
Segment	Total eCO2 (ton)
Buildings	293,113
Vehicle fleet	285,260
Street lighting	37,669
Water and wastewater	103,279
Municipal waste	159,283
Total	878,604



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	324,738
Vehicle fleet	292,849
Street lighting	39,502
Water and wastewater	119,596
Municipal waste	85,157
Total	861,841



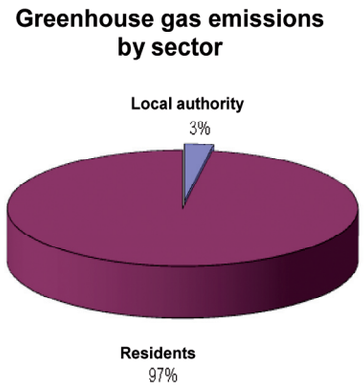
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	24,269
Residents	878,604
Total	902,872

Number of residents – 127,400

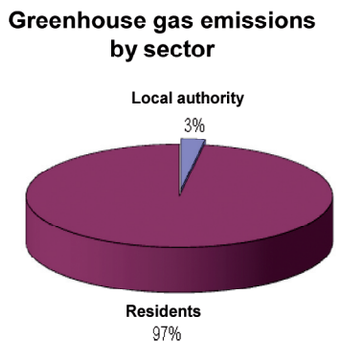


Year 2007

Greenhouse gas emissions by source

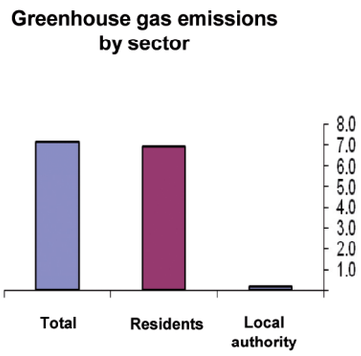
Sector	Total eCO2 (ton)
Local authority	22,800
Residents	861,841
Total	884,641

Number of residents – 129,900

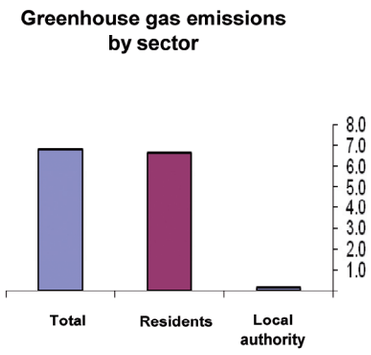


Total emissions per resident

Year 2000



Year 2007



Herzliya Municipality

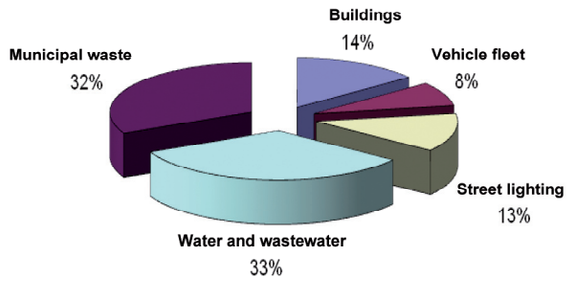
Results at the local authority level

Year 2000

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	7,006
Vehicle fleet	3,852
Street lighting	6,129
Water and wastewater	15,868
Municipal waste	15,574
Total	48,429

Total eCO2
Results at the local authority level

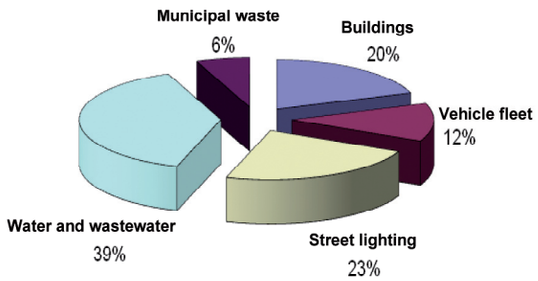


Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	6,046
Vehicle fleet	3,852
Street lighting	7,086
Water and wastewater	12,003
Municipal waste	1,881
Total	30,867

Total eCO2
Results at the local authority level



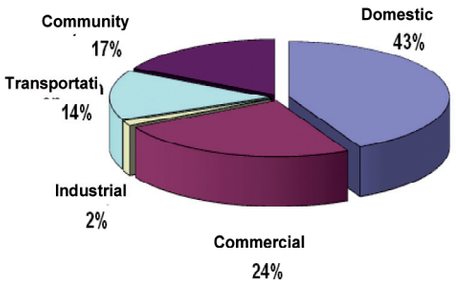
Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	211,057
Vehicle fleet	120,323
Street lighting	7,207
Water and wastewater	71,183
Municipal waste	84,325
Total	494,095

