

## Urban Poverty Energy Access: Case Study Argentina

Documento de Trabajo

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# EXECUTIVE SUMMARY

Worldwide, urban areas are in constant growth, driven by a variety of factors. Rural-urban migration, population growth, processes of industrialization, employment opportunities, better access to public services and education, better incomes, freedom to make life-style choices and better communications, to name just a few.

In Argentina, the phenomena of slum development began in the beginning of the twentieth century driven by European immigration. A modern development began 30 to 40 years ago with domestic migration and immigration from neighbouring countries the result of social exclusion due to economic factors and from public policies<sup>1</sup>.

The urbanization process, together with increases in unemployment and underemployment are primary drivers in slum and settlement populations<sup>2</sup>. The structural causes for slum and settlement growth are highly correlated with migration, increases in poverty and inequity<sup>3</sup>. Greater Buenos Aires (GBA) slum growth is the result of four discrete drivers<sup>4</sup>:

- Migrations from the other provinces, driven by regional crises
- Migrations from neighbouring countries<sup>5</sup>
- Migration resulting from income reduction, as a result of unemployment and underemployment
- The absence of family access to a “first home” program<sup>6</sup>

Settlements occur on private or public land with the inherent insecurity that such a precarious occupation implies. If the government intervenes to regularize land tenure, the situation improves on many levels. Legal tenure leads to access to energy via grids, to supplies of drinking water, telephony, etc.

Illegal land occupations are drivers for requests for infrastructure in public services like water, energy, education and other services. Surprisingly, the rate of growth of slums in the last five years was higher than the period 2001-2006. This process of growth stimulates energy consumption, a driving factor for increased and improved supply infrastructure and drives the agenda for an energy policy for the poor.

Existing energy policies for the poor are regressive in nature, even given energy subsidies. A clear cross-subsidy policy has been implemented in an attempt to make the energy system feasible while avoiding negative macroeconomic effects. However the complexity of the

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<sup>1</sup> Putera, L. Vivienda, déficit habitacional y políticas sectoriales – CIGES – 2012.

<sup>2</sup> Since 2006 the rate of growth of slums and settlements increase in relation to the previous period (2001-2005).

<sup>3</sup> Cravino, María Cristina. La Metamorfosis de la Ciudad Informal en el Área Metropolitana [Metamorphosis of Informal City in the Metropolitan Area], 2009. Of course, the process of migration itself recognized reasons as the ones mentioned in the first paragraph.

<sup>4</sup> Of course, behind the reasons of migration from other countries or provinces, are the issues of poverty, lack of employment and access to housing.

<sup>5</sup> Specially Paraguay, Bolivia, Peru and Uruguay.

<sup>6</sup> Grinberg, S. – Territories of schooling and schooling territories in contexts of extreme urban poverty in Argentina: between management and abjection – Elsevier – January 2011.

Argentine energy context in the wake of privatizations, deregulation and subsequent regulation changes, has had the result of privileging household users connected to the grid above all other user categories.

As regards key energy issues; there is a generalized situation of irregularity in energy provision and consumption, in the two principal modern energy sources. For LPG the following experiences are common: shortages and high prices for subsidized cylinders; lack of dependable supply and/or adulteration of contents. The electricity market has its own problems that include: user non-payment; illegally connected customers, and the provision of low quality service. Neighbours who do pay their bills also experience frequent problems including interruptions to supply, damage to the grid and variations in both frequency and voltage causing damage to appliances.

When comparing the study developed under UPEA III with that of UPEA II, there have been practically no changes in the last four years. Analysis of the case study demonstrates that there remains a significantly high proportion of unfulfilled basic energy needs in poor urban areas of Greater Buenos Aires (GBA). Energy bills represent a high proportion of budgets of poor families. Expenditure on energy would be higher even if all basic needs were fulfilled.

The conclusions and recommendations of UPEA II remain valid. Income improvements in poor urban areas were not accompanied by an improvement in conditions for energy access. Supply restrictions, and absence of energy policies to overcome these barriers, remain.

Fragmentary policies like prepayment meters or “social” gas cylinders have been partially successful since they provide solutions to energy access to an important share of urban poor. However they lack an integrated perspective and, in the end, they have limited results, isolated impact or remain pilot projects.

The implementation of social programs, like subsidies for un-employment or other social activities, combined with increases in income from growth in informal activities (in turn a result of a favourable macroeconomic environment) has improved satisfaction in energy services. Nevertheless, the improvement of income enabling the acquisition of new electricity appliances was not accompanied by an increase in the electricity supply infrastructure, generating major interruptions of power and a decrease in the quality of the service.

Some energy services demonstrate a high percentage of unfulfilled basic requirements. While penetration of Natural Gas remains very low, it could solve both problems. By reducing electricity consumption, it could contribute to solving the irregular situation of these households and reduce the load on electricity grids, which could in turn improve quality of service. Natural Gas penetration would also cater to a large number of these unfulfilled energy service needs.

Particularly in GBA (where the largest number of urban poor live) the long-term goal should be the connection of poor users to natural gas grids. This could significantly reduce their energy expenditure and improve the fulfilment of their energy service needs. Such a strategy

would help to reduce the users' electricity bill through the substitution of LPG and EE with NG. It would also lead to a more efficient use of energy while also fulfilling basic needs. As regards the specific circumstances of the case study – very poor neighbourhoods of GBA – charcoal should be substituted by LPG, as a first step, as well as electricity for caloric uses; then natural gas grids should be made available to the whole household sector.

The energy services should be provided, with consideration for the socio-cultural, economic and environment reality of the slums. Both those related to caloric uses (cooking, water heating, space heating, etc.) and to electricity (lighting, space conditioning, refrigerators, TV sets, etc.) should be addressed by various modern energy sources, LPG, Natural Gas and Electricity.

There is a need for a strategy to be developed step by step, where the most immediate actions should be:

- 1) Making the “social” gas cylinders available and affordable to all LPG consumers, via an effective real implementation of the “LPG for all” program, resulting in the following:
  - a. Substitution of Charcoal in cooking and space heating, as well as electricity for caloric uses in very poor households, by LPG
  - b. Provision of LPG appliances at a low subsidized price to substitute appliances using other sources like electricity or charcoal. Appliances should be as efficient as possible
  - c. Special attention should be paid to introducing renewable energy devices, especially solar water heaters and solar ovens or cookers
- 2) Coordinated activities carried out by natural gas distribution companies, the Regulatory Entity and communal organizations in poor neighbourhoods, to facilitate Natural Gas penetration; especially regarding:
  - a. Conditions of the dwellings to be connected to the grid
  - b. Conditions to become a legal user
  - c. Estimation of potential contribution of the users in order to build the gas grid, both in money and labour
  - d. Training licensed gas workers in the neighbourhoods
  - e. Implementation of a social tariff to guarantee basic caloric uses
  - f. Determining the time span of the social tariff once the grid has been paid off
  - g. Surveying the supply of minimum and efficient NG equipment for poor households, which would require coordination with suppliers of cooking stoves, water heaters and space heaters
- 3) Implementing a plan for the permanent regularization of low-income (poor) family electricity and natural gas customers as a contractual obligation of distribution companies. This would require the definition of a social tariff for basic electricity and natural gas consumption.

- 4) Engage local authorities to implement program of urbanization of slums and settlements, creating the conditions for a better supply of energy, especially those based on grids.
- 5) Develop an information system oriented to have better knowledge of energy consumption by the poor areas.

As part of the strategy there is a need to:

- Increase and guarantee provision of electricity to all the segments of the productive chain (generation, transmission and distribution) to foster improved well-being to major portions of the population
- Define policies to cover basic unsatisfied energy services and strategies of access to energy and the appliances to satisfy such services
- Quantify energy services requirements of the urban poor, adequate financing schemes, price policies and subsidies, as well as guarantee of supply
- Implement regulatory changes and more flexibility in the conditions of access to energy grids (Natural Gas and Electricity), especially in relation to property rights of the housing and negotiate with the utilities to develop a program of regularization of access
- Implement integral and systemic energy planning to promote the application of measures of energy saving and diffusion of clean sources for all the sectors and social strata in order to achieve a sustainable social inclusion

In addition, more general policies are needed, like:

- to promote a major involvement, role and engagement of local authorities in the treatment of poverty,
- regularization of property rights of occupied areas and the promotion of access to affordable land,
- generate funds and budget for slum upgrading and urban development programs, and
- empower the urban poor, with the promotion of an inclusive approach.

Urban poverty should be brought back into the centre of discussions on development. Exclusion has worsened the situation of the poor, as they lacked access to services with direct effects on their wellbeing. There is an urgent need to ensure that all socio-economic programs and activities are focused on meeting the basic survival needs of the most deprived groups, with resources being redesigned in order to cope with the challenge. Greater collaboration between national and local governments, as well as inclusion of civil society in local decision-making, is needed.

Regarding the specific issue of energy services and energy dialogue, the key challenge of identifying reliable and affordable energy supplies, as well as technologies for poor slum households was highlighted. It is a remarkable paradox that poor families pay disproportionately high prices for energy.

The following main constraints were identified: the absence of government leadership; the lack of long-term planning and vision; the unreliability of energy service provision and consequent unwillingness to pay for the services; the absence of monitoring process and, finally, the inadequacy of present systems to communicate the right information to stakeholders.

Finally, an integral and systemic approach to address the issue of poverty is needed. Energy policy could play a key role to alleviate poverty, if strategies, actions and an adequate implementation are put in place.

# 1. SETTING THE CONTEXT

The past decade has shown favourable progress towards population access to employment in Argentina. At present, 58% of the population has a monthly income to live on (wage/salary, rent, retirement plan, pension or social plan or assistance). There are also more people engaged in the labour market, which represents an important step forward in the number of active people and a decrease in unemployment. Also, the number of people with some sort of income has risen, but the impact is unequal. In aggregate terms, unemployment is lower. Some people have lost their jobs or begun informal employment in the “black economy.”

Despite the indicators showing this improvement the matrix shows asymmetric distribution for the extremely poor in long-term shantytowns with growth in informal settlements and slums increasing due to a deficit in housing. The 20% lowest income population gets 4.2% of the total revenue while the share of richest 20% is 48.2%<sup>7</sup>. This breach may be even larger since those with the highest earnings usually have unrecorded funds (understatement) while the poorest tend to declare more than what they actually have (overstatement). Also, this asymmetry only considers monthly incomes, leaving out other parameters such as patrimony, housing or health insurance<sup>8</sup>.

Findings from the same survey show that around 6 million people live on less than USD 4.20 a day and 5.3 million with USD 6.30 a day. These values, though over the official poverty levels, would not be enough to cover a basic basket of consumer goods. This figures help to explain the increasing share of population living in Slums and Settlements and the growth of this type of “urbanization” especially in Greater Buenos Aires.

Fundación Bariloche has chosen as the case study area for UPEA III the region known as Greater Buenos Aires (“*Gran Buenos Aires*”, GBA, for its acronym in Spanish), in order to follow the guidelines used in the previous study, UPEA II, as the area where the slums situation is more prevalent. The following sections will describe the study area characteristics as well as the profile of the population in the study.

## 1.1. Background

The nation comprises 23 Provinces with administrations that are independent from one another and which are, at the same time, ruled by a Central National Government. Each of these Provinces is further divided into districts, known as “*partidos*”.

The map below shows Buenos Aires Province. The Autonomous City of Buenos Aires (CABA for its acronym in Spanish) is the country’s capital city and is located in the northeast area of Buenos Aires Province. This capital city is surrounded by the 24 districts that, in

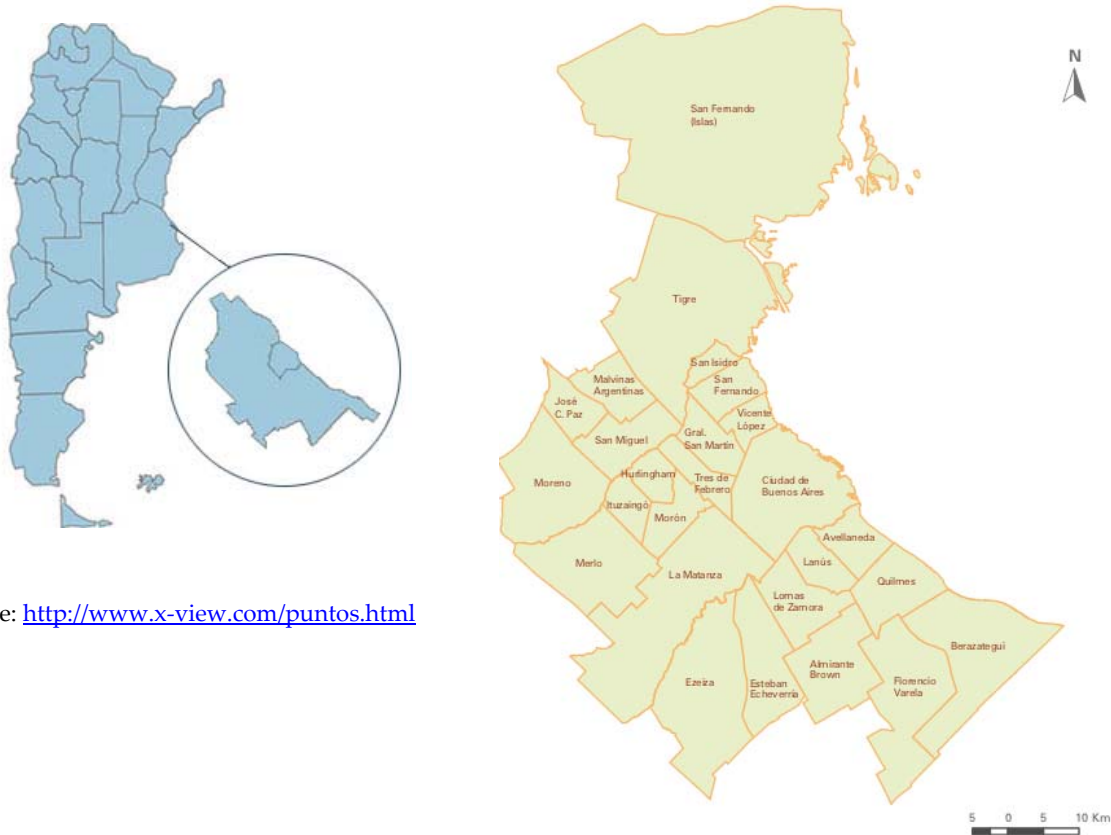
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<sup>7</sup> INDEC- Household Permanent Survey – Third quarter 2011.

<sup>8</sup> Poverty reduction has two key issues: income and property rights generation. Social policies based in the first issue but not including access to education, health, housing or other property rights or public goods could alleviate poverty but not eliminate poverty.



conjunction with the Autonomous City of Buenos Aires, constitute the so-called Greater Buenos Aires (GBA). The following sections provide a detailed description of this case study area.



Source: <http://www.x-view.com/puntos.html>

Source: General Direction of Statistics – Ministry of Public Finance, GCBA)

## 1.2. Location

Greater Buenos Aires (on the right) is constituted by the Autonomous City of Buenos Aires, Argentina’s capital city, which is administered by the Government of the City (GCBA)<sup>9</sup> led by a Head of Government.

The Greater Buenos Aires also includes the so-called “*conurbano*”, or suburb, which is formed by 24 districts that surround the Autonomous City of Buenos Aires: Avellaneda, General San Martín, Lanús, San Isidro, San Miguel, Lomas de Zamora, Hurlingham, Malvinas Argentinas, Tres de Febrero, Ituzaingó, Morón, Vicente López, José C. Paz, Quilmes, Almirante Brown, Florencio Varela, San Fernando, Berazategui, La Matanza, Tigre, Esteban Echeverría, Merlo, Ezeiza, Moreno.

All these districts are ruled by the Buenos Aires Province Government<sup>10</sup>, but each of them has its own municipality.

<sup>9</sup> [www.buenosaires.gov.ar](http://www.buenosaires.gov.ar)

<sup>10</sup> [www.gba.gov.ar](http://www.gba.gov.ar)

### 1.1.1. Demographic Profile

The following table summarizes the demographic changes found in the Autonomous City of Buenos Aires and the 24 GBA districts:

Table 1 - Demographic growth

	Inhabitants		Absolute variation	Relative variation (%)
	2001	2010		
Autonomous City of Buenos Aires	2,776,138	2,890,151	114,013	4.1
24 GBA districts	8,684,437	9,916,715	1,232,278	14.2
Total GBA	11,460,575	12,806,866	1,346,291	11.7

Data source: CENSUS 2010 by INDEC.

With regards to the Autonomous City of Buenos Aires (CABA), according to the last Federal census, carried out by the INDEC Institute in the year 2010, population reached almost 3 million (2,890,151 inhabitants), meaning a 4.1% population increase (114,013 inhabitants) compared to the previous census in 2001. This represents a 0.46% annual population growth rate for that period.

The main increase was detected in the administrative unit called "Comuna 1", which includes the following neighbourhoods: Retiro, San Nicolás, Puerto Madero, San Telmo, Montserrat and Constitución. In this administrative unit, a total population growth of 33,911 people was detected (19.7% more than in the 2001 census). Commune 1 includes the neighbourhood "Retiro", one of the neighbourhoods where the slums had shown a significant growth in the last 9 years (period 2001-2010). According to the Census, the Retro slums called "31 & 31 bis" had increased 117% in that period, reaching 26,492 inhabitants by the year 2010. That figure means that on the order of 14% of the inhabitants in Comuna 1 are inhabitants of the slum "31 & 31 bis".

Communes 7 and 8, including the neighbourhoods Flores and Parque Chacabuco, Villa Soldati, Villa Riachuelo and Villa Lugano respectively. Communes 7 and 8 had a growth of 23,258 and 25,595 people, respectively, with a total variation of 11.8% and 15.8%. These two Communes contain most of the slums of CABA. As regards Commune 7, by 2010, around 12% of the population is living in slums and settlements (26,455 inhabitants) an increase of 18% from 2001. As to Commune 8, just in Villa Soldati, Villa Riachuelo and Villa Lugano, 9 slums were identified with 33% of the population of Commune 8. Although there are few slums that have fewer inhabitants, there are new settlements like the one called "Villa 15", in Villa Lugano, and a general increment in slum inhabitants, which reached growth of 35% more than in 2001.

