

**MEGA PROJECTS, HUMAN CAPITAL DEVELOPMENT AND URBAN HOPE:  
School infrastructure projects in Bogota City during the last 10 years and their  
Impacts, effects and significance for the urban and social fabric.**

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**ABSTRACT**

The golden Lion award for cities gained by Bogota city during the past 10<sup>th</sup> Biennale di Venezia 2006 in Italy was a remarkable and worldwide recognition of a planned and well executed urban development vision that through mega projects achieved social processes of inclusion, improvements in life standards for citizens and enhancement of Urban Hope.

Between 1995 and 2007 a visionary development politic carried out by 3 different but consecutive mayors started a trend of physical reconstruction of the city based on megaprojects mostly in three complementary infrastructure branches: Mobility and transportation with the introduction of the BRT system Transmilenio, Education with the construction and renovation of more than 300 school facilities as well as 3 new mega public libraries and Environment due to the investments in new public spaces as parks, bicycle paths, sidewalks, pedestrian bridges and boulevards.

With an investment over 330 Million euro<sup>2</sup> (more than 420 million Dollars, twice the entire cost of the Guggenheim Bilbao) made during the last decade on new school facilities, mostly for children from the poorest sectors of the city, Bogota, the capital of Colombia with nearly 8 million inhabitants, contributed effectively with poverty reduction, social inclusion, urban regeneration and with the improvement of life standards within the city.

According to Becker<sup>3</sup> “*Education, training and health are the most important investments in human capital.*”. Thus through the construction of a new network of school infrastructures according to the highest standards and specification in architectonic quality, the mayor office of the city has triggered processes of human capital development as well as urban reactivation, giving to the poorest citizens new perspectives, skills and the hope of a better future.

The following revision of this school megaproject strategy built in Bogota city aim to discuss the impacts and effects of infrastructure interventions in their social and urban fabrics.

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<sup>2</sup> Official Homepage from the Bogota Mayor Office. [online] Available at: [http://www.bogota.gov.co/portel/libreria/php/x\\_imprimir.php?id=38568](http://www.bogota.gov.co/portel/libreria/php/x_imprimir.php?id=38568) . [Accessed 12 01 2012].

<sup>3</sup> Becker G.S. Human Capital. The concise Encyclopedia of Economics. [online] Available at: <http://www.econlib.org/library/Enc/HumanCapital.html> . [Accessed 12 01 2012]

## **KEY WORDS**

Bogota, School infrastructure, urban hope, human capital, Mega Projects.

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## 1. PRELIMINARY STATEMENTS

“Educate the children and it won't be necessary to punish the men.”  
(Pythagoras, Quoted by Geary, J. 2007).



**Figure 02:** Bogota's panoramic view facing north.

**Author:** Antonio ca2.

The improvement and provision of the School Infrastructure System carried out in Bogota city during the period between 1998 and 2007 is probably the biggest and most important investment made by the city's Mayor Office in the branch of education in its entire history, as well as the first megaproject of this kind built in any Colombian city until these days.

Developed in a relatively short period of time, the Bogota's New School Facilities might be understood as a megaproject made of more than 300 facilities distributed all around the city, which impacts relevance for the citizens in terms of urban and social inclusion, are just comparable with what in 1936 meant for the city the construction of the Campus for the Universidad Nacional de Colombia (Public National University).

The main goal of the megaproject was to actualize and improve the physical state of the existing School facilities of the city due to its old and high deteriorated levels as well as its high seismic vulnerability structures as long as according to a technical previous analysis more than the 60% of the facilities had a high seismic level risk (Rodriguez 2009).

Although the main goal of the project was really specific, the way to achieve it brought several elements into consideration as the role and meaning of the school building in the urban context, or the necessity for a definition of architectonic quality parameters to achieve with the new facilities, rising the complexity and at the same time assuming broad social impacts to achieve with the infrastructure improvement.

Thus having a look at the entire process of the megaproject during those 10 years of work, it is possible to understand 6 different main actions or phases, that might be seen as specific goals and further outcomes:

