

## **Sprawl and Density, Towards a Dispersed Urban form The Case of Córdoba City - Argentina**

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### **Abstract**

Numerous studies confirm as a feature of the current development model, the evolution of land use patterns towards a dispersed form and the decline of gross densities associated to the process of sprawl that occur in several countries. The paper presents the evolution of urban growth in Córdoba city in Argentina during the period 1991-2010 coinciding with three national censuses. It provides data of gross density, the urban land incorporated and the relationship with other social indicators to explain the evolution of the urban form in the last two decades. Based on the results obtained in the research the article critically debates the current normative instruments applied to regulate sprawl, its limits, constraints and effectiveness to avoid a dispersed land-use pattern. Taking in account the transformations produced in recent decades (in social and spatial fields), it is clear that urban sprawl far from stopping acquires a metropolitan scale. Finally, the conclusion mentions the need for new approaches in physical planning to address the problems arising from the evolution of ongoing processes. The formulation of growth strategies to attenuate dispersion is necessary to develop a sustainable urban form.

**Keywords:** Sprawl, Density, Planning, Norms, Urban development

### **1. Urban sprawl: The challenges in the Latin America City**

The extension of urbanization, its effects in land-use densities and sustainability urban growth present a complex subject in terms of physical planning that acquires relevance in recent decades. On a global scale, the research published by Shlomo A., 2010<sup>2</sup> includes the study of 120 cities around the world grouped into three categories (developed-countries rich on land; developed counties and developing countries) that decrease in density. It measures the average density as an indicator for monitoring the total area occupied by the population of the city and relate land-consumption rate with population growth rate. The results show a sustained reduction on urban gross densities in all cities and some common features inside the categories. In developed countries, the expansion takes place without a strong demographic pressure. Other studies show that, simultaneously with the extension of urbanized area decrease the density of land use<sup>3</sup>. The conclusions confirm that in several countries, the feature of the current development model is the decline of densities associated to urban expansion process.

In this line of concerns, many researches in Latin America have studied the physical and social effects of economic globalization, the dispersion of activities and its impact on sprawl and land use patterns.

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<sup>2</sup>[http://www.lincolninst.edu/pubs/1834\\_The-Persistent-Degradation-in-Urban-Densities](http://www.lincolninst.edu/pubs/1834_The-Persistent-Degradation-in-Urban-Densities) [On line]

<sup>3</sup>Lopez de Lucio, R. (2007: 6)

Numerous studies have addressed the question of urban transformations in the region that began in the eighties and consolidated in the nineties because of the changes in the role of the state (from welfare state to one oriented to neoliberal policy) and urban development, oriented to promote private investments in the city territory. Changes on the capitalist model of accumulation derived from globalization, the urbanization of the population, which in the region reaches almost 80% of inhabitants living in cities, and the transformations in everyday life due to information and communication technologies, have impact on production logics and urban growth patterns. The process of urban expansion has spatial features and a different nature to which took place during industrialization period, characterized by the rural-urban migration and the formation of extensive mono-functional suburbs inhabited by low-income population. The new and complex relationship between the centre and sub-centers due to the location / relocation of activities, services and jobs, on the edges or in satellite cities, resulted in large metropolitan areas with physical-functional continuity. The generalized mobility on private vehicle is the common condition in several contemporary urban structures.

The urban fringe is where most clearly manifest the social contradictions arising in the process of urban restructuring. The periphery is hybrid in the sense that locates different functions and social groups; it becomes the place of leisure, the residence of high-income communities demanding security and privacy, the place of illegal settlements and social housing. There is a variety of different cultural groups, lifestyles, mobility conditions and functions to those presented in the period of industrialization, where the edges were mainly industrial site location, the place for working-class neighborhoods, housing self-produced and informal settlements. There is a more complex social geometry although some features are not completely new<sup>4</sup>.

Socio-spatial forms lies in a divided city, with significant social inequalities as main feature of urbanization in Latin America. There are two dynamics particularly associated to the urban expansion model: the intensification of residential segregation and urban fragmentation. In the first case, with social homogeneity in certain city areas; in the second, with the physical interruption of vial design, the discontinuity on the open grid (plot divisions) and the development of new districts with closed perimeter, and residential enclaves in many cases with restricted access and defensive character<sup>5</sup>.

