



2012
UPDATE

PARIS CLIMATE AND ENERGY ACTION PLAN

ADOPTED BY THE COUNCIL
OF PARIS ON 11 DECEMBER 2012

MAIN GUIDELINES





“ We are also laying new foundations for forms of urban progress ”

In Paris today, it is impossible to imagine building our city without also protecting its environment at the same time. Far from being a hindrance, ecological issues have become, in the space of just a few years, a powerful driver of urban redevelopment for a more meaningful, fairer future. It was to ensure that this fundamental and fertile approach is applied to all its practices that the City of Paris voted an ambitious Climate Action Plan back in 2007.

Since then, the Climate Action Plan has been extended by the addition of Biodiversity measures and confirmed in the key commitments for the current term of office. It now applies to all the sectors of municipal life. From thermal rehabilitation of housing to creating ecological corridors, from waste recycling to combating urban heat islands, not forgetting the introduction of a circular economy with its reduced impact on the climate, the Plan is already mobilising the efforts of all city personnel, placed at the service of a more sustainable, environmentally-friendly city.

Forging and restoring links between the capital city and nature is not only a question of providing Parisians with a better living environment in which they can thrive. We are also laying new foundations for forms of urban progress that can then be applied throughout the metropolitan area in the near future.

Anne Hidalgo
Mayor of Paris



The impact of climate change on the planet and on human societies is increasing, and each new scientific study confirms that human activities are the main cause. It is therefore our duty to act each day to change the model of our society and limit the effects of this change.

Back in 2007, Paris demonstrated an exemplary sense of responsibility and determination when it adopted its Climate and Energy Action Plan. By setting itself ambitious targets through to 2020 in order to reduce its ecological footprint, the capital set about playing an active role in the fight against climate change.

Carrying out thermal rehabilitation of schools and homes, developing public transport and more active forms of mobility, producing renewable energy, fostering technological, social and environmental innovations and greening the city... These are just some of the measures that have been implemented and are beginning to produce results, contributing to transforming our city into a more sustainable, liveable metropolis capable of adapting to climate change.

There is still a long way to go, however. To tackle climate change, all those stakeholders who play an active role in making Paris the dynamic, vibrant city it is, must mobilise their efforts with calm, courage and determination to build the Paris of the future, step by step.

Célia Blauel

Deputy Mayor of Paris, in charge of all issues relating to the environment, sustainable development, water, canals policy and the “climate and energy action plan”



Roller & Skate Park, 18th

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Serge Gainsbourg Garden, 19th

The reality of climate change is no longer a matter for debate. During the 20th century, the average temperature increased by 0.7°C globally and by 0.9°C in mainland France. The latest reports from the Intergovernmental Panel on Climate Change (IPCC) estimate that the temperature of the earth could increase by 3 to 6° by the end of the 21st century if current demographic trends, consumption habits and land use trends continue. Climate change is linked to other events—scarcity of resources, large-scale migration, etc—to which societies must adapt by developing different working methods in order to limit their vulnerability.

THE FIRST CLIMATE ACTION PLAN AND ITS PREPARATION

In June 2005, the City of Paris decided to draft its first community Climate Action Plan, convinced that the effects of climate change on a global scale required innovative policies able to meet the challenges of civilisation. This approach extended and reinforced the transport, urban planning, housing and environmental policies which the City introduced in 2001. Equally convinced that the challenges of climate change were not confined to its administrative borders, it considered the metropolitan dimension from the outset.

Aware of the fact that significant progress could not be made without mobilising all the stakeholders in its territory, the City of Paris involved its authorities, economic and community stakeholders and citizens living or working in Paris, in an innovative collaborative approach, as described in the *White Paper, Voices of Parisians for the Climate* (February 2007) (*Livre Blanc, paroles des Parisiennes et des Parisiens sur le Climat*).

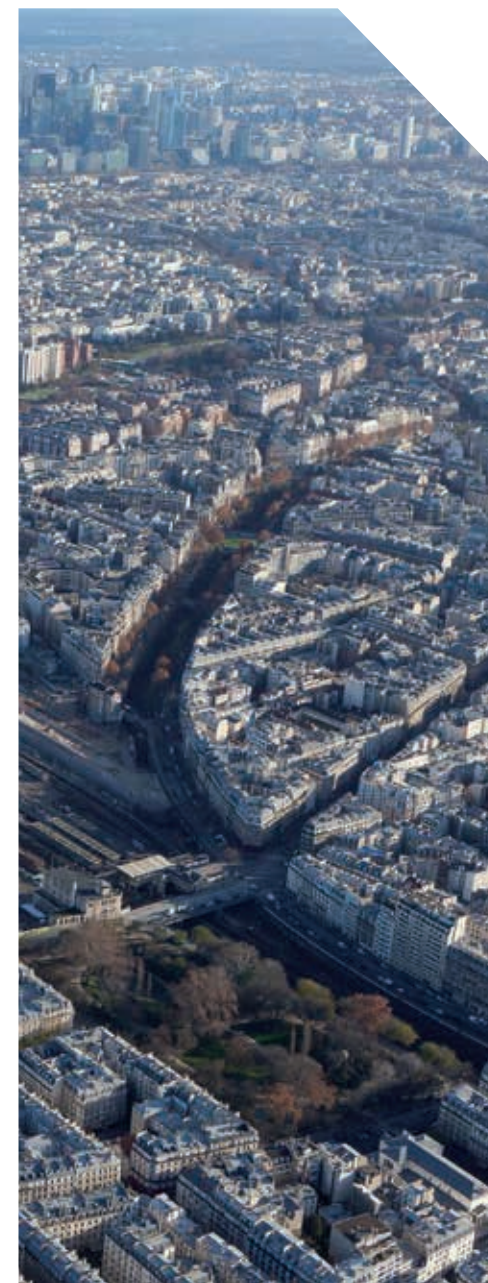
In October 2007, the Council of Paris unanimously approved the Paris Climate Action Plan, committing the City to a factor 4 scheme in order to decrease its overall emissions by **75% in 2050 compared with 2004**.

▲ **The Paris Climate Action Plan sets an initial deadline which exceeds European objectives. By 2020, it aims to achieve:**

- 25% reduction in greenhouse gas emissions in the territory compared with 2004;
- 25% reduction in energy consumption in the territory compared with 2004;
- 25% renewable or recovered energy in its energy consumption.

▲ **Duty bound to set an example, the City of Paris has set the following objectives to be achieved by 2020 by its real estate and municipal fleet and within its own jurisdiction (Administration):**

- 30% reduction in its greenhouse gas (GHG) emissions compared with 2004;
- 30% reduction in the energy consumption of its real estate, municipal fleet and public lighting compared with 2004;
- 30% renewable or recovered energy in its energy consumption.



Cardinet Bridge, 17th

THE CURRENT CHALLENGING ENVIRONMENT: ENERGY AND FINANCIAL PRESSURES

The situation at the end of 2012 is very different to that of 2007: the price of a barrel of oil has been rising again since 2009 and in 2012 it passed the \$100 a barrel threshold. The prices of fossil fuels (fuel oil, fuel and gas) have risen by more than 40% over the last few years and although electricity prices have risen more slowly over the same period, they are expected to increase by over 30% by 2016¹ and by approximately 50% by 2020.

The worsening economic situation both in Europe and internationally has curbed investment and innovation in environmental areas.

¹ Source : Energy Regulation Commission, 2012

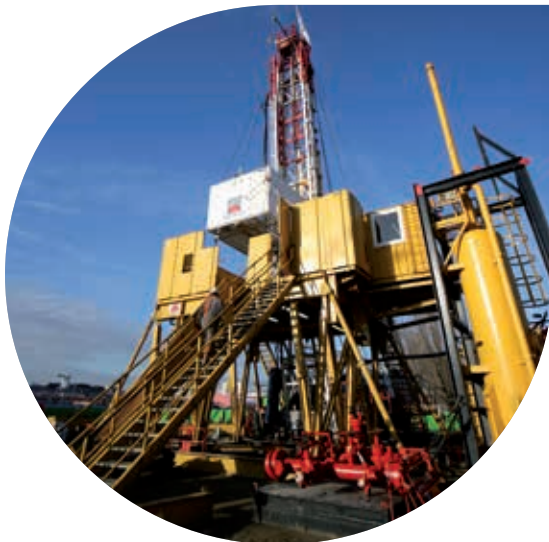
As an example, between 2007 and 2012 the government divided the feed-in tariff for photovoltaic electricity by five, and as a result the territories to the North of the Loire are no longer attractive to private investors. It will be necessary to mobilise and involve all public authorities in order to achieve the so-called "factor 4" objectives. Paris City Hall has therefore continued to invest in energy savings and new industries during this period:

- Support for the thermal renovation of over 4,500 social housing units a year;
- Creation of more than 25,000 m² of solar panels in Paris;
- Creation of a geothermal well in North-East Paris;
- Setting up of ambitious incentive schemes to promote energy renovation in private residential buildings;
- Support for eco-industries and completion of the first Low-Energy Building business centre;
- Launch of the largest energy performance partnership contract in France for the thermal renovation of 100 schools over two years;
- Launch of calls for projects for innovation and energy efficiency in the building industry.



Bois-le-Prêtre Tower, 17th

Geothermal well, 19th



THE LEGAL FRAMEWORK FOR UPDATING THE CLIMATE ACTION PLAN AND ITS PREPARATION PROCESS

The economic and social context changes over five years, as do regulations and technology. Aware of these future changes, back in 2007 the Council of Paris decided that the Climate Action Plan should be updated every five years. As a result, it set up a Climate Action Plan monitoring committee, which will remain in place. The creation of the Paris Climate Agency, on the initiative of the City of Paris, completes the community-wide support structure.

Updating the Plan is an opportunity to assess the actions undertaken, identify the work still to be done and plan the changes required to achieve the objectives. It is also an opportunity to comply with the new legal context. Article 75 of the Law of 12 July 2009 on France's Commitment to the Environment states that by 31 December 2012 all authorities of more than 50,000 inhabitants must adopt a Local Climate and Energy Plan (PCET) compatible with the Regional Climate-Air-Energy Strategy (SRCAE) adopted at regional level. The Climate Action Plan has become a legal requirement in France for the first time. This revision should finally make it possible to align and link the Climate Action Plan to

the other areas of municipal action promoting sustainable development, particularly the Biodiversity Plan. This Plan, approved by the Council of Paris in 2011, has set ambitious targets for the creation of green spaces which should make it easier for Paris to adapt to the consequences of climate change.

This Climate Action Plan describes the main guidelines and political commitments for the period to 2020. Over the coming months, it will be broken down into strategic, functional and operational roadmaps for the different types of stakeholder. An operational roadmap for the Local Authority has already been drafted.

The Climate Action Plan will be amended again in 2017 in order to achieve the 2020 objectives and draft the roadmap for the period 2020 to 2050.



2012 Climate Plan Consultation



Forecourt of Notre-Dame, 4th



LE PLAN
CLIMAT
ÉNERGIE
DE PARIS

THE MAIN GUIDELINES OF THE 2012 CLIMATE ACTION PLAN

Banks of the Seine, 4th

A CHALLENGE, AN OPPORTUNITY

Adapting our societies and cities to climate change and reducing their energy and fuel consumption are real challenges to be achieved in less than half a century. It is a major responsibility but also an opportunity to create the city of the future.

The City of Paris will take its own responsibility for this process, as it has done for the last 10 years. To illustrate this point, since 2001 a new transport policy has led to softer, less carbon-reliant forms of transport, including the construction of bus lanes, electric "traverses" (local bus routes), the T3 tram and the creation of Vélib' and more recently Autolib' in 2011.

A PARTNERSHIP AGREEMENT FOR BUILDING THE WORLD OF THE FUTURE TOGETHER

All stakeholders in Paris and its metropolis must take action, from the largest companies down to citizens, including the public authorities. The City of Paris will support and promote all the actions carried out by local stakeholders which help to fight climate change and which are therefore part of the momentum of the Paris Climate Action Plan.

To this effect, the City will sign a partnership agreement with community stakeholders who become involved in the momentum of its Climate Action Plan.

A LONG WAY TO GO BY 2020

The 2007 Climate Action Plan pointed the way to achieving factor 4; it is essential to reduce greenhouse gas (GHG) emissions in the territory by at least 25% by 2020. Although certain sectors are showing encouraging results (housing, passenger transport), others are making slower progress or need more time (service sector, individual behaviours). Finally, progress in certain areas requires a change in the regulatory framework and the respecting of national commitments at European level (transport of goods, energy).