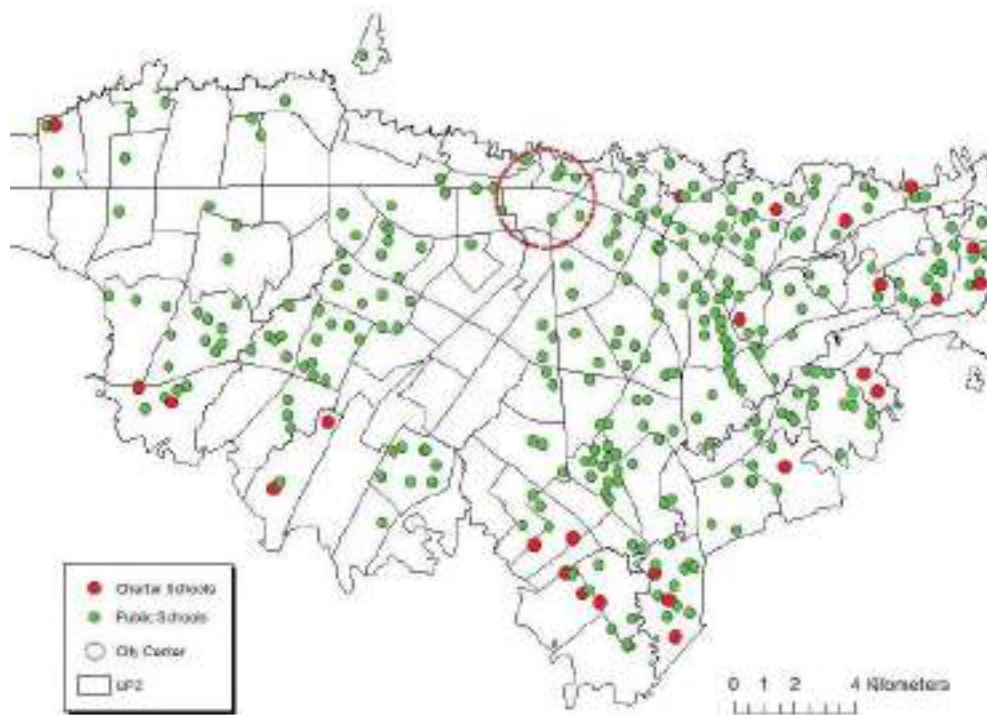
- To enhance and improve the physical features and spatial quality of the existing school facilities as well to ensure the structural reinforcement from all of them with regard to the highest architectonic standards.
- To increase the capacity of the education system due to the construction of new schools in several sectors of the city without supply of the public service.
- To carried out a Master Plan for Education Facilities that organize allocation and distribution of the public school infrastructures along the city, as well as that determine urban interaction aspects regarding land use, accessibility and environment, promoting equity and social inclusion.
- To create a bridge between the private and the public education sector giving in concession for management and guidance of 23 new public school facilities located in the poorest areas of the city to recognized private groups with previous experience in the education field.
- To clearly define and summarizes spatial and architectonic standards for the new schools and for the updated facilities with regard to the educational models and the kind of academic goals that the Colombia's Education Minister as well as the Bogota's Education Secretary had defined.
- And to actualize a survey of all the Public Schools in the city in order to create an updated and systematized data bank of the real physical state of all facilities as a comparative tool in order to organize, schedule and set up priorities of intervention.

Thus the process of the entire megaproject had been developed bottom-up regarding the previous goals list, starting with the survey of the existing schools in 1998, following with the compilation of architectonic standards in the year 2000 with the publication of the book “Construyendo Pedagogía. Estándares básicos para construcciones escolares, SED” (Rivera et al. 2000), (Building up education. Basic standards for school facilities SED). And mainly building up mostly of the new schools as well as reinforcing structures of the existing facilities between 2004 and 2008 (Benavides 2009).

Different actors have been involved along the process both at the City as well as at the National level, but the main public agency responsible for the management of the project has been the Secretaria de Educación del Distrito Capital SED (The Capital's District Education Secretary), together with the Bogota's Mayor Office. Among other public institutions involved on the project is important to mention the District Planning Department and the Universidad Nacional de Colombia, who through it Planning and Projects Office (Working as a professional consultant office) carried

out the Master Plan as well as the coordination for the Design of the new Schools and the structural reinforcement and renovation of the old facilities.

The successes of such a complex and ambitious megaproject lies in many different variables going from the quality of the professionals involved to the effectiveness of interaction and coordination between public agencies. But is of utmost importance to underlying how at the core of the process, the success in achieving the goals depended on the continuity of a visionary development policy of a more inclusive city, committed with the improvement of life quality levels for it citizens carried out by 3 different Mayors during a period of almost 10 years.



**Figure 03:** Bogotá’s public school distribution. In green color public schools and in red color schools in concession or “Charter schools”.

**Source:** Juan Diego Bonilla 2010.

## 2. DEVELOPMENT VISIONS OF SOCIAL AND URBAN INCLUSION

*“Vision without action is a daydream. Action without vision is a nightmare.”*  
(Japanese proverb).



**Figure 04:** Former Mayors from Bogota between 2005 and 2007. From left to right: Enrique Peñalosa , Antanas Mockus and Luis Eduardo Garzon .

**Source:** <http://www.terra.com.co/noticias/articulo/html/acu24564-preguntele-a-enrique-penalosa-lucho-garzon-y-antanas-mockus.htm>

The process of physical reconstruction carried out in Bogotá city between 1998 and 2007 has been studied, discussed and awarded by the media, the academy and planning experts both nationally and internationally during the last years. Mostly focused on the BRT Transmilenio project success, Bogotá has been seen as an example of how effective visionary politicians articulated with serious planning and high quality execution and implementation is a right way to intervene positively the built environment.