A third aspect associated with the extension of growth is the evolution of urban land consumption per inhabitants (in number of hectares annexed) and its effect on densities. This process is associated with an increase in the number of people living in the suburbs, the decentralization of activities to the periphery, the discontinuity in the location of activities and physical-functional dispersion in the urban structure. The built of large residential projects located on the city edges and the greater difficulties to access to urban-land by broad social sectors are the main forces that drive the migration of population to outlying locations. Lopez de Lucio, Ramón (2007: 6) points the case of the peripheries in Spanish cities where land consumption has increased between 26 and 40 times compared to what was observed in collective housing areas in the 60' and 70 '. The decrease in density is also significant in dwellings per hectare, from 125-150 to 25-35 dwellings, over a period of 30 years.

Perhaps the most significant fact on urban sprawl studies is that take place in a context of slowing population growth-rate. In the case of Latin America and the Caribbean UN-HABITAT (2012: 11) states that it is a largely urban region, where the average annual growth of population is less than 2%. In this sense, the same source mentions that despite the slowdown in population growth, cities expand physically at a rate that can be two or three times the increase in population. This situation implies challenges in terms of sustainability and management of urban services by increasing on infrastructure costs. Rodriguez J. and Villa M., (1998) note that there is a relative consensus among researchers, that Latin American cities observing the same demographic parameters, have a greater physical extension than others in the developing world. That is because the mode of expansion is predominantly horizontal (sprawling growth). This trend is also present in the case of Argentina, where 91% of the population is urban<sup>6</sup>. The slowing of population growth-rate and the massive urbanization bring as main questions: how this trend is observed in the case of Córdoba and how effective are planning instruments to guide urban growth.

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<sup>4</sup>Soja E., (2000: 265). Other authors also mention this concept as Harvey, 1998; Borja, 2007, De Mattos C., 2010

<sup>5</sup> Marengo, C. y Elorza, A., 2014.

<sup>6</sup>Source: <http://datos.bancomundial.org/indicador/SP.URB.TOTL.IN.ZS> [On line].

Access: 6/2/2015. In Germany 75% of the population is urban, in France 79% in Japan and relates to the validity of existing regulatory instruments to guide urban growth 92% and USA 81%

## 2. The process of sprawl in Córdoba city (1991-2010)

In the case of Córdoba City in Argentina, researches carried out in the Research Institute for Housing and Habitat (Faculty of Architecture, Planning and Design at National University of Córdoba) have addressed the problem of urban sprawl<sup>7</sup>. The externalities resulting from this growth pattern are identified. Through case studies, have demonstrated the negative effects from the relocation of population in the borders in the last decades; both in the case of low-income population (through public housing policies<sup>8</sup>), as well as the ones derived from the development of large scale gated communities built by the private sector. However, there are no comprehensive studies on the evolution of densities in time and the implications for physical planning. That is why Córdoba, a regional metropolis and the second city in terms of population in the country, is a good example to analyze the process of sprawl and the evolution of densities. The empirical research is based on Córdoba Municipality case study, although the territorial extension is of 57,000 hectares, it constitute one municipality and coincides with the capital Department of Córdoba Province.

It presents as a particular feature that some demographic indicators are similar to the ones observed in cities in developed countries even when the city belongs to a developing country. (As to mention a high level of urbanization, low rates of population growth, progressive decrease in terms of household composition, among others.)

The analysis takes the evolution of the expansion in two decades and three time sections 1991, 2001 and 2010, which coincide with the National Census of Population and Housing in the country, and explores the relationship between physical and social variables associated to this process. The decade 1991-2001 coincides with the implementation of neoliberalism in Argentina, a period when the country reaches the highest gross domestic product per capita in the region. After the default (in 2001), new impulse is given to the process of transformation in the development model. Macroeconomic policy was oriented to recover of the industry and the domestic market, an increase in public social spending looking for a better distribution.

The research methodology includes the processing of data available in public institutions, as well as derived from Census, and Statistics in governmental sites. Urban land annexed was calculated based on this information and the analysis of satellite photos. Planning criteria is examined based on the regulations and norms, actually on course, its evolution and changes.

a) The annexation of urban land inside the city perimeter. (See Table 1)

Year	Urban land (hectares)	Increase (hectares)	Variation (%)	Vacant land (hectares)	Relation Vacant Land/ Urb.Land
1991	18.986			2.848	15,00%
		5.909	31,12%		
2001	24.895			3.338	13,40%
		1.496	6,00%		
2010	26.391			2.419	9,16%
TOTAL (1991-2010)		7.405	39,00%		

Table 1: Evolution of urban growth by extension due to the development of residential areas. Own elaboration. Source of data: Municipality of Córdoba

In 1991, the city had affected 18,986 hectares for urban-residential use. This included urbanized areas and others that remain vacant but in condition to be urbanized.

