

**THE IMPLICATIONS OF DENSIFICATION POLICIES  
FOR GREATER RESISTENCIA (ARGENTINA):  
AN ASSESSMENT OF RECENT EXPERIENCE**

**Valeria Schneider**

Universidad Nacional del Nordeste Argentina  
valeria\_schneider@hotmail.com

**ABSTRACT.** Since 2001, Resistencia City Council has been promoting growth in building height by steering development towards built-up areas in central districts that already have complete infrastructure, through the implementation of the Ordinance 5403/01 - high density.

If Ordinance 5403/01 is to be accomplished, with the proposed density of up to 2400 inhabitants, there is a need for 128 hectares of green open space at the neighborhood level (Pérez and Schneider, 2011). In the last 10 years, although the population growth of the city (16%) has been followed by an increase in the supply of greenfield per inhabitant (85%), this increase has not been reflected in the inner city areas, where there is a higher population density. This legislation does, however, include sections that make it possible to optimize this situation.

This paper continues on from previous studies and attempts an analysis of the application of existing legislation that proposed the intensification of land use in built up core of Resistencia city. It is focused on an assessment of the scope of the implementation of this legislation, with an emphasis on the design of buildings which enable the supply of areas dedicated to leisure or recreation, which would allow a decompression in the demand for green spaces in the central area.

**Keywords:** policies, densification, Greater Resistencia,

**ABSTRAK.** Sejak tahun 2001, Dewan Kota Resistencia sudah mulai mempromosikan pertumbuhan kotanya secara vertikal yang terlihat pada area-area terbangun dengan mengarahkan pembangunan menuju ke daerah-daerah di distrik pusat kota yang sudah memiliki infrastruktur lengkap melalui pelaksanaan Ordonansi nomor 5403/01 tentang kepadatan tinggi.

Apabila Ordonansi nomor 5403/01 telah dilaksanakan secara menyeluruh, dengan kepadatan yang diusulkan mencapai 2400 jiwa, maka akan diperlukan sekitar 128 hektar Ruang Terbuka Hijau (RTH) pada tingkat lingkungan/ RT (Perez dan Schneider, 2011). Pada sepuluh tahun terakhir, walaupun pertumbuhan penduduk pada kota (16%) diikuti dengan peningkatan suplai dari area hijau/ penduduk (85%), peningkatan ini tetap saja tidak terlihat secara signifikan pada area pusat kota, dimana kepadatan penduduknya relatif sangat tinggi. Peraturan ini bagaimanapun juga melibatkan bagian-bagian yang memungkinkan untuk mengoptimalkan kondisi tersebut.

Tulisan ini merupakan penelitian lanjutan dari penelitian sebelumnya dan bertujuan untuk menganalisa aplikasi dari peraturan yang ada dimana di dalamnya diusulkan mengenai intensifikasi tata guna lahan dalam pembangunan pusat kota Resistencia. Penelitian ini difokuskan pada penilaian tentang ruang lingkup pelaksanaan dari peraturan tersebut, dengan penekanan pada perencanaan dan perancangan bangunan-bangunan yang dapat mensuplai kawasan-kawasan yang ditujukan untuk rekreasi dan hiburan, dimana akan mendorong untuk kebutuhan akan ruang-ruang hijau di dalam kawasan pusat kota.

**Kata Kunci:** kebijakan, densifikasi, Pusat Kota Resistencia

**BACKGROUND**

Previous research, developed in 2011 and 2012 in collaboration with the architect Malena Perez, provided an opportunity to examine the implementation of the Ordinance Number 5403 adopted on 29<sup>th</sup> May 2001 by the Municipality of Resistencia.

According to Resistencia City Council assessment, since 2001, 153 towers have been built within the high density zone, with heights varying from 30 to 40 meters. Meanwhile, in the same period, 108 buildings were built with the neighbors limits typology, 30 buildings of perimeter free (detached) and 15 buildings of semi-free perimeter (semi-detached) types, resulting in 302 buildings (on

average up to 4 levels) in the middle density zone (Pérez and Schneider, 2011; 2012).