	TERRITORY		
	2004 Reference	2009 Situation	2020 Objective
GHG	25.0 million tCO ₂ eq	24.6 million tCO ₂ eq	18.8 million tCO ₂ eq
Energy	32,165 GWh	30,677 GWh	24,124 GWh
Renewables	10%	12%	25%

RETAINED OBJECTIVES

The City of Paris is reaffirming the objectives adopted in the first Climate Action Plan in 2007:

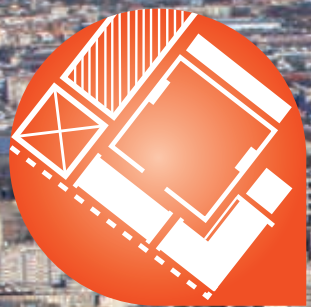
- ▲ 75% reduction in its greenhouse gas (GHG) emissions in 2050 compared with 2004;
- ▲ 25% reduction in GHG emissions in the territory in 2020 compared with 2004;
- ▲ 25% reduction in energy consumption in the territory in 2020 compared with 2004;
- ▲ 25% renewable or recovered energy in its energy consumption in 2020.

The City of Paris is continuing to set an example and has set the following targets for its own authorities, to be achieved by 2020:

- ▲ 30% reduction in GHG emissions in 2020 compared with 2004;
- ▲ 30% reduction in energy consumption in 2020 compared with 2004;
- ▲ 30% renewable or recovered energy in its energy consumption in 2020.

Jean Bouin Stadium, solar panels, 16th





URBAN PLANNING

URBAN PLANNING FOR ENERGY EFFICIENCY

Aerial view of the Gare de l'Est railway sidings, 10th

Urban planning policies in Paris

Aerial view of the Seine, 4th

URBAN PLANNING OPERATIONS: THE CLIMATE ACTION PLAN LABORATORIES

Paris is a densely-populated, very built-up area with few open spaces. 10% of the territory is currently undergoing urban development. These sectors are governed by specific regulations and over the last five years have become laboratories for the Paris Climate Action Plan.

As a result, in 2007 at the same time as the Climate Action Plan, the City of Paris

drafted a reference document entitled "**Sustainable city planning for Paris**", which serves as both guide and tool for assessing each urban development area. The requirements of the first Climate Action Plan were set out in the specifications for the urban development areas and taken into account in the follow-up, namely:

It should be noted that certain specific facilities, particularly retirement homes, should come as close as possible to achieving these objectives.

Five years after the adoption of the Climate Action Plan, several development areas are currently in the build phase. These include:

In 2011, the first operations were assessed to ensure that the sustainable development objectives had been met. Analyses were carried out during the design phase and the works phase. The conclusions will improve the monitoring and future management of the urban development areas.

Pajol sports centre, 18th



- Promote the growth of renewable energies;
- Construct buildings which consume a maximum of 50 kWh/m²/year²;
- Renovate existing buildings so they do not exceed 80 kWh/m²/year;
- Combine urban compactness and creation of green spaces;
- Keep logistical functions within the City;
- Help to improve air quality.

² In primary energy (heating, hot water, lighting and ventilation consumption)

- The first passive and LEB³ in the Fréquel-Fontarabie district (20th arrondissement);
- The creation of a geothermal well in the Claude Bernard urban development zone (19th);
- The creation of the 10-hectare Martin Luther King park in the heart of the Clichy-Batignolles urban development zone (17th);
- The creation of the largest solar power station in a dense urban environment in the Pajol urban development zone (18th) and the installation of 2,800 m² of solar panels in Jean Bouin Stadium (16th).

³ LEB: Low Energy Buildings

REGULATION OF THE LOCAL URBANISM PLAN

The Local Urban Development Plan has been amended several times since the 2007 adoption of the Climate Action Plan. Its main regulatory provisions focus on:

- Limiting road transport with rules on parking (particularly of bicycles) and the identification of sites on the banks of the Seine for creating goods transit platforms, thereby facilitating the transport or removal of waste by water;
- Aiming to maintain building density adapted to the fabric of Paris (general FAR set at 3, de facto FAR⁴ rule, easing and technical changes to the volumetric rules);

⁴ FAR: Floor Area Ratio

IN THE FUTURE...



- Urban development zone and major urban renewal projects are long-term investment areas. They will continue to be the scene of innovations which will equip the city of the future, such as geothermal energy in the Albi district with a relief well in the Clichy-Batignolles urban development zone, and the integration of logistical installations (under consideration at Porte de la Chapelle and Bercy-Charenton).
- The City of Paris will study the possible energy choices for the new urban development zone as a matter of priority, favouring as much as possible the use of local renewable energies or connection to the local heating system (CPCU-Paris Urban Heating Company) and/or cooling system (Climespace) networks, whilst also improving air quality. As an example, studies will be carried out to identify the geothermal potential of the Bercy-Charenton urban development zone.

- Authorising the surpassing of the building regulatory height for the installation of energy-saving or renewable energy-producing devices;
- Authorising the use of part of a public building, limited to 20 cm, for the external insulation of existing buildings;

- Authorising the construction of an area in building courtyards reserved for the selective sorting of waste or for bicycle storage;
- Creating green spaces around and on buildings.



Low energy office buildings, 19th

- ▲ **In Paris** there are now two possible scenarios for exceeding the FAR (floor area ratio) by up to 20%; one of these is conditioned by the construction of social housing (former Article L.127-1 of the Urban Planning Code) and the other by the construction of buildings which meet energy performance criteria or contain facilities for producing renewable energy (former Article L.128-1 of the Urban Planning Code).
- ▲ **Since 2008**, an energy information advisor has been supporting applicants who submit a building permit application or prior work permit application for their energy-saving projects (works, possible aid, etc.). He provides advice based on the collection of "Sustainable Living" booklets which covers all issues relating to the sustainable renovation of buildings. More than a thousand people receive this advice every year.
- ▲ **Since 2012**, an environmental analysis has been carried out of all the building permits submitted since 2008, with a view to devising a reliable, replicable process for requests to create green spaces, install solar and photovoltaic panels, renovate façades with the installation of external thermal insulation, receive FAR bonuses, raise existing buildings, install air conditioning and develop cellars and basements.
- ▲ **Finally**, the City recently began a study on air conditioning in Paris in order to define a strategy to combat individual air conditioning units which consume high amounts of energy and may damage the built heritage. More work will be carried out in this area as part of the updated Climate Action Plan.

TOWARDS A FACTOR 4-COMPATIBLE LOCAL URBANISM PLAN

- The new content of the Local Urbanism Plan is set out in Articles 16 and 19 of the Law of 12 July 2010 known as the "Grenelle 2 Law" and in the Decree of 29 February 2012 on urban planning documents.
- When it is next revised, the Paris Local Urbanism Plan will include these obligations and will further facilitate the application of the Paris Climate Action Plan objectives within the regulatory context.
- One of the subjects to be studied by the City of Paris is the possibility and feasibility of increased energy and environmental performance in sectors undergoing major development operations. As a result, the recommendations of the Paris Climate Action Plan to exceed current thermal regulations could be imposed in these sectors.

CONTINUE TO RAISE THE AWARENESS OF APPLICANTS

- The City of Paris will help to implement the Climate Action Plan by continuing to encourage and raise awareness among applicants as part of their urban planning permit applications.



Thermography, 9th



Social housing, 17th

The production and distribution of energy

Creation of the Pajol solar power station, 18th

No region of France is autonomous as regards energy. Our systems depend on fossil and nuclear energies. The Île-de-France Region produces 11% of its requirements and Paris slightly more than 3% thanks to the Paris Urban Heating Company (CPCU), the government-approved body responsible for the heating network.

However, there are real opportunities in the Paris metropolis, such as several heating networks, a high capacity for treating household waste (leading form of renewable and recovered energy in Île-de-France), a natural hot water spring which can be operated by geothermal energy and a biomass potential which is not yet fully exploited.

RENEWABLE AND RECOVERED ENERGIES

In a built-up area, the growth of renewable and recovered energies is very limited. In 2009, the City carried out a study to assess the plausible renewable or recovered energy production potential of the territory by 2020.

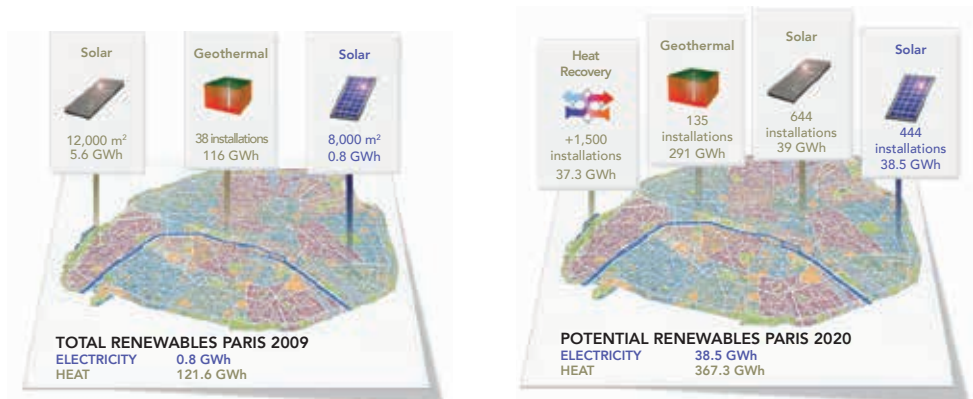
The greatest available resource can be found underneath the city with **geothermal energy**. The 2004 potential could be tripled by 2020, with half the work already completed with the creation of the geothermal well in North-East Paris (8 MW) and the renovation of the Louxor cinema (10th).

The City wanted to speed up the installation of **solar panels** with a 200,000 m² installation programme. However, the huge price reductions adopted between 2010 and 2012 have considerably undermined the industry and investors are no longer seriously interested in projects north of the Loire. Nevertheless, the municipality is still keen to achieve its objective and the City has taken on the investment for the major roof projects to be completed by the end of 2013, such as Halle Pajol (3,500 m²) and Jean Bouin Stadium (2,800 m²). More than 25,000 m² of thermal

and photovoltaic solar panels can now be found on the roofs of Paris.

The City of Paris has also successfully piloted the **recovery of heat** from waste

water at Wattignies School (12th) and will soon extend this scheme to Aspirant Dunant swimming pool (14th).



Potential for producing renewable and recovered energies in Paris

THE NETWORKS

The Paris authorities organise energy distribution throughout the territory; they also own the electricity, gas, heating and cooling networks. These networks present major challenges and opportunities:

- Provide a safe energy supply to the territory, which is 93% dependent on imports, ensuring that the networks are safe and well maintained. Any interruptions to supply may have major social and economic consequences;
- Define the priority development of certain forms of energy (heat and gas) in the territory, in particular in the new development zones;

- Decide to build local energy systems in the new districts by creating hot water loops fed by geothermal energy, improving their energy independence and the renewable energy rate of the network;
- Promote the injection of renewable energies into the networks;
- Help Parisians to manage their energy consumption by informing them about their consumption.



Solar roofing, 19th



Beaugrenelle floor heating network, 15th

DEVELOP LOCAL RENEWABLE ENERGIES

- The City of Paris has acquired a stake in the semi-state company Energies POSIT'IF, which aims to develop renewable energy industries in the Paris basin.
- Furthermore, by 2014 at least 10,000 m² of additional solar panels will be installed in urban development zones and public municipal facilities. As part of the European POLIS⁸ project, the City of Paris and the Paris Urban Planning Agency (APUR) have created the **1st solar land registry** in Paris, allowing each resident to find out the solar potential of his roof and the best possible type of installation where applicable. The City of Paris will monitor future prices changes for the purchase of photovoltaic electricity in order to relaunch local dynamism.
- Systematic studies have been carried out into the use of geothermal energy in urban planning operations. Following the geothermal doublet in North-East Paris, the geothermic project in the Clichy-Batignolles urban development zone has revealed the City of Paris' desire to use this important resource. Consequently, the production of energy from geothermics will double in 10 years.
- The recovery of heat, whether in buildings or in a network (drains, metro, etc.) is a sector with considerable potential which the City intends to leverage. Its first experiments with social housing buildings and municipal facilities show that the City of Paris intends to develop these innovations for the use of local energy resources.

- The Paris Climate Agency will work to inform Parisians of the possibilities of using local renewable energies, including geothermal energy.

⁸ <http://www.polis-solar.eu>

TOWARDS A METROPOLITAN MASTER PLAN FOR THE NETWORKS

- The City of Paris must increase its control of the networks, particularly as certain concessions will expire by 2020. To do this, it will need to improve its knowledge of the current situation and define a strategic long-term vision like the Paris master plan for the electricity network for 2044.
- With this in mind, in July 2012 Paris included the drafting of a master plan within the next few years in addendum n°10 of the concession agreement for the heating network. This heating master plan will be drafted together with neighbouring authorities. There are a number of heating networks in the metropolis, but they are rarely interconnected. In the long term it will be necessary to study the creation of governance for metropolitan heating networks, with the pooling of investments for production tools as one possible solution.
- This plan will be the first step towards a more global strategic development document for all energy networks in order to define the priority development areas for each one over the next 30 years.

