

Urban Design as a Tool for Sustainable Development in Social Housing Projects in Urban Areas



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Introduction

Due to lack of urban plans implementation in El Salvador, the cities have been grown without order. This problem is also reflect in the social housing projects, which in the majority of the cases have poor physical planning, are car traffic orientated and doesn't have suitable public spaces for the community in order to have social and recreational activities.

The intention of this paper is briefly give an analysis of the shelter situation in El Salvador, an later present a new zoning approach for sustainable development in social housing projects.

1 Shelter Situation Analysis

1.1 Basic General Data

El Salvador is located in Central America, between Guatemala and Honduras and has a total area of 21, 040 square kilometers (8,123 square miles). It is the smallest country in continental America, and is affectionately called the "Tom

Thumb of the Americas". Politically it is divided in 14 departments and 262 local governments. The temperatures vary primarily with elevations and show little seasonal changes; it has a tropical weather with pronounced dry (October through April) and wet seasons (May through September). It lies along the Pacific ring of fire, and is thus subject to significant tectonic activity, including frequent earthquakes and volcanic activity.

Since the last national population and housing census was released in 1992, the 2008 estimated population was 7,066,403. However, on May 12, 2008, El Salvador's Ministry of Economy finally released statistics gathered in the 2007 census. These data presented a surprisingly low figure for the total population of 5,744,113 showing the deep impact of external migrations in El Salvador: it is estimated in 1 million people, 96.35% of them living in The United States and Canada. The 2007 Census also shows that 55% of El Salvador's population lives in 4 departments (San Salvador, La Libertad, Sonsonate and Santa Ana). Only the capital city of San Salvador has about 1.5 million people. The urban population increased from 50.4% in 1992 to 62.7% in 2007; and rural population decreased from 49.6% to 37.3% in the same years. This confirmed that urbanization had expanded at a phenomenal rate in El Salvador, driving thousands to the main cities and creating growth problems around the country, increasing informal settlements without the basic infrastructural needs and usually at high risk in urban areas.

According to last year's census, the female part of total population was 52.7% and the population growth rate of El Salvador was 1.1%. The Salvadoran population is relatively young with 34% of the total population being under 15 years old), while 59% are between 15 and 64 years of age and 7% are elderly. Life expectancy has significantly increased for both males and females: from ages 63 to 73 in 1992; to ages 66 to 76 in 2007 respectively. The infant mortality rate was 21.5 per 1000 births; a total fertility rate of 2.4 children born/women and a public expenditure on health of GDP of 1.5%.

In the economic field and based on the International Monetary Fund data, El Salvador has the third largest economy in the region - after Costa Rica and Panama - when looking at nominal GDP and purchasing power GDP. In 2007, El Salvador's GDP per capita stands at \$2,867.4 USD at current prices. As a result of

the 30,000 million USD in remittances since 1990, the GDP income has been increased in recent years; in 2006 the real growth rate was 4.2%.¹. Consequently, the income distribution is not equitable and around 40% of the total population are considered poor and have no adequate access to shelter, education or healthcare.

Since the government undertook a monetary integration plan in 2001, where the US Dollar became the legal currency, it precipitated a trend toward lower interest rates, helping many to obtain credits for house or car purchases. However, El Salvador still faces many social issues: high crime rates including gang- related crimes reached up to 3,928 in 2006. Besides 30.6% of the total households live in poverty and 9.6% in extreme poverty, according to the Human Report 2008.

1.2 Shelter Related Fact and Figures

In 2007, the housing stock was 1,628,227 increasing 35% from 1992; 66% of them located in urban areas and 34% in rural ones. From this stock 77% are in good conditions and 23% have some kind of deficiency. The total housing deficit² was 360,361 of which 44, 383 are quantitative (families that don't have any access to a house or are living in overcrowded conditions) and the rest 315,978 are qualitative (housing with insecure roof, wall materials or soil/ floor).