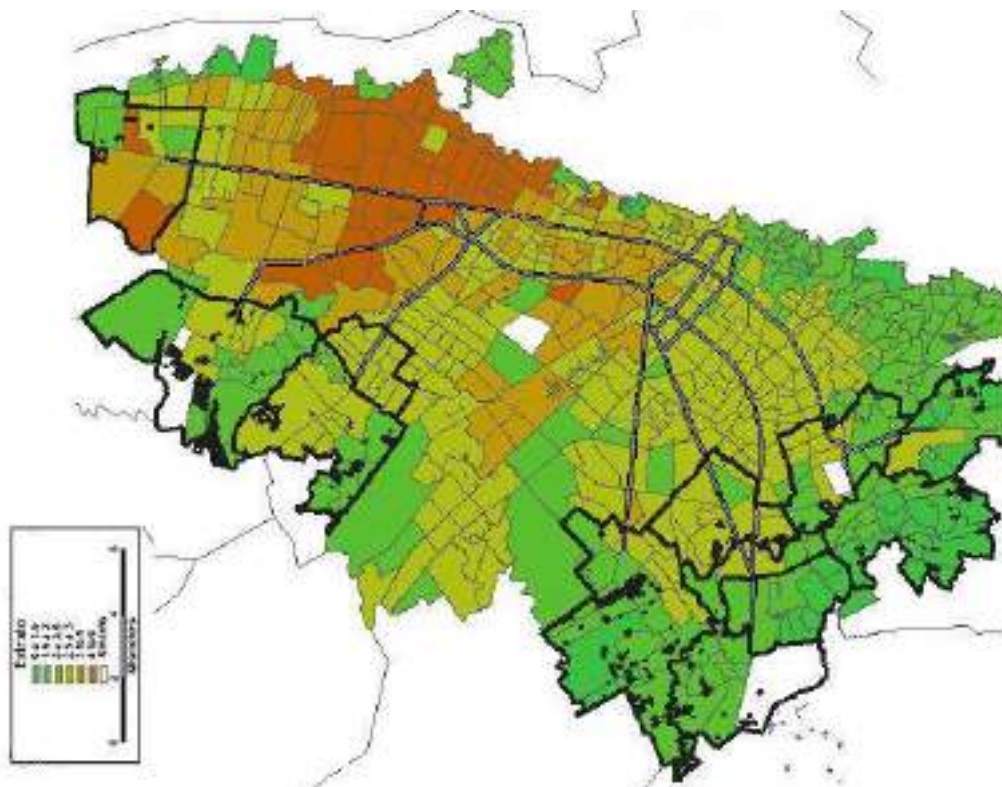
Provably the most important recognition in that sense have been the Golden Lion award for Cities that the city obtained in 2006 at the 10<sup>th</sup> Biennale di Venezia in Italy. *“The Golden Lion Award for cities is awarded to Bogotá, Colombia. This city has in the last decades addressed the problems of social inclusion, education, housing and public space especially through innovations in transport... Bogotá is, in short, a beacon of hope for other cities, whether rich or poor.”* (Sennett, R. Khan, A.A. Gormley, A. Hadid, Z. 2006).

Having a close look at the main interventions carried out in Bogotá during this period might be seen that the physical reconstruction strategy was focused on the improvement, reinforcement and consolidation of its urban infrastructure networks.

Thus the reconstruction trend of the city might be understood as the improvement of 3 complementary infrastructure branches and its networks associated on:

- Mobility and transportation with the introduction of the BRT system Transmilenio. Physical improvements of the entire transportation networks used by the system.
- Education with the construction of 61 new schools, the renovation and structural reinforcement of 201 existing facilities and the physical improvement of other 399 existing schools. As well as the construction of 5 new mega public libraries.
- Environment due to the investments in new public spaces as parks, bicycle paths, sidewalks, pedestrian bridges and boulevards, consolidating environmental networks, green corridors and the pedestrian as well as the bicycle paths continuity.

This infrastructural renovation trend of the city motivated by the vision of a more inclusive, accessible and balanced built environment has its roots in a context with tremendous social disparities, dramatic poverty – richness contrasts, unbalanced social infrastructure distribution and a fragmentary urban reality.



**Figure 05:** Socio economical distribution in Bogota. In Green tones strata 1 and 2

**Source:** Steer Daviea Gleave 2000

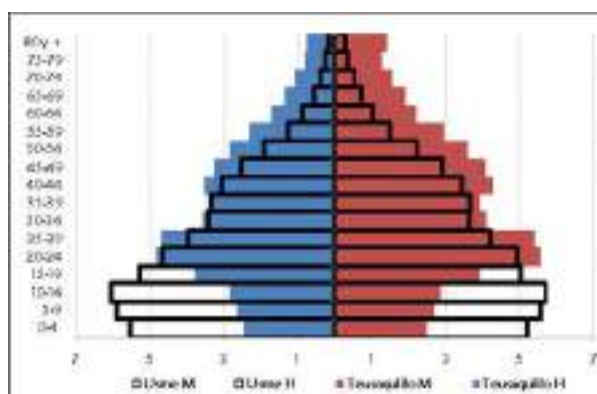
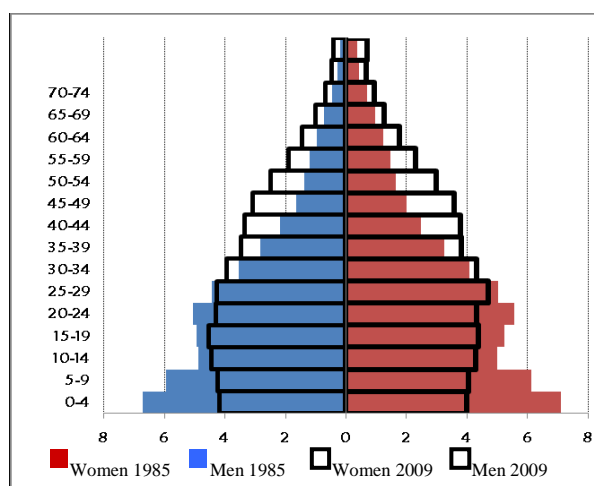
Bogota estimated population was in 1999 about 6'294.000 inhabitants with about the 44% of it population living in poverty and 11.3 in absolute poverty or destitution. For 2003 population living below poverty line was estimated in about 55,3 % (Garzón 2003).

According to Rueda (2003) Bogota was in 1999 about 31000 hectares what means a gross density of 204 inhabitants per hectare and therefore is seen by some city rankings among the largest populated cities of the world as one of the 10<sup>th</sup> with highest density levels ( City mayor statistics 2007). Poverty is spread in the city and there are different figures expressing the real share of urban land use among the different socio economical stratification sectors. According to some of this estimations the strata 0, 1 and 2 (stratification of the population below the poverty line) are concentrating about the 34,6 % of the housing areas of the city while the strata 5 and 6 (Higher income strata ) are just the 14%.