Finally, the total population of Commune 4 had grown 1.3% between 2001 and 2010, reaching 218,245 inhabitants at 2010. Commune 4 includes the neighbourhoods Barracas, Boca, Nueva Pompeya and Parque Patricios, the inhabitants in slums represent the 16.3% of

the total population in that Commune. This is basically due to the growth of three big slums located in Barracas that had increased 56% between 2001 and 2011.

So, according to the above-mentioned report, the number of slums in CABA, and the population magnitude living in them, undoubtedly explains a large share of the population increase of the city.

Regarding the remaining 24 districts that also constitute GBA, a population increase of 14.2% was detected in comparison to the previous (2001) census. The total population reached 9,916,715, with an absolute variation of 1,232,278 more people. Thus, the annual population growth rate for such period is 1.58%

It is interesting to examine the Lomas de Zamora and General San Martin districts, as the slums chosen as specific study cases in this report are located in those areas. In Lomas de Zamora, there was a total population of 616,279 people in 2010, a 4.2% rise in relation to the previous census. A total of 414,196 people live in General San Martin, indicating a 2.8% growth with respect to the previous census.

The following table summarizes all data by subdividing the study case area in the Autonomous City of Buenos Aires (CABA) and the 24 districts that constitute the suburbs. As can be seen in the table, population percentage in slums and settlements has been growing through the years, showing the highest rate in the 2006-2010 period, reaching 15.8% in the year 2010.

Table 2 - Buenos Aires and Great Buenos Aires Population Evolution

		CABA	24 GBA districts	Total
1980	Total population	2,922,829	6,823,175	9,746,004
	Population in slums and settlements	37,010	290,920	327,930
	% Slums & Settlements	1.3%	4.3%	3.4%
1991	Total population	2,965,403	7,969,324	10,934,727
	Population in slums and settlements	52,608	410,479	463,087
	% Slums & Settlements	1.8%	5.2%	4.2%
2001	Total population	2,776,138	8,684,437	11,460,575
	Population in slums and settlements	107,805	613,078	720,883
	% Slums & Settlements	3,9%	7,1%	6.3%
2006	Total population	2,838,912	9,257,707	12,096,619
	Population in slums and settlements	129,029	936,855	1,065,884
	% Slums & Settlements	4.5%	10.1%	8.8%
2010	Total population	2,890,151	9,916,715	12,806,866
	Population in slums and settlements	163,587	1,855,390	2,018,977
	% Slums & Settlements	5.7%	18.7%	15.8%

Source: Based on data from the reports: Slum and Settlement Extent and Growth in Buenos Aires Metropolitan Area in the last 25 years [*Magnitud y crecimiento de las villas y asentamientos en el Área Metropolitana de Buenos Aires en los últimos 25 años*]<sup>11</sup>, Buenos Aires City Government, Report "Un techo para mi país" and CENSUS 2010.

<sup>11</sup> Cravino, María Cristina. Magnitud y crecimiento de las villas y asentamientos en el Área Metropolitana de Buenos Aires en los últimos 25 años [Slum and Settlement Extent and Growth in Buenos Aires Metropolitan Area in the last 25 years], 2006.

An important factor in relation to the structural causes for slum and settlement growth is very much linked to migrations and employment<sup>12</sup>. It should be highlighted that the GBA experiences four different reasons<sup>13</sup>:

- Migrations from the other provinces, originated by regional crises
- Migrations from neighbouring countries<sup>14</sup>
- Migration due to income reduction, caused by unemployment and underemployment
- The absence of family access to a “first home” program

According to a recent study<sup>15</sup>, the participation in slums and settlements of people coming from Chilean migrations began to decrease from the mid-80s and by 2009 were almost nonexistent. On the contrary, migrations from Peru have been increasing. The same study indicates that foreign migration relevance is higher in the Autonomous City of Buenos Aires than in the suburbs.

Regarding the suburbs, data collected by a study carried out by the organization “*Un Techo para mi País*”<sup>16</sup> revealed that different migration groups coming from the provinces coexist in 68.1% of slums and informal settlements.

As the following table shows, most migrations to the suburbs come from Chaco, Santiago del Estero, Corrientes, Tucumán and Misiones Provinces, as ones of the poorest of the country.

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<sup>12</sup> Cravino, María Cristina. Op.cit. 2009

<sup>13</sup> Including rural-urban migrations, as well as those coming from other urbanized areas.

<sup>14</sup> Specially Chile, Paraguay, Bolivia, Peru and Uruguay.

<sup>15</sup> Cravino, María Cristina. La Metamorfosis de la Ciudad Informal en el Área Metropolitana [Metamorphosis of Informal City in the Metropolitan Area], 2009.

<sup>16</sup> CATASTRO 2011 report. Un techo para mi país. “*Relevamiento de villas y asentamientos en el Gran Buenos Aires*”. Argentina, Octubre de 2011.

Table 3 - Domestic migration origins

Province	%
Chaco	19,5%
Santiago del Estero	16,2%
Corrientes	15,6%
Tucumán	11,3%
Misiones	11,1%
Salta	5,3%
Formosa	5,0%
Entre Ríos	4,1%
Jujuy	3,6%
Córdoba	2,4%
Santa Fe	2,3%
San Juan	0,7%
Catamarca	0,6%
La Rioja	0,6%
Mendoza	0,6%
San Luis	0,5%
Neuquén	0,2%
Río Negro	0,2%
Chubut	0,1%

Data from: CATASTRO 2011

With respect to foreign migrations, 82.8% of the cases have shown the presence of groups from neighbouring countries: 55.3% of which come from Paraguay; 32.5% from Bolivia; 5.9% from Uruguay and 0.6% from Brazil.

The available figures did not give information on the proportion of people that arrive to the slums and settlements as a result of the unemployment and underemployment changes from previous situations, but several studies refer to the issue<sup>17</sup>.

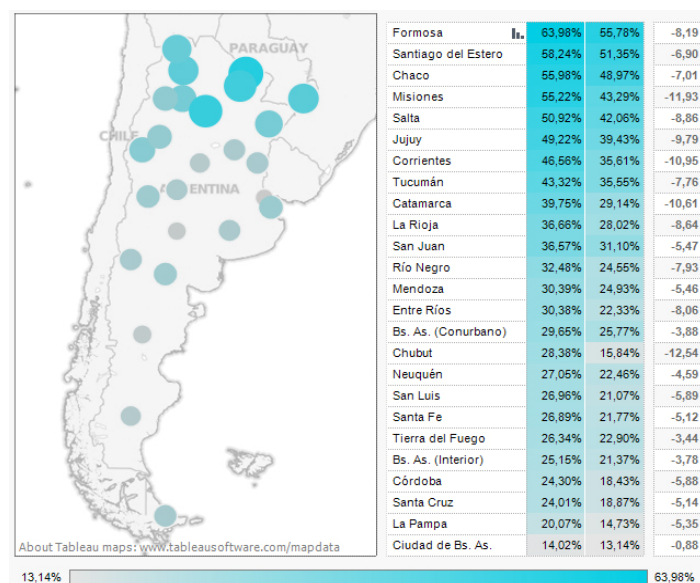
Although the economic growth and employment in the last 10 years has been important, as has been the reduction in the housing deficit; it remains a problem for 25% of the families<sup>18</sup>. The situation was improved but disaggregated information shows deeper problems.

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<sup>17</sup> Grinberg, S, Gutiérrez, R. La comunidad fragmentada: gubernamentalidad y empoderamiento en territorios urbanos hiperdegradados. Revista Espacios – 2012.

<sup>18</sup> In 2001 the déficit was for 30% of the families.

## Household deficit by Province Comparison between 2001 and 2010 census



Source: Newspaper “La Nación”, with information from National Census.

At the same time when the deficit decrease, there is reduction on the percentage of people owning a house that demonstrates a structural problem related with the absence of financing mechanism or social housing programs. 2001 Census showed that 75% of the household were property of the occupants. According 2010 Census the percentage decrease to 71%. The problem is larger in the poorest provinces driving the process of domestic migration.

### 1.1.2. Profile of the urban poor in the City

As a necessary first step, it is important to make a brief distinction between “slum” and “settlement”.

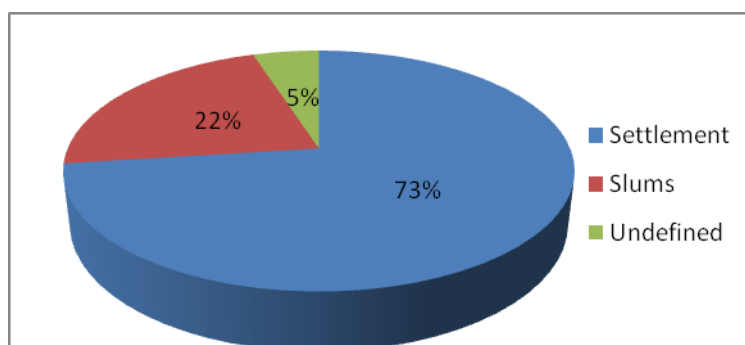
The term “slum” is used to refer to those sets of very precarious, highly overcrowded housing units, distributed practically one on top of the other in occupied land. Alleys in slums are narrow; most slums lack open or recreational areas; no roads or square blocks nor lots can be distinguished. On the other hand, when speaking of “settlements”, the term is applied to an occupation modality that tries to maintain an urban layout; the occupied land is subdivided in lots and square-blocks and street layout with areas intended for different activities or services (soccer fields, first-aid clinic, schools, among others) are respected. (Merklen: 1997; Cravino: 2009)<sup>19</sup>.

<sup>19</sup> CATASTRO 2011, op cit.

- **Type of informal urbanization:**

With regards to the type of informal urbanization, the report provides the following percentages:

Figure 1 - Type of informal urbanization



Data: CATASTRO 2011

This is by no means a minor point as, in 73% of the cases, infrastructure should not be a very large barrier to energy access because these settlements, as said above, observe street layouts, square-block subdivisions and lots.

- **Slum and Settlement Size:**

With reference to the size of slums and settlements, informal macro-urbanizations prevail.

Table 4 - Size of informal urbanization

Size	Percentage
Macro	65,6
Medium	26,5
Micro	7,9

Source: CATASTRO 2011<sup>20</sup>

Nearly 66% of informal urbanization are macro-size (over 100 families living in the urbanization). Those classified as “micro-size” are those holdings between 8 and 20 families and “middle” those with 21 to 100 families.

- **Social sectors living in the slums:**

It is interesting to note that urban informality should not be associated exclusively to sectors with the lowest economic resources. Within the migrant groups, there are families that have incomes above poverty levels but whose access to a “formal neighbourhood” is limited due to the lack of documents required, -or failure to fulfil other requisites- to have formal access to housing.

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<sup>20</sup> CATASTRO 2011, op. cit.

- **Families per household**

Approximately 5 to 6 persons per household was detected. There is a current tendency for new generations to stay in the same neighbourhood where they grew up. In some cases they add on to the family house, in other cases they place the new home in the same lot, or stay in the same household where they used to live.

### 1.2.3. Characterization of neighbourhoods and energy consumption

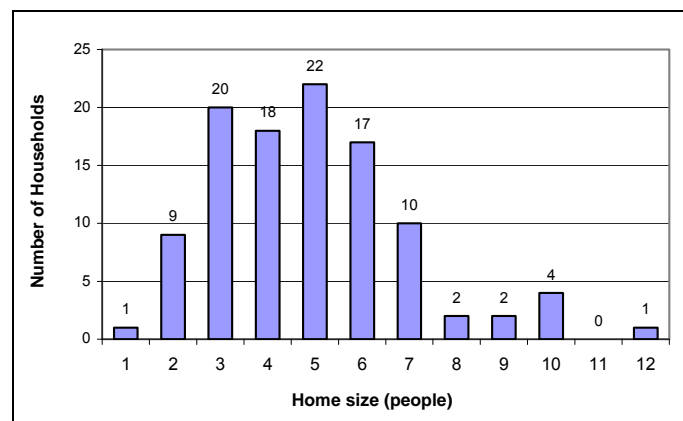
UPEA II<sup>21</sup> has already provided a description of Budge and Fiorito slums, a summary of the key findings is included.

In addition, a brief description of Villa Carcova’s specific socio-demographic features, based on the field surveys carried out, follows the reference to Budge and Fiorito.

#### *Budge and Fiorito*

Below is a characterization of the energy consumed by the dwellers of deprived urban areas (shanty towns) in Budge and Fiorito, on the basis of data surveyed among 106 dwellings, inhabited by 109 households and 538 people (an average of 4.94 people per household).

Figure 2 - Frequency of Households’ Members



Source: Author’s estimations

The weather in this area is warm and humid, with a wide temperature range across seasons. It may be as cold as 0° C in winter and as hot as 40° C in summer.

The range of jobs or activities performed by the head of family (the person that contributes the most important share of family expenditure) is included in Table 5.

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<sup>21</sup> Available at [www.gnesd.org](http://www.gnesd.org).



Table 5 - Main work activities of surveyed households

Main activity	Frequency
Employee	33
Construction worker	24
Self small business	16
Short daily jobs	10
Informal weekend market food sales	7
Recycling	4
Home tasks	2
Unemployed	2
Others	8
TOTAL	106

Source: sample surveys

Employees represent the largest category of occupation, including domestic workers paid by the hour. As expected, people working in the building sector are highly represented, with the second level of importance. The third group are people with their own businesses, generally food-related shops within the home. Short day jobs are the traditional activity of slum inhabitants and they are ready and available to work single day jobs.<sup>22</sup>

Regarding the types of services or shops performed within the slums, the sample presents the following detail:

Table 6 – Types of services or shops of surveyed households

Productive activity	Frequency
Food related shops	14
Clothing related shops	7
Carpentry	2
House cleaning articles	1
Souvenirs handcrafting	1
TOTAL	25

Source: sample surveys

Principal activities include is the sale of home products or articles to neighbours; including prepared food (frequently charcoal or wood fuel is employed, because the taste and flavour are preferred). Clothing related shops include small handcraft finished leather products, clothes mending and sewing, both for minor sales to neighbours and for resale to bigger shops.

If the main expenditure of these families is analyzed, food and travel disbursements stand out with 87% and 9%, respectively. Other issues are medicines, nappies and cellular phone bills; energy sources like LPG, kerosene and electricity were mentioned only once or twice, although a frequently mentioned problem related to their consumption is the high cost.

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<sup>22</sup> Non-formal activities called 'changas' in Spanish argot from Argentina.

Other problems related with the energy sources confirmed our preliminary notions of consumption, reflected in the final summarizing table.

Table 7 - Money spent in the two main relevant household expenditures (USD)

	Minimum	Maximum	Mean	Standard Deviation
Primary expenditure	\$3.20	\$31.70	\$10.40	4,4
Secondary expenditure	\$0.70	\$11.10	\$6.10	2,7

Source: Author's estimations, based on sample surveys

Relevant information is made up of a combination of the need of money for a particular item and the real expenditure in it (which was the idea of the survey). But it is helpful to identify money needs of these poor households.

#### *Villa Carcova*

The neighbourhood locally known as Villa Carcova is located in Jose Leon Suarez neighbourhood in the General San Martin District, Buenos Aires Province. As many other neighbourhoods of this area, it is commonly perceived as a "slum". The population is around 7,000 people.

The neighbourhood houses were built up using the layers of garbage as foundations. There are a variety of reasons for this: one of them is that the area had historically been used as dump and for waste picking. Many streets formed or continue to grow after some houses were already built; thus, when walking around the neighbourhood it is common to see windows just a few centimetres above from the ground. This is because even when the houses were already built it was necessary to continue land filling, so many house windows ended up a few meters above ground level. Self-construction and precarious urbanization are key features of life in the neighbourhood, in particular in relation to access to public services.

It has been identified that in Villa Carcova, 64.6% of household heads are with an average age of around 37 years old. Occupation of the household head varies: some are employees/construction workers, others have their own small businesses, others make the so-called "*changas*" (short daily jobs), others pick and sell cardboard for recycling, some are street vendors and some have other jobs.

The following table summarizes the percentages of each of the above occupations, but it should be highlighted that 12.9% of household heads are unemployed.

Table 8 - Household head occupation

Employee/construction worker	Own Business	Short day jobs	Recycling (cardboard seller)	Street vendor	Other	Unemployed	Refuse to answer
47.4%	18.2%	4.3%	3.8%	1.0%	11.0%	12.9%	1.4%

Source: Survey on access to energy, 2011

The category “other” includes housewives, pension beneficiaries, and retired people, among others.

It is important to point out that 38.4% of those within the employee/worker category claimed to be beneficiaries of a social plan, particularly the “Argentina Trabaja” Program, which aims, among other things, at doing maintenance and small construction work in the neighbourhood.

Table 9 - Household head occupation according to his status as social plan beneficiary

Household head occupation	¿Are you a beneficiary of any Government social plan?		
	No	Yes	Refuse to answer
Employee/construction worker	61,6	38,4	0,0
Own-business	50,0	50,0	0,0
Short daily jobs	66,7	33,3	0,0
Cardboard selling	50,0	37,5	12,5
Street vendor	50,0	50,0	0,0
Other	52,2	47,8	0,0
Unemployed	33,3	66,7	0,0
Refuse to answer	33,3	0,0	66,7
Total	54,1	44,5	1,4

Source: Survey on access to energy, 2011.

Table 10 - Social plans

No access to Social Plans	Access to Social Plans			
		Argentina Works	Universal Child Allowance	Other plans
54,1%	44,5%	11,0%	22,0%	1,9%

Source: Survey on access to energy, 2011.

Regarding the type of housing, most are unfinished. 83.3% are constructed with solid building materials which influences the feeling of ownership towards the house by these family groups who have been building their houses themselves and have improved the quality of the materials used in them.

Table 11 - Type of housing

Solid, brick /block and concrete	Solid construction materials, unfinished	Timber	Corrugated iron, canvas, nylon, scrap materials	Refuse to answer
31,1%	52,2%	15,8%	0,5%	0,5%

Source: Survey on access to energy, 2011.