Tabla 1. Qualitative Deficit 1992 - 2007

| Qualitative Deficit | 1992 | | 2007 | | Variations | |
|------------------------------------|---------------|-------|---------------|------|------------|--------|
| | Housing Units | % | Housing Units | % | | |
| Soil/ Floor | 434,822 | 39.5% | 315,206 | 23% | 119,616 | -16.5% |
| Wall (organic materials or waste) | 43,254 | 3.5% | 20,767 | 1.2% | 22,487 | -2.3% |
| Roof (organic materials or waste) | 43,254 | 3.5% | 14,391 | 1% | 28,863 | -2.5% |

As the chart shows, there have been improvements against the qualitative deficit since 1992, and the Vice Ministry of Housing and Urban Development VMVDU continues working in order to improve the floor condition subsidizing

¹ Human Development Report 2008. United Nations Development Program.

² In 2007 Census, the lack of infrastructure (water, sanitation and electricity) was not considered in the housing deficit.

\$1,000.00 USD per housing unit. Based on the 2007 Census, the new housing demand per year is around 33,632 units; and 70.9% of the demand belongs to families with less than 2.5 minimum wage income³ working in the formal sector. The housing supply is estimated in 28,000 units per year⁴. The number of households increased 23% from 1,140,094 in 1992 to 1,406,485, and the average household size is 4.1. About the tenure of households 65% reside in their own housing units, 13% are renters, 9% are paying bank or other financial mortgages and 12% other form of tenure. Nevertheless, it is known that exists a large percentage that doesn't own a property title. Due to lack of information, El Salvador doesn't have measurable data about floor area per person, housing affordability ratio, house price to income ratio and related facts. The first research is going to be undertaken next year, with the financial aid of international agencies.

Basic Infrastructure and Sanitation

Access to water supply and sanitation in El Salvador remains low, despite recent increases in coverage, which leads to negative impacts on productivity and health; in particular, of the rural areas. Water resources are polluted and the great majority of waste/water is discharged - without any treatment - into the environment. In general, about 78% of houses are connected to water networks, 53% to sewerage network, 55.3% have a waste disposal and 88% of dwelling units are connected to the electricity networks.

Building Materials

The most common building materials for walls are: concrete bricks, mud bricks, iron sheets, mud plaster and wood. Of the construction materials mentioned before, 72% of total housing have concrete block walls, 15.3% mud bricks, 6% iron sheets and 1.4% wood walls. In roofing materials 9% of dwelling units have fibrocement roof, 6% concrete slab, 29% iron sheet, 26% asbestos sheet and 29% clay roof tile.

Housing construction has been performed by different actors both formally and informally. The common type of housing in the main cities, has one and two levels and, they are constructed mainly by the private construction companies. For

³ http://www.fsv.gob.sv/PONENCIAS_PRIMER_FORO/1-Primer%20Foro-FSV%2030-6-08.pdf

those who have a low income, the construction is mainly done by semiskilled labour or in the majority of cases by the owner of the house; resulting in low quality dwelling units. House production has been focused to the medium and upper income social groups, as a result of the political and economical strategies to resolve the housing problems through the market and the increase of employments. Nevertheless, families in poverty and extreme poverty have been out of the range of these programs; and the programs implemented for these groups have been isolated attempts with reduced impact for low - income national policies.

Education and Communication

Regarding education, the average adult literacy rate in 2007 was 83.6; women's literacy rate was 81% , men's literacy rate was 86.7%, and the expenditure on education was 2.8% of GDP. In communication field, telephones in use were 1,035,777, there were 3,851,611 mobile phone users and 69,669 internet users.

1.3 Housing Policy

According to the Vice Ministry of Housing and Urban Development in 2004, the facts that contribute negatively to the housing situation in El Salvador were: unreachable housing programs to low income families without the capacity of payment; lack of information of the real state market and the supply and demand necessities, deficiency to provide basic human needs and social equipments especially for those living in poverty and local governments without an active role in the housing situation.