Social disparities and contrasts are also visible on the age distribution of the population in the different sectors of the city city, as well as on the household income distribution.

Indicators are strong enough and show some of the social and morphological problematic of the city and lead to understand why at that time was necessary to undertake measures in order to promote physical and social regeneration while reducing poverty and improving living standards and conditions for the citizens.

But this visionary development process seen in Bogota between the period of 1998 and 2007 would not be possible without the right political commitment coming from the heads of the public institutions, which right decisions and effective administration achievements turn into reality ideas and visions of social equity and a more inclusive built environment.



**Figure 06:** Bogota’s population pyramids comparison. Above City’s total comparison between 1985 and 2009. Below comparison between the Usme and Teusaquillo sectors in 2005

**Source:** DANE, Oficina Asesora de planeación. Boletín estadístico sector educativo Bogotá 2009.

## 2.1 The balance between political continuity and innovation

Perhaps one of the most important key issues that allowed visions turned reality was the continuity of development policies among 3 different Mayors along 4 consecutive administration periods, changing the traditional political behavior of cutting up plans and goals fixed by previous administrations. In that sense the administrative continuity of the 3 mayors started by Antanas Mockus, followed by Enrique Peñalosa and Luis Eduardo Garzon, is a positive example of right balance between the political commitment for policies continuity and the desire for innovation.

The megaproject for new schools facilities is one of the examples of this policies continuity where each Mayor took the achievement of the previous administration and tried to give a step further for the project improvement. Even though the 3 Mayors were at that time politicians coming from different parties and having different origins they shared the vision and goals and the way the city should go through.

Peñalosa is clear while defining his beliefs when talking about the visions his administration had: *“What I would propose is that there are at least two kinds of equality that every society should strive to provide for its citizens. First, that all children have access to nurseries, education, food, music, art, and green spaces. This ensures that we all start off on the same footing and are nourishing the same potential. Second, I believe that the first article in every constitution should read “all citizens are equal before the law.”* Peñalosa interviewed by Grunow (2012).

And Mockus as well when talking about the new mega Libraries which Peñalosa started some years before his second administration period: *“One of my dreams is that in a future we will have poets and intellectuals, who saw the light in these Libraries”*. Mockus quoted by Caballero, M. C. (2003).

## 2.2 Education as a priority for development

Never before in the history of the city was development and improvement of the education system for the less income citizens a priority for politicians like in this period. Prove of that are the allocation of the schools mostly carried out in the poorest sectors of the city (strata 1 and 2), the size of the economical investment more than twice the price of museum Guggenheim Bilbao for example<sup>4</sup>, the quality of the facilities which projects were designed by some of the best Colombian architects and the administration of the entire network carried out after construction assuring the expenses for it functionality as well as assuring the quality of education itself given to the children.

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<sup>4</sup> Investments in education between 2004 and 2008 where about the 31% of the entire budget of the Capital City (SED, Bogota’s Mayor office 2004)

Infrastructure Project	Time Period	Units	US Dollar Million.
Transmilenio Phase I *	1999 - 2002	42,4 km	\$ 682
New Mega Libraries**	1998 - 2002	3 Facilities	\$ 17,4
Public Spaces associated to the libraries		For 1 facility	\$ 6
New Schools in Concession ***	1998 - 2003	23 Facilities	\$ 57,5 (Est.)
Agreement SED-UN ****	2004 - 2008		\$ 421 (Est.)
New Schools		38 Facilities	\$ 140
Expansion and Reinforcement of existing schools		201 Facilities	\$ 281
Architectonic Improvement of existing schools		399 Facilities	
<b>Total Investment in Educative Related Infrastructure</b>		<b>About \$ 501,9 (Estimate)</b>	

**Table 01:** Bogota’s Infrastructure investment comparison between Transportation (t\Transmilenio Phase I) and Education related projects during the 10 years period analysis.

**With information from:** \*Angel, S.L. et al. (2011)

\*\* Caballero, M. C. (2003)

\*\*\*Sarmiento, A. et al. (2005)

\*\*\*\*Benavides, S. C. (2009)

Nevertheless the role played by the Education Infrastructures in terms of social inclusion goes beyond their academic main objective as long as the school facility has been understood as an urban node for socialization able to be used for participative activities by the communities. In fact the school is used for scholars as well as for their parents or any other social groups for cultural events, participative talks and sport and leisure activities in some moments. The school facility is used for the Mayor office as well as a place where to meet with the communities, where to get contact with them through special programs like the one to provide food for the poorest citizens for instance.

This influence capacity of the Education infrastructures in the community amplified the role of the education for citizens and goes beyond it own boundaries in giving them the chance to socialize in a dignified built space.

### 2.3 Public agencies working together

Probably the third key issue that played a relevant role during the entire process was the interaction and support between public agencies in all different aspects present in a megaproject like this.

Cooperation and coordination among agencies was of utmost importance according to Carlos Benavides S, chief director for the Facilities planning and design department of the SED: “ *according to the UNESCO and the Latin American and Caribbean countries the different agencies should improve and strengthen the links among them and the national and international organizations as well as with the universities and the professional associations of architects with regard to the improvement of the design, construction and maintenance of Education facilities*” Benavides, S. C. (2009).