Total eCO2
Results at the level of the residents

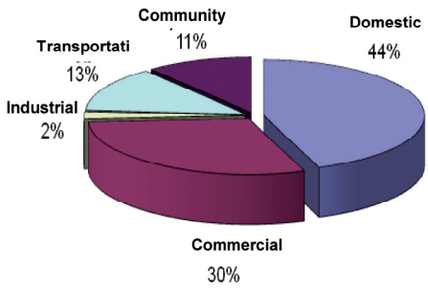


Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	239,587
Vehicle fleet	159,852
Street lighting	11,534
Water and wastewater	70,480
Municipal waste	57,721
Total	539,173

Total eCO2
Results at the level of the residents



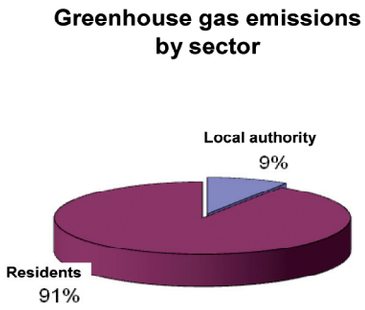
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	48,429
Residents	494,095
Total	542,523

Number of residents – 83,100

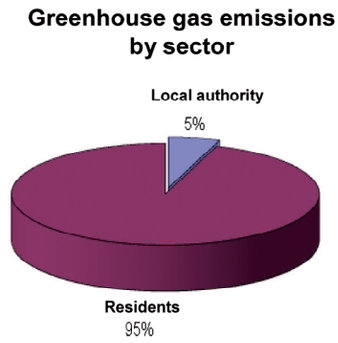


Year 2007

Greenhouse gas emissions by source

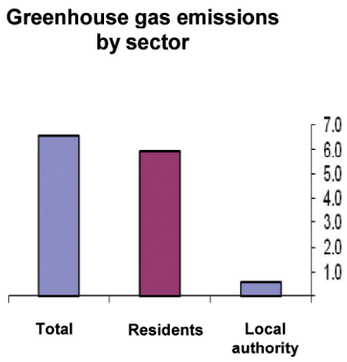
Sector	Total eCO2 (ton)
Local authority	30,867
Residents	539,173
Total	570,040

Number of residents – 96,235

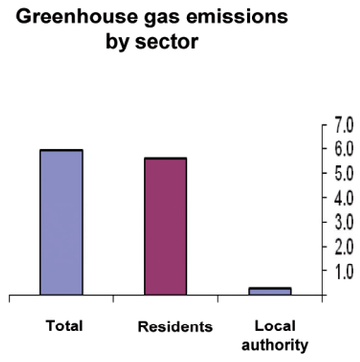


Total emissions per resident

Year 2000



Year 2007



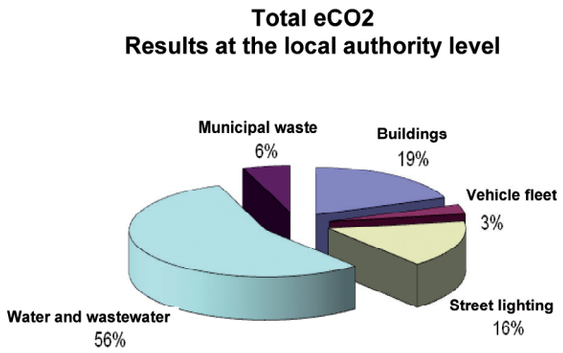
Kfar-Saba Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

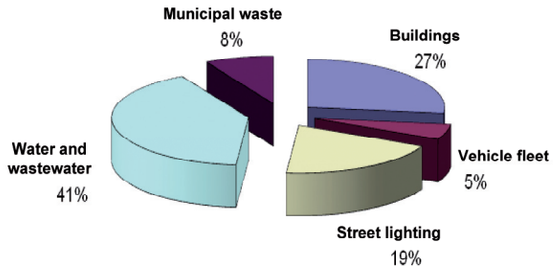
Segment	Total eCO2 (ton)
Buildings	6,411
Vehicle fleet	1,068
Street lighting	5,425
Water and wastewater	18,438
Municipal waste	1,869
Total	33,211