Due to this situation, the VMVDU published in 2005 the National Housing Policy around three axes: housing like an axis of development, housing access, and technical, institutional and legal frameworks modernization. To achieve these axes the current government is working with the following subjects:

- Create a sustainable source for saving – investment - growth – job and reducing poverty, through a savings system to be able to acquire a house.
- Eradicate housing deficit.

⁴ Accordin to the National Construction Chamber.

- Design new financial tools to attend the housing supply and demand.
- Development of sustainable construction materials and technologies.
- Eliminate illegal conditions in housing plots.
- Relocate families who live in risk areas.
- Increase the land supply with the basic social needs to develop housing settlements.
- Improve efficiency in housing - related sector entities.

1.4 Actors in Shelter Delivery and their Roles

Main actors in the shelter delivery are:

- Vice Ministry of Housing and Urban Development (VMVDU)
- The Social Housing Found (FSV),
- The National Found for Popular Housing (FONAVIPO),
- NGO'S and international cooperation agencies like CARE, the European Union, CIDECO, FUNDASAL and the Private Sector.

The Central Government is the policy and decision maker through the VMVDU which has the power to develop policies and strategies to come across the solution for the country's housing situation.

The Social Housing Found (FSV) was set up in 1973 to work as a social security program with the participation of the government, employer and employee to provide the financial tools to buy a house. The FSV gives solutions to the formal housing demand for families with an income between 1 and 4 minimum wages⁵ and recently, changes the financial policy increasing the amount of credit up to \$50,000.00 to buy or build a house and \$25,000.00 USD to improve, make some remodeling or buy a housing plot. Furthermore, in the last year the FSV had extended the loan portfolio, to help the informal sector with a permanent income of 4 minimum wages (less than \$800.00 USD) and two years of economical activity or job, working in commerce, production or service areas

⁵ The minimum wages in the private sector was increased in december 2008, the current minumun wages are: Commerce and Service \$207.60, Industry \$ 203.10, Textile Industry \$173.70, and agricultural sector \$97.20 USD.

with credits up to \$15,000.00 USD and \$50,000.00 USD for those selfemployee professionals or people with a micro, small or medium size enterprise. Also, for Salvadorians living in the United States of America the FSV is offering a loan through the Citibank Group up to \$50,000.00 USD to buy a house (either new or used); to pay the loan or to make the monthly down payments for their families or for their own with a long term - loan and an extra payment between 5 and 20% depending of the migration status.

The National Found for Popular Housing (FONAVIPO) is a public and independent credit institution, for Salvadoran families with a low income equal or smaller to 4 minimum wages, in order to solve their housing problems. To be benefited by this program, the families must prove they own the land where they will invest the contribution with a loan up to \$ 21, 960.00 USD to improve the house, build a house, buy a house (either new or used), a housing plot or both with a long term loan (25 years).

The NGO's became important for housing construction after the 2001 earthquakes with the aid of international cooperation like FUNDASAL this is one of the most important national NGO's with almost 44,000.00 houses built since 1969; and another NGO is CIDECO which recently won a national award of \$75,000.00 USD to continue their work providing houses and basic needs for those who live in extreme poverty conditions.

The Private Sector (Construction Companies) has influenced the public housing strategies and dominance on the real state market, since their targets are middle, upper - middle and upper social classes and with the stabilization of the economy (through the adoption of the US dollar as the national currency), banks are willing and flexible when granting loans for construction to private companies.

1.5 Shelter Design.

The governmental institution, in charge of makes the technical norms for the structural design and housing construction is the Ministry of Public Works, (Ministerio de Obras Publicas, MOP) The VMVDU has the responsibility to approve the housing construction projects. Furthermore, the construction projects must fulfill the municipality's laws. In general for housing construction, these

bylaws just provide both minimum property frontage and plot areas; everything else – shelter quality, comfort and others - will be according to the investor capacity. In the metropolitan area, housing plots for social housing projects have minimum 5 meter of property frontage, a minimum plot area of 62.5 m² and must have at least 10% of the total area for gardens.