<sup>7</sup>Research financed by National Council of Scientific Research Argentina and National University of Córdoba.

<sup>8</sup>There are difficulties in terms of access to urban mobility and public services provision, access to employment opportunities, to mention a few aspects.

From 1991 to 2001, the urbanized area increases 31.12% due to the development of large-scale residential projects. The land in condition to be urbanized increases 5.909 hectares. By 2001, the urban land increases to 24.895 hectares.

In the period 2001-2010 through changes in the urban regulations, incorporated 2.734 hectares of land to be urbanized (located in the northeast sector of the city). Later the Municipality disaffected 1.238 hectares initially planned as areas of future expansion due to the proximity with an area of hazardous industrial uses (explosives). The land affected to urban use in 2010 was 26.391 hectares. This value represented an increase of 6% in comparison to the values affected in 2001. If we consider the land annexed in the two decades (period 1991-2010) the increase represents 39% of the existing urban area in 1991; that is 7,405 hectares initially agricultural land affected to urbanization.

Towards the end of the period, the dynamics of land annexation slowed and consolidated the occupation of vacant plots (within the city limits) due to the feasibility of access to infrastructure provision. The incidence of vacant area on the total area affected urban residential use, reduced from 15% in 1991; to 13.4% in 2001 and 9.2% in 2010. The occupation of vacant land inside the city perimeter is the consequence of the economic recovery that begins in 2003 in the country (after the default in 2001) and the need to place the surplus derived from agricultural production into to real estate market. By this way the production of new residential developments, was impelled primarily occupying vacant land in the city edges (which have access to services and infrastructure networks) which had remained empty, due to a speculative land-market, waiting for higher returns.

#### b) The evolution of population growth.

The period, 1991-2010 observed a slowdown in the evolution of population growth. The growth rate in the central city is lower than the towns located in the metropolitan area<sup>9</sup>. Population growth in the period 1991-2001 reached to 103,197 inhabitants (8.9%) and in the period 2001-2010: 47,035 inhabitants (3.60%). In the period 1991-2010, the population increased 12.74% adding 150,232 inhabitants in two decades.

Relating both parameters, is observed that the annexation of urban land increased 39% (in the period 1991 to 2010) and the population growth 12.74%, the former is 3.06 times higher than the population growth-rate, indicating a form of predominantly horizontal growth.<sup>10</sup> (Table 2) The case of Córdoba, evidence a particular demographic transition characterized by the deceleration of the rhythm of population growth as it is mentioned in large agglomerations.

Year	Population (inhabitants)	Increase (inhabitants)	Variation In the period (%)
1991	1.179.372		
		103.197	8,90%
2001	1.282.569		
		47.035	3,60%
2010	1.329.604		
TOTAL (1991-2010)		150.232	12,74%

**Table 2:** Evolution of population growth. Own elaboration. Source: National Censuses.

#### c) The gross density in the administrative area of the municipality.

It decreases significantly: from 62.12 inhabitants/hectares in 1991 to 51.52 inhabitants/hectares in 2001 and 50.38 in 2010. The growth process evidence a dispersed model of land use. In this case, the characteristic feature that presents the urbanization process it is the decline of densities associated to a sprawling growth.

<sup>9</sup>The relative variation of population growth in Colón department bordering Córdoba department towards the north is 32%; while in Córdoba department is 4%. Source: Municipality of Cordoba, 2012.

<sup>10</sup>In the period 1991-2001, the amount of land annexed to urban use is 3.5 times higher than the population growth. In the period 2001-2010 although slowing, is still 1.7 times higher

On the other hand, when compare the values obtained in Córdoba with those mentioned in cities in developed and developing countries (Shlomo A., 2010, p.41) it is evident that gross densities in Córdoba are significantly lower.<sup>11</sup> (Table 3)

d) The evolution of the average income.

While relating the two previous variables with the evolution of the average income of the population, it is note that the increase in urban land values per capita corresponds to the economic growth that took place in the country (in general) and in the city. Table 3 analyses the evolution of urban land and the increase in the gross national income per capita in the case of Argentina<sup>12</sup>. Thus, in the case of Córdoba, there is a correspondence between the increase of urban square meters by population, the declining of gross densities associated to the process of sprawl and the increased in per capita income<sup>13</sup>.