TOWARDS LESS CARBON-RELIANT NETWORK ENERGIES

- In view of depleted fossil resources, their rising cost and our dependence on these energy sources, it is essential to increase the proportion of renewable and recovered energies used to produce network heat. This percentage should exceed 50% by 2015, which would allow the Paris Urban Heating Company (CPCU), the local government-approved network company, to enjoy a VAT⁹ reduction on consumption from 19.6% to 5.5%. For CPCU customers, this would mean savings of approximately €35m a year on the overall bill (including €1m for the municipal bill) and the growth of local renewable and recovered energy industries.
- The objective for the CPCU is to reach 60% renewable or recovered energies by 2020 in the heat production mix. The net reduction in greenhouse gas emissions could then be around **350,000 tCO₂eq** in 2020. This is one of the major levers at local level.
- The City of Paris will encourage its key partners and the stakeholders who sign the commitment contract to monitor the carbon content of the electricity they buy. Deliberations on this subject are already taking place within the Paris authorities with a view to liberalising the electricity market in 2015.

⁹ If the legislation remains in force

TOWARDS POOLED ENERGY MANAGEMENT IN THE METROPOLIS

- It will eventually be necessary to pool the energy distribution and production efforts of the Paris authorities in order to ensure the safety of the supply, reduce dependency on imports, manage and pool investment and production costs and curb energy prices for Paris consumers. Initial proposals are currently underway, in particular the work carried out by the Paris Urban Heating Company (CPCU) whose network supplies some of the towns in the inner suburbs, and the geothermal energy project in the Clichy-Batignolles urban development zone, which could also benefit outlying districts.



Heat production factory, Ivry-sur-Seine



HOUSING

LOW ENERGY AND AFFORDABLE HOUSING

Passive housing units, 17th

PREAMBULE

	OBJECTIVES			
	2004 Reference	2009 Situation	2020 Objective	Saving
GHG	2.95 million tCO ₂ eq	2.64 million tCO ₂ eq	2.07 million tCO ₂ eq	-25%
Energy	15,300 GWh	14,200 GWh	11,500 GWh	-25%

- ▲ In 2009, the Paris housing sector emitted just over 2.6 million total tonnes equivalent CO₂ (tCO₂eq), or 11.5% of the territory's total emissions.
- ▲ In 2009, the energy bill of Paris homes was more than one billion Euros, or almost €600 per resident.
- ▲ 1.3 million housing units in more than 43,000 co-owned properties consumed 14,200 GWh in 2009, a decrease of 6% (1,000 GWh) compared with 2004.

- ▲ Of this 1,000 GWh saving, the percentage resulting from the first actions launched by the Climate Action Plan since early 2008 was estimated at **13%**, i.e. 130 GWh or 30,000 tCO₂eq in savings at the end of 2009. These actions have made it possible to start €640m of work, creating an average of **1,300 local jobs⁷ and 420 external jobs⁸**.
- ▲ In 2011, the annual invoice per resident was estimated at €660, an 11% increase compared with 2009.

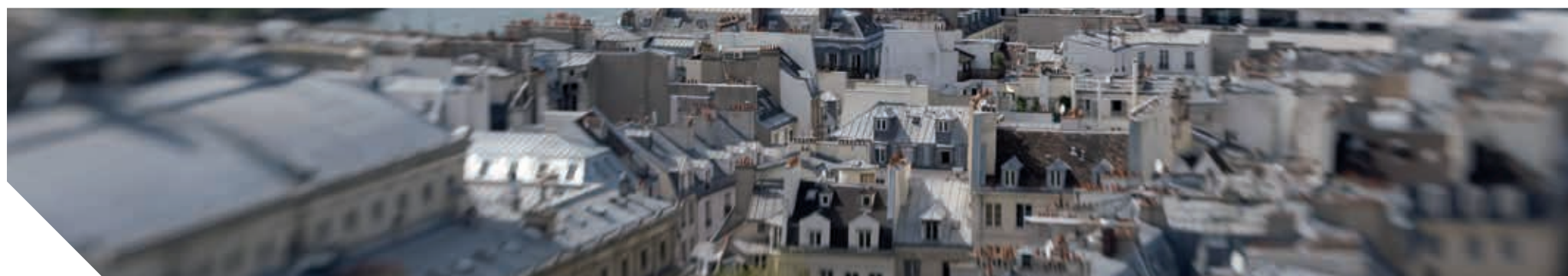
⁷ Source ADEME, FFB

⁸ Outside Île-de-France

- ▲ The considerable increase in energy prices has led Parisians to reduce their heating consumption (some have stopped using their heating) and has resulted in a move towards cheaper forms of energy (from fuel oil to gas or steam). This change in behaviour only managed to absorb 20% of the price increase since 2004. Parisians' loss of purchasing power as a result of their energy bill was estimated at €210 between 2004 and 2009.



Social housing, 3th



Paris roofs, 4th

Objectives and commitments

Paris façades, 16th

Improving the city's carbon footprint requires a considerable reduction in energy consumption by Paris residences, more than 75% of which were built before the first thermal regulations came into force in 1974.

There are three parts to the challenge of domestic energy savings: reducing the energy bills of Parisians, preventing large numbers of people being hit by energy poverty and creating jobs which cannot be relocated.

The City of Paris will continue to support this sector and will set up partnerships in order to achieve this objective.

The main aim for the residential sector is **to reduce energy consumption⁹ by 25%** whilst increasing thermal comfort in summer and winter. This objective will help to reduce greenhouse gas emissions in the sector by 25% by 2020.

⁹ All forms of energy, from heating to specific electricity

The consumption of housing stock in 2020 must not exceed 11,500 GWh/year.

The Paris Climate Action Plan retains the objective that **new housing build** in Paris must respect a consumption of 50 kWh/m²/year, consistent with the BBC-Effinergie+ label. This label represents a consumption level 20% lower than the 2012 thermal regulations (RT2012) for housing and proposes a method of assessing and monitoring the results.

MAXIMUM PRIMARY ENERGY¹⁰ CONSUMPTION (max PEC, in kWh/m²/year)

RT 2012	BBC-Effinergie+ Label
New housing	
60	48 (-20%)

¹⁰ The final energy is the energy actually used by an activity. It is different from primary energy, which takes into account the energy needed to produce the final energy.

- ▲ For housing renovations, the objective is to move towards 80 kWh/m²/year as defined by the BBC-Effinergie renovation label.
- ▲ In future years, specific attention will be paid to managing the demand for specific electricity linked to new convenience equipment (camera and phone chargers, etc.).
- ▲ Achieving the objectives of the Paris Climate Action Plan will result in overall savings of more than €500m for Paris households.



Passive housing units, 17th

Encourage private co-owned properties to commit to moderating energy consumption

Co-owned properties, 10th

Paris has 43,000 co-owned properties, representing more than one million housing units. It is very complicated for a resident to carry out energy renovation in his home. The recent Grenelle laws have slightly simplified the process, but the expectations of co-owned property owners, tenants, co-owners' associations and professionals in the building remain high. Significant legislative progress (making it easier for co-owners' assemblies to vote on the work) is necessary, as are financial innovations to help households absorb the cost of the work. The City of Paris is testing several ways of supporting co-owned properties in the city (14% of French co-owned properties) in this approach and of promoting the renovation of private apartment buildings in Paris.

FROM EXPERIMENTS TO LARGE-SCALE OPAH (GOVERNMENT-SUBSIDISED HOUSING IMPROVEMENT PROGRAMME)

In 2010, the City launched a **programmed operation for the thermal improvement of buildings (OPATB)**, focusing on the most energy-hungry buildings of the **13th arrondissement**, i.e. those built between 1940 and 1981, 56% of which have **communal heating**. The funding of 100% of the energy audit and the creation of aid for co-owners' associations for insulation work (a priority and one of the most difficult costs to absorb), have increased owners' commitment to ambitious works programmes. In two and a half years, 151 co-owned properties have carried out an energy audit, 38 co-owned properties have undertaken a works

project and 13 (1,126 housing units) have already voted to approve work for a 6 GWh/year saving under the OPATB. This system has allowed co-owners to plan ambitious works programmes. The expected savings are 30 GWh/year and 6,000 tCO₂e/a year if one third of property co-owners are involved. In 2012, the City launched an OPAH for sustainable development and energy savings in the **Place de la République area**. This OPAH will allow the testing of a call for projects system to target the most motivated property co-owners with a high potential for energy renovation in this area mainly made up of **buildings**

constructed before 1914 and equipped with individual heating systems. This approach will also make it possible to mobilise co-owners to carry out work to limit the environmental footprint of their building. The City, in partnership with the Paris Climate Agency, Eau de Paris and all the energy operators, is working to implement a multi-faceted platform for co-owners and co-ownership management committees to improve their knowledge and understanding of consumption and to allow each resident to take the appropriate steps.

+ IN THE FUTURE...

Following the success of the first two thermal improvement operations and in compliance with the PLH¹¹ adopted by the Council of Paris, the City of Paris is examining the possibility of launching an arrondissement-wide OPATB, first in the **19th arrondissement** (186,000 inhabitants) and later in the **15th arrondissement** (239,000 inhabitants). These operations, which involve more than 400,000 inhabitants, should speed up the renovation of co-owned properties in Paris. The expected savings are in the order of 50 GWh/year.

¹¹ PLH: Local Housing Programme

CUSTOMISED SUPPORT

Since 2008 the City, in partnership with ADEME (French Agency for the Environment and Energy Management), and since 2012 the Île-de-France Region, is offering property co-owners a subsidy to carry out an energy audit on their building. This subsidy could cover up to 70% of the cost of the audit.

In 2011, the creation of the Paris Climate Agency increased the visibility of the system set up by the City. 145 co-owned

properties have so far received a subsidy for an energy audit, 71 co-owned properties have carried out a works project and 30 (3,000 housing units) have voted to carry out work, leading to savings of approximately 5.2 GWh/year, or 1,150 tCO₂eq. The Paris Climate Agency (APC) has also provided Parisians with better energy-saving advice. The APC is innovative, as it is one of the first local multi-partnership energy agencies to have public and

institutional (Île-de-France Region, RATP, Météo-France) and private (EDF, CPCU) founders. The Agency currently has more than 65 members (associations, businesses, SME, social landlords, semi-public enterprises, Eau de Paris, etc.). It has doubled the amount of advice provided to Parisians in the course of a year.



Pavillon du Lac, headquarters of the APC, 12th

The City of Paris will focus on current systems for supporting private sector¹² property co-owners and will continue to explore new solutions, in accordance with changes to the regulatory and institutional framework.

In the context of the Énergie POSIT'IF semi-public enterprise, created with the Île-de-France Region, several Île-de-France authorities and the Caisse des Dépôts et Consignations, the City of Paris will create performance and financial engineering contracts for co-owned properties in order to facilitate and accelerate the starting of the work.

The City will continue its partnerships with housing, building and real estate stakeholders, in order to:

- Improve thermal renovation training to develop skills and create the jobs

necessary for achieving the objective of reducing consumption;

- Take greater account of the energy performance objectives and the architectural and urban planning implications of construction projects;
- Include criteria for assessing the thermal insulation potential of buildings in the reports drafted by the renovation inspectors;
- Inform co-owners' associations and co-ownership management committees of energy issues and the tools and aids available.

For this latter point, the City of Paris is considering drafting thermal renovation recommendations in order to speed up the external insulation firstly of courtyard facades and then exterior facades

when architecturally possible. Until the regulatory framework allows this, the City will set up a voluntary support system for buildings with a renovation project, to encourage them to study the possibility of renovation with insulation. It will also set up a system for projects to renovate building roofs without thermal insulation.

The Paris Climate Agency will continue to support Paris stakeholders and citizens as they move towards energy moderation, by creating a tool to support co-owned properties in 2013 (the Copro[®] coach) and by providing more advice for Parisians.

¹² Throughout the territory

IN THE FUTURE...



FURTHER ACTION...



The City of Paris will monitor any legislative changes which would allow it to speed up energy efficiency work in co-owned properties and any proposals for regional or national financial support for Parisians.



Haussmann apartment building, 16th

Provide a framework for the construction and renovation of social housing in Paris

Social housing, 11th

In 2007, the City of Paris defined strict requirements for the environmental quality of **new social housing in Paris**. The energy performance required for such housing remains more ambitious than the new national thermal regulations which came into force in 2013 (RT2012). Over 13,750 housing units out of the 19,200 financed between 2008 and 2011 (i.e. 72%) comply with these requirements and the others come as close to them as possible. It may actually be impossible to achieve this objective 100% due to heritage, technical and economic constraints, the use being made of the buildings or the purpose of certain categories of social housing (retirement home, home for persons with disabilities, etc.). The first "Climate Action Plan" housing was completed in 2011 and its tenants generally have energy bills 75% lower than the average. The first housing to comply with the new RT2012 will be completed during 2016.