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	7,199
Vehicle fleet	1,411
Street lighting	5,125
Water and wastewater	10,796
Municipal waste	2,163
Total	26,694

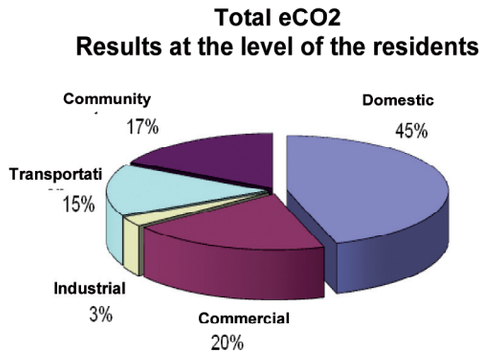


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

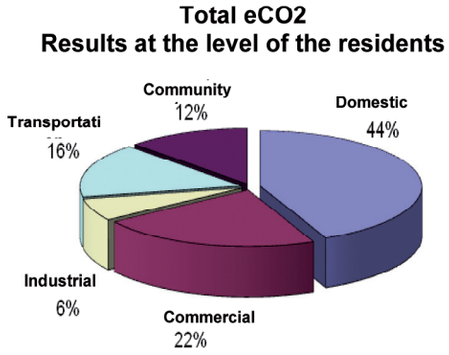
Segment	Total eCO2 (ton)
Buildings	158,596
Vehicle fleet	70,101
Street lighting	10,080
Water and wastewater	53,043
Municipal waste	60,323
Total	352,142



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	180,619
Vehicle fleet	91,961
Street lighting	26,547
Water and wastewater	66,235
Municipal waste	51,013
Total	416,374



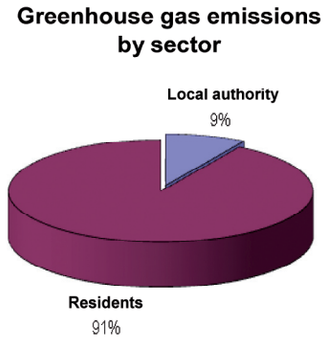
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	33,211
Residents	352,142
Total	385,353

Number of residents – 75,100

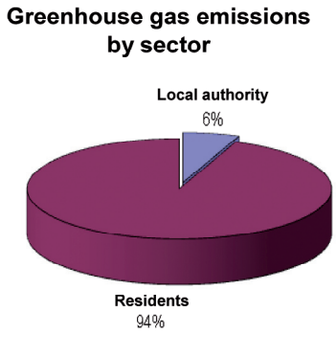


Year 2007

Greenhouse gas emissions by source

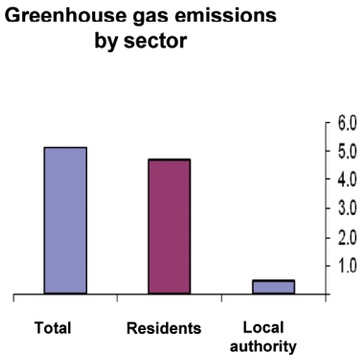
Sector	Total eCO2 (ton)
Local authority	26,694
Residents	416,374
Total	443,068

Number of residents – 81,600

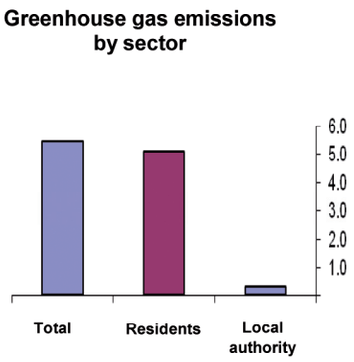


Total emissions per resident

Year 2000



Year 2007



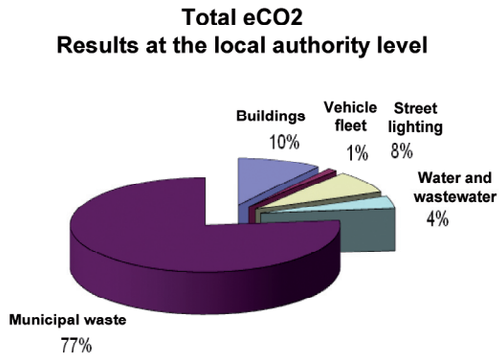
Hadera Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