Year	Urban area per inhabitants (m2)	Gross density (inhabitants/hectares)	Per capita income (US\$ dollars)
1991	160,9	62,12	5.736
2001	194,1	51,52	7.208
2010	198,5	50,38	11.460

**Table 3:** Evolution of urban land per inhabitant, gross density and per capita income. Own

e) Evolution of motorization rate.

Associated with the process of urban expansion and the decline of gross densities in the period, there is an increase in the rate of motorization in the city. In 1991 the relationship between cars and inhabitants was one vehicle every 6.72 inhabitants; in 2001 the number of vehicles increases to a vehicle every 3.77 inhabitants; and in 2010 continued increasing and registered a vehicle every 2.36 inhabitants. If we link this indicator with the number of households in the city, the values increase from 0.52 cars per household in 1991 to 1.35 in 2010. The significant growth in car ownership that took place in the period accompanied the process of urban sprawl. (Table 4)

Year	Population	Number of cars <sup>14</sup>	Number of people per car	Motorized index (% population)	Number of households	Motorized index (% households)
1991	1.179.372	175.382	6,72	0,15	336.963	0,52
2001	1.282.569	339.754	3,77	0,26	434.443	0,78
2010	1.329.604	562.338	2,36	0,42	414.237	1,35

Table 4: Evolution of the motorized index. Own elaboration. Source: National Census & Statistics Guide Córdoba City 2014.

<sup>11</sup>The data provided by this research mention that in developed countries rich in land, the average densities range is: 28 (+,-) 5 inhabitants per hectare; in developed countries: 70 (+,-) 8 inhabitants per hectare; and in developing countries: it is 135 (+,-) 11 inhabitants per hectare.

<sup>12</sup>GNI per capita is gross national income converted to US dollars using the World Bank Atlas method, divided by the population at midyear.

<http://data.worldbank.org/indicator/NY.GDP.PCAP.CD?page=4> [On line].

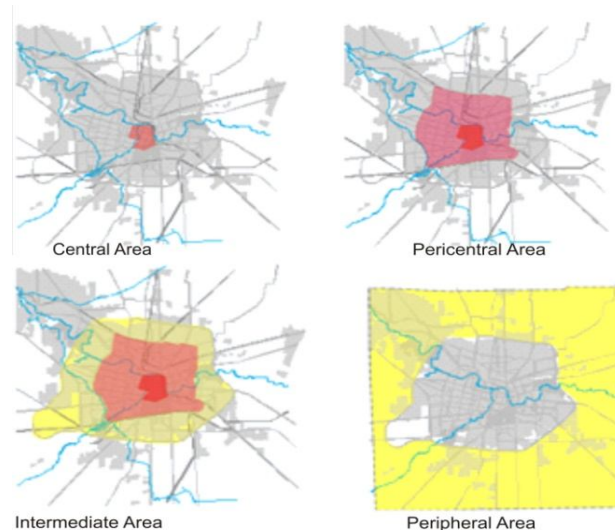
<sup>13</sup>The study by Shlomo, A. (2010) finds this relationship in the case of the cities analyzed

Is important to mention that Córdoba city is located in an area that has no natural barriers to contain sprawl. There is availability of land to annex to be urbanized within the administrative boundaries of the municipality.

<sup>14</sup>Source: Statistics Córdoba Guide 2014.  
[http://www2.cordoba.gov.ar/pohttp://estadistica.cba.gov.ar/Poblaci%C3%B3n/Hogares/tabid/83/language/es-AR/Default.aspxrtal/wp-content/uploads/downloads/2015/01/C%C3%B3rdoba-una-ciudad-en-cifras-2014\\_opt.pdf](http://www2.cordoba.gov.ar/pohttp://estadistica.cba.gov.ar/Poblaci%C3%B3n/Hogares/tabid/83/language/es-AR/Default.aspxrtal/wp-content/uploads/downloads/2015/01/C%C3%B3rdoba-una-ciudad-en-cifras-2014_opt.pdf)

f) The urban growth in different city-areas.