If the Ordinance 5403/01 (high density) objectives of achieving a filling up of the built-up city centre to 2,400 inhabitants/ hectares are accomplished, with the WHO suggestion of 10 square meters/ inhabitants, this would entail demand for 24,000 m<sup>2</sup> of greenfield space per hectare, approximately two and half squares

for each urban block. Based on the Ministry of Social Welfare suggestion in relation to the central squares (1.5 square meter/ inhabitants.), there would be a need for each hectare of the city centre area to have half as open space. Therefore, for 256 blocks covering the city centre built up zone, a total of 128 hectares of open space would be needed at the neighborhood level. See Figures 1 and 2.



Figure 1. Current relationship between population density / square metre of greenfield spaces in Residencia city centre: Study Case Block 181  
Source: Perez and Schneider 2012

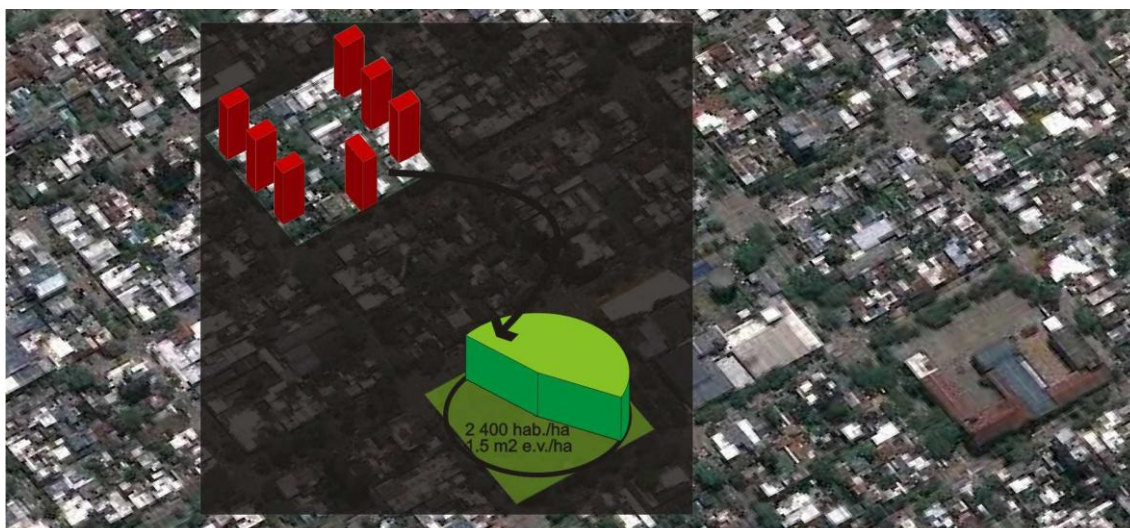


Figure 2. Potential relationship of population density, according with Ordinance 5403/01/square meter of greenfield spaces in the city centre: Study Case Block 181  
Source: Perez and Schneider, 2012

In summary, the typological study of open space in Greater Resistencia highlights the importance of the urban wetlands of about 48,908,802 square meters that still remain to be formally included as recreational parks and that also form a significant biotic reserve (Pérez, 2010). It is also important to point out that this reserve area could benefit a city of nearly 5,000,000 inhabitants, taking into account the 10 square meters/ inhabitants recommendation suggested by WHO (Pérez and Schneider, 2011; 2012).

## **OVERALL OBJECTIVES**

To analyze the situation that has arisen from the implementation of the legislation that allows both the intensification of central districts of Resistencia.

### **Specific Objectives**

- To evaluate the performance of Regulation 5403, in particular Item 13: Children's playground areas; builders must supply such spaces for leisure purposes.
- To know the quality of the spaces dedicated to recreation provided by developers of buildings within central districts of Resistencia.

## **METHODOLOGY**

The methodology is mainly qualitative though also combines secondary data, with a survey having been conducted that contained 10 questions, based on a sample corresponding to 10% of the total existing buildings up to end of the year 2011 (data supplied by the Municipality of Resistencia). The purpose was to get primary information, considered important to corroborate data in relation to the assessment of the implementation of regulations. The buildings surveyed were located throughout the districts under intensification (See Figure 3). Differentiated typologies were analyzed, according to different ages though were only included if they were officially opened after the implementation of the rule (i.e. after 2001). These data were then processed to draw in graph.

In addition, a photographic record was then taken of each of the buildings surveyed and it was then, located on a map. Once the processing of data was completed, the results were compared with the previously obtained data.