Without the active cooperation and coordination between the different public agencies the political development vision from the Mayors could not been possible to see the light as long as some of them are in charge to regulate and approve land use, environmental laws or public services topics that due to the location of the schools mostly in the periphery and in the poorest sectors had a lack of information and technical studies.

### 3. THE MEGAPROJECT DIMENSIONS AND COMPONENTS

*“Para renovar no es necesario contradecir, basta profundizar.”*  
(To renovate it is not necessary to contradict; it suffices to make something more profound)  
(Nicolás Gómez Dávila, 1992).  
(Translated by Nikos A. Salingaros)



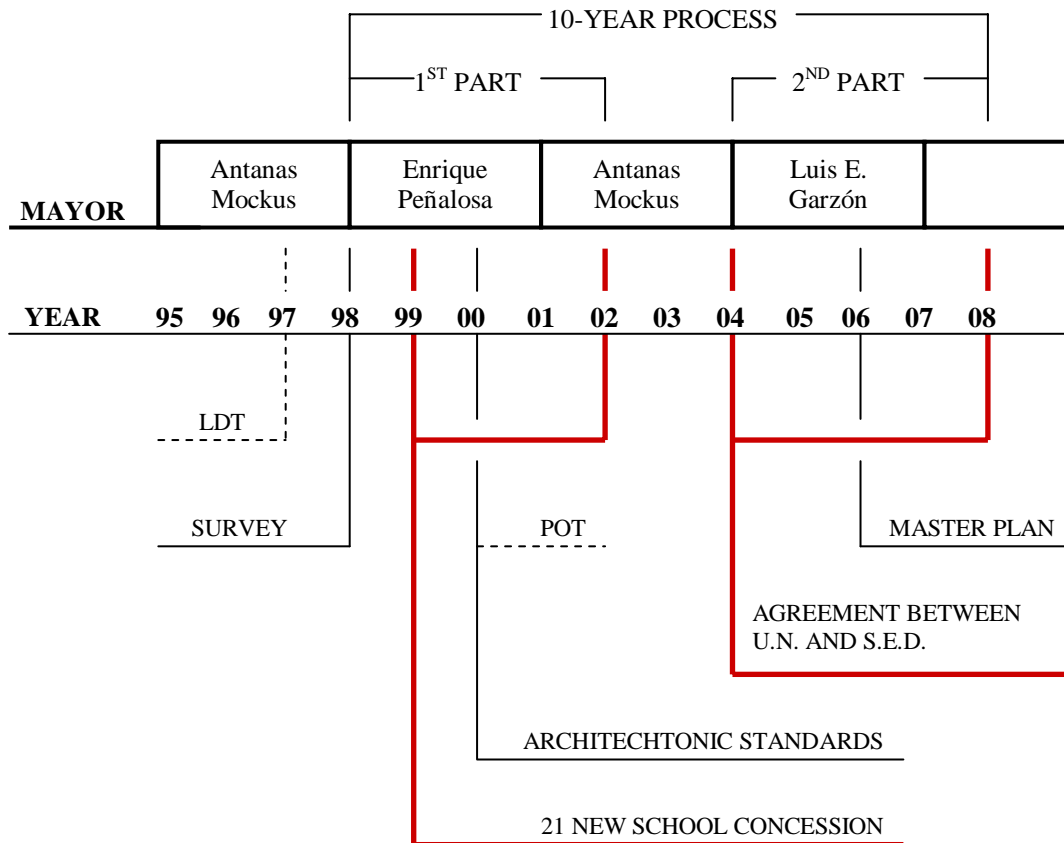
**Figure 07:** Public School Gerardo Molina. Architect Giancarlo Mazzanti.

Source: <http://sancheztaffurarquitecto.wordpress.com/category/arquitectura-colombia/>

The megaproject for new school facilities construction had several planning and implementation dimensions which might be understood as a ‘step by step’ process, where every reached “product” was wisely used as a resource for the development of the next stage.

Therefore is important to underlying the remarkable coordination and guidance effort that the SED perform along the entire process.

The following figure illustrates the different activities and main relevant external “Planning products” (POT and LDT) along the 10 years analysis period, together with every Mayor’s period.



**Figure 08:** Dimensions of the megaproject 10 years process.  
**Source:** Author.

### 3.1 The LDT from 1997 and the Bogota's POT

The territorial planning process transformation triggered in Colombia for the law 388 from 1997, better known as the Territorial Development Law (LDT), sought to complement the economic and social planning with the territorial planning dimension, to rationalize physical interventions on the territory itself and to direct its development as well as its sustainability (Fernandez, F. 2007). Probably one of the most important changes introduced with the law for all cities and departments was the obligatory development of a Territorial Plan called POT (Plan de Ordenamiento Territorial) by every Mayor Office and Regional Governor Office, which in the case of Bogota's first version was approved in the year 2000 and had a time frame of 12 years.

The POT territorial strategy is based on three principles; the protection and guardianship of environment and natural resources; the improvement and optimization of infrastructures of mobility, basic services, and social facilities; and the socio economic and spatial integration at different scales. Thus, it identifies three

complementary and interdependent structures to develop its territorial strategy; the main ecological structure composed by environmental and natural elements, rural land, protected areas, and parks; the functional structure composed by general systems of mobility, basic services, public space and social facilities; and the socio-economic structure composed by city centre and centralities networked.

The role the POT played in further urban interventions was crucial as long as it introduces a broad urban and regional perspective of influence and impacts analysis as well as specific goals and guidance's for the articulation between systems or structures and the reinforcement of the urban centralities. In order to achieve all these "allocation and distribution" parameters and requirements the law designates a planning tool called the Master Plan which articulate the macro scale of the POT with the specific scale of the urban project.