Although population growth has slowed in the last decade, density values present peculiarities in the different areas of the city. They are process of densification, decongestion and suburbanization simultaneously with a specific location in the urban structure. (Figure 1)

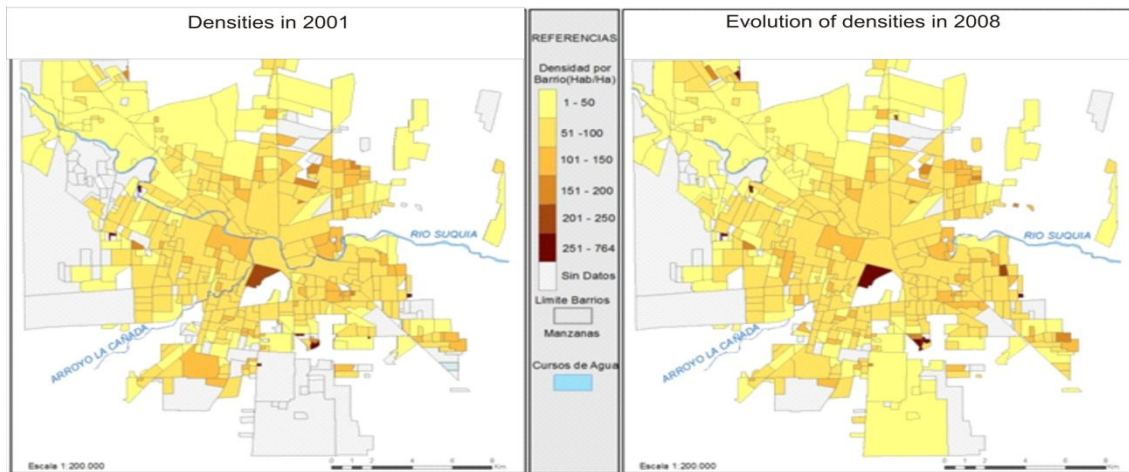


**Figure 1:** Urban areas in Córdoba city Source: Córdoba Municipality.

By 2010, the population density only increases in a specific neighborhood adjacent to the central area (Nueva Córdoba) and to a lesser extent, in certain specific areas near the city center. In these locations, take place a process of urban renewal that replaces the existing residential fabric of one or two stories high with residential towers of 36 or 21 meters high. The area that surrounds the city centre (the first expansion of the city in late nineteenth and early twentieth century) decreased in densities (decongestion). Consolidated and traditional neighborhoods, with a good level in provision of infrastructure and services fail to retain the population housed in comparison with previous periods.

New developments expand in the intermediate and peripheral areas. Although the number of population increases, (comparatively with the area that surrounds the centre) these areas present in general terms, low and very low gross densities (from 5 to 50 inhabitants per hectares). (Figure 2)

A more efficient land-use, natural, is related to a minimum level of population that is required to make interactions and urban activities viable. The most significant variable to analyze the costs of urbanization is population density. Studies carried in Córdoba (Ramos, 1985) stated a minimum of 100 inhabitants per hectare to support urban development costs. Although, as the analysis shows, this condition far to achieve, evolution to a decrease in densities with greater dispersion in urban-land use.



**Figure 2:** Population density by neighborhoods. Own elaboration, Source: National Census Data and digital information at Córdoba Municipality

### 3. The normative instruments applied to regulate sprawl in Córdoba

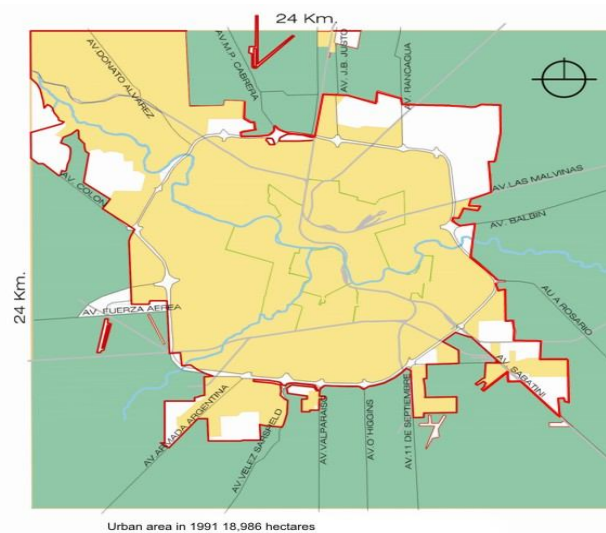
The norms on division, land-use and buildable area inside the municipal boundaries, were sanctioned in 1985-1986. At that time (and coinciding with the return of democracy in the country) was necessary to develop a coherent system of planning-regulations<sup>15</sup>, to stop the speculation on urban land and to avoid the development of new plots and housing on the city outskirts without the provision of basic infrastructure and services.