## 1.2.4 Energy Consumption in the Slums of Buenos Aires

In Argentina there is an ample distribution of natural gas in all sectors. Particularly, in the Household sector. In the Year 2010 some 51.2% of the total population had access to Natural Gas (population census 2010)<sup>23</sup>. The availability of this high-quality source and at a low price means that there is high consumption, particularly for water and space heating.

The homes that have no access to Natural Gas are those that are found in regions where there are no gas pipelines, in rural sectors, and in the low-income neighbourhoods where distribution grids have not been constructed. In some cases, grids exist but the income level is too low so that inhabitants are unable to pay for the connection and the internal house fixtures. The principal alternative fuels are LPG and kerosene and in some provinces or districts, electricity, in some cases through “illegal connections”.

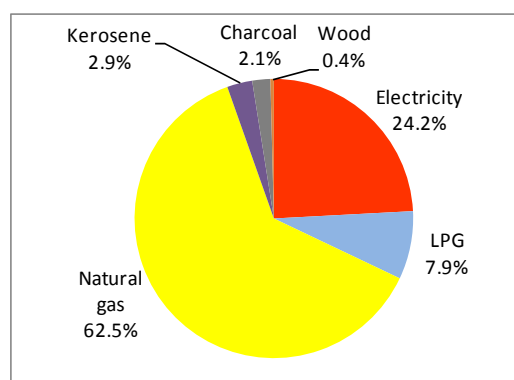
97.7% of Argentine dwellers have electricity from the public grids, 1.1% has their own generation, and the other 1.2% doesn’t have electricity. Almost all of those homes that don’t have access to the public grid are rural; it is rare to find an urban dwelling that doesn’t have access to the grid, whether or not the connection is legal.

Considering the Household sector as a whole, 62% of consumption is Natural Gas, 24% electricity, 8% LPG and the other 5% kerosene, charcoal and firewood. The average Household consumption for a household in the country in 2010 was 1,000 kep<sup>24</sup> per home.

<sup>23</sup> INDEC – Censo Nacional de Polbación, Hogares y Vivienda 2010 – Resultados Definitivos – Graph 4 - Page 9.

<sup>24</sup> Kilogram of petroleum equivalent.

Figure 3 - Structure of energy consumption by source.  
Household sector, Argentina, 2010



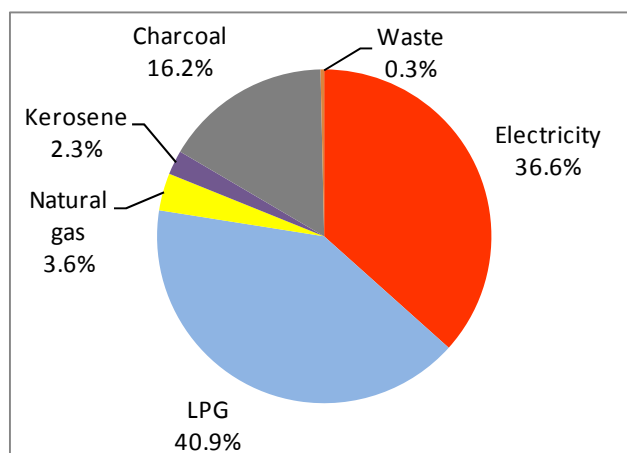
Source: National Energy Balance 2010

Energy consumption in the slums of Buenos Aires differs from the national average, as shall be shown later. The consumption structure in the slums is based on the case studies realized in UPEA II and in the current study. Both of them are representative of the energy situations of the Buenos Aires slums. In the case of UPEA II, as mentioned, that study area was the slums of Budge and Fiorito. Its principal purpose was to determine the structure and level of energy consumption, as well as energy services both satisfied and unsatisfied. For UPEA III, the case study was conducted in the slum called Villa Carcova, in the township of General San Martin, to identify the main problems of energy supply and consumption in the slums and the existing barriers to energy access from the demand side. An up-dated survey was made in Budge and Villa Fiorito just to identify current problems and barriers for access to electricity, LPG and Natural Gas.

Usually, the structure of energy consumption does not change in the short-term; particularly when there is no new intervention through energy policies, such as is the situation of the study cases. In consequence the results of the Budge & Fiorito study are considered as still valid as was confirmed by the more limited recent survey.

In Budge & Fiorito, LPG is the main energy source, representing 41% of the energy consumption. Electricity makes up 37%, charcoal 16%, Natural Gas 3.6%, kerosene 2.3% and waste 0.3%. That is to say, 81% of consumption is satisfied by modern sources: LPG, electricity and natural gas. 100% of the selected households have access to electricity.

Figure 4 - Structure of energy consumption by sources.  
"Villas Budge y Fiorito", 2007.



Source: UPEA II

Lighting, food conservation, ventilation and other energy services are 100% provided by electricity. 77% of cooking services are provided by LPG, 18% by charcoal, and 2% by Natural Gas. The remaining 2% is covered by kerosene and waste products.

In space heating the primary source is charcoal with 52% of consumption, followed by electricity with 30% and the remaining 18% being provided by LPG, kerosene and Natural Gas. As regards water heating, 36% is satisfied by LPG, 35% by electricity, 11% natural gas, 11% charcoal and the remaining 6% kerosene. The relatively high consumption of electricity in both of these uses, space heating and water heating, uncommon in the Household sector in Argentina, is due to the high number of illegal connections in the slums. This is also one of the primary reasons for the supply outages and drops in tension since the grids are not prepared to support of such consumers.

In the Villa Carcova slum the total amount of energy wasn't quantified, just the sources used for each energy services. Some 99% of the surveyed houses have access to electricity and, of them, only 10% have their own individual meters, while the remaining 90% have electricity access either via community/shared meters (whose bills are paid by the municipality) or illegal connections.

Every house that has an electricity supply covers their needs for lighting using electricity. Of the rest (1%) consume LPG (0.5%) and another (0.5%) no satisfaction. 88% of the homes surveyed have fridges and 78% have ventilators/fans.

A regards cooking, 98.6% of the houses use LPG and 1.4% natural gas. Neither the use of charcoal nor firewood was detected.

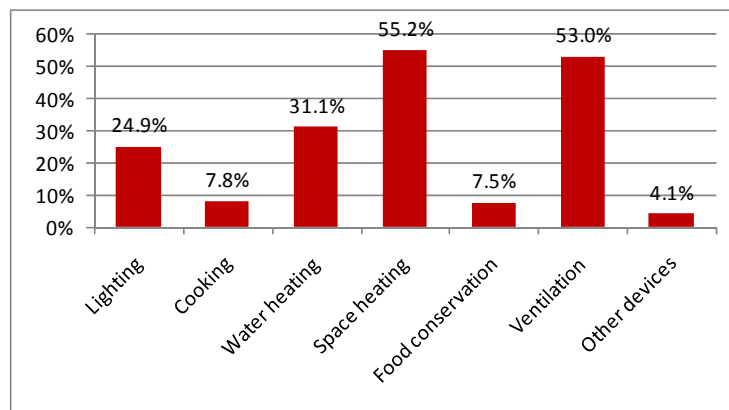
Heating water and space heating shows a high use of electricity; 76% and 68% of the houses respectively. The second source in terms of importance is LPG, while the remaining sources (natural gas, kerosene, charcoal and firewood) have little participation.

As regards the level of satisfaction of the energy needs, the Budge & Fiorito study revealed that some 85% of the houses **have unsatisfied needs** in space ventilation, 72% in lighting, 71% in space heating, 54% in water heating and 47% in cooking.

Quantifying the unsatisfied energy needs, the uses with the greatest shortfalls are: space heating, where the consumption is 55% less than basic energy requirements; ventilation with a 53% shortfall; water heating with a 31% shortfall; and lighting with 25% below basic consumption needs.

Figure 5 - Unsatisfied basic energy needs based on usage statistics.

Villas Budge & Fiorito, 2007



Source: UPEA II

In the case of Villa Carcova, 36% of homes lack space heating, some 22% have no ventilators, 12% have no refrigerators, and 10% do not heat water. This reflects energy shortfalls in the slums, similar to that of the case of Budge & Fiorito.

The consumption of energy by home in Budge & Fiorito in the year 2007 was 260 kep/home.

There has been a improvement in the socio-economic situations of the population on low incomes, in part due to macroeconomic growth in the last years, and also in part due to redistributive measures via subsidies and social programs such as the universal children's allowance (*Asignación Universal por Hijo*), the extension of the old age pension to a large number of people (who were previously excluded from the pension system), the Governmental Work Plan (*Plan Argentina Trabaja*), among others. This has definitely lead to some improvement in energy access for the urban poor, but most probably insufficient to eliminate the shortfalls detected.

In synthesis, the inhabitants of the Buenos Aires slums have access to electricity and LPG; but have a limited access to Natural Gas (a widely distributed energy source in Argentina.)

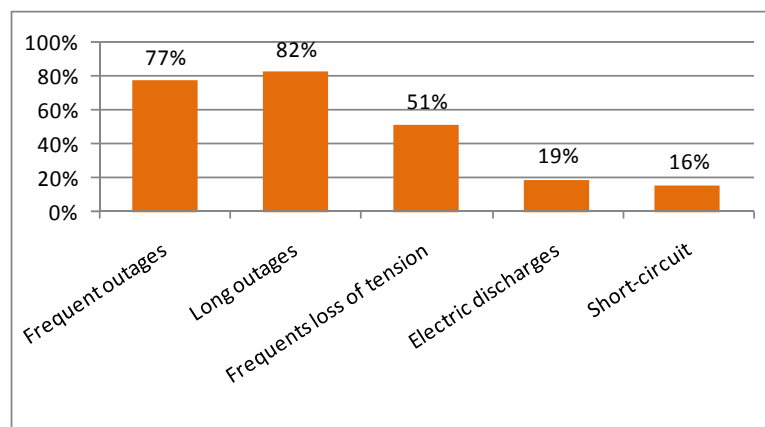
The slums demonstrate significant shortfalls in the consumption levels required to satisfy household needs. Access to energy services should be considered as insufficient.

Connection to electricity grid is precarious. Most of the inhabitants of the slums have illegal hook-ups or access via communal meters. In neither case do they pay for the energy consumed, and this affects the quality of service<sup>25</sup>. On the one hand, there is no economic limit for the consumption of energy destined for caloric use, heating water and general heating, with relatively high consumption characteristics and very poor cost-effectiveness and satisfaction of energy service. Also, the power distribution companies don't expand and increase the capacity of the distribution grids, in response to the rising population in the slums, the increase in electricity consumption per household (as their economic situation improves) and development of new productive activities in the slum.

According to Villa Carcova study, some 77% of those interviewed have frequent outages in their electricity supply. Among those, 18% suffer daily outages and some 53% have outages every second day. 82% of the outages last more than 3 or 4 hours. Some 51% of those interviewed stated that they suffered frequent loss of tension.

The probability of accidents while using electricity inside the dwelling is also a problem: some 19% mentioned having had electric discharges and some 16% have frequent short-circuits.

Figure 6 - Electricity Problems.  
Villa Carcova, 2011.



Source: Study in Villa Carcova, UPEA III.

As regards LPG, although there is a national program for household consumption of LPG in cylinders, with fixed prices of \$16 (USD4.00) for the 10kg cylinder (Social Gas Cylinder), in Villa Carcova only 5% of the habitants pay this price. 95% of the households pay a higher price, an average cost of \$22.7/10kg cylinder. Homes with medium and high incomes in Buenos Aires, with access to natural gas, pay for the equivalent amount of energy \$5.00

<sup>25</sup> It is noteworthy here that the people that are connected by communal meters could not ask for individual or exclusive meters, because it is assumed that the "technical conditions" to make a direct connection are not in place. They have to accept the communal meter or nothing.



(USD1.25). That is to say those homes in the slums pay 4.5 times the price for their main fuel use to satisfy their needs, than that paid by higher incomes households and, in many cases, up to 6 times. The LPG cost explains the use of electricity to satisfy several energy services that could be better satisfied by LPG.

As regards the social gas cylinder, 16% of those surveyed stated that the social LPG cylinder does not contain 10kg; some 22% stated that they don't have access to the social gas cylinder close-by, which means very difficult transport, and, in many cases, in very bad environment conditions. Additionally, around 40% of households consume an amount of LPG that is not sufficient to cover a minimum level of energy needs. In addition there are high risk of accidents, due to poor connections and conditions of the appliances.

In conclusion, although having access to some modern forms of energy, the poorest suffer from "energy poverty", due to poor appliances, higher prices and poor satisfaction of energy services.

## 1.3. Energy planning for the urban poor

### 1.3.1 National and local social plans/policies

At national level, there are a number of Social Plans aimed at providing the most vulnerable social groups with access to quality goods and services.

Financing to devise and execute such plans comes from so-called "Public Social Expenditure" (GPS, for its acronym in Spanish). Such expenditure is defined as "expenditure incurred to provide education, health, sanitary and housing services, implement compensation policies for the deprived groups and ensure social insurances, including welfare, medical care, family allowances and unemployment benefits"<sup>26</sup>.

#### Government Agencies and their Relevant Responsibilities

##### ANSES

- Social Security; Universal Child Allowance; Family Allowances (Contributory Scheme); Former Provincial Retirement Funds ("*Atención Ex Cajas Provinciales*"); "*Conectar Igualdad*" Program; Unemployment Benefit.

##### MINISTRY OF EDUCATION

- Higher Education Development; National Teacher Incentive Fund; Technology Training Innovation and Development; Infrastructure and Equipment; Compensatory Actions in Education; Education Quality Improvement.

##### MINISTRY OF SOCIAL DEVELOPMENT

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<sup>26</sup> Definition by the Ministry of Economy and Public Finance, Department of Economic Policy, Public Expenditure and Social Program Board.

- Non-contributory pension scheme; *Argentina Trabaja* [Argentina Works] Plan; “*Seguridad Alimentaria*” [PNSA, National Plan for Food Security]; Social promotion and protection actions; Promotion of social employment, Social economy and local development through the Program “*Manos a la Obra*” [Let’s get to work]; Integral promotion and protection of children’s rights; “*Familias por la Inclusión Social*” [Families for social inclusion] Program.

#### MINISTRY OF PLANNING AND TREASURY OBLIGATIONS

- Housing Infrastructure Development “*Techo Digno*” [Decent Home]; National Agency for Water and Sanitation Works [ENOHSA]; Housing Improvement and Basic Infrastructure; Financial Support for Social Infrastructure; “*Más Escuelas, Mejor Educación*” [More schools, Better Education] BID 1345 and 1966; Habitat Communal Enterprise; Urbanization of Slums and Informal Settlements; Support to Public Investment in Water and Sanitation Work Sectors (AySA, for its acronym in Spanish); Actions for Social Infrastructure Development; Financial Assistance for Social Infrastructure Works (Town Councils); Water Resources; Support to University Infrastructure Development.

#### HEALTH MINISTRY

- Medical care for non-contributory pension (PNC) beneficiaries; Disease prevention and control; Mother and Child welfare programs; Protection against AIDS and STDs; Development and strategies in family and community health; Strengthening of Public health system capacity (“*Remediar*” Program).

#### MINISTRY OF LABOR AND SOCIAL SECURITY

- Employment actions; Program for heads of households “*Jefes y Jefas*”; Training and Employment Insurance; Job Training Actions; Job Regularization.

The different social plans have an indirect impact on access to energy. As the report shows, in many case they mean an improvement in socio-economic situation giving the possibility to have a better satisfaction of the energy services or the incorporation of new energy services, through access to appliances. Social plans, especially “*Argentina Trabaja*” and “*Asignación Universal por hijo*”, mean an increase in income that makes possible better equipment in the household.

### 1.3.2. National and Local Plan/Policies for Urban Development

According to data from the report, “*Un techo para mi país*”, only 16% of slums and informal settlements benefit from the Government-implemented housing programs. Most of these programs have been implemented between 2009 and 2010. However, lack of participation in such programs is not due to lack of interest, since 89.4% have claimed interest in participating.

### Box 1

#### Actions to reduce slums and settlements

The role of the Government regarding slums (*villas*) and informal settlements is one of the key aspects in the configuration of the phenomenon discussed herein. In this sense, by devising and implementing housing policies, the State constitutes a major actor in the city construction process and in the appropriate social conditions.

The actions taken by the Government towards informal neighbourhoods have demonstrated different modalities along time. In this sense, it is important to note that the different modalities of housing policies do not respond to a linear timeline but rather coexist with another actions and programs. In this way, though there are housing programs with wider scope and greater funding, these coexist with other programs that adopt different approaches regarding habitat.

#### From the 20s to the 70s

The first housing policies took place during the 20s, as a result of demographic growth, the arrival of immigrants and the increasing difficulties faced by these sectors to locate in the city. Among these policies were a rent-freeze act known as "*ley de congelamiento de alquileres*" and the construction of houses through the National Commission for Economical Housing.

By the mid 40s, under Juan Domingo Perón (1946-1955) administrations, housing issues became an important priority in the public agenda. During this period, the five-year plans known as "*planes quinquenales*" gave a boost to the construction of new homes, the creation of new neighbourhoods (like Ciudad Evita) and the regulation of the rental market. Likewise, during this period the National Mortgage Bank's "*Banco Hipotecario Nacional*" criteria for access to financing schemes were modified, enabling a 'loose' credit policy for middle and low middle sectors.

From then on, the role that social housing played in the public agenda grew: the National Housing Commission was created in 1955, followed by the set up of the Federal Housing Fund in 1959, and eventually the establishment in 1965 of the Housing State Secretariat ["*Secretaría de Estado de Vivienda*"]. In 1972, the National Housing Fund (FONAVI) was created, establishing a centralized "social housing" provision system (Fernández Wagner, 2009).

#### The 70s

The policies regarding slums and informal settlements that were adopted by the 1976 military government set a precedent on how responses were to be given to this phenomenon. Although the Illia and Onganía administrations had already engaged in actions tending to eradicate the city slums and settlements, it is during this period that the compulsive eradication practices aimed at "extirpating" slums from the city emerged most fiercely.