The research also used a collection of secondary sources, such as:

- Information produced by researchers at the Institute of Urban Planning and Regional- FAU - UNNE and technicians of the Municipality of Resistencia.
- Data collection and revision of bibliography.
- Selection and analysis of reference cases, regulations and processes developed to address similar problems.
- Analytical Stage: processing, systematization and analysis of relevant information.
- Development of figures and texts. Conclusions and final recommendations

## **DISCUSSION OF RESULTS**

Ordinance 5403/01: The purpose is to intensify land uses in central districts where full-service infrastructure is available. These areas support high densities (1,200 to 2,400 people per hectare), allowing the city to grow in height. In addition, this legislation makes the following provision in Annex I, section 13:

*“...The developers of towers must provide a children's playground area in all the cases of multifamily buildings, with a specific area for recreation, to prevent further conflict by overlap with people at sidewalks or the surrounding areas.*

The area will have a minimum of 40.00 m<sup>2</sup> and its final dimensions must consider a minimum a surface of 2.00 m<sup>2</sup> for each functional unit.”  
([www.mr.gov.ar/v2/Documentos/.../ORDENANZA%20No%205403.doc](http://www.mr.gov.ar/v2/Documentos/.../ORDENANZA%20No%205403.doc))



### Location of surveyed buildings

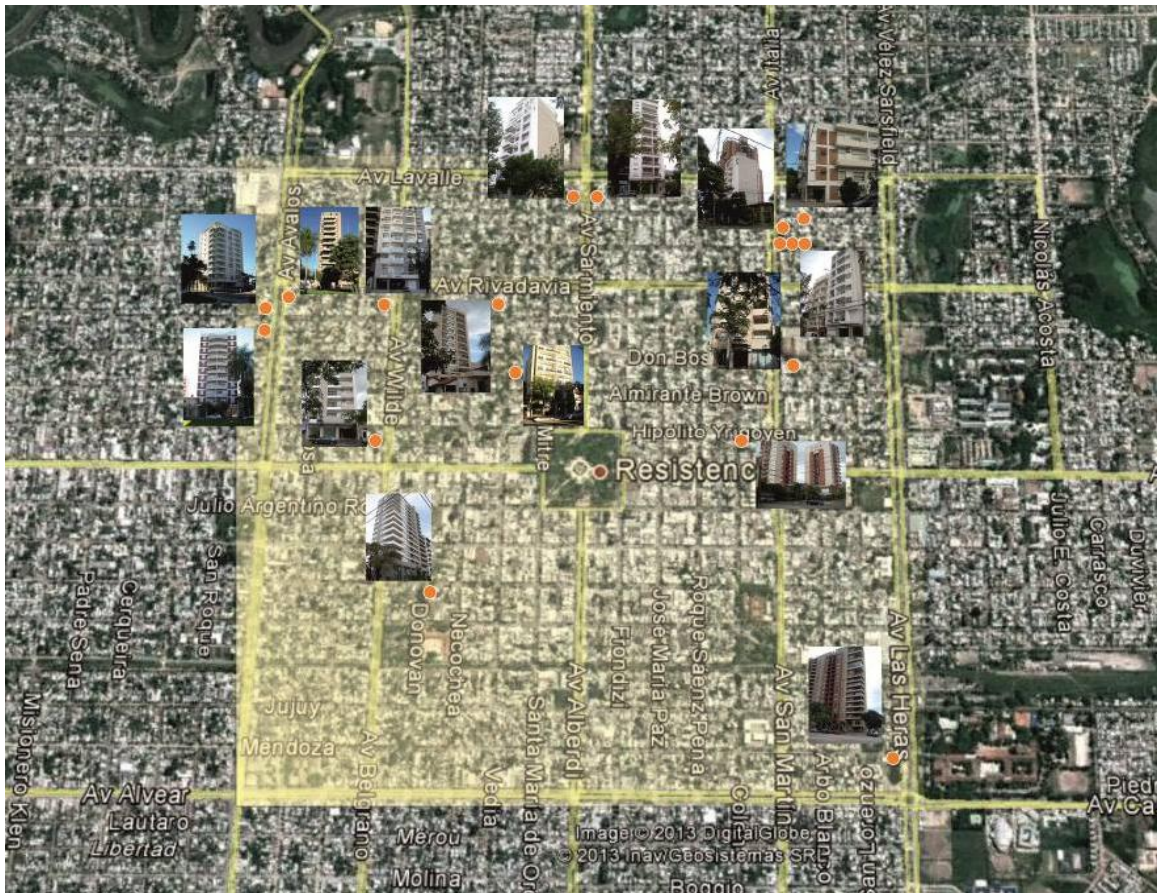


Figure 3. Distribution of buildings in central districts of Resistencia.  
Source: Author based on image Google Earth, 2013