Energy savings compared with buildings which respect the current regulations will be around **180 GWh/year, or 37,000 tCO₂eq.**

The City, with its ambitious energy saving objectives, financed almost **15,000 social housing units** between 2007 and 2011. These renovations are expected to result in energy savings of approximately **130 GWh of primary energy a year or almost 30,000 tCO₂eq, i.e. the annual consumption of almost 7,500 housing units.**

However, the lack of State subsidies for the renovation of the existing housing stock and the limited access to eco-loan social housing have so far restricted the programming of this type of operation by social landlords, despite considerable support from the City.

+ IN THE FUTURE...

The City of Paris is retaining its ambitious objectives to improve the energy efficiency of its social housing and the quality of life of tenants.

The main objective is to reduce the energy consumption of existing social housing by 30% between 2004 and 2020, by promoting the use of renewable and recovered energies whenever technically possible.

The new social family housing constructed on virgin land will respect at least the BBC-Effinergie+ low energy building label.

The required performance level will result in savings of approximately **50 GWh/year and 10,000 tCO₂eq.**

For new specific social housing, whether nursing homes or retirement homes, builders will apply the new thermal regulations when they are published.

New social family housing created following major renovations to an existing building must have energy consumption lower than 80 kWh/m²/year.

New social family housing created following simple renovations to a building which does not allow these operations to be assimilated to new build from a tax point of view, will aim to comply with the BBC-Effinergie renovation label or, for buildings with Joule effect heating, a 50% reduction in energy consumption, **with a maximum of 200 kWh/m²/year.** New social family housing created following the acquisition and approval of a building acquired from existing stock must comply with current thermal regulations. The City will continue to support the efforts of

social landlords in these major renovations operations and will ask the State and the Region to invest in this area. The expected savings are in the order of **40 GWh/year and 8,000 tCO₂eq.**

This continued investment will be accompanied by both increased monitoring of the building's consumption after the work and by support for tenants.

Combat energy poverty

Social housing, 18th

- ▲ According to the "Grenelle 2" law: *"a person is experiencing energy poverty under the terms of this law if in his housing he is experiencing particular problems in obtaining the supply of energy necessary to meet his basic needs due to the inadequate nature of his resources or living conditions"*.
- ▲ In Paris, according to the 2006 National Housing Survey, 54,000 households are considered to be experiencing energy poverty, or 4.7%, compared with 13.2% nationally. Only around 20% are owner occupiers, compared with 60% nationally. This poverty may stem from a combination of factors whose relative impact is difficult to determine: poorly insulated housing, energy inefficiency, class G electrical household appliances, behavioural problems, lack of information, greater social poverty and increased energy prices.
- ▲ The right to access energy, stated in the first Climate Action Plan, is and remains a fundamental value which the City of Paris intends to defend.
- ▲ The INSEE (French National Institute of Statistics) index of the "cost of electricity, gas and other fuels" increased by 40% between 2000 and 2010. In 10 years, fossil fuel prices have increased fairly spectacularly: +74% for gas, +62% for fuel and less significantly, +8% for electricity.
- ▲ Since 2008, the *Département* of Paris has significantly increased the aid paid to combat energy poverty (+25% for the Energy Housing Solidarity Fund (FSLE) and +6% for Paris Family Energy). The number of beneficiaries has also increased (+25% for the FSLE). In 2011, the *Département* paid out €10m in aid.
- ▲ The *Département* of Paris has launched a "low-energy light bulb campaign" to help Parisians on low incomes make these technological changes and make savings on their electricity bills.
- ▲ The aid mechanisms for the payment of these bills are now well established. The fight against energy poverty must now concentrate on prevention and the renovation and improvement of housing.
- ▲ With this aim, Paris Climate Agency is supporting an experimental project to combat energy poverty in the 19th arrondissement. It involves taking a local initiative (the CAPE – Concerted Action for Energy Poverty, supported by the European Union and based on the Flandre district) and extending it to the entire district, to allow better identification and assessment of local energy poverty and to use concrete local actions to test means of supporting vulnerable households; the plan is to replicate this scheme throughout Paris.
- ▲ On 23 May 2011, the Paris authorities signed a local commitment contract (CLE) with the State, the CASVP (City of Paris Social Action centre), the CNAV (National Pension insurance Fund), the Île-de-France SACICAP (socially beneficial cooperative companies for home ownership) and the APC (Paris Climate Agency). This contract establishes a programme of actions ranging from identifying households experiencing energy poverty to mobilising financial systems likely to improve their credit-worthiness for carrying out energy-saving work, through home visits to the households identified by social workers.

- More generally, this work is part of the Local Housing Programme adopted by the Council of Paris in March 2011, which sets out the main guidelines of the housing and habitat policy to be implemented by the City over the next six years.
- The right to water, like the right to energy, is a key focus of the policy of the City and the Paris municipal water company. Several actions have been implemented to ensure that all Parisians have access to water and purification, including an 8% decrease in water prices (City), aid for disadvantaged Parisians (preventive water solidarity allowance, Solidarity Housing Fund), the removal of housing with no toilet or bathroom and the creation of drinking fountains and public toilets.
- Furthermore, Eau de Paris and its partners have been working to install water-saving kits in order to reduce Parisians' water and electricity bills. 15,000 water-saving kits have been installed in the social housing managed by Paris Habitat, with the aim of reducing consumption by tenants by 15%.

+ IN THE FUTURE...

In addition to the legislative modifications underway, partnership work must be continued with all the stakeholders involved so that energy poverty can be anticipated as early as possible.

Firstly, it is essential to cross-check all the information available in each body, particularly energy consumption.

It will also be necessary to help social workers to identify the different possible causes, including poorly insulated housing, poor equipment, unsuitable subscription, behaviour which can be improved, etc. so that the most sensitive sections of the public, those in financial difficulty, can systematically receive the appropriate advice.



Social housing, 17th



SERVICE INDUSTRY

THE SERVICE INDUSTRY IN PARIS, A NEW CHALLENGE



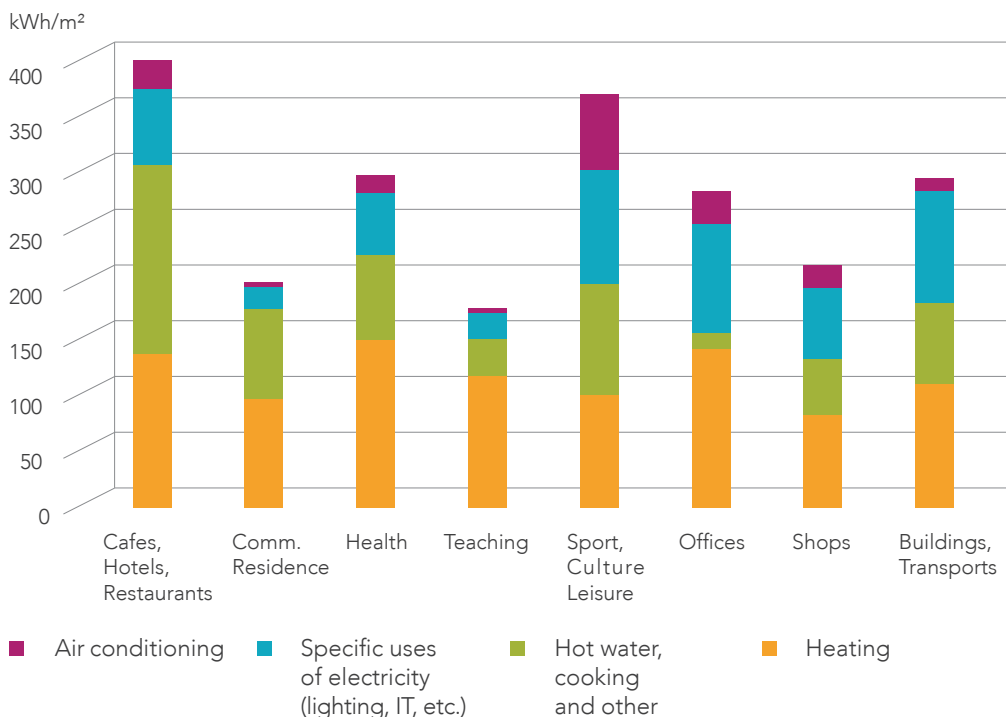
Paris Région Innovation Nord Express, 18th

PREAMBULE

	TERRITORY			
	2004 Reference	2009 Situation	2020 Objective	Saving
GHG	2.91 million tCO ₂ eq	2.71 million tCO ₂ eq	2.18 million tCO ₂ eq	-25%
Energy	16,900 GWh	16,400 GWh	12,700 GWh	-25%

	ADMINISTRATION			
	2004 Reference	2011 Situation	2020 Objective	Saving
GHG	148,900 tCO ₂ eq	156,900 tCO ₂ eq	104,200 tCO ₂ eq	-30%
Energy	859 GWh	895 GWh	601 GWh	-30%

UNIT CONSUMPTION BY USE (in kWh/m²)



Distribution of energy consumption per sector of activity in 2009

- ▲ Paris is home to more than 400,000 companies¹³ representing 1.6 million jobs. The service industry occupies over 58 million m² (+1.2% in 5 years).
- ▲ In 2009, the Paris service industry emitted just over 2.7 million tCO₂eq or 11% of total emissions in the territory.
- ▲ The 2009 energy bill amounted to €1.3 billion, with annual consumption of 16,400 GWh.
- ▲ For the first time since 1990, while stock is increasing, the energy consumption of the sector decreased by almost 3% between 2004 and 2009. Heating consumption considerably decreased over the period (-11%). These reductions were offset by the increase (+16%) in so-called specific uses of electricity (air conditioning, new uses, etc.).
- ▲ Service industry's activities in Paris are highly disparate, with very different energy consumption and resource requirements from one field to another.
- ▲ For certain activities or very small businesses, the energy category has an effect on the turnover.
- ▲ The public service industry in Paris include a large number of regional, national and even international public administrations and of course the Paris Administration, whose greenhouse gas emissions have remained almost stable over the period. A roadmap detailing all the Climate Action Plan actions for the Administration is annexed to the Climate Action Plan.

¹³ Paris Chamber of Commerce and Industry 2009

Objectives and commitments

Office buildings, 19th

It is essential to involve all the stakeholders in the Paris public and private service industry in order to achieve the ambitious objectives of the Climate Action Plan, not only to reduce the energy consumption of the buildings in question, but also to modify the activities of each one, make them more carbon-efficient and reduce the emissions of the Transport of goods, Consumption or even Waste sectors.

The main objective for the service industry is to reduce greenhouse gas emissions caused by its activities by 25%, without affecting the attractiveness of the territory or the economic performance of companies.

The consumption of the services stock in 2020 must not exceed 12,700 GWh/year.

Achieving the objective of the Paris Climate Action Plan will result in overall savings of €500m a year for the sector.



Automatic sun-screen, 12th

Promote the development of eco-industries and innovation

Offices buildings, 19th

Every year, Paris supports over 50 innovative SME specialising in the green economy, by funding individual and collaborative research and development projects, the launch of new products and services and job creation. Project funding remains an essential springboard for young, innovative business which can also draw on the "Paris Innovation Seed Fund" and the "Paris Finance Plus" guarantee, both managed by Oséo¹⁴.

Making it easier for these companies to access public-sector contracts in Paris is a major challenge. Regular themed encounters are held between SME and City purchasers/specifiers. The City also gives them the opportunity to test their new solutions in the public domain so that they can improve their technologies, as with the "Building Energy Efficiency" call for projects by the Paris Region Lab' with the support of the Paris Climate Agency. Testing innovative eco-construction and renewable energy projects is also one of the key commitments of the partnership agreement between the City of Paris and the département of Seine-et-Marne, signed in February 2011.

¹⁴ State-owned company responsible for supporting SME in financing innovation



Solar panels, 18th

▲ To ensure the continual creation of innovative SME and new jobs in the green economy, they now have 14,000 m² of dedicated office space in the Paris Région Innovation Nord Express business incubator – business centre in the 18th and the future business incubator in the Boucicaut urban development zone eco-district. These two buildings meet the 50 kWh/m²/year criterion set out in the Climate Action Plan.

▲ The City's support also extends to professional networks such as the eco-innovative Durapole business cluster, an association which brings PME together for environmental issues, and Advancity, the Île-de-France competitiveness cluster dedicated to the eco-technologies of the sustainable city.