The goal of the slum eradication plan, implemented by the local housing commission [*“Comisión Municipal de Vivienda”*], was to stop slums, freeze their growth, dismantle the existing organizations and eliminate the economic structure supporting them in order to recover those lands and include them in the urban planning.

Direct repression, firearms, tear gas and various forms of harassment were applied during the eviction practices. The vast majority of the evicted found themselves expelled to locations in Gran Buenos Aires; some of them found shelter at the backyard of a relative, while others lucky ones managed to buy a lot and move in their huts from the City, though they were not able to build their own brick houses. This way, most slums and settlements in Buenos Aires City were quickly sent to the outskirts, beyond General Paz Avenue (Oszlak, 1991).

#### The 90s

As regards politics and institutions, a strong neoliberal mark characterized the period between 1990/2000, with the State no longer performing functions that had historically been attributable to it, through decentralization, outsourcing and with the subsequent dismembering of its organic structures.

This decade was characterized by weakening national house providing systems, in a social and urban context experiencing profound change, and by a general worsening of the housing problem. During this period, the tendency towards housing issues was to find solutions through the expansion of the mortgage market. This middle and upper class-oriented approach was completed with policies that focused on the lowest strata, which were not eligible for credits, through financing by the Inter-American Development Bank (BID).

During this period, the BHN was also privatized, losing its historical social role as grantor of funds for housing. Simultaneously, the National Housing Fund (FONAVI) was paralyzed.

#### Year 2004 to present

Within the framework of a process of economic recovery, from 2004 onwards, housing policy has been characterized by large scale housing construction, achieved through the implementation of several programs. The most relevant of these programs is the Federal Program for Housing Construction, which receives the highest federal budget allocations regarding housing. The goal of such program is economic reactivation with the subsequent formal employment generation through public works executed by construction companies.

There are other programs that were devised before 2004 currently in implementation, such as the neighbourhood improvement program Promeba or the Housing Emergency Program known as *“Techo y Trabajo”* (literally *“a roof and a job”*), as well as other land title regularization programs (like *“Plan Arraigo”*), among others. From the above mentioned plans, the Federal Housing Emergency Program has the objective of encouraging the use of labour by forming worker cooperatives with the beneficiaries from the program for heads of households known as *“Jefas y Jefes de Hogar”* and building houses on a small scale; the Neighbourhood Improvement Program has the objective of providing urban infrastructure

and/or social equipment, while the programs following the “*Plan Arraigo*” are focused on regularizing property ownership.

This stage clearly shows a change in relation to the scale of housing construction when compared to the previous period. This way, habitat becomes a priority in the Government agenda.

Source: *Un techo para mi país* [A roof for my country], 2011

The main housing and urbanization programs currently in execution in GBA are the following:

- Federal Program for Housing Construction [“*Programa Federal de Construcción de viviendas*”]<sup>27</sup>: Under the Ministry of Federal Planning, Public Investment and Services. Department of Public Works, Sub-department of Urban Development and Housing.<sup>28</sup>

The program implies:

- A contribution by the National government of around \$3.9 billion pesos
- The construction of 120,000 houses
- The generation of 360,000 jobs
- Minimum extension of the units: houses will go from 44 to 49 m<sup>2</sup>, depending on the geographic area.
- Each house will cost between \$33,000 and \$65,000, according to their location.
- Federal Program for Housing Improvement “*Vivir Mejor*”: On the one hand, it is dependent on the Nation’s Sub-department of Urban Development and Housing, which is in charge of designing and managing the Program at central level and of issuing the “no objections” to the projects.

This body transfers the funds required to finance the works involved in the “*Vivir Mejor*” Program to the rest of the country’s districts.

On the other hand, it is also accountable to the Department of Urbanism and Housing of Buenos Aires Province, which establishes the guidelines for the Program’s execution in Buenos Aires Province, oversees it, and provides advice and technical assistance to the town councils.

In addition, the program involves the Buenos Aires Province’s Housing Institute (IVBA), which is responsible for executing the program in Buenos Aires Province.

Lastly, the town councils from Buenos Aires Province are in charge of hiring the Project Management Team, choosing the intervention areas, defining the universe of households (which houses are to be improved under the Program’s scope) and

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<sup>27</sup> <http://www.vivienda.gov.ar/construccion/descripcion.html>

<sup>28</sup> <http://www.vivienda.gov.ar/>

submitting to the IVBA the list of households selected to be part of the program. Their duties may also include public bid openings to award contracts to companies. Town councils shall receive the funds coming from the “*Vivir Mejor*” Program and establish an ad hoc fund, allocating these funds to investments in social housing.

The following are the two main goals pursued by the Federal Program for Housing Improvement “*Vivir Mejor*”:

- To improve living conditions of households with their own lots, who live in permanent houses built with “lasting” materials, in overcrowding conditions, with sanitary deficiencies and/or with roofs, masonry or installations showing deterioration or problems in finishing the household
  - To remedy the poor conditions of housing units building additional rooms, new bathroom and kitchen and/or through restoration, repairs and finishing
- Subprogram for Slum and Neighbourhood Urbanization: At a national level, it is the Sub department of Urban Development and Housing, on behalf of the Ministry of Federal Planning, Public Investment and Services, which grants funding to projects through a non-reimbursable subsidy to Town Councils, arranges the remission of funds, approves accounting reports and audits the Program’s financial and technical aspects. At a local level, it is the Town Councils that provide the Projects, award work contracts to companies, monitor their execution, pay the contractors, submit the corresponding accounting reports to the Nation and allocate the housing units.

Program’s goals and scope:

The program’s actions are aimed at informal settlements, located in non-floodable sites, where ownership is clear enough to make ownership regularization of the settlement housing possible.

- Ownership regularization
  - Infrastructure grids: water, sewer, electricity, gas
  - Opening of internal roads
  - Construction of a new housing unit to allow the road network and/or replacement of houses that cannot be recovered
  - Improvement of the existing housing: core construction, enlargement by building a new room, restoration of walls and ceilings
- Neighbourhood Improvement Program (PROMEBA I and II)<sup>29</sup>: The Program falls within the framework of the Sub-department of Urban Development and Housing (SDUV), Department of Public Works (SOP for its acronym in Spanish), an office of the Ministry of Federal Planning, Public Investment and Services.

It is a nationwide program, segmented according to areas/regions: Greater Buenos Aires, Central Cuyo, North East Argentina, North West Argentina and Patagonia.

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<sup>29</sup> <http://www.promeba.org.ar/>

The aim of the Neighbourhood Improvement Program II is to improve quality of life and cooperate with the urban and social inclusion of households from the poorest segments of the population that live in slums and irregular settlements. The proposal is to improve, in a sustainable manner, the habitat of this sector of the population by developing and executing integral neighbourhood projects.

The goal of the integral neighbourhood projects is to consolidate the beneficiary population in the place where they live, by granting access to land property, contributing to the provision of urban infrastructure works, community facilities and environmental sanitation, and by promoting the strengthening of human and social capital.

The program's actions are part of the national public strategy by the Sub-department of Urban Development and Housing, aimed at alleviating poverty levels, easing overcrowding, reducing environmental risk levels and improving the population's overall sanitary conditions.

Management planning is coordinated with the Sub-department's Federal programs for housing construction and improvement, and includes participation of other State bodies, institutions, civil society organizations and companies.

PROMEBA II builds upon the valuable contribution made by the experience developed while conducting PROMEBA I –which began in 1997- and is characterized by integral interventions that convey a modality of participation.

- National Housing Program: it depends on the Ministry of Federal Planning, Public Investment and Services. The "Federal Housing System", established by Federal Law 24441 enacted on 03/27/95, was established in order to create the necessary conditions so that populations with limited resources could get access (in a rapid and efficient manner) to a decent home, in accordance with Section 14 of the National Constitution. This system includes the FONAVI –National Housing Fund-, and the Implementing Agencies from the Provinces and Buenos Aires City, which are in charge of enforcing the law in their districts, and the National Housing Council [*"Consejo Nacional de la Vivienda"*].

The Program involves actions aimed at achieving the following primary goals:

- Address the demand for housing units for families with limited resources, improving quality of life for the beneficiaries by facilitating access to a housing unit
- Reduce housing deficit in the different districts
- Promote technological development in the construction sector through techniques and materials that will improve product quality, with time and cost reductions
- Contribute to the creation of direct and indirect jobs, supporting the development of regional and local economies

- National Housing Emergency Program<sup>30</sup>: At national level, the participating public bodies are: the Ministry of Federal Planning, Public Investment and Services through the Sub-department of Urban Development and Housing, which provides the funds for the Program, coordinates actions with the other actors, determines the eligibility of projects, and audits the use of resources. The Ministry of Social Development, through the National Institute of Cooperation and Social Economy (INAES) is responsible for training the cooperative members, and enrolling and registering the cooperatives through a registration number. It also provides human resources to train local agents that will be in charge of the follow-up of the program's social aspect. The Ministry of Labour, Employment and Social Security [*Ministerio de Trabajo, Empleo y Seguridad Social*] is in charge of developing and monitoring the procedure followed when including the beneficiaries from the program "*Jefas y Jefes de Hogar Desocupados*" from the construction industry into the worker's cooperatives.

At provincial level, Housing Provincial Bodies manage the funds granted by the national government, establish agreements with town councils, assigning and registering housing units based on their suggestions, and devise the mechanisms for investment recovery through partial payments in order to eventually re-allocate the funds in new projects.

Locally, town councils are also involved. They execute the program, their duties being to provide the land, make agreements with worker cooperatives, devise the urbanism and housing projects and make the payments to the cooperatives.

Goals:

- Contribute to the improvement of habitat, housing and basic infrastructure conditions of households with incomes below the poverty level and of vulnerable groups in a situation of emergency or social exclusion. To help unemployed people and beneficiaries of welfare assistance or unemployment benefits join the labour market.
- Program for Housing Improvement and Basic Infrastructure<sup>31</sup>: This program is designed to promote development and improvement of habitat, housing and social infrastructure conditions for households with unsatisfied basic needs (NBI, from its acronym in Spanish) and for vulnerable groups from small villages or places, rural areas or Indian communities in a situation of emergency, risk or social exclusion. The Program gives non-reimbursable funds for the acquisition of construction material, housing improvement and completion, or community facility building, such as multi-purpose facilities, first aid clinics, day-care centres, among other community infrastructures.

Objectives include:

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<sup>30</sup> <http://www.presidencia.gov.ar/sitios-de-gobierno/planes-de-gobierno/2678> .

<sup>31</sup> <http://www.vivienda.gov.ar/promhib/descripcion.html> .



- Improve habitat conditions for vulnerable groups located in small and medium-scale rural and urban areas and help them access to a basic housing unit or to finish recoverable houses
  - Improve basic community infrastructure, thus ensuring social participation, training, support and protection to groups under emergency, risk or social exclusion conditions
  - Reinforce vulnerable group's subsistence and self-management abilities to satisfy their basic needs, by developing and strengthening the social, productive, technological and working organization of residents and beneficiary intermediary associations
- Water Supply, Social Aid and Basic Sanitation Program (PROPASA, for its acronym in Spanish): PROPASA's activities are directed to small town councils and municipalities ("*Comunas*"), especially rural ones, from all over the country, and to periurban areas. These local authorities can delegate the role of works' implementing agency to Provincial Governments in cases specifically provided for in the Operating Regulations, as for example, inserting the Project into a provincial plan for drinking water and sanitation.

The Program makes funds transfers with the object of performing the following works:

- Increased access to drinking water, or rehabilitation or extension of their scope
  - Recover or increase capacity in water treatment plants
  - Construction of sewage systems
  - Sewage effluent treatment plants or systems
  - Mitigation equipment (Tankers, septic trucks and compressing/collector garbage trucks)
- Sanitation Program for Deprived Areas: The purpose of this project is to provide financial and technical aid to scattered community groups and urban cores in a situation of deprivation and precariousness, with the aim of promoting basic sanitation services.

With specific regard to the City of Buenos Aires, the management of the social programs and plans are centralized by the City's Housing Institute (IVC, for its Spanish acronym) which assumes the implementation of urbanization plans of slums, settlements and transitional housing estates. This institute assumes the planning and development of programs/plans for housing access through construction development, land urbanization and promoting the community life of their inhabitants, facilitating housing access through operative and credit policies which enables the development of housing plans and construction projects, promoting self and co-management policies and actions.

The results of all these programs and the relation with energy consumption could not be evaluated clearly. In any case the information related to the evolution of slums and settlements indicates that the impact is relatively marginal.

### 1.3.3 Energy Policy and Programs

As mentioned, there has been an improvement in the socio-economic situations of the population on low incomes, in part due to macroeconomic growth and also in part due to redistributive measures via subsidies and social programs. As far as Energy Policies, at present, the conditions are pretty much the same as those of 2007, when the UPEA II was carried out. At least in the areas of Great Buenos Aires there is no integral energy policy for the poor to account for their energy requirements, or the different energy source options that could be used, the improvement of service quality, the increase in energy efficiency, the required investments for infrastructure and house interiors or the funding mechanisms.

Although incorporating a few operation and financing adjustments, all programs, actions and pilot cases already described in UPEA II are still in effect, with no modifications in any of their essential aspects.

#### *Program for electricity supply*

Since September 2002, there is an agreement known as the “New Framework Agreement”<sup>32</sup> between the National Government, Buenos Aires Province and GBA electricity utilities. The main objective of the deal is to “regularize” the large number of users with illegal connections, as well as those cases of low-income households with important delays in payment of their electricity bill.

Common meters were installed in slums, identifying the number of users consuming from each measuring point and establishing a limit in the supplied power for each point according to the number of connected households. The utilities must ensure supply continuity up to the point of collective supply. Downstream of such point, the electricity companies do not take any responsibility regarding grids, installation security nor service quality, thus leaving any desired extension in the hands of the local authorities and slum inhabitants. The National Electricity Regulation Agency (ENRE) and the Argentinean Electrotechnical Association [*Asociación Electrotécnica Argentina*] have set up the guidelines to devise electricity grids in slums with the purpose of providing them with basic safety conditions.

The tariffs to be applied to the users within this regime do not have any explicit subsidy nor is there any social tariff for electricity in the area. Despite the context of a generalized price increase, tariffs in the GBA area have experienced very few adjustments since the year 2002, which implied a generalized subsidy on electricity tariffs for all household users regardless of their income levels.

A special fund was created as a joint action of the National Government, the Buenos Aires Province and the local town councils, to cover the deficit of user payments.

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<sup>32</sup> The First Framework Agreement, at national level, was developed during the nineties, after the privatization of the power system, with the same objectives.

According to information supplied by the distribution companies, a major reduction in illegal consumption has been achieved, partly as a result of this program and partly by the initiative of the slum inhabitants since having an electricity bill in their name brings several advantages: identification of their household, possibility of access to other services such as water grids or landline phones, access to credit, etc.

Nevertheless, based on the field work in Budge and Fiorito slums and in Villa Carcova for the UPEA III, service quality in slums continues to be very poor as power outages are too frequent and last for too long. Anyway, this aspect was not considered in the New Framework Agreement.

### *Price of LPG*

In Argentina natural gas is widely used in all sectors and, in particular, in the household sector. The price paid for natural gas/kilocalorie is 80% lower than the price paid for the LPG kilocalorie, which is the main alternative fuel for households. LPG is used in cities that are away from gas pipelines, in rural homes and in most low-income households, which, though located in urban and periurban areas with access to natural gas, have no distribution grids inside the neighbourhoods or slums.

In 2003, the National Government signed an agreement, with companies in charge of LPG fractioning and distribution providing price stability for 10kg gas cylinders in order to maintain a differential, more economic price. In 2004, Buenos Aires City Government creates the Social Gas Cylinder Plan with the aim of subsidizing the price of 10kg LPG gas cylinders for low-income households with no access to natural gas grids. Beneficiaries were those households with social plans and incomes below the poverty line. There were many complaints filed by consumer protection bureaus and community organizations regarding flaws in this plan: very low adherence to the program, non-observance of the established prices, shortages in winter time and low quality of LPG delivered.

By the end of 2008 the National Program on Household Consumption of Bottled Liquefied Petroleum Gas [*Programa Nacional de Consumo Residencial de Gas Licuado de Petróleo Envasado*] is created, with the main purpose of amending gas price asymmetries between households with access to the natural gas grid and those without it. It establishes a maximum price for 10, 12 and 15 kg cylinders of \$16 (USD4.00), \$20 (USD5.00) and \$25 (USD6.25) respectively, applicable in the entire country. But even with these subsidized prices LPG is still 3 times more expensive than the natural gas equivalent.

A fiduciary fund has been created with money from the National Government and natural gas production companies in order to meet subsidies of the LPG price<sup>33</sup>.

This Program, in principle, is addressed to slum dwellers. As mentioned, according to a study in Villa Carcova, only 5% of LPG consumers in these slums pay the subsidized price while the remaining 95% pay higher prices. In the workshops that were conducted in Budge

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<sup>33</sup> Article 45 of the Law 26020 (2005) and amendment, law 26314 (2007)

and Fiorito the same conclusion has been reached: only in very few cases can LPG be purchased at the subsidized price.

### *Pilot experiences*

This section describes specific experiences developed by natural gas and electricity distribution companies aimed at supplying energy to the poor areas of GBA. The objective of these experiences is, if successful, to become programs of wider scope as part of an energy policy for the poor. These experiences were already in motion when the UPEA II was carried out.

With regards to electricity supply, the distribution company EDENOR implemented the Prepayment Meter Project in the areas of Escobar and Merlo during years 2002 and 2003 respectively. Each user purchases a certain amount of kWh that he wishes to consume and can pay for. He can fraction the purchase in small amounts too, so that the payment scheme is affordable to him. Once this quantity has been consumed, he recharges.

The tariff applied in this system is not subsidized. The fixed charge is prorated in the first 150 kWh consumed per month and the variable charge per kWh that is bought is the same as the one for the common Household tariff.

Around 5,000 prepayment meters were installed (this is 1% of slum households in GBA), with wide acceptance among the system users (96%). Electricity consumption was reduced by 35% in relation to users under the same socioeconomic conditions, partly due to a more rational use of energy and partly due to unsatisfied needs.