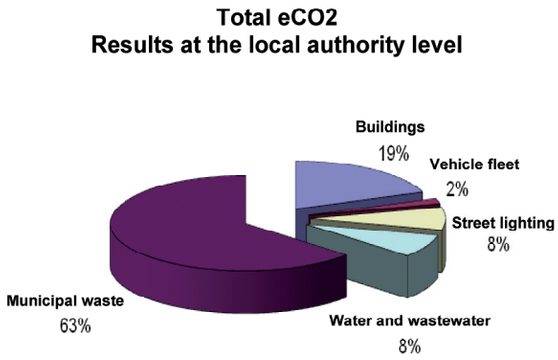
Segment	Total eCO2 (ton)
Buildings	3,391
Vehicle fleet	375
Street lighting	2,638
Water and wastewater	1,460
Municipal waste	25,701
Total	33,565



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	4,685
Vehicle fleet	427
Street lighting	1,865
Water and wastewater	1,881
Municipal waste	15,334
Total	24,192

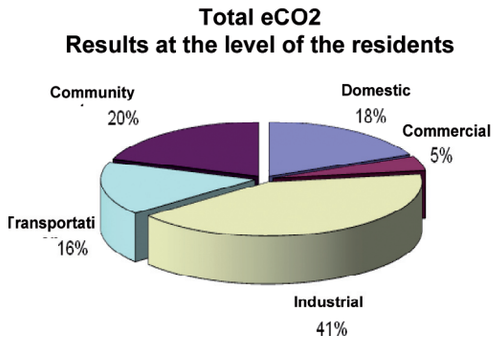


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

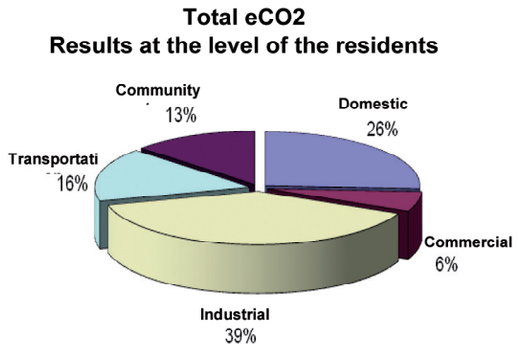
Segment	Total eCO2 (ton)
Buildings	88,067
Vehicle fleet	21,328
Street lighting	199,486
Water and wastewater	78,186
Municipal waste	94,862
Total	481,928



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	137,667
Vehicle fleet	31,973
Street lighting	207,947
Water and wastewater	85,321
Municipal waste	69,909
Total	532,817



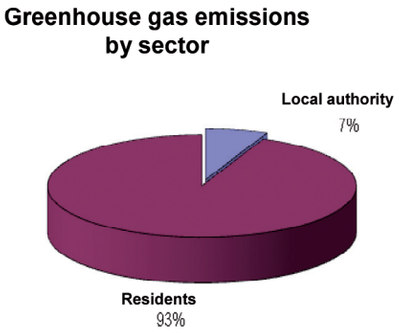
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	33,565
Residents	481,928
Total	515,493

Number of residents – 70,226

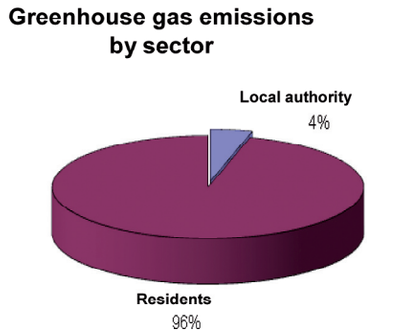


Year 2007

Greenhouse gas emissions by source

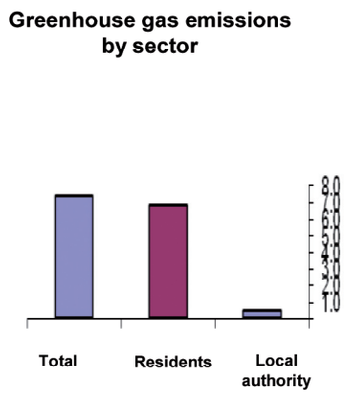
Sector	Total eCO2 (ton)
Local authority	24,192
Residents	532,817
Total	557,009