#### Analysis of survey data:

With the purpose of knowing the different types of towers and the amenities that they offered, the first questions aimed at determining the year of official opening of different buildings.

Determining the age of these buildings was important for analyzing whether developers were implementing the regulation items and in order to review the evolution of proposals (See Figure 4).

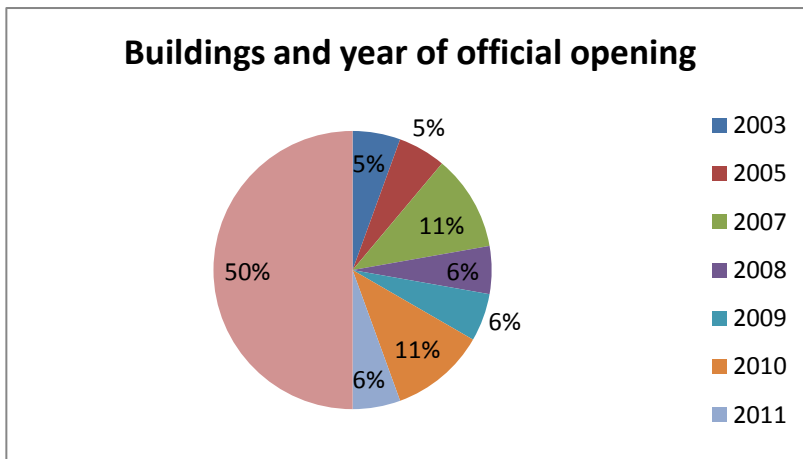


Figure 4. Years of inauguration of buildings surveyed  
Source: Author, 2013

The majority of typologies of buildings analyzed had between 15 and 80 flats, in some cases reaching up to 100 flats distributed in 2 towers, with most of them being between 80 and 100% occupied. In Figure 5 it can be seen that the oldest typologies offer spaces for common use with a grill known as 'MUR' (Multi-purpose room) since it is designed to accommodate various activities and is located in the terraces in the majority of the typologies. The 'newer' buildings also have other offers

such as 'grill by flats', 'community swimming pool', 'playground area for children' and new spaces have also been introduced such as 'gym and micro-cinema' (items contained in the Figure 5 as 'Others'). In general, all of them supply garages; the reason why this item is represented by 100 % in the data. In order to evaluate the performance of this item, a question was designed to better appreciate this reality. Figure 6 summarizes the answers.