It is well known that those slum and settlement customers illegally connected to the network show relatively high electricity consumption (generally associated with inefficient use). No wonder, therefore, that the obligation to pay the electricity induce a more rational use of it. Moreover, the tariff applied under this system has no subsidy, in consequence is not clear enough how this system manages to fulfill the basic energy needs of the most deprived households.

Often, those who live in slums and settlements are connected to the network illegally or by a common meter, and they make the effort to become regular users, since access to individual meter represents a strong indicator of social inclusion, but it is not easy to know to what extent this effort partly sacrificed the possibility of covering the basic energy needs.

In relation to natural gas supply, a pilot experience was carried out in the neighbourhood *Cuartel V* in Moreno, initiating in September 2003. The project was the result of joint actions by Natural Gas distribution company BAN (now "*Gas Natural Fenosa*"), community organizations and neighbours. Around 4,300 families were connected to the natural gas grid.

In order to finance the works, funds were supplied by the distribution company itself, as well as by the Buenos Aires Province administration, the World Bank, IDB-FOMIN and Supervielle Bank to connect 7.000 families to the natural gas grid. A fiduciary fund was created with money from the neighbourhood dwellers that would be the project

beneficiaries. Among the factors leading to the project's success, the participation of the neighbours and of two community organizations (locally well-known) should be highlighted.

This project entailed other additional benefits, such as the workshops on health, nutrition and natural gas usage. In order to execute the household installations, the neighbours themselves were trained and certified as registered installers, which not only reduced costs but also equipped them with an important work field.

### 1.3.4 Some key issues and results

The social objectives of the service infrastructure (energy, in this case) are typically associated with the concept of universal access (of service), which implies considering two main and complementary dimensions:

- The access to such services (ways to provide coverage)
- The capacity of the users with limited resources to pay (affordability)

The usage and tariff structure with equity objectives are normally derived from current users' ability to pay and not based on access for new users to services.

The instruments designed to improve or facilitate access include:

- Service obligation: the most common form is to impose requirements for Universal Service, with complementary actions to bring this into operation, such as: specify the obligation in detail (connection goals) and the form by which it will be financed.
- Reduce the costs of the connection: financing the costs of expansion/connection (e.g.: grid expansion and internal installations); contributions of existing users to the incorporation of new users (roll in/cross subsidies); explicit State connection subsidies.

As far as instruments for improving the ability to pay of the very poor, these relate to:

- a. Specific subsidies (or tax cuts): reducing the tariffs of the very poor
- b. Voucher provisions: increase the ability to pay of the very poor
- c. Pre-payment systems and consumption limits: enabling payment, lowering the number of connections and improving the relation between the amount and the frequency of payments and liquidity in the dwelling
- d. Tariff Structure: rebalancing fixed charge / variable charge, self-selection of distinct plans (High Fixed Cost and Low Variable vs. Low Fixed Cost and High Variable), tariffs in increasing bands

Evidently, when confronting situations of lack of access, and very low consumption rates, these instruments are absent or their application is ineffective.

The challenges to confront, when faced with the necessity of applying instruments geared toward the improvement of equality —in this case via a better or greater access to energy—

are associated with sources of finance and focus on target population. In the first case, identifying the origin of the funds is necessary—national budget, taxes or tariffs- while the second aspect implies resolving issues as to how to select the beneficiaries.

This second point is, perhaps, the most complex. If one takes as a reference the levels of consumption, it would become necessary to consider the correlation with income and poverty and factors such as large numbers of family members, various families sharing the same roof, accords between neighbours, inefficiency of the equipment used, implying that the consumption by those in poverty is not low.

If one analyses the socio-economic characteristics using multi-dimensional criteria/indicators, this may improve focus. Examples include: overcrowding, inconvenient location, unsatisfactory sanitary conditions, number of children, level of education of the head of household. These are some indicators that might improve the focus on target population.

In synthesis this involves avoidance of errors, both in inclusion and in exclusion. The first measured by the percentage of beneficiaries of subsidies who are not poor, the second measured by the percentage of the poor not in receipt of subsidies. It is clear that the criteria used to identify the beneficiaries will affect the results and could result in errors in both inclusion and exclusion.

It is certain (and it is for this reason we develop the theme of identifying barriers) that the access situation is quite different when it comes to the different sources considered: electricity, natural gas and LPG.

As we have shown, approx. 98% of the Argentine population has access to electricity under varied conditions of quality and payment, implying that all income quintiles are covered in terms of access to this energy source, even though under diverse conditions.

In the case of Natural Gas, conditions of access are highly variable due to levels of income. Approximately 51% of the population has access to natural gas while the desegregation by income quintile of this percentage, although current information is not available, what is known is that the strata of middle and high income have a high access to Natural Gas, while low-income households that access is very low. Although the growth in coverage has been greater in those strata with lower incomes, persistent differences remain between gas and electricity at both aggregate levels and in income terms.

In the case of LPG the situation is the inverse of that for those with network gas line supply, with higher levels of LPG consumption in the poorer strata.

It is evident that gas coverage through grids has its limits, related to the safety levels of the dwellings, the urbanization and spatial effects, where zones far away from the gas grids and with low population density, it could be more efficient to subsidize LPG (via grids or bottled gas)<sup>34</sup>.

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<sup>34</sup> As regards this theme we shall return to barriers.

## 2. IDENTIFYING BARRIERS TO SUPPLY

### 2.1. Introduction and methodology

The methodology used was similar to the one implemented for the UPEA II report, that is to say, developing a combination of qualitative and quantitative surveys. Case studies in slums and poor household areas were conducted in order to collect basic information from primary sources regarding (i) home fixtures and features, (ii) composition of households and (iii) energy consumption, and (iv) evolution of access in the last 3 years. This was combined with interviews to representatives from the supply side, both in the electricity and natural gas industries, and also conducting interviews with representatives of the LPG business chamber. Other qualitative approaches to the subject of this study included: in-depth interviews with relevant representatives in close contact with the reality of the slums, with people closely tied to the society. The FOC (a community based NGO already working within the slums) and the University of San Martín (UNSAM) providing unique insights on the approach taken, and the problems faced, by households attempting to fulfil both domestic energy needs, and those of certain productive activities in the slums.

As was the case when setting the groundwork for UPEA II, the FOC support was very important to opening up access to the reality of the slums. FOC works with young associates who live in the slums, and have become successfully integrated into the society, due to several activities coordinated by the NGO. The workshop undertaken to update information was coordinated by FOC and developed with the direct participation of the slum inhabitants providing frank answers to key questions. This sense of belonging to the slums was preferred to more complex formations, the survey and questions were simplified and the resultant interaction provided the possibility of better quality information and access within the slums.

The implementation of this strategy, involves the simultaneous definition of both the methodology and the kind of information to be used. Thus, instead of curtailing the analysis to restricted aspects of the issue, the viewpoint was of the phenomena being studied, viewed as whole, while investigating ways to address the issues.

The strategy described permits; on one hand, an understanding of the complexity of the phenomena under study; and on the other hand, the identification of new and unexpected issues, interpretations or interactions that may prove pertinent. The justification for this qualitative and quantitative mix is the novelty of the subject matter of this study, as we, as yet, had not identified similar studies of energy consumption by slum dwellers.

As to identifying the principal difficulties in access to electricity, natural gas and LPG, or the irregularities of supply conditions for such services, recourse was made to different sources of information, by developing questionnaires and interviews that were submitted to:

- Authorities in the Energy Secretariat in the fuel sector (LPG) and in electricity

- Functionaries from electricity distributors responsible for the supply of energy in the area in our study (EDENOR, EDESUR and EDELAP)
- Functionaries from gas distributors responsible for the supply of energy in the area in our study (METROGAS and GASBAN)
- Local Authorities in the areas studied
- Representatives and spokespeople for the slum communities and areas of extreme poverty.

As a result of such questionnaires and interviews, we extract conclusions developed in the following sections.

## 2.2. Supply side barriers

### 2.2.1 Barriers to access to new electrical connections

The most important barriers are associated with rules and regulations that the dwellings need to comply with and the electrical installations so as to permit authorization of a connection to a public service.

In particular, the dwelling has to comply with current regulations (Resolution ENRE 225/2011 -“Regulations for connections for new supplies”). This resolution established the obligatory requirements and recommendations for the connection of a new supply in the following segments:

- Connection of new supply for Household domicile — T1R single-phase.
- Connection of new supplies for installations — T1R triple-phase, T1G, T2 and T3BT

The requirements established in the resolution are very restrictive, in relation to security conditions in the household, especially in cases of single-phase installations.

Of the major requirements, it is important to emphasize:

a) Electricity users should have connections to the grid which comply with the following list of requirements to guarantee public safety, especially in the following aspects:

- Location, degree/position of isolation and level of protection of the main user table
- It is necessary to restrict access to those parts with electric tension, to avoid accidental contact with such live elements
- Users should install a TT grounding system which complies with the regulatory requirements for installing electrical installations in buildings of the Electro-technical Association of Argentina (AEA) and the following rules: IRAM 2281-2 and 2281-3
- Installation of a bipolar electromagnetic circuit breaker for each electrical circuit and an automatic AC switch for protection against overload and short-circuit.
- All elements used for such installations conformant to these Regulations must be identified by being marked with the letter 'S', conforming to the regulations of resolution SICyM No. 92/98, conformant to the corresponding norms of the IRAM



(Argentine Technical Institute for Normalization and Certification) or the IEC (International Electro-technical Commission).

- The compliance with these requirements is verified in an initial inspection, which needs to be undertaken by responsible professionals, technical staff or electrical installers registered in technical or professional colleges in that jurisdiction
- A written declaration of the compliance to all of these technical norms should form an obligatory part of the documentation to be presented to obtain a new supply

b) When the technical regulations are complied with, it is necessary to add the following related documentation for the building for which the solicitation was made:

Documentation for the building itself (to accredit possession): Title, Bill-of-sale/purchase (advance), Lease agreement, Loan for use, or declaration of succession (original and copy) including the applicable legal certifications:

1. Identity document of the owner (original and copy)
2. House number authorized by the municipality
3. Municipal certificate or pre-certificate
4. Photocopy of a Household tax receipt
5. Certification of “*aptness*” for electricity, issued by a matriculated (electrician) or evidence of compliance of points 3 & 4 of section II Annex I, “Rules for the connection of new supply –Resolution ENRE 225/2.011”, emitted by the competent organism for the corresponding municipality

Finally, an authorization for the electrical connection depends on complying with the following:

- The construction of a pillar/support where the corresponding meter is installed conformant to the current regulations
- The presentation of the detailed documentation shown in items a) and b) above
- Guarantee deposit and payment of the cost of connection

The combination of requirements and conditions for the authorization of the electrical installations, with the legal requirements related to the dwelling, constitute the principal hurdles for legal access to electricity.

In effect, the most common barriers confronting the distribution company, when faced with providing electrical connections to the poor (especially those living in slums or shantytowns) are<sup>35</sup>:

1. The legal situation of the dwelling. Its inhabitants cannot present the documentation proving their title or their situation as renters

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<sup>35</sup> As part of the policy dialogue developed through interaction with different actors related to the issue, the ones involved with several social studies made in the slums suggest that the arguments 1 to 4 are especially support by the utilities itself just to justify the inaction in the provision of individual meters.

2. Dwellings are not built such that they conform to technical safety norms for electrical installations
3. The ability to pay for the connection to the grid. Non-affordability of the connection costs
4. The existence of a common power meter, assuring the utility company of the total payment is an incentive to maintain the “status quo”
5. Their incapacity to pay the monthly bills. As in the previous case, what is referred to here is the inability of potential users to pay who initially disqualify or whose meter is disconnected within a short period after initial connection
6. The lack of an adequate distribution grid: the inexistence of an adequate urbanization constitutes a barrier for the extension of the electricity grid, O&M and, as a consequence, for the access of the dwelling to service
7. The impossibility for the applicant to construct a support/pillar: that gives the possibility to the legal connection to the dwelling, is related to the previously mentioned point relating to the characteristic of the construction generating a barrier related to, either the characteristics of the dwelling and the lack of possibilities to modify them, or the lack of sufficient income on the part of the inhabitants to pay for the modifications
8. The usurping of private land, making it impossible to lay cables or grids on same. That is to say the illegal occupation of lands and homes, or the necessity that, in order to get to same, electricity grids needs to cross land or properties whose titular nature is indeterminate or where there are illegal occupations
9. Household electric security: to have access to exclusive power meters (connection fitting out); there should be a certificate to declare the household as secure to have power connection (quality of the installation, circuit breaker, etc.) Added to the installation costs it must be added the certificate costs that have to be signed by a professional

## 2.2.2 Barriers to access to natural gas grids

Argentina is one of the nations in the world with the highest participation of natural gas in its energy matrix. A high proportion of the population have access to natural gas, of a total of 12,171,675 homes 6,834,327 have access to natural gas (52%) (Census 2010).

As indicated in the introduction, access to a natural gas supply (both demand and barriers to supply) is, however, very unequal based on income. This theme shall be developed in this section.

The barriers of prime importance are based on the rules and regulations that the dwellings need to comply with and those that apply to the condition of the internal installations within the dwelling so as to authorize a connection to public services. These rules and regulations are much stricter than is the case with electricity since it is necessary to guarantee more rigorous safety conditions.

As such dwellings need to comply with the current regulations, including the regulations of ENARGAS: No. 2747 and No. 2785, which came into effect in the “National Argentine Gas

Code – NAG”, along with norms and obligatory compliant technical specifications applying to the Gas Industry in the Argentine Republic unified under the initials NAG.

The groups into which the rules have been systemized number four:

- Group I: Distribution grids, transmission lines and complementary installations
- Group II: Internal Installations
- Group III: Equipment
- Group IV: Liquid Natural Gas

Of these four the three relevant restrictions for this report are Groups: I, II and III which imply:

- Compliance with the normative body NAG (Argentine gas norms)
- The law number 24,076 and regulatory decree
- The basic rules for the license to distribute natural gas
- Service regulations in the license to distribute natural gas
- Local government norms and regulations
- The matriculated installer’s interventions necessitated by necessary concerns
- The interventions of companies that have been certified to realize works to extend the network of gas lines

Processing of the procedures that need to be followed by dwellings so as to be able to obtain a new gas connection, imply fulfilling the following steps:

- Feasibility of Natural Gas supplies that corresponding to the realization of a distribution network
- Approval of the internal gas installation for Natural Gas (including the obligatory installation of certain devices)
- Personal documentation and the documentation pertaining to the dwelling to contract supply (signature of supply solicitation for Household clients)
- Payment of charges and rates that apply (execution of service and or installation of meter)
- Execution of service

For this it is necessary, also to present a significant amount of documentation including:

- Proof of property: Title to property, certification of precarious tenancy, or Bill-of-sale/purchase (advance), rental contract, other service receipt in the name of the owner, update of domicile in the National Identity document (DNI) (concordant with the gas supply)
- Identity document (residency): DNI, LE, LC, etc.
- Income formula R-531 from the province of Buenos Aires

As a consequence, the most common barriers that service provider firms are presented with in order to provide gas connections to the poor (especially those whose dwellings are in slums or shanty-towns) are:

1. The legal situation of the dwellings: may not have defined property rights in municipal terms, may not have the minimal width for natural gas grid connection, etc.
2. The quality of the living quarters: inflammable materials which cannot be in contact with gas installations, deficient devices, located in unregulated areas and/or insecure devices, etc.
3. The ability to pay for the extension of the gas network: in both the extension of the network as well as the execution of the internal installation and the provision of the devices that meet regulations
4. Their incapacity to pay monthly bills

Under certain circumstances, the distribution companies try to facilitate access to the gas network for the urban poor.

In the case where the network distribution is available and there is an adequate internal installation conforming to the regulations, the option is offered to the client to include the charges associated with the connection and/or the installation of a meter in the first bill.

Another theme, apart from energy policy, but essential for the viability of access to the gas distribution network is to count on the presence of a government urbanization development plan for the slum which can make viable an aid package for infrastructure works or the construction of works to bring the slum into compliance with the applicable norms.

Improve the access to credit for those sectors enabling the necessary investment (gas network extension, internal installations, devices), would be an action to facilitate the process of the penetration of gas supply via gas grids.

### **2.2.3 Barriers to access to LPG**

In Argentina, especially in the urban zones, LPG is referred to as the “energy of the poor” as it satisfies, in the main, the caloric requirements of the poorer Household.

Rather than barriers to access, one might put the accent on the inequity related to relative prices between LPG and Natural Gas. As mentioned the high price of LPG creates a social inequity in the poorest population, who have no access to Natural Gas.

Although they were several proposal and intentions, it was never possible to consider LPG as a public service<sup>36</sup>.

As mentioned, one solution was the implementation of the “*Garrafa Social*” (a subsidized cylinder of LPG), now known as the “*Cylinder for all*” with a price fixed by the Government.

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<sup>36</sup>As is the case of electricity and natural gas, with regulated prices and supply guarantee.

With decree No. 1,539 dated 19<sup>th</sup> of September 2008, approval and regulation proceeded of Articles 44, 45 and 46 of Law No. 26,020, in parallel creating the National program for Household consumption of bottled petroleum-based LPG.

It became possible to establish uniform pricing across the whole country for LPG consumers in 10, 12 and 15 Kg. bottles at USD4.00, USD5.00 and USD6.25 respectively.

One of the essential aspects of this program was guarantees of supply for Household LPG users for all of the national territory, until access to grids of gas ducts proves effective for the whole population.

Compliance with this program has, however, been only partial.

On the one hand there are an insufficient number of points of sale for total coverage. On the other hand, it was noticed that the program had insufficient exposure and diffusion thereby reducing the quantity of beneficiaries. Finally, there was a lack of technical quality control, safety and maintenance of these cylinder<sup>37</sup> and according to statements, the cylinders were not found in the neighbourhoods, and the sales price is higher.

In 2008, it is estimated that there were 600 distribution centres in Greater Buenos Aires but complaints were made noting the lack of access for households that were located far from the distribution centres and the lack of provision of distribution system implemented for these areas.