Number of residents – 77,100

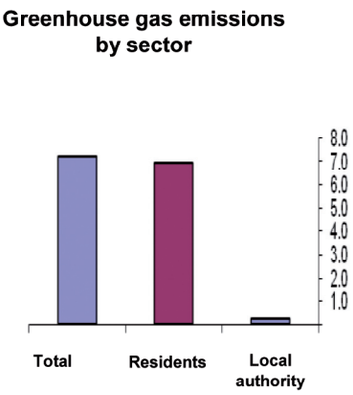


Total emissions per resident

Year 2000



Year 2007



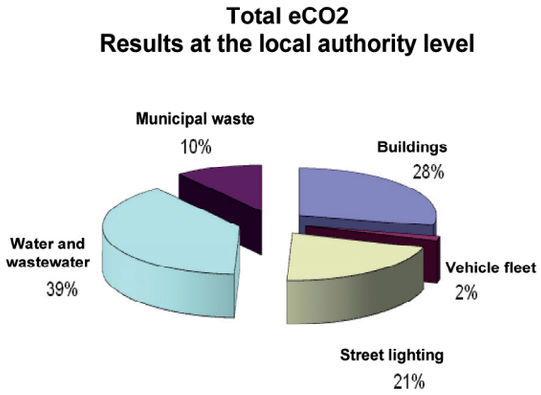
Raanana Municipality

Results at the local authority level

Year 2000

Greenhouse gas emissions by source

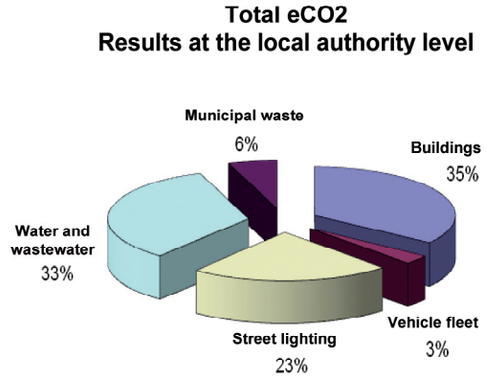
Segment	Total eCO2 (ton)
Buildings	339
Vehicle fleet	4,969
Street lighting	9,313
Water and wastewater	2,448
Municipal waste	23,819
Total	33,211



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	8,983
Vehicle fleet	771
Street lighting	5,918
Water and wastewater	8,660
Municipal waste	1,447
Total	25,780

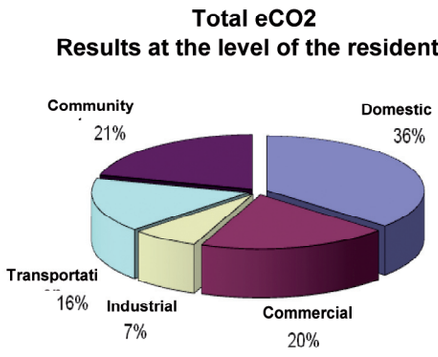


Results at the level of the residents

Year 2000

Greenhouse gas emissions by source

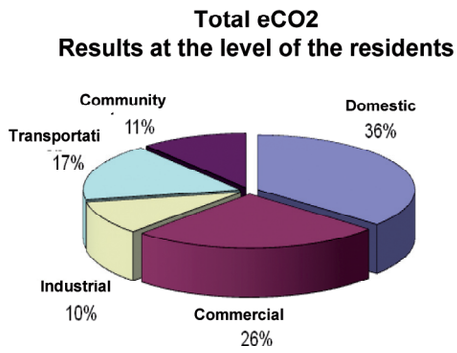
Segment	Total eCO2 (ton)
Buildings	136,523
Vehicle fleet	73,002
Street lighting	25,623
Water and wastewater	60,316
Municipal waste	78,250
Total	373,713



Year 2007

Greenhouse gas emissions by source

Segment	Total eCO2 (ton)
Buildings	155,346
Vehicle fleet	109,733
Street lighting	42,678
Water and wastewater	72,913
Municipal waste	46,801
Total	427,471