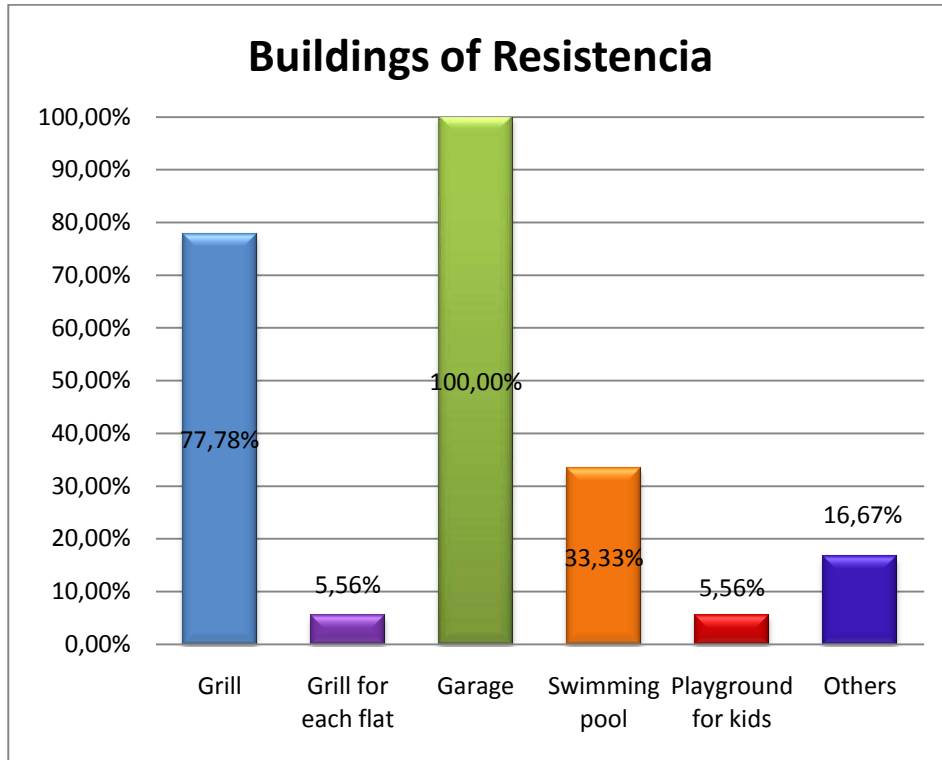


Figure 5. Buildings of Resistencia and their amenities  
Source: Author, 2013

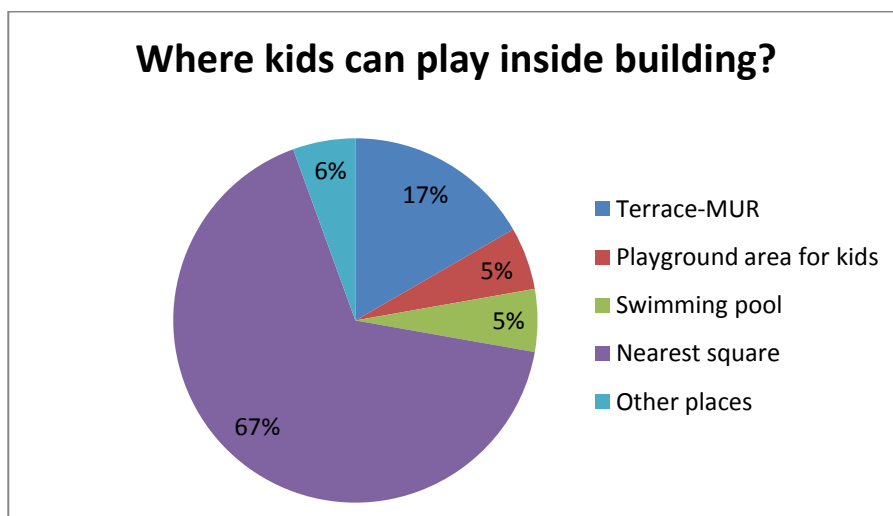


Figure 6. Spaces where children play at building  
Source: Author, 2013

Likewise, it was important to establish the quality and uses given for the space 'MUR' that as a space was designed to meet the Item 13 of Regulation 5403. Then, the next question

was aimed to finding out who used it and if it also accomplished its purpose of supplying a playground area for children. Figure 7 summarize all the answers.