The objectives were to prevent fragmentation in areas without availability of infrastructure, to promote the use of existing infrastructure networks and to avoid residential expansion into rural and industrial areas avoiding use frictions. The sanction of the norms established an urban perimeter, not allowing locating developments outside it. (Figure3). Requirements for approval new residential developments had different goals. As to mention are the following: to preserve the continuity of the vial network; to donate 15% of the land to be urbanized to the municipality (that will be reserve to develop parks and social institutions); to transfer the responsibility for providing infrastructure to the developer (water and electricity networks, public lighting, urban trees, pavement, drainage works and sewage systems).

Until 1991, the regulatory framework reached the objectives and discouraged urban sprawl, dismissed speculation on land and promoted the occupation of vacant plots within the urban perimeter. The norms were effective from 1985 to 1991, and growth was contained within the perimeter defined as developable.

<sup>15</sup>The central purpose was to stop growth through expansion that had occurred during the period of industrialization in the 50s to 70s. Omissions in regulatory framework at that time had made possible the extension of plots without the provision of services and infrastructure. Latter the municipality should assume it. The normative instruments are the ordinance 8060/86 on land division, the 8256/86 on buildable area and the ordinance 8133/85 on land use.





**Figure 3:** Urban perimeter in 1991. Own elaboration, source Córdoba Municipality.

From 1991-2001 the urban perimeter expanded due to the annexing of land through different actions and changes in the normative framework. The first action was the readjustments on the current norms to allow changes in land-use regulations (from rural to residential). The second action was illegal occupations and irregular settlements built in transgression to the norms, which also increased the urban land annexed in the period. Finally, a third situation was the enactment of new regulations to enable the expansion of new residential developments for high-income sectors (gated communities) promoted by real estate agents, since 1991.

#### -Readjustments on the current regulations

From 1993-2010, took place successive changes in the regulations for land-use zoning. The annexation of areas to be urbanized progressively expanded the urban perimeter established in 1986 (Figures 4 and 5). The demand for urban land and the relative scarcity of plots to enable residential location within the perimeter produced successive changes, on land-use from rural (initially affected to agricultural activities) to residential.

The annexation of urban land is the result of the implementation of public housing policies. The State developed several programs to provide accommodation to poor population. The possibility to buy rural land (because of its lower cost) and later make a successful legal management to change the original use is the most common strategy for land-access. This situation is the result of the internal procedures in different state levels between the agencies that implements the housing policy (provincial) and the municipally that regulates urban growth, and contradicts the objectives of planning to contain urban growth, inside a perimeter initially defined by the norms.

#### -Illegal situations

Another case, which also produces urban sprawl, is the result of irregular or illegal settlements (that involves social groups living in misery conditions). This reflects one of the most critical situations of cities in developing countries, which is the access to urban land. Large segments of the population cannot make it through the formal market then they occupy areas in the city and later through social protest demand access to services. To manage extension of public services (transport) and infrastructure (as for example water and electricity networks), the private companies (that provide them) require changes in land-use condition (from rural to urban)<sup>16</sup>. Urban policy does not provide planning instruments to facilitate land access from the perspective of urban inclusion, or to address regularization processes. State's response addresses the social pressures of the informal population through actions that seek to solve a factual situation. Once produced the irregularity, the measures apply to reorganize the settlements but are not effective in cutting the vicious circle of reproduction of urban poverty and sprawling growth registering new extensions in the periphery.

<sup>16</sup>Marengo C., Monayar V., (2012) have identified that in Córdoba, towards the end of ninety decade were 109, 25 hectares inhabited as result of urban informality. This value increased to 482 hectares in 2011.