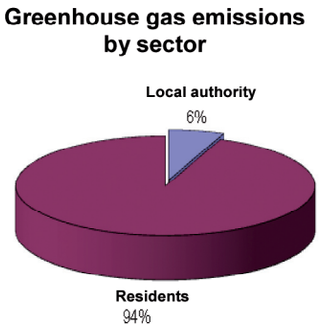
Total municipal emissions

Year 2000

Greenhouse gas emissions by source

Sector	Total eCO2 (ton)
Local authority	23,819
Residents	373,713
Total	397,532

Number of residents – 65,900

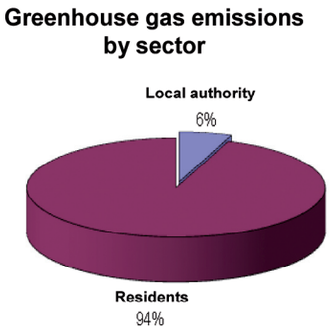


Year 2007

Greenhouse gas emissions by source

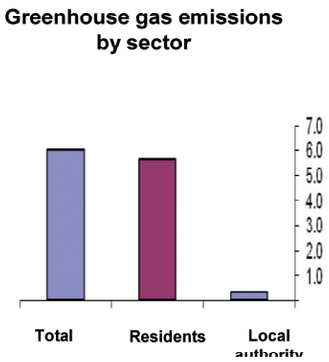
Sector	Total eCO2 (ton)
Local authority	25,780
Residents	427,471
Total	453,251

Number of residents – 73,000ה

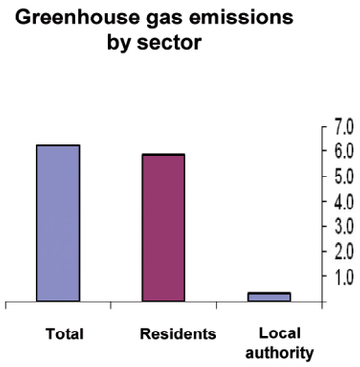


Total emissions per resident

Year 2000



Year 2007



Appendix C -

Results of municipal emissions surveys – Air pollutants

The table below represents the results of the breakdown of air pollution emissions in the cities, as shown in the urban inventory surveys submitted to Forum 15, broken down by sources of emissions and types of pollutants that the professional methodology's intended to calculate. Here too, similar to the greenhouse gases section, the survey examines the 'sources of emission'. As noted, this is due to the desire to isolate those sources of emissions that are within the municipal boundaries of the city and which can be dealt with or be influenced.

Pollutant emission data by pollutant types and emission source (in percentages)

SO_x (not mandated obligatory the guide)	CO	NO_x	Hydrocarbons (HC) Volatile Organic Compounds (VOC)	Particles (TSP)	Cities	Source
Chose not to calculate	99.80%	84.40%	79.60%	88%	Netanya	Transportation
51%	99.9%	82%	98%	84%	Tel-Aviv-Yafo	
41%	100%	100%	88%	100%	Ramat-Gan	
Chose not to calculate	100%	0.28%	86%	0.27%	Hadera	
23%	16%	1%	89%	4%	Ashdod	
Chose not to calculate	100% (sole sector indicated)				Raanana	
95%	99%	73%	88%	72.60%	Jerusalem	
Chose not to calculate	99.95%	97.10%	99.96%	96.80%	Kfar-Saba	
Chose not to calculate	100% (sole sector indicated)				Herzliya	
Chose not to calculate	**100%**	**87%**	**90%**	96%	Rishon-Lezion	
84%	0.17%	5.20%	Not yet completed	9.60%	Netanya	Industry
24%	Negligible			4%	Tel-Aviv-Yafo	
Negligible					Ramat-Gan	
4%	0%	1.15%	No data in survey	6.4%	Hadera	
28%	3%	6%	No data in survey	22%	Ashdod	
Survey states no industry					Raanana	
3.90%	0.70%	24%	1%	20.60%	Jerusalem	
99.99%	0.04%	2.90%	0.04%	3.20%	Kfar-Saba	
No data in survey					Herzliya	
Not yet completed - initial survey shows negligible rate of emissions					Rishon-Lezion	
No power station					Netanya	Power stations
6%	0%	17%	Negligible	6%	Tel-Aviv-Yafo	
No power station					Ramat-Gan	
96%	0%	98.5%	Negligible	93.24%	Hadera	
49%	81%	93%	Negligible	74%	Ashdod	
There are no power stations					Raanana	
There are no power stations					Jerusalem	
There are no power stations					Kfar-Saba	
There are no power stations					Herzliya	
There are no power stations					Rishon-Lezion	