Solar hotel, 14th



THE SERVICE INDUSTRY IN PARIS, A NEW CHALLENGE

As well as contributing to the operation of these key stakeholders, the authorities, together with the City of Paris College of Engineers, are helping to develop collaborative research projects so that the tools for better living tomorrow can be created within the research laboratories, universities, industries and SME today. The "Paris 2030" programme, which is aimed at researchers and funds a selection of two-year projects on metropolitan development by 2030, adds force to this momentum.

In 2007, the municipality joined forces with professional building companies to encourage their members, businesses and tradesmen to acquire new skills for the energy-saving work necessary to comply with changing thermal regulations and public calls to tender. The details of more than 100 specialised businesses and the work they do are accessible to individuals and associations on paris.fr.



Office buildings, 19th

+ IN THE FUTURE...

In view of the challenges posed by the energy performance of buildings, the City of Paris and its professional building partners are pooling their efforts and coordinating their actions to encourage (co-)owners of private residential buildings, households or institutional heritage owners and local stakeholders (associations, businesses, etc.) to carry out targeted work to adapt their housing or premises to climate change. This approach aims to provide Parisians with consistent, high-quality information and

advice, particularly on works tenders, using the list of building professionals which will be accessible to Île-de-France businesses.

They have also agreed to work together to develop new skills relating to energy-savings within building companies, by creating training better suited to the needs of the industry, focusing on employees, young people, job-seekers and people entering employment.

In order to support building professionals investing in these new human resource and facilities activities, the City of Paris together with the Île-de-France Region is opening up its aid to Paris and Île-de-France businesses. At the same time, the partners to the agreement¹⁵ will continue their work to improve the distribution of information on tests of new thermal renovation technologies in Paris, on future work operations and on public contracts in order to encourage SME, VSB and SIAE (Economic Integration

Structures) to apply, particularly in the form of temporary groups of businesses.

¹⁵ 2011-2013 partnership agreement between the City of Paris and the Paris-Île-de-France FFB, the Paris and inner suburbs CAPEB, the Paris Federation of building and public works S.C.O.P. (cooperative enterprise), the Île-de-France Regional Council, the Regional Council of Île-de-France architects and the Paris Climate Agency for the adaptation of private housing, Paris apartment buildings and professional premises to combat climate change.

Mobilise the big corporations

Department stores, 1st

A number of big corporations and leading retail managers have already carried out major energy efficiency work.

MAXIMUM PRIMARY ENERGY¹⁶ CONSUMPTION (Max CEP, in kWh/m²/year)

RT 2012	BBC-Effinergie+ Label
New offices	
77	53.9 (-30%)

¹⁶ The final energy represents the energy actually consumed by an activity. It differs from primary energy which takes into account the energy necessary to produce the final energy.



Large Paris stores, 4th

+ IN THE FUTURE...

The City of Paris now allows managers of service industry buildings to play a direct role in the Paris Climate Action Plan by signing a commitment contract which acknowledges the efforts already made and outlines the work which needs to be done by 2020.

Mobilisation will take place by demonstration: the signatories of the contract (cf. chapter II) will meet every year during The Paris Energy and Climate Days to discuss their progress, share their problems and work together to find solutions.

There are three parts to this contract:

1. I agree: I share the objectives of the Climate Action Plan and I share information on climate change internally;
2. I commit: I carry out an energy or carbon audit for my business and I create an action plan with objectives;
3. I act: I implement my action programme and I share my results every year.

The Paris Climate Action Plan retains the **50 kWh_{ep}/m²/year** objective for **new office buildings** in Paris, based on the BBC-Effinergie+ label. This label corresponds to 30% lower consumption than the RT2012 for offices and proposes a method for assessing and monitoring results. This level of performance for large building complexes is an economic attraction, as performances are generally above those demanded by the international labels (LEED or BREEAM).

Support for small businesses

The future energy price rises could have a serious impact on small businesses in Paris. It is therefore important to identify the causes of over-consumption, which may be wide-ranging and include poorly isolated shops or shop windows and low-performing equipment.

It is also necessary to promote the positive energy-savings schemes of businesses. By showing what they have achieved, they can encourage business leaders to include an eco-responsible and cost-cutting element to their organisation and service offer. The City, with interested consular chambers, can help to highlight the approaches and support energy efficiency through the Paris Climate Agency.

Retailers committed to this approach can sign the partnership agreement of Climate Action Plan partners and join this community of businesses to promote their social commitment.

Passage Dauphine, 6th

Shop, 18th



Cafe terrace, 4th

An improved sustainable tourism offer

Notre-Dame de Paris, 4th

Tourism is essential to the activity and influence of Paris. If it is not well managed, it can damage the very resources which guarantee its success and sustainability. The City of Paris is committed to a sustainable tourism process, through the implementation of initiatives which create the sustainable face of the world's leading tourism destination. The Paris Tourism and Conference Office (OTCP) is attempting to promote the assets of Paris, promote eco-labelled Paris institutions within the professional tourism industry and encourage initiatives to bring visitors and Parisians together.

+ IN THE FUTURE...

SUSTAINABLE BUSINESS TRAVEL

Increasing eco-responsible behaviour in the organisation of business events is becoming crucial for operators in the different parts of the sector: local agencies and professional conference organisers; events venues, exhibition centres and conference centres; caterers; decoration-stand-furniture; lighting-audio-visual-ITC; transport; communication-advertising-signage and events. The OTCP is committed to raising the awareness of its partners and promoting major initiatives through its website and communications operations. Themed dossiers for individuals and professionals are available online and are regularly updated.

MORE ENERGY-EFFICIENT HOTELS, THE CHARTER FOR SUSTAINABLE ACCOMMODATION IN PARIS

In June 2012 the OTCP, in partnership with the ADEME, launched an innovative programme to encourage Paris hotel-owners to adopt a sustainable development approach. The Office offers member hotels an auto-diagnostic tool, support and membership of the "Charter for sustainable accommodation in Paris". This programme plans to support 250 hotel-owners in order to create a large supply of committed hotels and make Paris a sustainable destination. The eventual aim is to lead as many hotel-owners as possible in this responsible approach.



Bateaux-mouches, 4th

THE HOTEL PLAN

Paris has launched a hotel plan to encourage the creation of 7,000 additional rooms by 2020. The specifications and the selection of the operators which respond to the consultations for the construction of hotels on municipal land or in large development zones will be based on the criteria of high architectural, environmental and energy quality.

"CLEAN" MOBILITY PASSES (VÉLIB' BUSINESS PASS, AUTOLIB', COACH PASS, ETC.)

The ECO Coach Pass allows coach operators to promote the use of more modern coaches in Paris, thereby reducing atmospheric and noise pollution. This measure consists of encouraging the modernisation of the tourist coach fleet through a system of points bonuses for the use of municipal car parks. From 2014, coaches will have to comply with the new EURO 6 standard.

The Business Pass will be created to facilitate the use of these means of transport, so that as many professionals as possible can use the Vélib' and Autolib' services.

Furthermore, by 2020, the connection of new European cities to the high speed rail network (average of 3 hours) will allow 75% of the tourists visiting Paris to arrive by train.

The Paris Administration

Climate Action Plan School, 12th

The City of Paris has adopted voluntary commitments for its Administration:

- 30% reduction in GHG emissions in 2020 compared with 2004;
- 30% reduction in the energy consumption of its real estate, its municipal fleet and public lighting in 2020 compared with 2004;
- 30% renewable or recovered energy in its energy consumption in 2020.

These commitments are retained in the new Climate Action Plan. The major work areas are as follows:

- ▲ **Control energy consumption** by empowering officials and improving the performance of public facilities (buildings and public lighting);
- ▲ Implement the measures of the **Paris Administration Transport Plan** adopted in 2011, which aims to optimise the municipal vehicle fleet and rationalise business travel;
- ▲ Strengthen Paris' **responsible purchasing policy** and apply the **sustainable food plan** implemented in accordance with the 2007 Climate Action Plan;
- ▲ Create measures so that the Administration **can adapt to climate change**.

Crèche on Rue Budin, 18th



All the actions taken in its own area of competence are set out in a specific roadmap attached to this document.

The City of Paris will study these objectives gradually and on a case-by-case basis for its entire area of competence, such as concessions or outsourcing public services, as and when contracts are renewed.



MOBILITY

TOWARDS TRANSPORT
WHICH IMPROVES
THE CLIMATE
AND AIR QUALITY



T3 tram, 20th

PREAMBULE

	TRANSPORT (in million tCO ₂ eq)			
	2004 Reference	2009 Situation	2020 Objective	Saving
Travel in inner Paris	1.22	1.14	0.5	-60%
Travel in outer Paris	1.49	1.46	1.12	-25%
Paris air travel	2.59	2.59 ¹⁷	1.95	-25%
Goods freight	2.96	2.96	2.22	-25%
PDAP ¹⁸	0.0543	0.0540	0.031	-43%

¹⁷ Figure frozen in 2009 due to lack of reliable information

¹⁸ PDAP: Paris Administration Transport Plan

Transport produces the highest greenhouse gas emissions and is the leading source of air pollution in Paris and, more broadly speaking, in the Paris metropolitan area. Four million journeys are made between Paris and its urban area every day.

The total emissions of this sector were estimated at 12 million tCO₂eq in 2009. The method used includes emissions caused by the air transport used by Parisians for work or leisure or by the air freight of manufactured goods. These two areas represent 6 million tCO₂eq.

The pre-defined objectives are taken from the Paris Transport Plan adopted in February 2007 and also included in the 2007 Climate Action Plan.

The main objective is a 60% reduction in emissions due to inner-Paris travel between 2001 and 2020. In 2009, the report showed a 7% saving compared with 2004 and 12% since 2001. Since

then, the City of Paris has launched a voluntary policy to define a new mobility for the capital: reduction in car use (25% fewer vehicle.km in 10 years) and harmful emissions, increased and improved public transport (including the creation and extension of the T3 tram and the creation of local bus routes), more active means of travel (Vélib', 400 km of cycle paths). This voluntary policy has extended beyond the administrative borders of Paris, as 30 communes now have Vélib' stations, 46 authorities are currently members of the Autolib' association and 60% of T3 users are not Parisians.

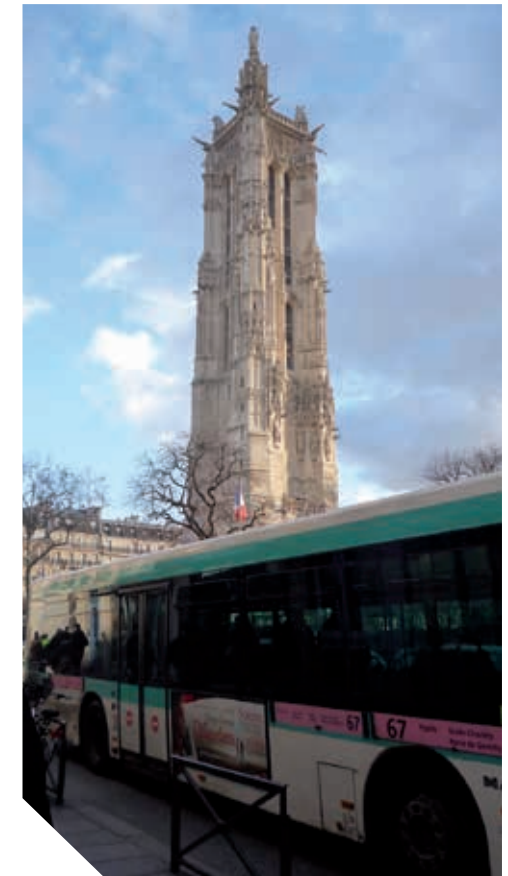
At the same time, the number of annual metro journeys has increased by 16% in 10 years and the number of bicycle journeys has more than doubled over the same period.

Between 2001 and 2011, the equivalent of 2,200 million vehicle.km were "saved"

due to the Paris mobility policy, representing €20m in **saved fuel expenditure** over this period.

The City of Paris actively supports the actions of the Île-de-France Transport Union (STIF) in its far-reaching programme to improve public transport. As a result, the City of Paris' contribution to the STIF budget has grown by almost 83% since 2005, reaching €363m in 2011.

Finally, the City intends to pay particular attention to pedestrians through the "Paris Pedestrian" programme, which aims to use the different public space development projects to promote walking.



Bus, 4th

Objectives and commitments

View of Paris, 4th

While waiting for the definitive adoption of the next Île-de-France Urban Transport Plan (PDUIF), the ambitious objectives of the 2007 Climate Action Plan remain in place:

The main objective for Transport is a 60% reduction in greenhouse gas emissions due to inner-city transport and a 35% reduction for all other transport in outer Paris between 2001 and 2020. As regards air quality, progress must be made towards respecting the regulatory limits, particularly near motorway traffic.