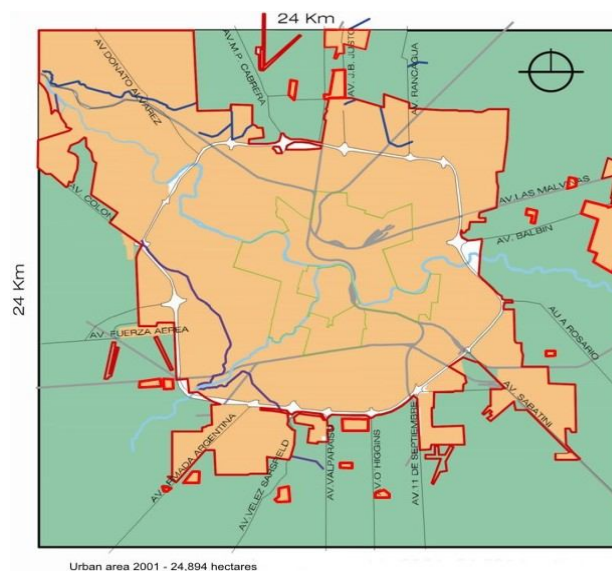
Towards the end of the period and through irregular actions (not covered by the regulations) starts a process of change in land-use of rural plots located in the city green belt. The ordinance sets a minimum plot division of 5,000 m<sup>2</sup>, and the possibility to locate only one housing unit. In this plots, collective housing under the form of condominiums develops in an irregular way. This situation while increases urbanized area introduces frictions between rural and industrial uses nearby. On the other hand makes clear the increasing difficulty in exercising the power of control in an extensive area (57,000 hectares) administered by a single municipality.

-The sanction of new regulations

The transformations in the economy and society in the late twentieth century modified the planning goals from de previous decade. Decentralization policies, privatization of services and the transformations in the role of the state, were the main facts that facilitated the actions of private market in urban development.<sup>17</sup> In 1991, national and international companies start to develop gated communities for high-income sectors, in Córdoba. In consequence, a new and specific norm sanctioned to enable such significantly different type of intervention due to the scale, the area of the plots and the conditions in land-use<sup>18</sup>.

Plot divisions are significantly different from the traditional plot division in most neighborhoods. The minimum plot area is 1,000 m<sup>2</sup> inside the city ring and 1,500 m<sup>2</sup> outside it, while the average plot area in the city is 300 m<sup>2</sup>. In previous research, we have calculated that the density in high-income residential developments is 25 inhabitants per hectare. Net density values vary from 8-10 houses per hectare.

The new norm allowed the residential location outside the urban perimeter (previously defined as a limit for expansion) and extended urban form. It enables the possibilities of locating high-income developments towards the borders nearby the administrative boundaries of the municipality. In this way although the sanctioned rules responds to the demands of private developers, it generates negative effects, as displayed by analyzing the evolution of the process of urbanization in the city; increases the average values of urban-land per inhabitants, decreases gross densities and intensifies segregation process concentrating high and very high income in large gated communities. (Table 3).



**Figura 4:** Urban perimeter in 2001. Own elaboration, source Córdoba Municipality.

<sup>17</sup>Towards 2010, the decentralization of activities intensifies, shopping and services move to the city periphery. The urban functions diversify as well as the profiles of the population that moves to the suburbs. Conurbation processes in regional penetration roads modify the mono centric structure of the city in the nineties towards a polycentric structure consolidating a metropolitan region.

<sup>18</sup>The Ordinance 8606/91 applies to gated communities developments.



This process is associated with improvement in the income levels of the population in the period analyzed, the lack of geographical barriers for expansion into any of the axes of growth, the availability of land for urban expansion, the increase in the motorization rate; and a lower public resistance to change the norms and convert rural land to urban.

Urban growth policies should aim to control the processes of land speculation, encouraging the occupation of vacant land and develop (legal, regulatory, etc.) instruments that promote intensification and mixture of uses. It is necessary to promote a more dense occupation, according to the criteria of sustainability and urban efficiency (as to mention: to densify transport corridors, remove obstacles to locating more housing units per plot or to facilitate urban renewal processes in depressed sectors that have lost population). Urban fragmentation associated with the processes of expansion, can be mitigated preserving the continuity of the vial network (both primary and secondary). Facilitating urban connectivity in new residential areas and especially not interrupting the access to services and social equipment by those who live nearby.

Housing policy can be an instrument in this regard, to discouraging sprawl and the discontinuity of urban form and to encouraging the location of population in urban areas with low density. New approaches in planning are required to increase urban densities as an alternative to counteract sprawl produced by new developments in detached houses.

Strategies to project the territory in a scenario characterized by uncertainty and the need to achieve sustainability in terms of urban growth, require to define the boundaries of land uses: residential, rural (agricultural) and industrial, within the administrative area of the Municipality, to minimize tensions derived from incompatibility in land-use, between them. Growth planning should also redefine the limits to extend developable land, to protect natural drainage with eco-productive rural uses, as well as to preserve the existing irrigation channels.