Potential users of these cylinders also complained that these cylinders “lasted a short time”. YPF<sup>38</sup> was giving out two bottles per person with identification, however, a family uses two or three cylinder per month for cooking alone (leaving aside space heating).

In the year 2010, it was noted that despite promises for the regulation of the subsidized cylinder, it continued to be an issue: when winter began, they started to become scarce. Neighbours from various areas maintained that speculators sold them at double or triple the stipulated price.

In 2010, the defence council for the Buenos Aires district of “La Matanza” detailed the issues confronted by citizens in accessing cylinders “overpricing by up to 100% above the fixed price stipulated by the Secretary for Energy (SE)<sup>39</sup>”.

As the cylinders have a quota, they are not sent despite the demand and this means that when they can be acquired, they are found at prices much higher than the original.

In 2011, the province of Buenos Aires continued their controls of retail outlets<sup>40</sup>. According to an article, having inspected 300 outlets in 40 Municipalities it was determined that 36.32% of those establishments did not comply with specified rules governing pricing.

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<sup>37</sup>UPEA II.

<sup>38</sup> Oils and Gas company

<sup>39</sup> For the 10 Kg cylinder ARG\$16, the 12 Kg, ARG\$20, and the 15Kg, ARG\$25.

During the inspection 100 outlets were served with violations from 23 municipalities for not charging the correct price or not exhibiting prices.

Apart from the reaffirmation that price controls remain in effect until the 31<sup>st</sup> of December, 2011, a measure<sup>41</sup> was launched which warned that “in the case of lack of compliance of the regulations established by the Law No. 26,020, on the part of those responsible in the LPG industry, compensation payments could be partially or totally suspended, depending on the gravity of the infraction<sup>42</sup>”.

The association of users and consumers denounced the fact that there is a lack of access to subsidized “Social” cylinders in the “Monte Grande” and “Lomas de Zamora” neighbourhoods. Also the same association denounced the fact that the tanks “are old, rusted inside and the liquid gas looks like water”<sup>43</sup>

That said field studies show that, in effect, users are confronted with various problems accessing the supply of cylinder at official prices.

Those problems manifested by users relate to:

- Sales prices which are several times above the fixed official price
- A lack of sales outlets and distribution where one can access cylinders at the official price
- Long distances to sales points where the cylinders are available at official prices
- Gas tanks that do not contain the specified contents, such that those cylinders available at official prices have a different use duration than those cylinders at “market prices”

The characteristics and the structure of the supply-side of the market is one of the reasons that pose difficulties for adequate control mechanisms. There are quite few actors in the LPG production chain in the refinement and bottling of LPG, but the distribution segment is relatively diffuse with many small distributors so it proves difficult to control.

On regular basis, monitoring and controlling mechanisms to verify quantities, qualities and prices, fixed by the resolution that regulate the “Cylinder for all” program were never put in place. The absence of policing has enabled evasion of fixed-pricing, fraudulent content in the cylinder, and in compliance with the volumes on offer adequate to guarantee Universal Access at the stipulated prices.

Outside the realm of publicity and political pronouncements, the authorities did not implement an adequate information system oriented toward the users so that they might know the prices they should pay and denounce the abuses encountered. The lack of

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<sup>40</sup> <http://www.tiemporojas.com.ar/2011/07/11/garrafas-sociales-detectan-sobrepresos/>

<sup>41</sup> Resolution 229/11.

<sup>42</sup> <http://www.diariouno.com.ar/edimpresa/2011/06/28/nota275741.html>

<sup>43</sup> <http://www.4aldeas.com.ar/sport-news/tennis/2716-otro-invierno-con-denuncias-de-faltantes-de-garrafas-sociales>.

knowledge of the users is evident as a result of the field studies where they think that they have access to the cylinder at subsidized prices even though, in some cases, they pay prices which are more than 100% above the government specified price.

The principal barrier is, in consequence, the result of lack of adequate implementations of the policies and the strategies due to the lack of control and monitoring, as far as the prices and the quality/quantity of the products offered.

Field studies show that in the slums an important share of the population paid between 25% and 144% above the official price for the gas cylinder. As mentioned, they are ignorant of the situation and mentioned that they were buying the “social cylinder”, which demonstrates the lack of information in the program, and above all, of the lack of care for beneficiary’s consumer rights.

## **2.3. Demand side barriers**

### **2.3.1 Introduction and methodology**

Demand side barriers to energy access is defined as any situation or factor blocking or preventing consumption of the quantity and quality of energy required to meet household basic energy needs.

These barriers are classified into:

- Regulatory barriers
- Economic/Financial barriers
- Service quality barriers
- Information barriers

In order to identify the demand side barrier to energy access, surveys have been conducted as well as a workshop with the slum dwellers also being organized.

The surveys were carried out in Villa Carcova, regarded representative of the socioeconomic and energy situation in GBA (Great Buenos Aires) slums. The fieldwork has been conducted by a San Martin National University team, that had done previous research in the area. The questionnaire form is included in Annex 3 with the following question categories:

- i. Energy uses and sources applied
- ii. Energy access problems (electricity and LPG)
- iii. Housing/construction characteristics

The workshop attended by neighbourhood representatives was conducted in Budge and Fiorito settlement, where UPEA II surveys had been carried out, in order to assess how the economic, social and energy access situation had evolved from that moment (2007) until the present. The main purpose of that fieldwork was to establish the energy consumption

patterns, which energy sources were employed for each household use, and in which quantity, and finally, to see which were the unsatisfied basic energy needs by usage. These results were presented in UPEA II report, and more general results are provided in other section of this report. Before holding the workshop with neighbourhood referents, a survey was done in order to determine the main barriers to energy access. The questionnaire used can be found in Annex 4.

The main energy sources used by the poor population in GBA are electricity and LPG. Natural gas is consumed in incipient form and has a high penetration potential in settlements. The following sections deal with demand side barriers related to these three sources.

## 2.3.2 Demand side barriers to electricity access

### Regulatory barriers

- *Irregularities related to land property:* Irregularities related to land property do not allow the installation of individual meters in compliance with the regulations on public network connection.

The survey conducted in Villa Carcova has revealed that only 10% of households have individual meters<sup>44</sup>. The remaining 90% has access to electricity through community meters or by means of illegal connections.

This has the following consequences:

- High electricity consumption since there is no consumption control
- No alternative energy source
- Frequent and extended interruptions and voltage drops
- Distribution companies are exempt from expanding network capacity and from their duty to maintain the quality of their service
- Perception of inequality in neighbours who have individual meters and pay for the energy they use
- Lack of access to other benefits for electricity account holders such as: access to other services, personal loans, etc.
- It is an incentive to install illegal or informal industrial power intensive activities like electric bread ovens, electrical welding activities, among others

Most people who live in slums and settlements have occupied government-owned lands and to a lesser extent private lands. Despite being in possession of the lands for many years, ownership has not being legalized. Local authorities (town councils) are responsible for subdividing lands into parcels and for the land registry. And, though

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<sup>44</sup> The interaction during the policy dialogue showed that there were more than 10% of the household with individual meters; the issue is that many of them are connected to communal meters without paying the bill for different reasons.



there are certain land title regularization programs, not much progress has been made in this regard.

- *Neighbourhoods not being recognized as such by the Town Council:* In several cases, rapid growth of slums and settlements has a consequent absence of recognition as neighbourhoods by the authorities. Given that the neighbourhood is not recognized by the local authorities, their inhabitants have no access to community electricity supply, let alone to an individual meter. Therefore, the neighbours tap electricity from nearby power supplies, which contributes to the precarious nature of the supply and increases accident risks.
- *Non-compliance with technical and safety regulations applicable to household electrical installation:* 32% of neighbourhood referents in Budge and Fiorito stated that this was a problem preventing them from getting an individual electricity consumption meter.

### Economic/financial barriers

- *Electricity bill cost:* a low percentage of settlement dwellers expressed that they were not able to pay their electricity bill. In spite of the fact that there is no social tariff in GBA, maintaining the same Household fees since 2002, with only a few adjustments, has the effect of a subsidy. The recent National Government decision of removing subsidies does not affect low-income households. For this reason, it merits consideration that this barrier only affects a small portion of slum and settlement population.

### Quality of service

In order to eliminate or mitigate these kinds of barriers, action should be taken on the supply side. Due to slums and settlements' economic, social and institutional context distribution companies do not invest in distribution grids in these areas thus sticking to market logic and diminishing their quality of service.

- *Frequent and extended supply interruptions:* this barrier has a strong impact on household needs satisfaction. Although service quality has improved in some settlements, the general situation is of a precarious and damaged supply. Illegal connections and community meters promote electricity consumption increase while exempting distribution companies from appropriate maintenance and network expansion. Moreover, this situation is perceived as unfair in the eyes of that part of the settlement population that has their individual meters and should enjoy a high quality supply.

### 2.3.3 Demand side barriers to LPG access

#### Economic/Financial barriers

- *High LPG cylinder price:* the fieldwork surveys conducted indicate that in general the maximum price of the social gas cylinder agreed upon by distributors and the National Government is not respected in slums and settlements. LPG is costly for low-income families and this stops them from purchasing enough quantities to meet their basic heating and water heating needs.

#### Service quality barriers

- *Low calorific power of the social gas cylinder:* though this is a supply side barrier, slums and settlement dwellers said it is more convenient to buy popular branded cylinders and pay a higher price for the 10kg cylinder since it lasts almost twice as long. Hence the subsidized gas cylinder low quality is further constraint to consumption due to the high price of LPG.

#### Information barriers

- *Being unaware of the social gas cylinder program ("garrafa social"):* though in a lower percentage, there are some slum and settlement dwellers that are unaware of the LPG Price agreements enabling them to buy cylinders at a lower price. As a consequence, they do not demand that authorities ensure proper enforcement of the program.

### 2.3.4 Demand side barriers to natural gas access

#### Regulations

- *Irregularities related to land property:* as is the case with electricity, irregular property of lands where houses were built in slums and settlements is an obstacle to natural gas supply.
- *Lack of urbanization:* in slums, the impossibility of opening streets, mostly in order to build distribution grids which comply with minimum safety regulations is a significant barrier. Having street layouts (in grids), settlements do not face this barrier.
- *Housing construction features:* most houses do not meet the minimum construction standards set for natural gas connection requirements. In some cases, houses were built with inflammable materials, such as wood or discarded plastic, and often they do not have the rooms necessary or suitable to install the different devices.

### Economic/Financial barriers

- *High cost of network expansion:* neighbours have to finance network extension from the distribution company unit to their homes. Even though the distributor then reimburses this cost to the neighbours by providing Natural Gas free of charge until the amount is covered, neighbours lack financing capacity and there are no credits they have access to.
- *High cost of internal connection:* although using natural gas instead of LPG will be translated into significant savings with which the cost of pipelines would be soon recovered, neighbours lack the financing capacity or access to credits that would enable them to afford the installation of internal connections in their households.

### Information barriers

- *Not knowing how to organize themselves:* in general terms, the benefits of access to Natural Gas are known by settlement dwellers and often distribution grids reach the settlement. However, they are not aware of the different ways in which they can organize themselves or the successful experiences which made it possible for neighbours to have Natural Gas supply, such as the Cuartel V case previously mentioned in this report. Action from community organizations and local authorities has proved to be very important in this regard.

## 3. SOME EXAMPLES OF GOOD PRACTICES

### 3.1. “Join the system” Plan (EPEC)<sup>45</sup>

#### 3.1.1 Identifying the problem and characteristics of the plan

Users with clandestine access to electricity make use of the energy source in an abusive manner, causing electricity outages and tension drops in the whole sector. Price increases in competing energy sources aggravate the situation, substituting gas, kerosene, firewood or charcoal with electricity from clandestine connections.

When faced with cuts and service irregularities, the company needs to respond with urgency to complaints from legal customers, thereby providing parallel benefits to those who caused the damage. The solution to isolated complaints thereby leads to a vicious circle reinforcing the problem that grows while facilitating illegality.

In order to begin to implement solutions a strategy was opened on multiple fronts based on four pillars:

- **Educational Signals:** An educational group for energy consumption (UECE). A mobile unit that travels through poorer sectors organizing community workshops
- **Economic Signals:** Social tariff. Special commercial program creating a flexible tariff for with differences for shortfalls and the indigent
- **Communicative Signals:** Communication campaign. Internal and external communication campaigns
- **Technological Signals:** Installation of pre-assembled anti-fraud cables in neighbourhoods with the largest indices of loss

The objective is to achieve a general change in attitudes and conducts in the long-term with respect to the energy theft.

#### 3.1.2 Execution of the plan

Initially, the presence of representatives from the EPEC in those neighbourhoods was considered as a form of policing, and considered a menace. The initial experience and the contact with “key referents” in diverse communities oriented toward a strategy to reduce resistance to participation and to attain maximum contributions.

Various aspects were worked on:

- **Community history.** The talks typically begin with questions about the origins of the settlement or neighbourhood, the most well known personalities, key moments in its common history, and relations with certain institutions. This enabled the recognition of common experiences, references and prejudices in the community.

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<sup>45</sup> EPEC – Provincial Electricity Public Utility of the Cordoba Province.

- **Physical Environment.** Experience has shown that schools are the optimal place to meet (they are considered as a “neutral” space, respected by all members of the community). The community centres and clubs proved to be less representative and more associated with highly defined sectors of the community.
- **Educational Material.** A table was designed which enabled one to visualize “directly” the movement of the meter while one plugs-in various electro-domestic devices.
- **Interactions.** The workshops had a significant level of participation, both from the point of view of asking questions and “trying out” working with equipment and cables connected to the table. The reunions concluded with questions directed to the EPEC trainer, who periodically returned to the neighbourhood.

### Social Tariffs

The EPEC trainers in charge of the UECE proved to be invaluable actors as regards direct contact with clients and clandestine users. They provided the following services:

- Assess the levels of knowledge and understanding of the characteristics of the Social Tariff by the consumers
- Identify the preferences regarding adequate channels of communication for the advertising messages
- Detect the difficulties which surface in the management of the Social Tariff project

To these were added the results of the Public Opinion study performed using the Delphi method<sup>46</sup>. This report determined the grade of awareness of the Social Tariff. This analysis enabled adjustments to the content and to the media campaign put out in the mass media to have better impact on the knowledge offered by the program.

### Communication Plan

Among those who knew of the Social Tariff, there was an absence of knowledge on how to gain access to the social tariff.

Based on this evidence, the redesign of the administrative management was accompanied by a packet of products to support the process (folders, letters written to clients, ethical signals). In mass-media campaigns exposure was given to the key informative content and even educational content.

Some 32% of the inhabitants of the capital city knew of the Social Tariff, an indicator that dropped to 13% in the countryside. Given the results of this survey, the original media

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<sup>46</sup> The Delphi method is a structured communication technique, originally developed as a systematic, interactive forecasting method that relies on a panel of experts.

strategy was revised with a reinforcement of newspaper guidelines, radio and small-scale publications with regional distribution, opting for presence at folk festivals in the rural parts of the province using posters and promotional activities.

### 3.1.3 Lessons learned

An analysis of the evolution of the Plan allowed us to identify the main threats to its generalized implementation and the sustainability of the Social Tariff:

- **Economic Barriers:** Associated with the difficulty to comply with the tariff payment and access requirements to payment plans for outstanding debt
- **Cultural Barriers:** prominent habits and values in the public in question
- **Administrative Barriers:** The bureaucracy of the management of the Social Tariff

In an attempt to get over these hurdles, it was decided to:

- Design a flow diagram as a tool to the various actors with perspectives on the process and with suggestions as to how to improve its administration
- Develop new communication elements oriented toward distinct audiences
- Develop an educational alliance with local NGOs dedicated to local education, to include concepts associated with saving energy in the curricular content of official primary and secondary level education
- Develop alternative payment plans

### 3.1.4 Preliminary results

- An increasing number of neighbourhoods and settlements were visited
- A significant number of requests for the regularization of services were made
- The implementation of the Social Tariff was put in place
- A very favourable reaction from the users was found
- Outdoing the initial proposals envisaged for the Plan

The Plan acted like a proactive communications program, capable of empowering the principles of the EPEC and generating extra value. The synergy between technology, communication and education permitted the connection of more than 23,000 Social Tariff connections in 20 months.

The value-added of the program was evident in various facets of the change in public opinion, such as:

- The ongoing seasonal service problems (cuts, tension spikes) began to be seen by the company as aspects of a situation that are beyond technical or commercial answers
- The issue of energy theft was shared with the community as a social phenomenon and recognition of the problem and consequences
- The utility is not seen as the only stakeholder that should address the challenges
- Opinion makers took up the theme as a source of public debate

## 3.2. Normalization of electricity grids – PRONE - Colombia

A program was created via articles 63 and 64 of the Law No. 812 (2003) whose objective was to legalize users, the optimization of electrical energy services and the reduction of non-technical issues in under-serviced neighbourhoods, situated in municipalities in the Interconnected National System (SIN).

The program received financial resources from the Fiduciary Funds receiving up to 20% of the funds brought by the FAER fund, with resources from the general budget according to the Law No. 812 (2003) and with resources from the FNR as stipulated in the Law 859 (2003).

Distribution companies and those who bring electric energy to market should participate with economic resources in order to help develop this program by contributing: designs, projects, technical assistance and labour.

The assignment of resources is performed by an administrative committee, made up of the Minister of Mines and Energy or a delegate, the Ministry for Energy and the Secretary General of the Ministry for Mines and Energy.

In order to present projects under this program, it is necessary to present the definition of the project using Underdeveloped Neighbourhoods stipulated in Article 1 of the decree No. 3735 (2003).

Execution of the project is assigned to the Ministry for Mines and Energy.