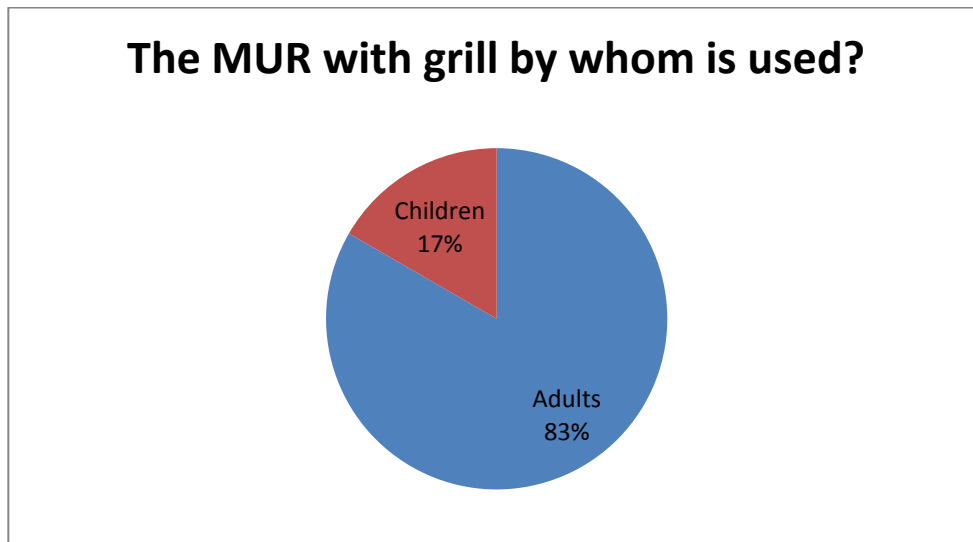


Figure 7. 'MUR' and their uses  
Source: Author, 2013

Continuing with the analysis of the 'quality of MUR' that existed in the majority of towers, one of them was selected to examine its available uses. It was opened in 2003 (the oldest of those surveyed) and had garages on the ground floor, 90% occupation of its 18 flats and MUR with grill located on its terrace.

Figure 8 and 9 show two spaces within the same building, the first being an open access hall, protected by a fence that divides the private to the public, and the second is the area located on the terrace with communitarian grill (MUR) of 40 m<sup>2</sup>.



Figure 8 and 9: Building 'Condo East'  
Source: Taken by author, 2013

Without doubt, the access area was being used by all the inhabitants of the building. Despite the fact that it was a place of frequent transit, not only for individuals but also pets, and it 'eventually' covered the demands of the kids when, for various reasons, they could not go up to the nearest square located four blocks

away. This situation could be related to a number of reasons: it is accessible; it has security that allowed control over children; in warm summer, children could use this space during the greater part of the day and finally, the area promoted socialization since all the neighbors and occasional visitors passed

through it. Perhaps for these reasons, the MUR was deteriorating and had become a 'marginal area, almost in disuse'.

In summary, it must be stressed that the majority of the typologies of towers offered a communitarian area with grill, commonly located on the terraces, which were primarily used by adults. In most cases, the children continued to go to public squares for leisure, especially when buildings did not offer choices other than the 'MUR'.

Review of the evolution of typologies reveals that the majority of the buildings were inaugurated in 2011. However, only one of them offered 'playground area for children'. In general, developers supplied amenities such as swimming pools and small places, most of them, inconvenient for children's needs. Meanwhile, greenfields in the central districts of Resistencia are considered insufficient with few opportunities to be increased. However, there is a large area of Greater Resistencia, currently inaccessible to the majority of the citizens and located in an area prone to flooding, that could become a recreational park.

#### **Analysis of similar cases: the experience of New York**

The 1961 Zoning Resolution inaugurated the incentive zoning program in New York City. The program encouraged private developers to provide spaces for the public within or outside their buildings by allowing them greater density in certain high-density districts. Since its inception, the program has produced more than 3.5 million square feet of public space in exchange for additional building area or other considerations, such as relief from certain height and setback restrictions. The Department of City Planning, the Municipal Art Society and Harvard professor Jerold S. Kayden joined forces several years ago to develop an electronic database with detailed information about every one of the public spaces created as a result of the incentive zoning program of the city. Findings from the database led to the publication of the book *Privately Owned Public Space: The New York City Experience*. This book described the evolution of incentive zoning in New York City and profiled each of the 503 public spaces at 320 buildings that were granted additional floor area or related waivers in exchange for providing these spaces.

The results of the program have been mixed. An impressive amount of public space has been created in parts of the city with little access to public parks, but much of it was in poor quality. Some spaces have proved to be valuable public resources but others were inaccessible or devoid of the kinds of amenities that would have attracted public use. Approximately 16 percent of the spaces were actively used as regional destinations or neighborhood gathering spaces, 21 percent were usable as brief resting places, 18 percent were circulation-related, four percent were being renovated or constructed, and 41 percent were of marginal utility.

In response to the perceived failure of many of these spaces, and to community opposition, the types of spaces permitted and their locations have been curtailed in recent years. Now, given the publication of this book and the comprehensive information available from the database, owners can be more aware of their obligations and the city can be better able to pursue enforcement matters where obligations are not being met. Only with increasing public awareness, further refinement of design standards, and diligent regulatory review and enforcement, can New Yorkers be assured of high-quality privately owned public spaces ([http://www.privatelyOwnedPublicSpace - New York City Department of City Planning.html](http://www.privatelyOwnedPublicSpace-NewYorkCityDepartmentofCityPlanning.html)).