Population Density

The current data shows, the average population density in 2007 was 340 per km². Nevertheless, if we look each department's population density we have another reality. San Salvador - which is the most populated department in El Salvador - has the highest average population density with 1,737 inhabitants per km². Their municipalites have the highest population density ranging from 2,485 in Apopa to 11,574 inhabitants per km² in Cuscatancingo. Recently, studies shows that if we follow this trend, in 2025 the average population density is going to be 440 per km²; and we are going to need between 900 km² and 1,200 km² of new urban land, according to the Vice Minister of Housing.

To address this situation, the VMVDU in the last six years has been working developing zoning plans. In 2004, released the Land Development Policy which incorporates 14 regional plans (one for each department), with both urban and regional levels. Moreover, these regional plans have partial plans to link private projects with the cities development. Until May 2008, 65% of regional plans had been done, 21% are in process and 14% are in financial management.

2 Salvadoran Concrete and Cement Institute. ISCYC

The Salvadoran Concrete and Cement Institute is a non governmental organization established in 1994. It has carried out an intense institutional work, framed in its mission to promote a suitable use of cement and concrete. It has obtained recognitions at both national and international levels through the different studies and research that has made to promote the application of technologies into our national reality. In the Shelter Design and Development area, ISCYC works with governmental and private institutions showing, technologies and constructive alternatives to build houses using durable materials; and also giving technical advice to technicians, constructors, masons and those

who build their houses by themselves. Furthermore, after the 2001 earthquakes ISCYC has been promoting the union of all the main actors (VMVDU, FSV, FONAVIPO, NGO'S) in the Shelter Delivery through the Housing Forum that we hold every two years with three main subjects:

- To find out the national housing problem is, and what the different institutions are doing about it.
- To present new proposals to solve the housing problems: (in financial areas, in the area of improvements, quality in construction materials, in architectural and urban design, governmental policies and others).
- To know about experiences abroad that can help and improve our current, real - life situation.

As a result of the housing forums developed, we have been able to identify what the main problems in the housing area are. Some of them are related with financial aspects, norms and building codes, real state market and town planning regulations. Regards urban design in social housing projects, we found out that the green spaces lack of quality, and are inadequate located with no maintenance. There is no public spaces to gather, and sometimes the community facilities are far from the housing projects. Even though our role is to provide technical assistance during the construction process, the Executive Director established that we can deliver an holistic approach promoting better neighborhoods through better urban designs that take into considerations the green and public spaces as key to improve the quality of life of the inhabitants. At the same time will be able to promote the use of concrete products in pedestrian walks, main squares and urban furniture as a complement to improve the neighborhoods.

3 Inadequate Urban Design in Social Housing Projects.

Due to lack of urban plans' implementation in El Salvador, and the high population density in urban areas, the main cities grew without planning and order. As a result, currently the cities and the inhabitants are facing inefficiency in public services, insufficient communication roads, environmental degradation, inadequate use of urban land and lack of public, green and recreational spaces.

These problems are also reflected in urban housing projects; but most of all in social housing projects⁶. where land developers just provide a “ house unit” without fulfilling the social necessities of the occupants.

In the sixties, the Urban Housing Institute⁷, a government agency, undertook a social housing mass construction in urban areas for low-income families between 1965 and 1969. The aim of this program was to build 25,000 housing units and apartments in mid-rise buildings at low cost with long term mortgages. The housing program was developed with the financial aid of the Inter – American Development Bank.