### **3.2 The survey of existing Education Facilities**

As a first step for the improvement of existing and the design of new school facilities the SED carried out in the year 1998 a survey and systematized inventory of the Education infrastructures of the cities, with detailed information about quantitative and qualitative physical and environmental features of the buildings, along with an seismic vulnerability evaluation. According to Benavides (2009) the scope of the survey covered almost 667 facilities with an approximated built up area of 1'138.000 Sq m. The evaluation determined that mostly the 63% of facilities had risks under seismic events.

Based on the survey the SED obtained not just a first measurable scope for the physical intervention in existing facilities, but an actualized data bank of the properties in terms of documentation for legalization and regularization of plots with regard to the property law.

### **3.3 Building up with high architectonic and spatial standards**

Parallel developed to the survey of existing infrastructures the SED carried out a research about the desired spatial and architectonic standards to be used in the design of the new schools as well as the parameter to be achieved with the renovation of existing facilities. The project was finally compiled and published in the year 2000, under the name "Construyendo Pedagogía. Estándares básicos para construcciones escolares, SED" (Rivera et al. 2000), (Building up education. Basic standards for school facilities SED).

The book is a useful tool and a fundamental reference for architects and professionals involved in the design of the school facilities, as long as it gives the desired architectonic parameters, dimensions, features and specifications for classrooms, and every interior and exterior spaces to be required. Moreover the book explains and discusses the relationship between education and architecture in order to set up spatial concepts for designers and architects to be achieved within the buildings.

	For New Facilities	For renovation in existing Facilities
Parameter	Sq m per Student	
Plot Area / Student	12 Sq m	5 Sq m
Built up Area / Student	6 Sq m	2,7 Sq m
Open Space / Student	9 Sq m	2 Sq m
Amount of Floors	2 Floors	2 Floors
Building Footprint Rate	0,35 Max.	0,35 Max.
Academic Room	Minimum Rates per Student	
Kindergarten Classroom	2 Sq m / Student	1,3 Sq m / Student
Medium – High School Classroom	1,8 Sq m / Student	1,2 Sq m / Student
Specialized Classroom	2,2 Sq m / Student	1,5 Sq m / Student
Specialized Workshop room	3,5 Sq m / Student	3 Sq m / Student
Administration and General services	0,45 Sq m / Student	0,26 Sq m / Student
Toilets per Kindergarten children	1 Toilet / 15 Students	1 Toilet / 15 Students
Toilets per Medium – High School children	1 Toilet / 25 Students	1 Toilet / 25 Students

**Table 02:** Basic School Facilities Standards indexes.**Source:** Rivera y asociados (2000)

The Document is considered today a reference book about the relationship between architecture and education not only nationally but internationally.

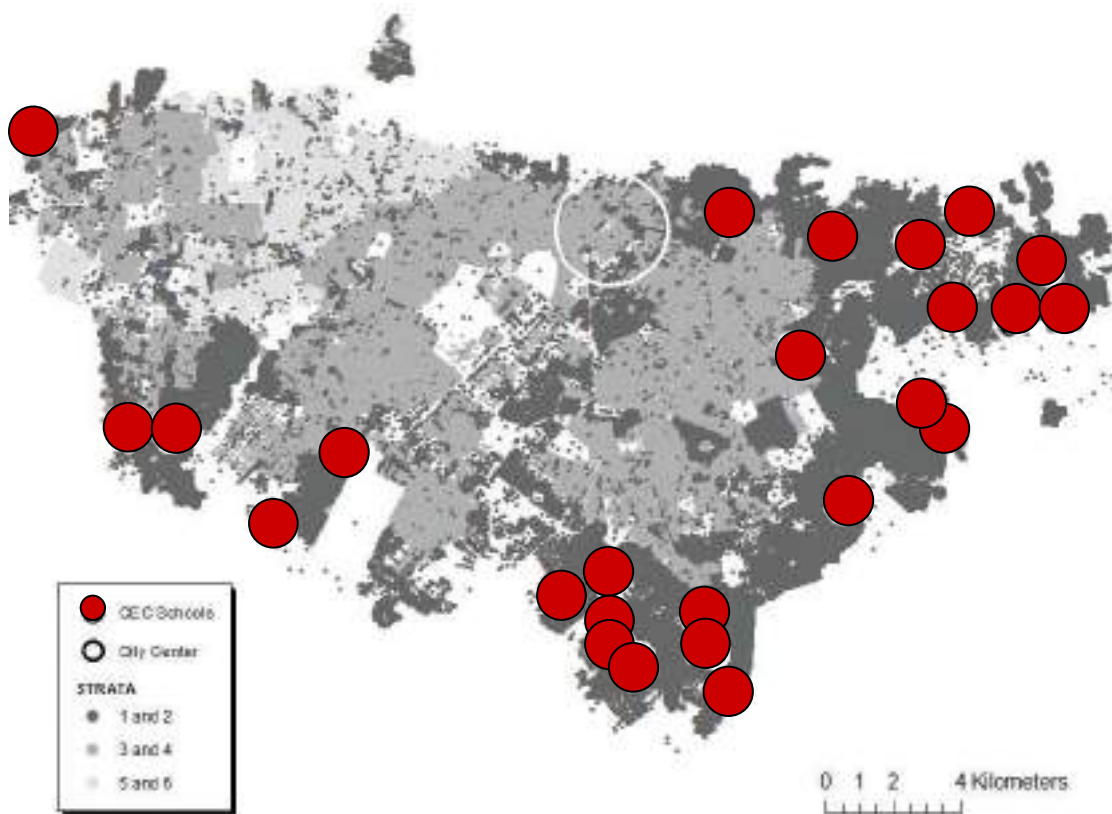
### 3.4 The school concessions (Chartered Schools)

Between the 1999 and 2002 the SED started the first round of new school construction based on the architectonic standards already delineated.