This objective may be achieved by a voluntary policy to improve public transport in Île-de-France, develop local inner-city logistics platforms and revolutionise the national and Europe-wide transport of goods.

Continuing the current trend and making changes to motor transport will allow 40% reductions of greenhouse gas emissions in eight years. To achieve the objective of 60% reductions, the City of Paris will consider starting work in the following areas.



Quai de Valmy, 10th

Towards new reductions in road traffic

Rue de Rennes, 6th

REDUCTION OF THE SPEED LIMIT ON THE PARIS RING ROAD

The City of Paris is in favour of reducing the speed limit on the Paris ring road from its current 80 km/h to 70 km/h to reduce pollution and noise and improve road safety. This measure has been approved in principle by the government. The City wants this reduction to become effective in 2013.

CREATION OF "30 ZONES"

In Paris, the Municipality would like to pursue the creation of "30 zones", with for example a new "30 zone" in the Goutte d'Or district in 2013. The Municipality, together with the Prefecture of Police and all the relevant stakeholders, also wants to study the gradual introduction of a 30 km/h speed limit in streets around schools and sporting or cultural facilities used by the public. More 30 km/h zones are planned for Paris in the future. The first zone will be created on Avenue de Clichy in summer 2013.



T3 tram, 12th

CREATION OF COMBINED PEDESTRIAN/VEHICLE ZONES

Pedestrian/vehicle zones are areas shared by different users, but where pedestrians take priority. There is a 20 km/h speed limit. These areas, which can be created without costly development, could in the short term cover 10% of Paris. This solution of pedestrian/vehicle zones will reduce car traffic in districts where there are large numbers of pedestrians.

INCENTIVES TO USE LESS POLLUTING VEHICLES

The creation of a low emission zone (LEZ), with the aim of banning access for the highest polluting vehicles, has come up against obstacles which the current government wants to remove. The Mayor of Paris wrote to the Prime Minister about this issue last July and is awaiting government decisions which will allow the creation of a fair and effective city-wide LEZ, in close collaboration with the State and the relevant authorities. Following the Council of Paris debate last November, other solutions for reducing emissions must also be studied in order to reconcile air quality and a reduction in greenhouse gas emissions.

PARKING POLICY

- The above-mentioned ideas on reducing driving speeds and encouraging alternative solutions which help to reduce greenhouse gas emissions must go hand-in-hand with a change to the parking policy.
- The implementation of a more effective parking policy would involve changes to decriminalisation and decentralisation. Nevertheless, before this happens, steps can already be taken to rationalise the use of public spaces. These measures will, however, only be effective if there is also a policy to punish and report those who contravene them.

Continue to improve public transport

Panoramic view, 13th

- Since 2001, public transport services in Paris have increased considerably. 2011 and 2012 saw the opening of the T3 tram extension, the extension of 2 metro lines, the creation of a 4th local bus line (known as traverse), etc.
- It is important to continue to develop and increase the efficiency of public transport networks throughout the metropolitan area in order to meet the additional need generated by Parisians and Ile-de-France residents encouraged to abandon their cars.

+ IN THE FUTURE...

- The City of Paris and the STIF are currently considering extending the tram line 3 towards Porte d'Asnières. The City will ensure that the SDRIF and the PDUIF, which are both currently under revision, include all the necessary public transport infrastructure projects.
- Finally, following the first experiments with five boat stops between 2008 and 2011, from autumn 2013 the Voguéo river shuttle will provide a full service on 3 lines serving Paris and its neighbouring communes.



"La traverse" local bus, 20th



Extension of T3, 13th

Promote cycling Encourage electric mobility in Paris

Velib'

+ IN THE FUTURE...

- A new cycling plan was adopted in 2010 to create 700 km of cycle routes by 2014, either by continuing existing routes or as new projects in neighbouring communes.
- The City of Paris will continue to create cycle routes until 2020 and will also create suitable parking areas and encourage businesses to create bicycle garages for their employees.



Autolib'

- ▲ Between 2008 and 2011, the City of Paris subsidised both the development of electric mobility so that Parisians could buy a bicycle or electric moped and the replacement of **6% of the Paris taxi fleet**. The City of Paris is also supporting the manufacture of 100% electric taxis.
- ▲ At the end of 2011, the 46 communes in the public-private entity **Autolib'** launched the first electric mobility service for Paris residents.



Velib'



Autolib'

+ IN THE FUTURE...

The City of Paris is also monitoring the gradual expansion of electric vehicle fleets in the capital, particularly within large groups of businesses. Together with the Corporate Vehicle Observatory, it will **consider pooling fleets** and charging points whilst promoting slow night-time charging to avoid destabilising the network and recharging with highly carbonated electricity. The City is also considering gradually obtaining less polluting, hybrid or 100% electric vehicles for collecting household rubbish and for road cleaning, in order to reduce pollution and noise.

Urban logistics: a major challenge

Arcole bridge, 4th

The source of traffic problems, noise and pollution, the delivery of goods in city centres, particularly the last, most expensive, mile (20% of the total cost of the chain), and urban logistics are the municipality's main focuses for transport reduction.

While there is an increasing demand for home deliveries and e-commerce for everyday consumer goods, largely linked to an ageing population and fewer city-centre car journeys, logistics areas are moving out of the centre due to the scarcity and cost of land.

Finally, new services and technologies essentially involve fleet management and monitoring deliveries and do not include sufficient ways of improving the ecological footprint, such as pooling resources or changing to non-road transport.



Delivery by barge, 8th

URBAN LOGISTICS AREAS

▲ To encourage Paris professionals to commit to the fight against climate change, the City has developed the idea of creating five Urban Logistics Areas (ULA) for bundling and unbundling parcels in the capital's underground car parks (in Saint-Germain-l'Auxerrois, Concorde, Porte d'Orléans, Saint-Germain-des-Prés and Pyramides). This would create new ways of reducing harmful emissions in deliveries. The creation of ULAs is an important issue, but also a major challenge due to the scarcity and cost of land in the heart of the city.

+ IN THE FUTURE...

- By March 2013, Sogaris, in partnership with SEMPARISEINE, will create a 3,000 m² Urban Distribution Area dedicated to e-commerce and express freight in the Beaugrenelle area. This local logistics project will handle more than 30 delivery rounds in the 15th arrondissement using electric vehicles. It will immediately cut over one third of the CO₂ emitted by current letter and parcel delivery operations in the area.
- Sogaris is present in Rungis, Roissy and Créteil and is also supporting the Halle rail/road project in the Chapelle International sector of Paris (18th). By 2016, this project should include a 26,000 m² logistics centre (consisting of an urban rail terminal, a local logistics and cargo-bike area and a logistics support centre) as well as a 2,600 m² urban logistics centre of competence (Research and Education). This urban logistics base would be used for large-scale distribution, e-commerce, cargo bike operators and local logistics operators and would avoid 560 tCO₂eq of emissions and 13,700 lorries arriving in Paris.
- Whenever possible and as part of the next Local Urbanism Plan, the City of Paris will study reserving sites for Major Urban Services Urban zones (UGSU), particularly for the five sectors with logistics functions for the railway sidings.



Intra-urban delivery

CHARTER FOR SUSTAINABLE URBAN LOGISTICS

- The City of Paris and its mainly professional partners are working to revise the goods charter signed in 2006; this revision should focus on the following challenges: considering regional logistics challenges, promoting dialogue between partners, respecting the environment, promoting urban integration and preserving economic dynamism. There are two major areas: influencing urban logistics structures in Paris and developing sustainable logistics practices.
 - Rationalising flows of goods and creating a modal shift are essential elements of the Île-de-France Urban Transport Plan (PDUIF). Together with the charter for sustainable urban logistics, the City will help to implement the recommendations of the PDUIF, particularly in the following areas: better organisation of and access to logistics sites, greater move towards rail and water transport (the adoption with the relevant authorities of master plans for port installations on the Saint Denis canal and the Ourcq canal is an illustration of this) and incentives to change the behaviour of professionals and consumers. The latter are at the origin of 50% of urban logistics traffic.
- Since 2005, thanks to the financial support of the City of Paris for the creation of a platform, Monoprix has been supplying 60 of its Paris shops by rail and later by lorries which run on natural gas. This is no longer an isolated initiative, as Franprix now sends goods to 80 shops in western and central Paris by river. A floating market was tested on Quai Henri IV in summer 2011. Such initiatives are likely to increase in the capital.
 - Dialogue with specialised competitiveness clusters such as Novalog (logistics), Advancity (eco-technologies of the sustainable city) and MOVEO (transport) and with other stakeholders in the sector will be necessary to gain a better understanding of progress in urban logistics in France and abroad and to identify the levers for improvement.
 - The City of Paris, together with the RATP, will test Tram Fret (Freight Tram) with an operator under real conditions until 2014; this test, whose boundaries still have to be specified with RATP and the operator in questions, will take account of the opportunities provided by connections with the logistics projects planned in urban planning operations.



Freight tram, 13th

Reclaiming the Seine and the canals


 Right Banks of the Seine, 4th

+ IN THE FUTURE...

- The City of Paris will help to apply the Urban Transport Plan in Île-de-France. Through its project to **reclaim the banks of the Seine**, the City of Paris intends to gradually turn this site back over to leisure activities, walking and new transport stopping points for the public transport of passengers.
- Reclaiming the Seine also makes it possible to consolidate and improve freight on the river and in the ports. In accordance with the 2011 plan for the occupation of the banks and ports, Ports de Paris and the City are sustaining and renovating Paris ports, which now facilitate the entry and departure by river of around two million tonnes of goods a year, with a very positive effect on greenhouse gas emissions.
- The plan also aims to develop urban river logistics in Paris in the short and medium term, particularly for everyday consumer goods, in the ports of Javel, Bourdonnais, Austerlitz, Bercy and Gros Caillou.
- Similarly, because **the canals** provide structure at metropolitan level, and present economic, ecological, social and heritage challenges, in 2012 the City of Paris decided to draft a document entitled **Sharing the canals**. This document sets out the directions and priorities for developing these structures and is the result of initial deliberations within the City of Paris and exchanges with the authorities bordering the canals. These directions contribute to the debate on the future of the canals and will be the subject of constructive dialogue with all the authorities involved. They will be implemented in association with partners to ensure a shared future for the canals.


 Banks of the Seine, 4th

 Paris Beaches in the La Villette Basin, 19th


The Paris Administration Transport Plan

Paris view, 18th

In the context of the Protection of the Atmosphere Plan and the 2007 Climate Action Plan, in March 2011 the City of Paris adopted its first Paris Administration Transport Plan¹⁹ (PDAP).

¹⁹ All the details can be found in the special Administration roadmap annexed to this document



Electric suction unit, 13th

+ ET DEMAIN...

REDUCING THE VEHICLE FLEET AND HIGHER-PERFORMING VEHICLES

- The objective of reducing the municipal motor vehicle fleet by 10% over three years (2007-2009) has been achieved.
- A new objective of reducing the light vehicle fleet by 15% (PV, LDV, 2RM) was set for the period from 2011 to 2014. By 31 March 2012, this fleet had been reduced by 6%, meaning 125 fewer vehicles since 1 January 2011. This reduction was made possible by the creation of car-sharing in seven central sites, representing 40 shared vehicles.
- The City is also buying less-polluting vehicles which emit less greenhouse gas (49 Toyota Prius saloons at the end of 2011).

INTERNAL AND EXTERNAL DELIVERIES

In-depth work has been started on deliveries, with the complete reorganisation of the Administration's mail shuttles, to be followed by small-scale logistics. To achieve this, it will also be necessary to create Urban Logistics Areas, which may be shared with other companies.



Vélib', 6th

OTHER PDAP ACTIONS

- A job exchange was recently set up for employees wanting to find an equivalent job to the one they have but closer to home.
- The Vélib' Pass has been reimbursed in full since 2009.
- The City intends to discuss its Business or Administration Transport Plan with other major employment hubs in Paris in the near future in order to capitalise on positive initiatives and possibly develop partnerships (APHP, Ministry, La Poste, etc.).



CONSUMPTION
AND WASTE

TOWARDS SUSTAINABLE CONSUMPTION WHICH GENERATES LESS WASTE



Paris market, 17th

PREAMBULE

	TERRITORY in tCO ₂ eq			
	2004 Reference	2009 Situation	2020 Objective	Saving
Food	4,330,000	4,490,000	3,245,000	-25%
Products consumed	1,550,000	1,500,000	1,155,000	-25%
Waste	521,000	484,000	442,800	-15%

	ADMINISTRATION in tCO ₂ eq			
	2004 Reference	2011 Situation	2020 Objective	Saving
Food	52,500	49,700	36,750	-30%
Products consumed	10,650	11,200	7,460	-30%
Waste	1,600	1,800	1,360	-15%



Paris market, 5th

▲ Like other large metropolises Paris is a city which uses large amounts of energy and everyday/professional consumer goods which generate greenhouse gases throughout their lifecycle, from their creation to their destruction via their use.

