

Energy renovation in Paris schools

November 2014



Specific goals for 2020 :

- To renovate 100% of Paris schools (about 600)
- A 30% reduction in the energy consumption of Paris schools
- Gains of 65,000 MWh and 13 500 teqCO₂ expected for the period 2012/2020

30%
à 2020



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Paris schools...

- 38% of energy consumption by municipal facilities
- 225 kWh/m²/year energy consumption on average
- 42 kgCO₂/m²/year produced on average
- 300 schools renovated in the period 2008/2014

Energy consumption by Paris schools represents 38% of consumption by municipal facilities. To reduce their consumption by 30% in accordance with the Paris Climate Plan, a **wide-ranging energy renovation project has been in operation since 2008**.

Heating represents the main item in energy consumption in City of Paris schools. The average consumption per school, including all energy sources, is 225 kWh/m²/year of primary energy. Paris schools were built in different periods (from 1880 to the present day, more than half of them being built before 1948) and are characterised by great architectural and technical heterogeneity. Nevertheless, the **renovation work concerns mainly insulation, openings, heat production/distribution/regulation, lighting and automation systems**.

Between 2010 and the end of 2014, 50% of municipal schools need to have been renovated. A first batch of **100 schools benefited from works between 2010 and 2012 in the framework of the partnership contract for energy performance (CPPE)** with an initial investment of 28 million euros before tax. Another 200 schools are currently being renovated to meet this target of 50%.

Ultimately, depending on procedures that remain to be defined in accordance with changes in regulations, all Paris schools (more than 600) will benefit from energy renovation works.

[Read the news on paris.fr](http://paris.fr)

Focus

The example of the Asseline school, 14th arrondissement

The works implemented in 2012 on the pilot site of this school in the 14th arrondissement of Paris, with a budget of 408,000 euros before tax, brought the building from energy class D to C. The works are expected to produce a 38% reduction in consumption of primary energy (44% of final energy) and a 46% reduction in greenhouse gas emissions.

[Press kit for the visit to the Asseline school, 14 March 2012](#)

The first results for a batch of 45 schools in the framework of the CPPE

The first known results of these renovations indicate a reduction of 33% in the energy consumption of the buildings and a reduction of 34% in CO₂ emissions in 2013 (compared to the period 2008/2009) for 45 schools, thus surpassing the CPPE contractual goal of an estimated reduction of 30%.

For the 100 schools renovated in 2012

- Renovations in the framework of the partnership contract for energy performance (CPPE)
- An expected reduction of 10,700 MWh in final energy per year
- 2,300 tons of CO₂ avoided per year
- €850,000 saved per year
- More than 25,000 m² insulated, 10,000 doors and windows revamped, 7,500 lamps replaced and 6,600 thermostatic taps installed
- 2,200 m² of roofing planted with vegetation
- 500 municipal employees trained and 150 awareness-building sessions for the school-going public
- €32 M before tax, for the works and studies conducted over 2 years

For more information

An initial project involving 100 schools between 2010 and 2012, a partnership contract for energy performance

By the end of 2012, **100 schools in Paris had been renovated in the framework of a partnership contract for energy performance (CPPE)**. The schools are evenly distributed over the 20 arrondissements in Paris. The aim of the works was to reduce their energy consumption by 30% in accordance with the goals of the Paris Climate Plan.

The partnership contract for energy performance (CPPE) is a special type of partnership contract that provides a real guarantee that the fixed goals in terms of energy saving will be achieved, thanks to a single contact person with the private partner who accepts an obligation to achieve results. Financial penalties can be applied if the partner fails to respect these commitments.

The Paris CPPE, which fixes a dual goal of reducing energy consumption and greenhouse gas emissions by 30%, is the largest contract of its kind ever concluded in France.

The works, which were adapted to the configuration of each building, concerned the production, distribution and emission of heat, the centralized technical management of heating and ventilation systems, revamping of external doors and windows, insulating attics and renovating lighting. More than 100 people were mobilised at the height of the works that were conducted between 2012 and 2013 with ten different trades involved. In order to appreciate the relevance of the solutions envisioned and the quality of the materials, several solutions were presented in a demonstration room reserved for the project.

In addition to these renovation works, the CPPE includes a **care and maintenance programme over 20 years** in order to guarantee the performance objectives of the establishments. Finally, in order to back up the procedure, **awareness-building exercises** built around eco-gestures and the use of the buildings were organized for the school-going public and municipal employees in the schools.

The renovation of 100 primary schools represented an **initial investment of €28 M before tax**, nearly half of it devoted to insulation and heat distribution and regulation. The private partner – *Nov'Ecoles Paris*, was not **paid until after the works had been completed and upon providing proof of the results obtained** in terms of reduced consumption. Thus, the rent paid is the subject of a bonus-malus mechanism that depends on the real savings obtained compared to the initial commitment. The average annual amount of the sums payable by the City to the operator, *Nov'Ecoles Paris*, is estimated at a nominal value of about €4 M before tax.

In terms of financing, the project had the **support of the European Investment Bank (IEB)**, which covered 90% of support expenses for the project preparation and follow-up services, and the intellectual services in the framework of the European Local ENergy Assistance (ELENA) programme implemented by the European Commission. The subsidy contract was signed on 15 December 2010 and ended in September 2014.

Keywords: energy efficiency, greenhouse gas, administration