Even though the program incorporated innovative construction technologies to build mid-rise buildings and self-help management for those who would be benefitted with housing units, they did not consider the maintenance of green and public spaces nor the fulfillment of physical and psychological needs of the inhabitants. As a direct result of the inadequate urban design and lack of communitary organization, the inhabitants faced unsafe public spaces, neglected green areas, unpleasant urban environment and problems to restore the aesthetic of the mid-rise buildings . Until now, the government hasn’t done a social housing program on this scale.

Due to the failure of social and urban integration criteria, the mid-rise building option for social housing projects received a bad reputation and lost supporters against the horizontal construction. But in a country with only 21,041 square kilometers -and with the highest population density⁸ in Central America, (FAO,2004) -it is unreasonable have low urban densities and horizontally housing constructions. This phenomenon is especially negative in metropolitan areas and outskirts with wastefulness in energy, cost of installation and maintenance of water, sewage and electricity networks and the inefficient use of land.

⁶ Social housing is used in this paper to refer to those dwellings with a monetary value of up to \$15,000.00 USD according the Liberty and Progress Institute created in 1991 by the President of El Salvador, to promote and provide land legalization in social housing projects for those living in squatter areas.

⁷ The aim of the Urban Housing Institute, was to promote the construction of low cost house units in urban areas for those with low and middle incomes. The institute ended their operations in the seventies.

⁸ Number of people per unit of area or, alternatively, the amount of land available per person.

Nowadays, the social housing projects are executed by few private construction companies, land developers and NGO's with the financial aid of institutions like the National Housing Fund (FONAVIPO) and the National Found for Popular Housing (FSV). The housing projects are located in the outskirts far from sources of employment and opportunities; with a high cost of transportation for the inhabitants. They have unplanned locations for commercial areas and are also surrounded by unpleasant urban environments, with social problems like drugs and gang -related crimes.

Moreover, most of the social housing projects just provide the dwelling with access to electricity, water and sewerage networks without taking into consideration the social community development, which increase the social exclusion and promotes violence. Furthermore, none of the projects has implemented sustainable processes; neither do they take into account technology management nor have a plan for communitarian organization or environmental impact assessment.



The quality of public and green spaces are low. Usually, local authorities don't have funds to provide the suitable maintenance. As a result, this areas ended up underused or in a state of neglect. Other issues, like inadequate building codes and norms, lack of urban regulations and tax deduction to promote green technologies, keep innovative building systems and materials away from our reality and contribute in a negative way in our development.

4 Proposal for Change and Improvement.

Urban design- especially in social housing projects- can be an effective tool to improve the quality of life for the inhabitants. Based on lessons learned during the Shelter Design and Development Programme, both planning and urban design of human settlements are important tools and largely determine the success or failure of a housing project. Especially, if we have in mind these issues:

- Housing is not an isolated element.
- The housing problem goes beyond the construction of housing units.
- Build housing projects means building cities.

VIVITAT: a neighbourhood vision

VIVITAT is a word that was created to name our proposal. It came from two words: **VIVIENDA**⁹ and **HABITAT** which translated into English means: Housing and Habitat, in order to reflect the holistic approach that we want to achieve to create better housing projects.

The aim of this proposal is to promote a different vision of how a social housing project can be conceived to built better communities and to improve the quality of life of the inhabitants living in urban areas. The target group of this proposal are the main actors in the shelter delivery, listed before.

The proposal is based in the principle that social housing projects have to be developed from a vision of neighbourhood. This means not only provide the social infrastructure and housing units. Moreover, it has to contribute to accomplish social and cultural needs. Where residential use



New urban proposals. Escala magazine 2002

⁹ VIVIENDA is a spanish Word.

coexists with commercial, educational, cultural, recreational, sports and recreation uses as well.

In this regard, the proposal presents new points of view of how the neighbourhoods can be developed from a different block design to create sustainable places and to improve the accessibility to social infrastructure and public spaces.