These first 23 new school facilities build up in the poorest sectors of the city where gave up under concessions contracts for administration and management to recognized private operators with a large experience as the Universidad de Los Andes, The Nueva Granada, the San Carlos and the Nogales School among others.

The model of concession looks for promotes quality in the education for children from the poorest sectors, offering the best Education infrastructure and educators from the highest levels free of charge.

Facilities under the model of concession are administrated for a period of 12 years for operators, which are elected after a public competition regarding their capabilities, experience, educational program and proved quality of past results in the ICFES examination (National recognized final examination for scholars similar to the SAT in the US, or the Maturita in Italy).



**Figure 09:** Bogota’s schools in concession location with regard to the socio economical distribution.

**Source:** Juan Diego Bonilla 2010.

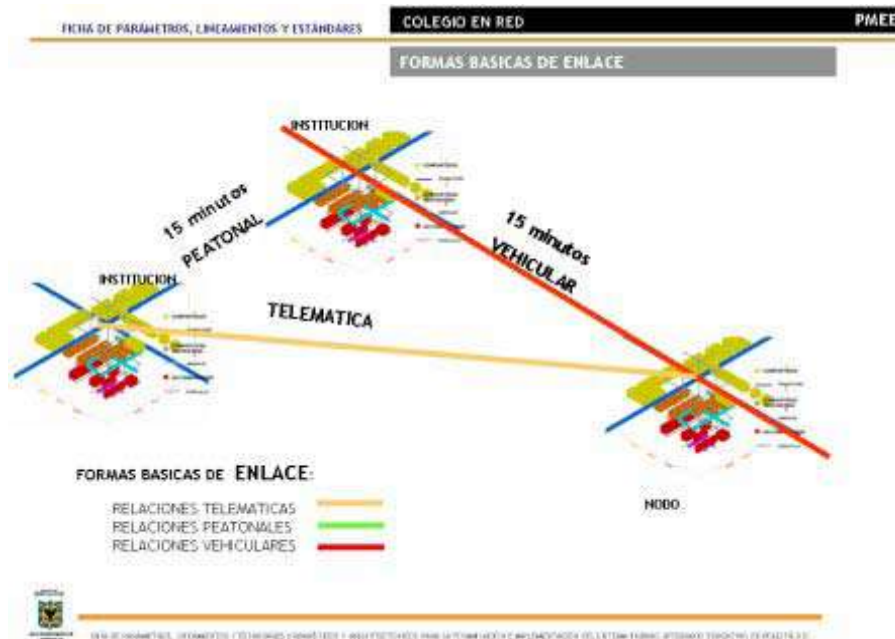
### 3.5 The Master Plan PMEE

Probably one of the most important features of the megaproject is the fact that the school facilities are distributed all around the city, mostly in the poorest and less income neighborhoods. This operation of allocation and distribution of the social infrastructures is regularized with Master Plan for School Equipment with regard to the broad parameters established for the planning department of the city in the POT as was already explained.

According to Talavera (2005) *“The Master Plan... has the task to delineate the ordering principles for endowment services, to adopt urban standards and provide indicators to allow future building and implementation planning.”*

The Master Plan understood the school facilities as nodes of a network functionally articulated with regard to its spatial characteristics able to be linked by other services, or community uses, aiming to assure a relevant urban and social role to the school building beyond its physical limits. This understanding of the social responsibility that Education Facilities might represent with regard to the specific Bogota’s urban

context was of utmost importance for the design and implementation phase of the project as long as determined typological and spatial organizations of the building itself as urban quality standards.



**Figure 10:** The School facility as urban node working in network and its basic different kind of connections according to the Master Plan for School Equipment.

**Source:** Decree 449 – 06 PMEE.

[http://www.sedbogota.edu.co/archivos/SECTOR\\_EDUCATIVO/Plan%20Maestro%20de%20Equipamiento/DECRETO\\_449-06\\_PMEE\\_VERSI%20X%20OFICIAL\\_REGISTRO\\_DISTRI%20TAL.pdf](http://www.sedbogota.edu.co/archivos/SECTOR_EDUCATIVO/Plan%20Maestro%20de%20Equipamiento/DECRETO_449-06_PMEE_VERSI%20X%20OFICIAL_REGISTRO_DISTRI%20TAL.pdf)

Developed by the Universidad Nacional de Colombia under the direction of architects Henry Talavera and Pedro Juan Jaramillo in an inter-institutional agreement with the SED between 2004 and 2006, the Master Plan is probably one of the most interesting and relevant Infrastructure planning and implementation tools developed in the last years in Bogotá due to the aim to promote inclusive spaces for community socialization as well as nodes of urban inclusion and interaction.

### 3.6 The UN – SED Agreement and the new Facilities

Based on the experience and results obtained from the previous phases of the project the SED started what would be the biggest and ambitious Facility improvement program carried out for any administration in the city before.

The SED organized in two different phases this development endeavor: with the first one they carried out public competitions among the best national architecture offices in order to find out the best proposals for the design and construction of the new Schools.

