



Best Practice: Green Schools

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CITY: BUENOS AIRES

POLICY AREAS: ENVIRONMENT; EDUCATION

BEST PRACTICE

As Mayor of the Autonomous City of Buenos Aires, Mauricio Macri has maintained the Sustainable Development policy since assuming office. The **Green Schools' Program** emerged from this policy. As a joint effort between the Green Schools Program of Buenos Aires Ministry of Education and the City's Environmental Protection Agency, the GCABA plants green roofs on public schools to reduce CO₂ emissions and improve the school buildings' efficiency. In addition, it is an opportunity to teach students about environmental issues and promote sustainable living.

ISSUE

According to the report "Population Division of the United Nations," Latin America is the most urbanized region in the developing world. At present, 81 percent of Latin America's population lives in urban areas and that number is expected to grow to 86 percent by 2030.

Consequently, cities must play a strategic role in the fight against climate change. Changes should be measured not only based on the population rates, but also by the impact they have in influencing the people who live in them. Buenos Aires is a compelling force for economic development in Argentina, but was among the four least sustainable cities in Latin America according to the results published in 2010 Latin American Green City Index.¹

According to the Green City Index, Buenos Aires had to make significant changes to improve its performance in energy consumption, CO₂ emissions and water consumption. In response, Buenos Aires recently adopted an ambitious action plan on climate change, in which environmental and sustainable development education plays a key role in developing conscious citizens who are aware of their impact regarding food, energy, and water consumption.

The local government is now taking steps to mitigate the consequences of climate change and reverse this situation. In this context, the Ministry of Education has been implementing the program Green Schools. This program is organized into four specific areas: energy efficiency, waste management, environmental health and climate change.

GOALS AND OBJECTIVES

The overarching goal of the program is to strengthen students' critical knowledge on environmental issues to promote sustainable development in schools and other buildings of the Buenos Aires Ministry of Education.

More specific goals are:

- Build green roofs on public schools
- Develop curricula that will provide children with an understanding of sustainable development
- Implementation of classroom activities focusing on four specific areas: 1) Energy Efficiency; 2) Renewable Energy and Climate Change; 3) Waste Management; 4) Environmental Health.
- Training teachers and staff

¹ http://www.siemens.com/entry/cc/features/greencityindex_international/all/en/pdf/report_latam_en.pdf

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IMPLEMENTATION

Organic green roof architecture is an eco- friendly technology that integrates nature into man-made structures. The roof of a building is covered first with a waterproofed membrane followed by native plant species. The engineering allows for vegetation growth while maintaining and protecting the original structure.

Installation of a green roof

1. Waterproofing:

The first layer of a green roof is a 4 cm waterproof membrane.

2. Roof Drainage System:

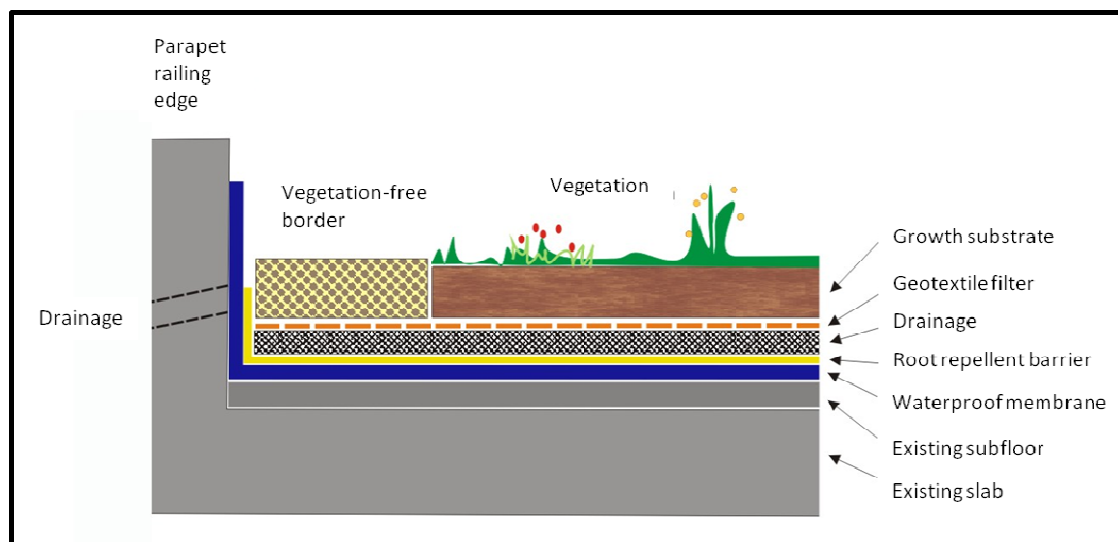
- Placement of a drainage membrane
- Placement of the substrate (mixture of ground in suitable proportions for low-maintenance plant)
- Placement of plants
- Brick footpath
- Irrigation Drip

3. Vegetation

- Substrate layer of 15 cm
- Native plants and vegetation

Maintaining a green roof

Maintaining a roof garden requires very little extra care. Fertilization is unnecessary, however if you choose to fertilize, it is important to use only organic products and not fertilize more than once a year.



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TIMELINE

In 2011, the first green roof was built on top of a public school. The vision of the program is to create green roofs on all public schools in the city. The beneficiaries of this intervention are primary and secondary students in public schools.

- August 2010** In August 2010 the Minister of Education signed the resolution and the Green School program was formally incorporated to the traditional education of children in public schools.
- January 2011** In January, the government of Buenos Aires began work on the first green roof.
- March 2011** In March, the first Green Roof School was inaugurated in Buenos Aires.
- 2011** Construction of three additional Green Roofs on Public Schools.
- 2012** Building of ten new green roofs on ten different schools.

COST

Total cost is \$73,000. This includes the construction and monitoring of a 300 m2 green roof.

RESULTS AND EVALUATION

- More efficient buildings
- Year round plant growth
- Reduced heating and cooling costs
- Lower urban temperatures due to the heat island effect (on a summer day an asphalt roof reaches 70 ° C, while the same surface covered with vegetation does not pass 26 ° C)
- Improved carbon dioxide levels
- Increased environmental awareness and sensitivity to environmental care among students.



A student looking at the flowers on the green roof



The Minister of Education with students on their green roof

LEGISLATION

Minister of Education Esteban Bullrich creates the Green Schools Program through Resolution N°3117/GCABA/MEGC/10.

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LESSONS LEARNED

Below are issues encountered since the beginning of the Green School program:

- Some public schools in the City have infrastructure problems due to the lack of proper maintenance and access to essential services (gas and water supply). Heating systems are usually obsolete. Therefore not all buildings are suitable for the installation of green roofs. The first priority should be to resolve the basic foundational problems.
- The construction process is expensive and the City of Buenos Aires does not provide tax incentives for green building. It is best to address the construction as an articulated initiative between different public agencies.
- Previous unresolved building problems were discovered during the process of the installation of the green roofs. Therefore some unforeseen costs had to be addressed within project budgets.
- Green roofs involve higher initial costs than traditional roofing so there must be a willingness to address the construction as an articulated initiative between different public agencies.

TRANSFERABILITY

Through the General Direction of International Relations and Cooperation, the government of the City of Buenos Aires works traversals to systematize Publics Policies to provide innovative solutions to shared problems.

At present, the Green School Programs is being shared with the City of Medellin and with the Japanese government.

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