Zoning Approach

First of all, to achieve an efficient use of land, the currently sized blocks (90 x 90 meters) must be increased. Instead of having blocks areas from 8,100 square meters, our institute propose one 32,400 square meters block (3.24Ha). Big size blocks, will decrease the monetary investment in road infrastructure and electricity, water and sewerage networks.

Green and Public spaces

“The quality of people's homes is influenced by the spaces around them. There is increasing recognition that well-designed, well-managed green spaces by and in between housing are crucial to making neighbourhoods liveable, and contribute to people's quality of life.”(Frith, M. & Harrison, S.)

Public spaces and green areas¹⁰ are the core's blocks in our proposal. These areas will be located at the center of the block, and it will act as courtyard and semi private areas surrounded by the community facilities and residential areas. Having green and public areas centralized will encourage the foot and bike traffic through

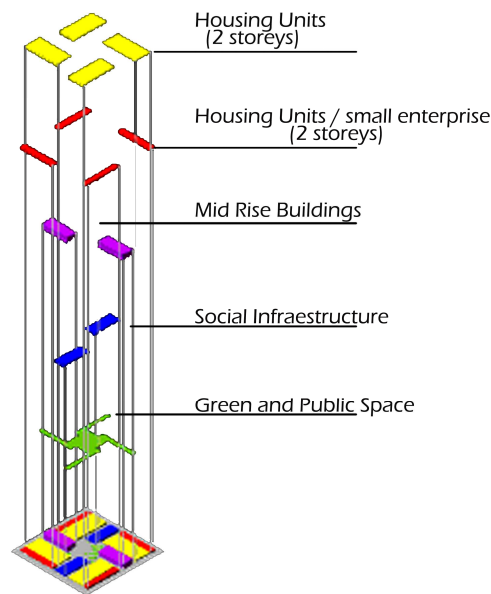


Fig. 1 Zoning Proposal

¹⁰ Green spaces are defined on this proposal as primarily the vegetated spaces in and around social housing properties. They include communal greens, gardens (communal and private), as well as other open space predominantly of an amenity value.

attractive walking tours and places to stop along the way, which promotes social and recreational activities.(see Fig.1) From the social perspective the aim is to allow individuals to leave the social anonymity and to promote community life. On the other hand, green and public spaces can be tools for increasing the land value and properties of the project itself.

Both green and public areas have to be increased beyond the current norms demand in social housing projects.¹¹ This could be accomplished by increasing the density allowed, leaving less space for roads and more area for pedestrians' walks and social infrastructure in the vicinity. Furthermore, both green and public spaces have to be according to the social housing project's dimension and have to take into consideration the maintenance over time to be sustainable.

The maintenance of green and public spaces, can be done involving the communities. “ *There is a widely held belief that where residents have a say in what happens to their housing environment this is more likely to result in sustainable long-term solutions.* “(Beer & Jorgensen) For example, At Holma in Malmo, Sweden, the Housing Company¹² established an innovative solution to the design, management and maintenance of urban greenspace involving the communities. Part of the tenant's rent was allocated by the Housing Company for looking after the green spaces. The money was then allocated to a fund over which the inhabitants, through an elected Residential Area Committee, had control. Currently, the tenants have totally redesigned their greenspaces with the aid of caretakers, who were selected and trained to stimulate local action.

Residential & Community spaces

Innovative house design solutions for low-income households have to be developed, as a response to their necessities. According to our norms the plot size in social housing projects must have an area of 62.5 m² with a minimum property frontage of 5 meters and 10% for gardens. The plot area can be reduced to

¹¹ Our local regulations, currently demand 10% of the total area for green areas in social housing projects.

¹² Most swedish municipalities choose to organize part of their responsibility for housing supply by means of a housing company owned by the municipalities. Such companies combines commercial aims with social responsibilities on offering good-quality, safe housing at a reasonable cost.

increase the density when local authorities or the Vice Ministry of Housing support this type of projects.