▲ It is very difficult to change this data and thus the behaviour and practices of each user, business or administration rapidly, without proposing alternative services and techniques which produce less waste. This is the idea behind the initiatives of the Climate Action Plan, which aim to save, recycle or promote the materials, energy and CO₂ emitted, without altering economic dynamism and employment. As an example, 30 million tonnes of goods are consumed every year in Paris, generating major road traffic.

▲ For this reason, the City of Paris is mobilising its services, service providers, partners and users in this dynamic process based around the following three major axes.

Create exemplary purchasing policies

Panoramic view, 4th

- ▲ It is important to create demand so that industries can meet requirements. It is often difficult for a public or private purchaser to find innovative products with a sustainable lifecycle. The businesses which create these products are often small businesses which do not have the infrastructure necessary to provide the regular high volumes required by large companies.
- ▲ Since 2007, the City of Paris has made it easier for these companies to access Paris public-sector contracts. Regular themed meetings are held between SME and City purchasers/specifiers. The City also gives them the opportunity to test their new solutions in the public domain.

- ▲ In almost all its public contracts for service provision or goods purchasing, the City of Paris has introduced environmental and social criteria whose requirements increase at the same rate as performances and standards.



Paris market, 12th

+ IN THE FUTURE...

Specific work will be carried out to provide easier access to municipal public commissions for sustainable products and services. The City of Paris is working closely with the Pacte SME association to source eco-active SME and facilitate their access to calls to tender.

Major account holders in Paris will be informed of this process in order to increase sustainable purchasing orders in Paris. It is essential to send out strong signals to producers to generate the SME sectors producing and distributing responsible products and services, as is the case in other networks of cities.

Paris market, 12th



Sustainable food in Paris

School canteen, 19th

- ▲ Food is the perfect example of the above. In France, agriculture accounts for 20% of greenhouse gas emissions.
- ▲ As part of the 2007 Climate Action Plan, the City of Paris wanted to increase the proportion of products from sustainable agriculture²⁰ in the 30 million meals served in municipal and départemental restaurants every year. This strategy was included in a Sustainable Food Plan.
- ▲ The percentage of sustainable products in the meals served in Paris Administration canteens has doubled in less than 5 years, reaching 14% in 2010 (less than 2% nationally). Even though the criterion for greenhouse gas emissions is not particularly relevant for assessing a food policy, these decisions have resulted in a **12% reduction** in the carbon content of a meal. If this policy were extended throughout the city, it could generate savings of **at least 500,000 tCO₂eq** by 2020.
- ▲ Certain industries (AMAP²¹) cannot meet the needs of corporate catering. The City of Paris is currently considering the creation of a central purchasing office so that these industries can fulfil requirements.
- ▲ It is also important to shorten supply systems and for this reason the City, with the land owned by Eau de Paris in Seine et Marne for example, is monitoring the economic and ecological conversion proposed by the Île-de-France Region; the main aim of this conversion is to considerably increase the ability of Île-de-France to feed its inhabitants.
- ▲ The work carried out in this area goes beyond the Climate Action Plan objectives insofar as the sustainable food plan also makes it possible to improve the quality of meals and the health of Parisians.

²⁰ From organic, seasonal, local and approved agriculture

²¹ Association for Preserving Traditional Agriculture



School canteen, 11th

Waste

Sorting bins

The 2007 Climate Action Plan set as an objective a **15% reduction in the production of household and similar waste** between 2005 and 2020, i.e. **84 kg per inhabitant in 16 years**.

During these first five years, or one third of the period covered by the Climate Action Plan, the actions launched by the City of Paris as part of the 2006-2010 waste prevention plan have already allowed a **35 kg reduction per inhabitant compared with an objective of 23 kg per inhabitant** over five years. In the same period, it should be noted that the tonnage of recyclable materials has stabilised.

The success of this waste prevention plan has led the City to take on more difficult challenges and to step up its work to achieve a continuous and greater reduction in the production of waste at source.

A NEW PREVENTION PLAN FOR FURTHER ACTION

In February 2012, the City adopted its **local waste prevention programme (PLPD)**. These concrete local actions aim to achieve the national objective of reducing household and similar waste by 7% in five years (except bulky items). For the City of Paris, this will involve an additional reduction of **31 kg per inhabitant between 2009 and 2015**.

The PLPD has set three priority targets:

- Packaging waste, which represents 40% of the total waste collected in Paris;
- Food waste, a major source, as the level of food products not consumed is double the national average (12 kg/year/inhab. in Paris compared with 7 kg/year/inhab. for France, according to the ADEME);
- The amount of paper, cardboard, textile and plastic collected, which is much higher than the national average.

These sources represent $\frac{3}{4}$ of the potential for waste reduction in Paris. Through this programme, the City of Paris plans to inform stakeholders and make them more aware of their own waste production, using different themes such as:

- **Eco-consumption:** choice of products which generate less waste (tap water, buying to order or in bulk, etc.);
- **Food waste;**
- **Composting food waste and green waste;**
- **Bartering, re-using and repairing objects and textiles;**
- **Reducing paper waste:** office papers, unsolicited printed matter, newspapers and magazines;
- **Managing hazardous waste:** unwanted electrical and electronic equipment (lamps, batteries, computer hardware), toxic waste (paints), waste from health care activities with a risk of infection (syringes for self-treating, bandages, etc.);

- **Good practice by the Paris administration:** continuing the dematerialisation process for administrative documents and mail, creating e-training on the effective use of photocopiers and printers, using recycled paper, awareness of the sensible use of paper, spreading good practices, etc.

The aim of removing carrier bags as indicated in the 2007 Climate Action Plan remains, and is part of a more cross-functional local approach to reduce packaging waste.

This waste prevention policy can only be created through a concerted partnership approach, as it will only be possible to change the behaviour of Parisians and users by the increased involvement of all stakeholders: local councils, schools, district city halls (together with the creation of this programme, which will remain open to any suggestions which may be made during its execution), inhabitants, associations, shops, businesses, etc. To this end, the City of Paris has created the **Observatory for the Reduction, Re-use and Recycling of Waste, known as "O3R"**. This body leads a network of professionals, elected officials and active associations involved in the sustainable management of waste.

INNER-CITY SORTING AND RECOVERY CENTRES

The City will continue its work to create inner-city recycling centres and facilities. Four Recovery Centres for Bulky Goods (CVAE) are being created and are due to open by 2014.

For processing selective collections and bulky items, the SYCTOM, a Metropolitan Waste Agency, had until 2011, five sorting centres with a total processing capacity of 156,300 tonnes.

The largest sorting centre in central Paris was inaugurated in the 15th arrondissement in 2011. It will eventually process 15,000 tonnes of selectively collected waste a year from the outlying districts.

A 2nd sorting centre is due to open in 2015 in the Clichy-Batignolles urban development zone (17th), and another is being considered in the Bercy-Charenton urban development zone (12th). The latter centre will replace the Ivry-Paris 13 centre, which will close when the multi-industry centre is transformed into an organic recycling and energy recovery centre. These sorting centres will allow the recovery of recyclable waste from Paris and the outlying communes.

Pneumatic collection in the Clichy-Batignolles sector will allow sorted and residual waste to be collected via a network of canals connected to a single terminal which evacuates them towards the different processing areas, avoiding the problems caused by rubbish trucks on the road.

NEW PROCESSING METHODS FOR BETTER WASTE RECOVERY

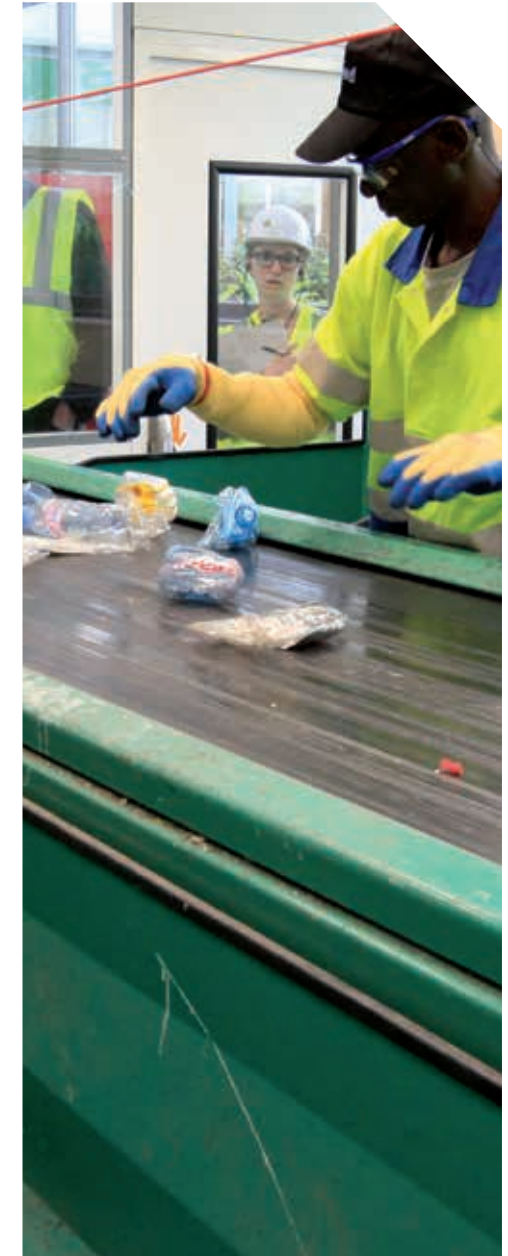
The waste-to-energy conversion of waste does not only involve its incineration and the production of the heat which now feeds urban heating networks, but also methanisation. Methanisation produces both biogas and compost. The 2007 Climate Action Plan launched a debate on the possibility of creating methanisation factories near Paris and the second Climate Action Plan will see the first achievements take shape.

SYCTOM plans to create several methanisation centres for the production of compost and energy (biogas, steam, electricity).

SYCTOM could help to reduce the pollution caused by the processing of the waste from the metropolitan area, whether air, olfactory or sound emissions or liquid waste. It is installing its facilities close to waste production sites in order to limit road traffic by promoting the use of alternative forms of transport to road (rail, water, etc.).



The SYCTOM processing plants.



Sorting centre, 15th

Several types of waste are the subject of Extended Producer Responsibility (EPR) sectors. This system makes waste producers fund a large part of the collection and processing of their waste. The environmentally-friendly waste management companies approved by the authorities are responsible for collecting eco-taxes and redistributing the money collected to the local authorities which manage the waste according to the criteria set at national level.

This is the case with packaging, waste from electric and electronic household equipment and newspapers and papers.

The national criteria do not take account of the specific nature of Paris as regards waste production or sorting efficiency. The recent increase in EPR has made inhabitants confused about the sorting process and does not cover the collection costs which are payable by the City of Paris.

The national challenge lies in better control of environmentally-friendly waste management companies and information about the harmonisation of sorting advice at metropolitan level.

Furthermore, harmonising both the labelling of truly recyclable products instead of the green badge which only means that the tax has been paid, and the colour of the containers would make it easier for citizens to sort their waste. Inhabitants who work in a different commune would receive the same message.

In addition, new flows of waste, particularly plastic, could be collected and recycled. This is the aim of a national experiment led by Eco Emballages and underway in the 3rd arrondissement of Paris since early 2012.

Increasing domestic composting in Paris is a challenge as it is a very dense urban area with few green spaces. Consequently, the City Hall is asking residents and voluntary institutions to compost their waste and obtain high-quality compost for their window boxes and green spaces. It provides the necessary means and support free of charge for 6 to 9 months on the network of websites which it manages. Inhabitants commit to noting the quantities of waste composted. This community approach generates social cohesion. The City is also considering installing composting machines in its parks and gardens so that Parisians can place their green waste in these.



Sorting centre, 15th



Electric suction unit, 13th



Sorting bin

Water management in Paris

Seine, 4th

MORE RESPONSIBLE WATER CONSUMPTION

▲ Parisians have very high-quality water in Paris; it is an average of 300 times cheaper than bottled water and more ecological as it does not create plastic waste. Tap water allows savings of approximately 10 kg of waste a year compared with bottled water, of which only 50 to 60% is recyclable. The City is therefore committed to promoting tap water by systematically removing bottled water from meetings, committees, conferences, events, etc.

▲ Tap water is also promoted through the presence of Eau de Paris at a number of Paris events and through advertising campaigns (eg. Open a grand cru).