Finally, the planning of urban growth should balance the extension, with the densification inside the urbanized perimeter, to achieve conditions of greater equity and sustainability. Above all, it is a political compromise, where urban planning should balance the interest of private sector with the collective benefit to achieve a more integrated, dense and livable city.

## References

- Borja, J. (2007). Revolución y contrarrevolución en la ciudad global: las expectativas frustradas por la globalización de nuestras ciudades. *EURE*, diciembre 2007, Vol. XXXIII, N° 100, p. 35-50.
- De Mattos, C. A. (2010). Una nueva geografía Latinoamericana en el tránsito de la planificación a la gobernanza, del desarrollo al crecimiento. *EURE*, Vol. XXXVI, N°108, p. 167-179.
- Harvey, D. (1998) La condición del la posmodernidad. Investigación sobre los orígenes del cambio cultural. *Posmodernismo en la ciudad: arquitectura y diseño urbano*. Buenos Aires: Amorrortu Editores.
- Hiernaux, N. (1999). Los frutos amargos de la globalización: expansión y reestructuración metropolitana en la Ciudad de México. *EURE*, Vol. XXV, No. 76, p. 57-78.
- López de Lucio, R. (2007). Construir ciudad en la periferia. Criterios de diseño para áreas residenciales sostenibles. Ed. Maira. Ed. Digital.
- Marengo, C. (2013). Extensión urbana e intervenciones habitacionales. El caso de la ciudad de Córdoba (Argentina). *Cuadernos de Vivienda y Urbanismo*. Julio – Diciembre, Vol. 6. N° 12. *Revista del Instituto Javeriana de Vivienda y Urbanismo – INJAVIU – Facultad de Arquitectura y Diseño de la Pontificia Universidad Javeriana*, p. 280-301. [Online] Available: <http://revistas.javeriana.edu.co/index.php/cvyu/issue/view/551>
- Marengo C., Elorza, A. (2014). Tendencias de segregación residencial socioeconómica: el caso de Córdoba (Argentina) en el período 2001-2008. *Eure*, 2014, Vol. XXXX, N° 120, p.111-133. [Online] Available: [http://www.scielo.cl/scielo.php?script=sci\\_arttext&pid=S0250-71612014000200006&lng=es&nrm=iso](http://www.scielo.cl/scielo.php?script=sci_arttext&pid=S0250-71612014000200006&lng=es&nrm=iso)
- Marengo C., Monayar V. (2012). Crecimiento urbano e Informalidad residencial. El caso del asentamiento “Nuestro Hogar” en la periferia de Córdoba –Argentina. *Cuaderno Urbano*, Octubre de 2012, Vol. 13, N° 13, p.7-25. Municipalidad de Córdoba. Dirección de urbanismo. Evolución del área urbanizable 2010 (mimeo).

- Municipalidad de Córdoba. Córdoba Una ciudad en cifras. Guía estadística de la Ciudad de Córdoba.2014.[On line] Available: <http://www.uic.org.ar/Archivos/Revista/File/ADEC.Guia.Estadistica.pdf>
- Municipalidad de Córdoba – UNC. Bases para el Plan Director de la Ciudad de Córdoba. Lineamientos y estrategia general para el reordenamiento del territorio, 2008 (mimeo).
- Municipalidad de Córdoba, Ordenanzas 8060/86, 8256/86, 8133/85 and 12.077.
- ONU HABITAT. (2012). Estado de las ciudades en América Latina y el Caribe 2012. Rumbo a una nueva transición urbana. PNUD. 2012.[Online] Available: [http://www.onuhabitat.org/index.php?option=com\\_docman&Itemid=538](http://www.onuhabitat.org/index.php?option=com_docman&Itemid=538)
- Ramos, J. (1985). Planificación urbana y regional. Ed. FAUD – UNC 1985, 226 p.
- Soja, E.(2000). Postmetropolis Critical studies of Cities and Regions. USA: Blackwell publishing, 440 p.
- Shlomo, A., Jason. P-, Daniel L., Blei, A-, (2010). The Persistent Decline in Urban Densities: Global and Historical Evidence of 'Sprawl'. Lincoln Institute of Land Policy.Working Paper. [Online] Available: [https://www.lincolinst.edu/pubs/download.asp?doc\\_id=1085&pub\\_id=1834](https://www.lincolinst.edu/pubs/download.asp?doc_id=1085&pub_id=1834)