In this regard, our institute advise a combination of mid- rise buildings and two-story housing units for residential areas, to increase the density through vertical solutions. For two -story housing units, our proposal considers a decrease in the plot area of up to 42.5 m², leaving 10% for small gardens to fulfill zoning laws. Mid -rise buildings have to accomplish the current densities established in density maps. The quantity of apartments will be established based on 5 people per apartment; and the total area of the project, as stated in our local regulations. Moreover, as technical institute we advice the use of new materials; and also, green technologies that promote sustainability in social housing projects.

Social equipment areas have to be accessible for everyone and they have to fulfill the inhabitant's needs. For each block this proposal suggest areas for this purpose near the residential areas. (see Fig.2) Local regulations establish that community facilities in social housing projects can be proposed

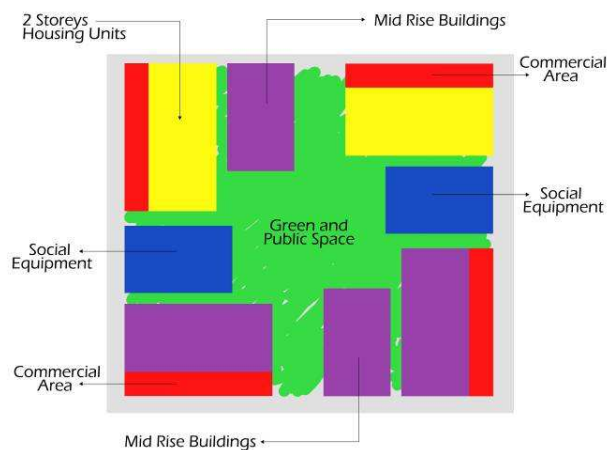


Fig. 2 Mix Block (Residential and Social areas)

VIVITAT Zoning proposal.

under the professional criteria of the project manager. The design must be justified and will be approved by the housing authorities.

Another option that can be developed, to fulfill the social infrastructure requirements, can be arranged through the combination of two block types. One block can be designed just for residential areas (see Fig. 3) and another one with a mix of both residential and social use. Combination of both typologies will allow a balanced land use and stimulates diversity and sustainability.

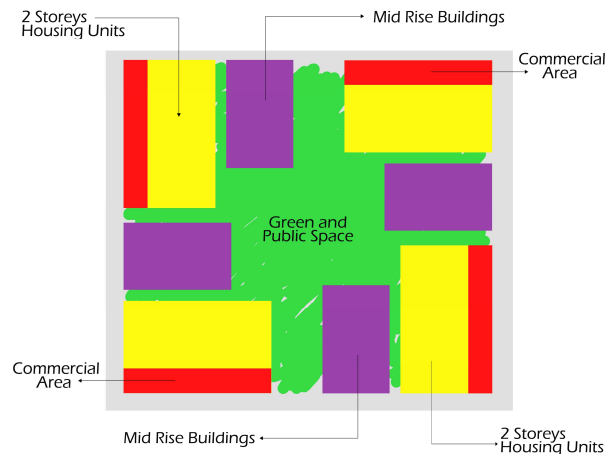


Fig. 3 Residential Block
VIVITAT Zoning proposal.

Commercial areas

Commercial areas are also an important part in this proposal. These areas are located in front of the perimeter roads, and they can be spaces where small enterprises and local markets can be developed. In this area, two-story housing units can be designed with two functions: for residential and for commercial use. This option will allow families to have a space for developing small enterprises, in order to improve their economic situation.

Final Comments:

VIVITAT proposal hope to develop a new social housing zoning approach, from a holistic point of view. As a technical institute we believe that community areas and green environments are the keys to achieve better communities and neighbourhoods. In this regard, there are a lot of successful experiences around the world, that can help us to improve our local conditions and to demonstrate what we can achieve if we start looking at the problem from a new perspective. That is the reason for this proposal, to start a change in the minds of the main actors in shelter delivery.

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