#### **Regulations in Cochabamba, Bolivia**

An analysis of building regulations in Cochabamba (Bolivia), conducted by the architects Ana Dominguez and Elisabeth Pardo in 2007, showed that one of the most common problems of the buildings in this city was that builders overlooked the supplying of areas for playgrounds for children and where elderly could do some physical activity. People that lived in buildings without common areas for recreational purposes, with no relation between them, could be in circumstances that led to violence. This problem directly affected children who spent time in their flats. Psychological studies have shown that children who had no contact with nature and spent time in their flats could eventually, as adults, suffer from psychological disorders such as claustrophobia, depression or deep sadness ([http://www.edificios not bring problems to recreational area for kids.html](http://www.edificiosnotbringproblems torecreationalareaforkids.html)).



## CONCLUSIONS

Now, after 12 years of the implementation of the regulation for the promotion of intensification of land use in central districts of Resistencia, it is necessary to assess the results achieved so far.

According to Falcon (2007), the compact city model is characterized by buildings in height, of medium to high-density, concentrated in a greatly compacted built-up core. It is a sustainable model but, it is also related to decrease quality of city life since is lacking of private space then; the supply of greenfields should be increased. It is, therefore, essential that this model is supported by services and infrastructure, ensuring the availability of greenfields (Perez and Schneider, 2011).

However, in Greater Resistencia, existing green open spaces in the central districts are



Figure 10 and 11: Towers 'El Progreso' and towers 'COPERVI'  
Source: Taken by author, 2013

As such, this model seems to be closer to the spirit of New York regulation, allowing the city to add 3.5 million square feet by turning private spaces into public use. These options would add space for public use accessible to all citizens by extending the range of potential spaces for recreational use and thus, take pressure away from the few green spaces that are available in the intensification area. Other reasons for better implementation are based on the need to meet the requirements of early childhood and the possibilities of generating 'green' spaces in order to improve drainage systems when the city experiences heavy rain over a few hours, working together with the FIS (Factor Water proofing Soil) which was also introduced by normative 5403/01 in study.

On the other hand, it is necessary to insist on public access to natural areas reserved by

insufficient and, until riverside areas reserved by Resolution 1111/98 are formally incorporated, it is necessary to review the provision of spaces for recreation purposes that developers are offering in different types of towers.

This study has revealed that most of the typologies provide a zone with a communitarian grill, most of which are located on the terrace and, perhaps, their location results in them not being used by children for leisure purposes. In fact, these spaces are meant to be meeting place for adults. Some types offer a kind of square set on a corner (Figure 10 and 11), although some of them have amenities to encourage social life, such as the meeting of neighbors or casual passersby (Figure 11). Meanwhile, others offer amenities and places for outdoor physical activities like cycling for children (figure 11).

Resolution 1111/98. This would 'introduce' nature into the city by adding Black River valley areas, promoting accessibility to wetlands associated with Ramsar site in Chaco for all citizens, alternating green typologies with urban densities to balance the supply across the city (Perez and Schneider, 2011).

Finally, in reflecting on areas for recreation offered by towers at built up areas within the core of Resistencia, it is considered essential to review the different type of buildings and the amenities they offer by implementing Item 13 of Resolution 5403/01, especially in relation to the quality of those spaces, verifying what kind of use is really assigned, and avoiding spaces with 'marginal use' as detected in the study of New York. This is directly related to the need to promote spaces to meet the demand for areas for recreational use, by reducing the



overlap of the few available places and to somehow avoid the generation of psychological problems from early childhood.

For these reasons, the cases presented here only respond to 10% of the existing buildings registered by the Municipality for the year 2011. It would be interesting to assess the performance in implementing the regulation and to find if the objectives of the Municipality

of Resistencia are being achieved. In this regard, it seems appropriate to recommend that the view is carried out covering all the towers and their amenities, thus approaching the type of study that was conducted by New York City Council (USA), which has allowed the improvement of the design of those spaces that were not meeting public goals.



Figure 12: Image of towers in Resistencia densification area  
Source: Taken by author, 2013

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