The project is applicable in zones where:

- Certification that the zone is classified as a rural sector or an occupied urban zone, an underdeveloped neighbourhood or a displacement zone
- Documents relating to the user number legalized and specifying the identification of the population, the number of users to legalize, socioeconomic stratification
- Studies over the means of reduction of energy losses. This document refers to a technical study where one puts the monetary value of the reductions in losses and the percentage for the work done
- Responsibility schemes. By means of a document the territorial entity must certify the responsibilities of the parts (Entity, Company, Users) with the rights and responsibilities, and also a description of an adoption scheme for the responsibilities in the phases of execution
- Type of subscriber: In the document endorsed by the Operator of the grid one must delimitate the type of subscriber if it is a user, a community or a single user

### Criteria for PRONE eligibility

- Financing of projects corresponding to areas or neighbourhoods registered in the Unified Information System – (SUI) of the Superintendent of Domestic Public services (SSPD)

- Projects 100% investment financed
- Compliance with requirements previously listed
- Availability of additional resources on the part of the Municipality or Department, in that which relates to public lighting

Once compliance is verified for the established requirements in this decree and these regulations, the procedure of prioritizing projects will be undertaken, keeping in mind the following criteria and the established deliberations in each tender:

- 1) Minimum cost per user
- 2) Maximum number of users in underprivileged neighbourhoods to be included in the investment projects for normalization realized entirely by the GRID operator, in those cases in which the Ministry for Mining and Energy present priority zones special deliberation, shall be made to the operators which present projects in such areas

The project is in effect until December 2018. To date the 2011 report is not yet available; in December 2010 the program had assigned resources for USD130 Million benefiting about 150,000 subnormal users in 108 municipalities of Colombia in the following Departments: Atlántico, Bolívar, Cesar, Córdoba, Choco, Guajira, Magdalena, Nariño, Santander, Sucre, Tolima and Valle

### **3.3. The Integral Program for Urban Poverty (Multi-phase) – Mexico (Habitat)**

#### **3.3.1 Synthesis**

This is a Mexican Federal government program specifically designed to improve the living conditions and bring access to basic social services in urban marginal zones with at least 15,000 inhabitants.

This is a program with an integral focus combining both attention to physical needs – increasing access to urban services and to basic infrastructure— with the social needs of the inhabitants of marginal zones.

Since it began in 2003, it co-finances investments in municipalities and facilitates, with an integral focus, the focalization of actions in areas where there are concentrations of populations with higher indices of poverty. The integral nature is manifested via a combination of territorial interventions: on the one hand bringing investment and equipment; and on the other hand promoting finance for the delivery of social services and community development actions. These actions are coordinated with the activities of the Federal secretariats and those of state and local governments. Potential beneficiaries of “Habitat” include 10.6 Million urban poor households. Up to the month of August, 2009, the program extended to 48% of such homes.



The program permits better improvements of cities and access to basic services and also fortifies social integration, with a particular focus on populations with the highest incidence of poverty providing benefits to at least 2.2 million homes in a year.

The program has five consolidated components.

- (i) Social and community development with an emphasis on development and a coordination of social interventions;
- (ii) Improvement in the urban environment, which concentrates physical investments and infrastructure;
- (iii) Promotion of urban development, which empowers the creation of, and reinforcement of local urban development;
- (iv) Evaluation;
- (v) Support for the management of Habitat

The funds finance paving works and road network improvement and urban fittings, supplies of drinking water, sewage systems, electrification and public lighting, collection and distribution of refuse, equipping land-fills and treatment plants, the cleaning of (and repairs to) slopes/gullies, reforestation and education in care for the environment.

As regards social aspects the program allows the strengthening of individual or collective capacities and social inclusion, as well as consolidating participative networks and community organization, enabling the citizen to become fully integrated in their locality.

This area contemplates activities taught in community development centres (CDC), including educational workshops in different skills, promoting citizen integration by means of recreational activities, preventative measures for risky adolescent activities, assistance for female victims of violence, and support for the elderly.

A pilot project was added to this strategy that attempts to amplify and improve the involvement in certain districts so as to reduce vulnerability to violence and insecurity by means of community involvement.

The program contemplates the paving and the repaving of roads and the installation of pipelines for drinking water, drainage ducts and sewage systems, and electric cables. Plans are also in place for public lighting; construction and improvements in a total of 300 centres for the attentions of victims of violence; construction and/or equipping of 840 CDC's; and the execution of 840 public works for disaster prevention.

### **3.3.2 General justification**

Nearly 72% of the population of Mexico is in urban zones and in 2008; some 40% of urban residents (27 million people) are poor. This number represents a rise of 4.2% compared with 2006. As regards basic service, one million dwellings do not have running water, 633,000 lack drainage, 953,000 lack electricity, 762,000 have earth floors, and 1.3 Million have overcrowding problems. Likewise, the poor in the cities also have limited access to social

services: 2.3 million of the population above the age of 15 years could not read and write and 31.3 million (44.3%) have no access to public health services.

The Program is structured within the framework of the National Development Plan 2001-2012; it emphasizes the need to incorporate the concept of sustainability as an intervening principle in social programs in Mexico. This plan proposes, as one of its key driving principles: the attainment of “social and economic development incorporating respect for the environment”. To comply with this plan, since 2009 SEDESOL has been working on implementing sustainability guidelines on climate change, infrastructure, productive projects, land use/territorial planning, and environmental education. As part of this initiative, it has been decided to reinforce the Habitat activities with a focus on the improvement of the sustainability of its activities.

### **3.3.3 Program objectives and target population**

The principal objective is to support the efforts of the Mexican Government to confront poverty in the country, improving the living conditions of marginal urban populations.

The specific objectives of the program are: (i) broaden home access to social services that reduce vulnerability of the homes with an emphasis on specific population groupings and (ii) Augment infrastructure coverage, equipment and basic services in marginal urban zones and increment earnings in homes that benefit.

The requirements for the target population that need to be complied with are as follows:

- 1) High percentage of urban homes in a situation of poverty
- 2) Large deficit in basic urban services
- 3) Resources allocated and put into effect in fiscal activities in the previous fiscal year
- 4) Level of occupation of the lots and population density. Preferably 500 homes or more
- 5) Large deficit in basic infrastructure (drinking water, drainage, public lighting, paving, sewage, electrification, and the collection and disposal of solid domestic waste)
- 6) Proximity to the grids of drinking water, sewage systems and electrical energy, and if not compliant with this requirement, that a possibility exists for a concise solution to the water and the sewage issues with adequate costs
- 7) That road access is available or that it could be feasible to develop road access to the nearest urban area in costs compatible with the limits of investment of the program
- 8) That the constructions are not located in areas that are either: (1) on private property or under litigation; (2) restricted use
- 9) That the neighbourhood is within urban limits or in the master plan of the respective municipality
- 10) That the neighbourhood is not located in a zone of critical natural risk (landslides, floods, etc.) or where vulnerability to such risks exists, the costs of mitigation or correction have costs compatible with the limitations of the program

The operation provides benefits to about 10% of homes in a situation of poverty in the country (2.7 million people). It has generated impacts in accessibility of services and urban facilities, social capital, housing values and the reduction of violence.

## 4. RECOMMENDATIONS and CONCLUSIONS

Considerations regarding energy access will vary according to the energy source involved, Electricity, LPG or Natural Gas.

Indeed, as for the first case (Electricity), access level in Household areas in Argentina is extremely high. Approximately 97.7% has access to the Public Service, 1.3% is connected to more isolated systems or generates their own electricity, and 1% of households lack the service.

However, these percentages deserve some clarifications.

- 1) Service quality is not reflected in the percentages above since service interruptions and voltage drops are frequent, especially in certain areas and, in many cases, in the most deprived areas. Although there are not updated statistic, it is usual that frequent electrocution accidents occur (especially children)
- 2) Distribution infrastructure is highly precarious in vast areas, which contributes to the above-mentioned flaws
- 3) In an extremely high percentage in deprived neighbourhoods, the only access to electricity is by means of common meters or by tapping other nearby power supplies. In both cases, the user does not pay for the service

Findings from fieldwork surveys have shown that users who are illegally connected or linked to common meters usually express their intention and willingness to become regular users and have access to an individual electricity meter. Access to a meter is a strong indicator of social inclusion which, among other aspects, enables the user to show a real address, access to finance such as credit cards targeted at low income households, or access to other energy and non-energy services.

As it has been mentioned before, the main obstacle lies in what is established within the regulatory framework required in order to have access to the service. The user should show legal occupation of the house he inhabits, that is to say, the property title, rent contract or any other documentation certifying that he is a legal occupant. In a substantial number of cases, these are families who have occupied the lands for many years and have built a perfectly habitable masonry building. A Plan or Program formalizing and legalizing land occupations, mostly of government-owned lands, whether at the nation, state or town council level, would remove one of the barriers and regularize the situation of a significant portion of users.

The Program would also make it possible to identify illegal activities conducted within deprived neighbourhoods, such as textile sweatshops, which have a multi-dimensional negative impact on other neighbours. These activities cause power supply interruptions or voltage drops due to repeated overloads in the electricity network. Lack of meters rules out formal complaints from users who are not responsible for this and whose electrical appliances are damaged. As they are not registered users, they are not entitled to make complaints to the electricity distribution company. What is more, they are usually informal

labour forces in sweatshops or related distribution and sales activities, without any social security, retirement benefits or a decent remuneration.

It is clear that addressing the issue only from the energy perspective is not enough; we need a comprehensive policy focused on poverty to address the problem structurally. At a minimum formal access to electricity can be achieved by policies outside of the context of energy.

Provisionally, an agreement between local authorities, distribution companies and the Regulatory Entity, could lead to specific actions providing the opportunity of access to individual meters to those households which require them, even when they cannot comply with regulations demanding legal occupation or tenure of their houses. The example of the program implemented by EPEC, which has been previously mentioned, moves in this direction. Another alternative would be prepayment meters. The agreement would imply distribution companies investing in the improvement of electrical grids within the neighbourhoods in order to ensure a good quality of service.

The LPG case is more complex as it is a system that is not based on fixed grids and due to the fact that suppliers are not centralized.

It is evident that the effectiveness of the program of social gas cylinders called *Garrafa social* or *Garrafa para todos* depends on the proper enforcement power, that is, the implementation of control and monitoring mechanisms able to ensure gas cylinder supply and the quality of their content.

Several authors have considered that LPG supply should be considered a Public Service and should be subject to regulation since it is the energy source satisfying the caloric needs of the lower income population and its price is “tied” to that of Petroleum, in spite of the fact that, in Argentina, a significant portion of LPG supply comes from the separation of natural gas liquids (Propane and Butane).

The recommendation is that, if a Program is aimed at facilitating LPG access to lower income sectors, it should meet the premises and objectives set for such program, that is, ensure price, quality and quantity of the product.

An alternative is to develop an official distribution chain that guarantees availability of delivery points in all the neighbourhoods or settlements that house lower income population.

A further option is delivering a card or voucher entitling users to buy the gas cylinder at the price fixed by the government at any distribution outlet.

In the case of Natural Gas, barriers are more significant due to infrastructure costs and much stricter safety regulations. However, there are plenty of locations where there is a distribution grid, but, for the reasons previously mentioned, households are not able to connect to the system, these reasons being: lack of finance to face the costs of household

distribution system, non compliance with housing safety standards, impossibility of certifying legal property or tenure of the house.

The barrier to housing quality to guarantee safety conditions can only be removed with proper financing that would make it possible for potential users to meet the conditions required by service providers. Likewise, when questioned about internal distribution system installation costs, respondents said that a cost of about USD750 could be covered with targeted financing. It is worth highlighting that the price difference per calorie between Natural Gas and LPG is so significant that the additional investment needed to access to Natural Gas would be soon recovered.

Legal aspects would only admit the solutions outlined when dealing with the electricity sector.

An energy-only approach to improve the supply and consumption of energy in the slums and settlements is clearly insufficient; rather a comprehensive policy on poverty is required to deal with this problem on a structural level.

From a strictly energetic view, there is an apparent need for a step-by-step development strategy, where the most immediate actions could be the following:

- 1) Involve the local authorities (provincial and municipal) to implement an effective program of urbanization of slums and settlements, creating conditions for a better energy supply, especially network-based supplies
- 2) Implementing a program for the permanent regularization for low-income electricity consumers as a contractual obligation for distribution companies. This would require the definition of a social tariff for basic electricity consumption
- 3) Ensure availability and affordability of LPG in the slums and settlements by means of the effective (and real) application of the current programme called "LPG for all"<sup>47</sup> thereby enabling the following:
  - Substituting the use of charcoal for cooking and heating, as well as that of electricity for home heating and water heating
  - The supply of high-efficiency LPG appliances, at a subsidized price to replace appliances that use other energy sources such as electricity or charcoal.
  - Promote the introduction of renewable energy devices like solar water heaters.<sup>48</sup>
- 4) The coordination of activities to be carried out by natural gas distributors, ENARGAS and community organizations in the settlements in order to facilitate the penetration of natural gas, especially with respect to:

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<sup>47</sup> Or of something that has a more precise name and taking care that those that apply for the program so as to avoid "free-riders"

<sup>48</sup> The Nation subsidizes the gas cylinders and to the fractionator/distiller (approx. \$/carafe 20), which along with the payment which is made by the consumer, could be the origin of a fund to bring the solar collectors to the settlements.

- Aptness of the conditions of the dwellings for connection to the network
- Estimates of the potential contribution of users with a view to constructing the gas network, in terms of both money and work
- Training and matriculation of inhabitants living in the slums in the installation of natural gas systems
- The application of a social tariff to ensure basic calorific use
- Determining the time lapse of the social tariff once the network has been paid for
- The provision of efficient natural gas appliances to meet the basic needs of poor households

5) Develop an information system designed to gain a better understanding of energy consumption in poorer areas.

As part of the strategy, it is necessary to:

- Increase and guarantee electricity supply in all segments of the supply chain (generation, transmission and distribution) so as to incorporate large portions of the population thereby improving their welfare
- Define policies to meet basic energy needs (as yet unmet) and strategies of access to energy and required equipment to meet these services
- Quantify the extension of services to poorer sectors in terms of the financial resources necessary and in terms of pricing policies and subsidies that would be compatible with the objective of guaranteeing supply
- Implement regulatory changes and increase flexibility in the conditions of access to energy networks (natural gas and electricity), especially as regards the property/ownership of the home and the land
- Implement comprehensive and systemic energy planning to promote the application of energy-saving measures and the dissemination of clean energy sources for all sectors and social strata with an aim to achieve sustainable social inclusion

In addition, more general or enabling conditions are needed, such as:

- Promote significant participation and commitment of local authorities to deal with poverty,
- Regularise property rights of the occupied areas and promote access to land,
- Generate funds and the budget for the improvement of the slums and settlements and urban development programs

In addition, urban poverty should be brought to the forefront of the development debate. Its exclusion has exacerbated the plight of the poor, as has the lack of access to services directly affecting their welfare. There is an urgent need to ensure that all socio-economic programs are centred on meeting the basic needs of the most disadvantaged groups, resources should be reallocated to this end to confront this challenge. There is a need for greater collaboration between national and local governments, and for the inclusion of civil society in local decision-making.

As regards the specific issue of access to energy in a sustainable way, the main challenge is identifying a reliable energy supply, with appropriate and affordable technologies for poor households, in conjunction with the implementation of programmes that enable that access in an efficient manner while satisfying reasonable levels of energy services. In addition, paradoxically, poor families often pay disproportionately high prices for their energy. Among the main shortcomings, one can mention the lack of active energy policies for the poor, the absence of a long-term vision and of long-term planning, low reliability of energy services and consequent unwillingness to pay for such services, the absence of a monitoring process and, finally, the insufficiencies of the abilities of existing systems in their capability to communicate the right information to interested parties.

Finally, we reaffirm the need for a comprehensive and systemic approach to address the issue of poverty. Energy policy could play a key role in alleviating poverty, if appropriate strategies and actions are implemented.



# ANNEX

# ANNEX 1

Questionnaire No. \_\_\_\_\_

Date of Interview: \_\_\_\_\_

## Interviews of agencies responsible for provision of electricity in the city/region

### Respondent details:

<b>Name</b>	
<b>Agency</b>	
<b>Designation</b>	

### Interviewer details:

<b>Name</b>	
<b>Signature</b>	

### **Bariloche Foundation**

Piedras 482 2H  
Buenos Aires  
Tel. (5411) 4331-2021/2023

The questionnaire aims to understand the process of electricity provision\* to urban poor in Buenos Aires with a specific focus on understanding the barriers faced by electric utilities in providing electricity to urban poor.

1. Type of agency
  - a. Government

- b. Private
  - c. Joint venture of government and private entity
  - d. Others, please specify \_\_\_\_\_
2. Spatial jurisdiction of the agency
- a. Covers entire city/region
  - b. Covers part of city/region
3. What are the key goals/objectives of the agency?

4. What are the key functions of the agency?

## II. Getting a new electricity connection

5. What is the procedure that a household needs to follow in order to get a new electricity connection (domestic-Household connection)?

a. Steps

b. Documents to be submitted

Mandatory	Optional
Proof of ownership/residence -Sale deed -Allotment/possession letter -Lease deed -Identity card (Voter id, passport, ration card) - Others, please specify _____ _____	Please specify-

6. What are the criteria used to sanction a domestic electricity connection for a household (Household connection)?

- a. Legal status of house/premises Yes\_\_\_ No\_\_\_
- b. Affordability level of household
  - Ability to afford initial infrastructure cost of wiring, meters, etc. Yes\_\_\_ No\_\_\_
  - Ability to pay security deposit and other upfront charges Yes\_\_\_ No\_\_\_
  - Ability to pay monthly bills Yes\_\_\_ No\_\_\_
- c. Quality of housing structure (construction materials used, etc.) Yes\_\_\_ No\_\_\_
- d. Presence of main electricity infrastructure near the house Yes\_\_\_ No\_\_\_
- e. Others, Please specify \_\_\_\_\_

7. What is the time duration within which you have to provide the connection/respond to the applicant? \_\_\_\_\_

## III. Electricity connection for poor households

8. For poor households, many of whom live in illegal houses/colonies, do you have a different procedure to apply for electricity connection? Yes\_\_\_ No\_\_\_

- a. If yes, then explain the difference
  - i. In steps
  - ii. In charges payable
  - iii. In documents required
  - iv. Others
  - v. Do the sanctioning criteria also change in their case? Are some criteria relaxed in their case?
- b. If no, then confirm if your policy is to -
  - i. treat poor households in a similar manner as higher income households and therefore have same procedure for all to get new connections  
Yes\_\_\_ No\_\_\_

ii. have same approach for all despite the legality of their Household status

Yes \_\_\_ No \_\_\_

iii. have same sanctioning criteria for all Yes \_\_\_ No \_\_\_

9. In general, what are the common barriers faced by your agency in providing electricity connections to poor (especially poor living in illegal houses/colonies)?
- a. Legal status of their residences
  - b. Quality of their residences (temporary shelters using inflammable construction materials, etc.)
  - c. Their inability to pay for initial cost of connection and other upfront charges
  - d. Their inability to pay monthly bills
  - e. Non-availability of main electricity infrastructure around urban poor pockets
  - f. Others, please specify \_\_\_\_\_

10. Describe the monitoring mechanism for electricity connections for urban poor.
- a. Mechanism for meter reading and monitoring tampering
  - b. Bill cycle, Mode of payment and collection of bills
  - c. Percentage share of non-payment cases

#### IV. Your agencies strategies for urban poor

11. Do you have a focused strategy/program/scheme to provide electricity access to poor households?

a. Yes

If yes, please answer question 10 and 11.

b. No

Please give reasons \_\_\_\_\_

\_\_\_\_\_

c. Are you planning to formulate such a strategy/program?