	No. of Facilities	Students capacity
New Schools	38	111600
Expansion and Reinforcement of existing schools	201	30740
Architectonic Improvement of existing schools	399	
<b>Total</b>	<b>638 Facilities</b>	<b>142340 new places</b>

**Table 03:** Goals for the expansion and improvement of the Education Infrastructures in 2004.

**Source:** Benavides, S. C. (2009)

Thus the SED together with the SCA (Colombian National professional association of architects) elected 5 of the more renowned Colombian architects giving them the chance for the design and construction of 11 new Facilities each one for 1410 students in plots about 7200Sq m and 7 of 940 students in plots of 5200Sq m.



**Figure 11:** Public School Maria Mercedes Carranza. Architect: Consorcio Arquitectura y Educacion Urbana. Arquitectos Leonardo Alvarez, Sergio Trujillo and Diego Suarez.

**Photo:** Jorge Gamboa.

The second phase, for existing Facilities improvement, expansion and structural reinforcement, was organized by the SED in a different manner with regard to the big amount of schools and the complexity of the different interventions.

Taking into account the big challenge and in order to guarantee the quality of the facilities as well as to fulfill the chronograms and general expectations of that big

enterprise, the SED subscribed an inter – institutional cooperation agreement with the Universidad Nacional de Colombia in order to get their expertise, guidance and technical support during four years of project development.



**Figure 12:** Public School Nicolas Buenaventura. Architect: Consorcio Arquitectura y Educacion Urbana. Leonardo Alvarez, Sergio Trujillo and Diego Suarez.

**Photo:** [http://www.bogota.gov.co/portel/libreria/php/x\\_frame\\_detalle.php?id=35822](http://www.bogota.gov.co/portel/libreria/php/x_frame_detalle.php?id=35822) .

The University participation was of utmost importance for the achievement of the goals. It coordinates during 4 years time more than 380 professionals and experts from different fields as architects, engineers, educators, social workers, economists, urban planers, environmental experts, and lawyers among others, focused and working all together.

The different work teams organized by the UN had to react to the big range of different technical problems in existing facilities in order to achieve the high spatial and quality standards defined by the SED, aiming to pull up, renovate and qualify old existing educational infrastructures at the level of performance of new facilities. For that reasons many of the original small interventions had to be reconsidered and had to be reformulate mostly in bigger physical interventions or spatial expansions.



**Figure 13:** Public School Republica Dominicana. Architect Eduardo Samper by the Universidad Nacional de Colombia, Bogotá.

Source: <http://colegio.redp.edu.co/repdominicana/> .



**Figure 14:** Public School Porfirio Barba Jacob. Architect: Leonardo Alvarez by the Universidad Nacional de Colombia, Bogotá

Source: <http://jaimebuitrago.com/proyectos.php?cat=42> .

#### 4. FINAL STATEMENTS AND CONCLUSIONS

*“Sow seeds for the future harvest”*  
Old proverb.



**Figure 15:** Public School Gerardo Molina. Architect Giancarlo Mazzanti.

Source: <http://sancheztaffurarquitecto.wordpress.com/category/arquitectura-colombia/>

Among the positive impacts reached by the SED and the Bogota’s Mayor Office with the planning and implementation of the New school Facilities Megaproject provably those associated to the strengthening of the Social and Urban fabric are of a remarkable importance.

On the one hand the project urban dimension had understood the school facility as the node where to get contact with the community and as a physical link to orientate infrastructure projects associated to the public space and transportation networks in slums and the poorest districts of the city.

And on the other hand less income children had found a dignified place right at their districts where to meet with the community, and where to get the tools and skills to build a perspective for a future.

Besides that it is possible to state that the megaproject promoted the strengthening of the public agencies and institutions involved due to the dimension of the challenge and the responsibilities assumed by them.

Both of these positive impacts, at the community and at the public agencies, reached with the Megaproject had had a remarkable effect on the enhancement of urban hope in citizens as long as agencies had proved commitment and real qualified results and the improvement of the built environment has positively changed.

#### **4.1 Human capital development**

It is thought that the investments carried out in education are going to have direct impacts in the human capital of a society as long as through education human resources as knowledge, know how and creativity among others might be spread, understood, discussed and improved.

With the Bogotá's Mayor Office education policy carried out between 1998 and 1997 it is possible to see an effective investment program on human capital development, which future vision aim looks for a more inclusive and equilibrate society and built environment.

#### **4.2 Conclusions**

There is no doubt about the usefulness of Megaprojects as a tool to trigger urban and social change regarding its final physical dimensions and its normally Multi and Meta disciplinary processes.

But its positive impacts and influences mostly depend of the accurate statement and understanding of the real problems it is planned to improve as well as on the urban and social visionary foreseen reality is hoped to be built up.

Therefore an evaluation of the possible side effects as well as the non project scenario must be compared with the megaproject scenario in order to determine real positive and negative impacts at the different social and urban scales.

As long as the time frame for evaluation, design and implementation of a Megaproject use to be relatively long different forecast scenarios might be evaluated and compared aiming to determine the right decisions undertaken today.

Megaprojects must not be seen only as a punctual big operation but as a chain link which multidimensional reactions might improve or affect the urban as well as the social fabric.

The spatial distributive strategy implemented with by the SED in Bogota with the planning and construction of the School Facilities between 1998 and 2007 give an example of how a Megaproject might be maximize for the use and improvement of social and urban conditions of the majority of the population.

The visionary development of a more inclusive built environment has found in Bogotá a real built example which allows us to understand a social megaproject as an infrastructure network.

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