There are no power stations					Netanya	**Quarries**
There are no power stations					Tel-Aviv-Yafo	
There are no power stations					Ramat-Gan	
There are no power stations					Hadera	
There are no power stations					Ashdod	
There are no power stations					Raanana	
There are no power stations					Jerusalem	
There are no power stations					Kfar-Saba	
There are no power stations					Herzliya	
There are no power stations					Rishon-Lezion	
16.18%	No data in survey	10.40%	Negligible	2%	Netanya	**Residential / Household heating by fuel**
12%	0.10%	0.03%	Negligible	1%	Tel-Aviv-Yafo	
No data in survey					Ramat-Gan	
No data in survey					Hadera	
No data in survey					Ashdod	
No data in survey					Raanana	
0.48%	0.08%	0.64%	Negligible	1.87%	Jerusalem	
No data in survey					Kfar-Saba	
No data in survey					Herzliya	
No data in survey		13%	0%	4%	Rishon-Lezion	
Not relevant			20.4%	Not relevant	Netanya	**Fuel filling stations**
Not relevant			2%	Not relevant	Tel-Aviv-Yafo	
Not relevant			12%	Not relevant	Ramat-Gan	
Not relevant			14%	Not relevant	Hadera	
Not relevant			11%	Not relevant	Ashdod	
Not relevant			Not yet completed	Not relevant	Raanana	
Not relevant			11%	Not relevant	Jerusalem	
Not relevant			No data in survey	Not relevant	Kfar-Saba	
Not relevant			No data in survey	Not relevant	Herzliya	
Not relevant			10%	Not relevant	Rishon-Lezion	
0%	14%	0%	Negligible	0.17%	Netanya	**Large institutions / Large commercial stores**
7%	Negligible			5%	Tel-Aviv-Yafo	
59%	Negligible				Ramat-Gan	
Negligible				0.06%	Hadera	
No data in survey					Ashdod	
No data in survey					Raanana	
0.92%	Negligible	1.64%	Negligible	5%	Jerusalem	
0.0067%	0.0001%	0.0037%	Negligible	0.0013%	Kfar-Saba	
No data in survey					Herzliya	
Negligible					Rishon-Lezion	

The surveys submitted to date, with the data as presented in this table, show that the main air pollutants in the cities are emitted by the transportation sector. In Ashdod and Hadera the power stations within their boundaries represent an additional significant source of pollution.

Forum 15 brings together the 'self-government' cities in Israel, which receive no 'balancing grants' or 'development grants' from the government and are managed as closed, independent economies by virtue of their independent financial resources.

Most of the large cities in Israel are represented in the Forum, as well as most metropolitan areas - metropolitan Haifa, Tel Aviv-Yafo and central Israel, along with Beer-Sheva and the south.

The Forum focuses its activities on re-ordering relations between central government and local government, aiming for decentralized authority and administrative independence for financially stable municipalities, as well as promoting joint municipal initiatives. The key issues dealt with by Forum 15 include education; environmental quality and protection in large and medium cities; planning and construction; promoting a new, current municipality law and initiatives to decentralize authority in financially stable cities; representing the large cities in the government, the Knesset and other institutional bodies; and promoting and spearheading public processes in benefit of the large cities and their residents.

The following cities are Forum 15 members: Tel Aviv-Yafo, Haifa, Rishon-Lezion, Petach-Tikva, Ashdod, Beer-Sheva, Netanya, Holon, Ramat-Gan, Rehovot, Herzliya, Kfar-Saba, Hadera, Raanana, and Givatayim.

The cities of the forum include nearly 3 million residents (approximately 40% of Israel's population), and many further surrounding populations make daily use of the municipal services provided by the Forum's cities (altogether around 70% - 80% of Israel’s population).

A long list of nationally important organizations and public institutions operate in the Forum's member cities, including Israel’s leading academic centers; the foremost cultural and sport centers and leisure facilities; advanced industrial and high-tech areas; major medical centers, and more. These entities operate, among other things, with the encouragement, assistance and support of the municipalities.

The broad scale of the population served by these cities and their role in the national arena place the Forum 15 cities at the forefront vis-à-vis the national challenges confronting the State of Israel, including: economic, employment, health, education, culture, transportation, environmental quality, infrastructure development, urban planning, dealing with relief and welfare situations, immigrant absorption, and more.

The Chairman of Forum 15 is Ron Huldai, Mayor of Tel Aviv-Yafo. The mayors of all member cities constitute Forum 15's Board. The Director of Forum 15 is Adv. Eitan Atia.

Forum 15
The Israeli Forum of
Self-Government Cities

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