▲ **Furthermore, the City must set a good example in its own consumption of drinking and non-drinking water. As a result, drinking water consumption by municipal facilities has decreased by 35% in 6 years, despite the**

construction of a large number of new facilities since 2001. This reduction has been achieved through more rigorous monitoring of water consumption, with leak alerts, through advising officials to reduce water consumption and installing water-saving devices. **In public spaces, the consumption of non-drinking water has decreased by 30%**, thanks mainly to automatic sprinkler systems (30% less water used compared with manual sprinkling) in green spaces, the use of plants which require less water and the rationalisation of water use for cleaning pavements.



Wallace drinking water fountain, 5th

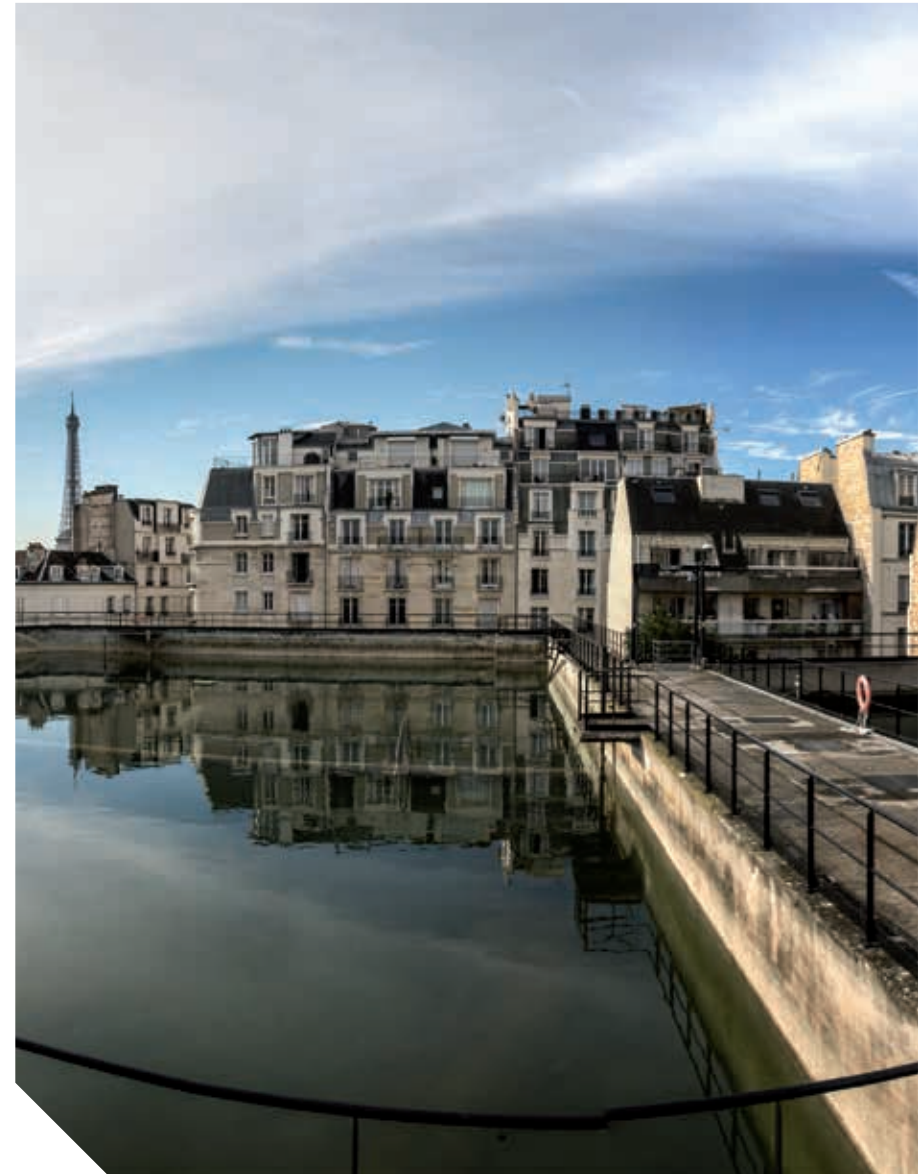
▲ At the same time, actions have been undertaken to reduce the city's water consumption, particularly the signature of the Water Management Charter by Eau de Paris, Paris Habitat and the City of Paris. The aims of this charter include the installation of water-saving kits which lead to reduced water and energy consumption for the collection, processing and distribution of this water. The first of the charter's four objectives is the reduction of water consumption.



Seine flood, 4th

MAINTAINING A RECONFIGURED NON-DRINKING WATER NETWORK

- ▲ Paris is one of the few cities in the world to have a double water supply network, one of which carries non-drinking water to be used for cleaning streets, watering parks and gardens, cleaning operations in the drains and a few private users.
- ▲ Aware of its economic and environmental importance, the City of Paris wanted to conserve this non-drinking water network, which dates from the Haussmann era. An advance investment of €8m is required to maintain this network; this payment will be made by Eau de Paris so that the current network functions (watering, pavement cleaning, etc.) can be maintained.
- ▲ Furthermore, to make the network more effective, allow new uses and generate income, the sites not currently essential for the operation of the network will be developed. Finally, the best way to sustain this network is to find new uses for it. The systematic watering of green spaces with non-drinking water, the need to combat heat islands, the possibility of supplying the non-drinking water network from other sources such as rain water and also the sale of non-drinking water to other authorities are all working themes for a new economic, global and sustainable management model for the non-drinking water network.



Passy reservoir, 16th



ADAPTATION

AN ADAPTATION STRATEGY



Green wall, 5th

PREAMBULE

THE NEED FOR AN ADAPTATION STRATEGY FOR PARIS

Even if greenhouse gas emissions were quickly and drastically reduced, it is now accepted fact that climate change will inevitably have serious consequences. Consequently, as well as the process to reduce the effects of climate change, broadly outlined in the previous chapters of this Paris Climate Action Plan, it is also necessary **to prepare the city for the changes taking place**. This is the Paris adaptation strategy, which the City is implementing together with the metropolitan area, in the knowledge that some of its resources depend on it.

The purpose of the Climate Action Plan is to prepare the City for both future climate changes and the scarcity of certain resources such as water, fossil energies, food and biodiversity. The aim is to start including a long-term vision in Paris policies now, based on increased vigilance in the face of the many vulnerabilities and opportunities in our territory, and resistance to atypical climatic events. This chapter covers the **Paris adaptation strategy faced with the two-fold challenge of climate change and the scarcity of resources**.

Planted avenue, 8th



Montsouris reservoir, 14th



Drinking water fountain, 5th



Clichy-Batignolles, Martin Luther King Park, 17th

CURRENT AND FUTURE CLIMATE CHANGE

The climate changes listed below were outlined by Météo-France during its collaboration with the City of Paris.



▲ Well-documented and increasing **temperature rise** in Paris:

- 2.6 to 3.4°C rise in average daily temperature by the end of the 21st century;
- Increase in the number of hot, very hot and extremely hot days;
- Increase in the number of heatwaves.



▲ **Occurrences of rain** with high total rainfall could become more frequent, but there is no major trend.



▲ Towards more frequent **droughts**:

- Uncertainty over changes to total annual rainfall, but trend for total summer rainfall for fall;
- Reduction in the rate of flow of the Seine, estimated to be 29% by 2100;
- Increased risks of agricultural drought by 2050, severe risk by 2080.



▲ **Cold periods** still occur but less frequently:

- Fewer frosty days;
- Winters becoming shorter;
- Very cold periods still occur but becoming less frequent and less intense.



▲ Uncertainty regarding **wind-related phenomena**.

SCARCITY OF RESOURCES

As well as increased **energy** prices, which are already noticeable and are mainly due to the programmed depletion of fossil fuels, there will be changes in the availability, price and/or quality of other essential resources in the coming years. This may be the case for **water resources** which, with the predicted changes to rain patterns, may

become scarce within a few decades, particularly the supply of drinking water from surface waters.

As regards **food**, the unknown climate factors repeatedly predicted in climate models suggest difficult years for agricultural production, both in Île-de-France and around the world.

Biodiversity will also be affected, as the distribution of species, their migration, as well as the resistance of the species currently present are also dependent on climate change.

REPORT ON THE ADAPTATION ACTIONS CARRIED OUT SINCE 2007

Since 2007, several actions have been carried out as part of the Paris Climate Action Plan and the other adaptation-related plans, including:

- ▲ **Heatwave Plan:** annual update of the Chalex (extreme heat) file in order to contact and assist the elderly and persons with disabilities who have requested it (more than 24,000 registered at the end of summer 2011), plan implemented over 4 days in July 2010;
- ▲ **Creation of green spaces:** 5.4 ha of additional green space/gardens opened to the public between 2009 and 2011; in 2011 there were **40,000 m²** of green roofs on public facilities and more than **100,000 trees** in inner Paris;
- ▲ **Flooding:** Flooding Risk Prevention Plan (PPRI) revised in 2007, Protection Plan against Flooding (PPCI) in progress;
- ▲ **Adoption of the Biodiversity Plan** in 2011, with ambitious objectives for the creation of more green spaces in the territory;
- ▲ **Adoption of the Blue Paper on Water** in 2012, with actions and areas for deliberation on the use of water for cooling the city during heatwaves;
- ▲ **Climate projections:** work carried out with Météo-France for Paris; EPICEA Study (Multi-disciplinary study of the Impact of Climate Change within the Paris Urban Area);
- ▲ **Research and forecasting:** identification of urban heat islands in Paris;
- ▲ **Awareness-raising and communication:** the **Paris Energy and Climate Days**; success of the **" +2°C... Paris invents itself! "**.



Turlure Park, 18th



" +2°C... Paris invents itself! " exhibition, 6th

Heatwaves, urban heat islands effects



Joséphine Baker swimming pool, 13th

Its high concentration of businesses, the density of its urban network and its extremely mineral soil leave Paris vulnerable to what are known as "urban heat islands", noticeable temperature increases compared with the less urban areas on the outskirts of the city. These heat islands are particularly noticeable at night and can have serious consequences during heatwaves. In 2003, the temperature difference between Paris and its outer suburbs reached over 8°C at night.

There are various possible solutions for providing greater comfort for Parisians in summer in an environment where the heatwave experienced in Paris in 2003 could become the norm within a few years. Some of these solutions have been tested and others are still being studied:

- **Improve the design and thermal renovation of buildings** by considering summer comfort (bioclimatic orientation, ventilation, humidification, blinds, shutters, sun screens, Canadian wells, better reflective properties of materials, etc.);
- **Create green public spaces and buildings**, as plants humidify and cool the air thanks to evapotranspiration;

- **Integrate and use water in the City** for its thermo-regulation abilities: the water in ponds, lakes, fountains or flowing through parks helps to reduce temperatures and thus improve well-being in the City.



Drinking water fountain, 4th

In reaction to the crisis, the Paris Heatwave Plan allows the activation of the CHALEX (extreme heat) communal register of names; this register lists the elderly and persons with disabilities who have requested inclusion and means that they can be contacted and assisted if necessary.

Floods, droughts, drinkability, cooling: water and adaptation

 Seine and Arts Bridge, 1st

In terms of adapting to climate change, water or the lack of water can be both a challenge (floods, droughts, drinking water resources) and a response, particularly in the face of heat.

By adopting its Blue Paper on Water in March 2012, the City of Paris wanted to compare all the municipal actions regarding water and confirm the integration of water as a common good, a metropolitan and cross-functional challenge par excellence, in a cohesive vision of the City of the future.

In addition to maintaining a network of non-drinking water, the Blue Paper covers the City's measures to manage and prevent the risk of flooding, create rain zones for the localised management of rain water and improved permeability of land, save water in anticipation of drought and use water as a coolant in summer, in particular thanks to the fountains and drinking water points (Wallace fountains, automatic public toilets, sparkling water fountains) located in the capital and the use of non-drinking water for sprinkling pavements.

 Natural garden, 20th

 Wallace drinking water fountain, 11th

 Sparkling water fountain, 12th

Towards an adaptation strategy

Green roof, 13th

The "Vulnerability and strength of Paris in the face of climate change and the scarcity of resources" study was launched in 2012. Its aim was to list and analyse the vulnerabilities and also the opportunities and adaptation measures (current or recommended) which can be implemented. This analysis will be used as a basis for creating the adaptation strategy for Paris, together with the measures already identified to combat heat and floods.

Whereas the strategic adaptation document will be drafted jointly with different, mainly metropolitan partners during 2013, it is already possible to assess the key measures, which should be considered as general directions for Paris in terms of adaptation.

The five general directions for the adaptation strategy:

- ▲ Improve knowledge;
- ▲ Inform and raise awareness of Parisians and the Paris Administration;
- ▲ Improve (climatic) risk management for the long-term integrated planning of the challenges;
- ▲ Include a forecast analysis of climate/resource changes in the land planning documents and other framework documents;
- ▲ Create an adaptation strategy with concrete, functional and partnership actions.



Fountain on Place de l'Hôtel de Ville, 4th

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