Yes

Give details \_\_\_\_\_

\_\_\_\_\_

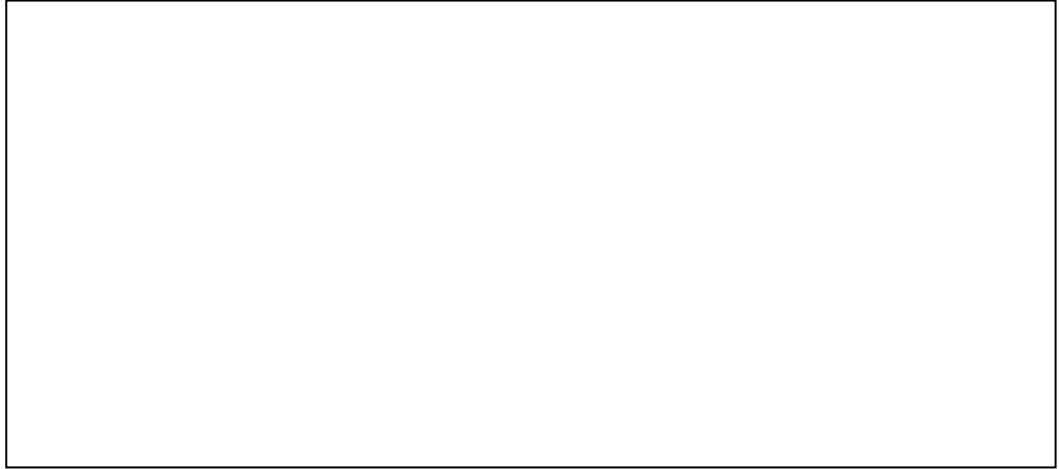
No

Give reasons \_\_\_\_\_

\_\_\_\_\_

12. Describe the strategies/programs and the specific actions implemented to improve electricity access for urban poor.

13. What has been impact of these actions?



# ANNEX 2

Questionnaire No. \_\_\_\_\_

Date of Interview: \_\_\_\_\_

## Interviews of agencies responsible for provision of Natural Gas in the city/region

### Respondent details:

<b>Name</b>	
<b>Agency</b>	
<b>Designation</b>	

### Interviewer details:

<b>Name</b>	
<b>Signature</b>	

### **Bariloche Foundation**

Piedras 482 2H  
Buenos Aires  
Tel. (5411) 4331-2021/2023

The questionnaire aims to understand the process of Natural Gas provision\* to urban poor in Buenos Aires with a specific focus on understanding the barriers faced by suppliers in providing Natural Gas to urban poor.

1. Type of agency

- a. Government
  - b. Private
  - c. Joint venture of government and private entity
  - d. Others, please specify \_\_\_\_\_
2. Spatial jurisdiction of the agency
- e. Covers entire city/region
  - f. Covers part of city/region
3. What are the key goals/objectives of the agency?

4. What are the key functions of the agency?



## II. Getting a new Natural Gas connection

5. What is the procedure that a household needs to follow in order to get a new Natural Gas connection (domestic-Household connection)?

g. Steps

h. Documents to be submitted

Mandatory	Optional
-Proof of residence ownership -Identity card -Others, please specify _____ _____ _____	Please specify-

6. What are the criteria used to sanction a domestic Natural Gas connection for a household (Household connection)?

- i. Legal status of house/premises Yes\_\_\_ No\_\_\_
- j. Affordability level of household
  - Ability to pay security deposit Yes\_\_\_ No\_\_\_
  - Ability to pay for refills Yes\_\_\_ No\_\_\_
- k. Quality of housing structure (construction materials used, etc.) Yes\_\_\_ No\_\_\_
- l. Availability of stove and hose Yes\_\_\_ No\_\_\_
- m. Others, Please specify \_\_\_\_\_

## III. Natural Gas connection for poor households

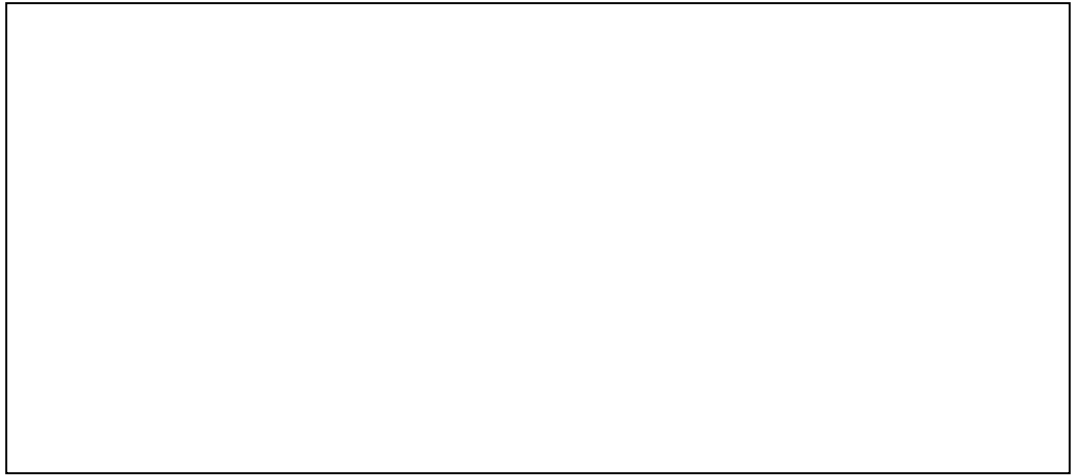
7. For poor households, many of whom live in illegal houses/colonies, do you have a different procedure to apply for Natural Gas connection? Yes\_\_\_ No\_\_\_

- n. If yes, then explain the difference
  - i. In steps
  - ii. In charges payable
  - iii. In documents required
  - iv. Others
  - v. Do the sanctioning criteria also change in their case? Are some criteria relaxed in their case?
- o. If no, then confirm if your policy is to -

- i. treat poor households in a similar manner as higher income households and therefore have same procedure for all to get new connections  
Yes\_\_\_ No\_\_\_
  - ii. have same approach for all despite the legality of their Household status  
Yes\_\_\_ No\_\_\_
  - iii. have same sanctioning criteria for all Yes\_\_\_ No\_\_\_
- 8. In general, what are the common barriers faced by your agency in providing Natural Gas connections to poor (especially poor living in illegal houses/colonies)?
  - p. Legal status of their residences
  - q. Quality of their residences (temporary shelters using inflammable construction materials, etc.)
  - r. Their inability to pay security deposit and purchase stove and hose
  - s. Their inability to pay for refills
  - t. Others, please specify \_\_\_\_\_  
\_\_\_\_\_
- 9. What is the time duration within which you have to provide the connection/respond to the applicant? \_\_\_\_\_

#### **IV. Your agencies strategies for urban poor**

- 10. Do you have a focused strategy/program/scheme to provide Natural Gas access to poor households?
  - u. Yes  
If yes, please answer question 10 and 11.
  - v. No  
Please give reasons \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
  - w. Are you planning to formulate such a strategy/program?  
Yes  
Give details \_\_\_\_\_  
\_\_\_\_\_
  - No  
Give reasons \_\_\_\_\_  
\_\_\_\_\_
- 11. Describe the strategies/programs and the specific actions implemented to improve Natural Gas access for urban poor.



12. What has been impact of these actions?



# ANNEX 3

<b>Study of Energy Access in Greater Buenos Aires Neighborhoods</b> <div style="border: 1px solid black; padding: 2px; display: inline-block; margin: 5px auto; width: 150px;"> <b>LA CARCOVA</b> </div>	
<b>Location of dwellings:</b> Street: _____ Between the following streets: _____ & _____ Neighbourhood (or sector): _____	Questionnaire N°: <input style="width: 50px;" type="text"/>
<b>I. ENERGY USES</b>	
<b>1. Illumination using which energy source:</b> <input type="checkbox"/> Electricity <input type="checkbox"/> Light using liquified gas <input type="checkbox"/> Kerosene Light/Lamp <input type="checkbox"/> Candles <input type="checkbox"/> Otro: _____ <div style="text-align: right; font-size: small;"><i>(specify)</i></div> <input type="checkbox"/> No lighting	<b>4. Heating with which energy source:</b> <input type="checkbox"/> Stove using gas carafe <input type="checkbox"/> Electric Stove <input type="checkbox"/> Precarious Electric Heating Element <input type="checkbox"/> Cooker/Stove (gas carafe) <input type="checkbox"/> Kerosene Heater <input type="checkbox"/> Wood Coke burning brazier (Brasero) <input type="checkbox"/> Charcoal burning brazier (Brasero) <input type="checkbox"/> Bar heater burning wood or waste <input type="checkbox"/> Other: _____ <div style="text-align: right; font-size: small;"><i>(specify)</i></div> <input type="checkbox"/> No heating
<b>2. What do you cook with:</b> <input type="checkbox"/> Cooker with over (gas carafe) <input type="checkbox"/> Burner (gas carafe) <input type="checkbox"/> Electric Heater <input type="checkbox"/> Kerosene Heater <input type="checkbox"/> Firewood Brazier <input type="checkbox"/> Firewood Barbeque <input type="checkbox"/> Charcoal Brazier <input type="checkbox"/> Charcoal Barbeque <input type="checkbox"/> Brazier/Barbeque with wood or waste <input type="checkbox"/> Other: _____ <div style="text-align: right; font-size: small;"><i>(specify)</i></div> <input type="checkbox"/> Don't Cook	<b>5. Refrigerator?:</b> <div style="text-align: right;"> <input type="checkbox"/> NO  <input type="checkbox"/> YES         </div> <b>6. Ventilators/Fans?:</b> <div style="text-align: right;"> <input type="checkbox"/> NO  <input type="checkbox"/> YES         </div> <b>7. Availability of other electrical devices?:</b> <input type="checkbox"/> Iron <input type="checkbox"/> Washing Machine <input type="checkbox"/> Liquidizer/Blender <input type="checkbox"/> Food processor <input type="checkbox"/> Radio/Radio Recorder <input type="checkbox"/> Music Equipment <input type="checkbox"/> Television <input type="checkbox"/> Air Conditioning Others (specify): _____ _____ _____
<b>3. Water heater for washing or bathing?:</b> <input type="checkbox"/> Heater/Hot Water using LPG carafe <input type="checkbox"/> Electric Heater/Tank <input type="checkbox"/> Electric Shower <input type="checkbox"/> Liquid Gas cooker <input type="checkbox"/> Kerosene Heater <input type="checkbox"/> Wood Brazier <input type="checkbox"/> Charcoal Brazier <input type="checkbox"/> Brazier using wood or waste <input type="checkbox"/> Other: _____ <div style="text-align: right; font-size: small;"><i>(specify)</i></div> <input type="checkbox"/> No hot water for washing or bathing	<b>8. Availability of the following public services?</b> <input type="checkbox"/> Rubbish/Garbage collection <input type="checkbox"/> Running Water <input type="checkbox"/> Sewage <input type="checkbox"/> Landline Telephone <input type="checkbox"/> Cable TV

## II. PROBLEMS WITH THE ENERGY SUPPLY

### 9. Electricity:

Does it have electricity?  NO → Move on to question 10  
 YES

Does it have its own meter?  NO → Why?: \_\_\_\_\_  
 YES \_\_\_\_\_

NO YES

<input type="checkbox"/>	<input type="checkbox"/>	Does the electricity cut out frequently? How often?: _____
<input type="checkbox"/>	<input type="checkbox"/>	In general do the black-outs last for more than 3 or 4 hours ? _____
<input type="checkbox"/>	<input type="checkbox"/>	Are there frequent changes in tension/voltage? _____
<input type="checkbox"/>	<input type="checkbox"/>	Have people in the household been shocked/electrocuted? _____
<input type="checkbox"/>	<input type="checkbox"/>	Are there frequent short circuits? _____
<input type="checkbox"/>	<input type="checkbox"/>	Do you have other problems with the electricity? Which ones?: _____

### 10. Liquid Gas (carafe):

Do you use gas carafes?  NO → Skip to question 11  
 YES

Do you buy subsidised carafes?  NO → Why?: \_\_\_\_\_  
 YES \_\_\_\_\_

NO YES

<input type="checkbox"/>	<input type="checkbox"/>	Do you have a retail outlet close-by?
<input type="checkbox"/>	<input type="checkbox"/>	The quantity bought per month; is it sufficient?
<input type="checkbox"/>	<input type="checkbox"/>	Are there gas leaks in the house?
<input type="checkbox"/>	<input type="checkbox"/>	Are there other problems with the gas carafes? What are they?: _____

How much does the carafe cost The 10 kg carafe: \$ \_\_\_\_\_  
 The 12 kg carafe: \$ \_\_\_\_\_  
 The 15 kg carafe: \$ \_\_\_\_\_

#### 11.a. Water Do you have a water tank?:

NO   
 YES

11.b. Does water accumulate in the tank? NO  YES

#### 13.a. Do you buy water carafes (large bottles)?:

NO   
 YES

13. b. How many per month? \_\_\_\_\_

#### 12. If you don't have a piped water supply, Do you get water from a well?

NO   
 YES

### III. CHARACTERISTICS OF THE HOUSE / HOME

**14. Are there more than one living quarter in house?**

*House: sharing the same roof and eating together at least once per day.*

NO  
 YES → How many?: \_\_\_\_\_

**15. How many people make up this household?**

people

**16. About the head of household:**

Sex:  Masc.  Fem. Age: \_\_\_\_\_

Occupation:

- Employee/worker
- Self Employed
- Odd Jobs
- Unofficial Recycler ("Cartonero")
- Itinerant Salesperson
- Other: \_\_\_\_\_

*(specify)*

Unemployed

**18.a. Approximate Earnings per Month (pesos):**

- from 500 to 1,000
- from 1,000 to 1,500
- from 1,500 to 2,000
- from 2,000 to 2,500
- from 2,500 to 3,000
- 3,000 or more

**18.b. Are you a beneficiary of a State social plan ?**

NO   
 YES  Which One?: \_\_\_\_\_

**19. Kind of living quarters:**

- Solid, made from bricks/blocks and concrete
- Building materials, unfinished
- Wood
- Corrugated Iron, canvas, nylon, waste materials.

**20. Age of living quarters:**

years

**17. For the rest of the integrants of the household:**

N°	Family (wife/husband, child, etc.)	Age
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

**21. Relationship to the living quarters:**

- Owners
- Loan/Lease
- Rented

**22. The children of the household go to school?**

NO 22.a. Why?: \_\_\_\_\_

YES 22.b. To which school do they go?: \_\_\_\_\_

22.c. Why?: \_\_\_\_\_

### IV. OBSERVATIONS

**23. What are the primary environmental problems of the neighbourhood?**

END OF INTERVIEW

# ANNEX 4

## Interviews with community actors in Budge y Fiorito regarding access to Energy

If the respondee cannot reply to a question or is not sure, leave this reply blank and proceed to the next question.

Name: \_\_\_\_\_

Neighbourhood in which they live:

- |   |  |
|---|--|
| <input type="checkbox"/> LA CAVA                            | <input type="checkbox"/> VILLA ALBERTINA |
| <input type="checkbox"/> BUDGE BIS                          | <input type="checkbox"/> CAMINO NEGRO    |
| <input type="checkbox"/> ING BUDGE                          | <input type="checkbox"/> VILLA LA MADRID |
| <input type="checkbox"/> LA SALADA                          | <input type="checkbox"/> VILLA URBANA    |
| <input type="checkbox"/> VILLA OBRERA                       | <input type="checkbox"/> BAJO DE BUDGE   |
| <input type="checkbox"/> Other neighbourhood, which?: _____ |  |

### I. SOCIO-ECONOMIC CONDITIONS

1. Do you consider that the socio-economic conditions have improved where you live in the last five years?:

- NO → Skip to question 2.  
 YES

If the reply was YES, what are the conditions that have produced these improvements?:

*It is possible that the responder may indicate multiple reasons, please mark all responses*

- There is more work available  
 Incomes have improved  
 Because of the social programs  
 Due to children's allowance scheme "Asignación Universal por Hijo"  
 Due to community activities  
 Security improvements  
 Other reasons, which?: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

### II. ELECTRICITY SUPPLY

2. Has the electricity supply improved in the last five years?:

- NO → Skip to question 3.  
 YES

If you replied YES; what have these improvements been?:

*There may have been more than one improvement, please mark all responses*

- Extension or improvements to electricity grid in the neighbourhood  
 Less service cuts/black-outs  
 Less drops in tension  
 Less accidents in the home  
 Other improvements, which?: \_\_\_\_\_

\_\_\_\_\_  
 \_\_\_\_\_

**3. If you don't have your own meter; why do you think this is?:**

*There may be more than one reason, please indicate all responses*

- I cannot pay the electricity bill
- My dwelling doesn't comply with regulations
- Dwelling's internal electricity installation does not comply with regulations
- Other reasons: which?: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**4. In your opinion: What should be done to improve the electricity supply in the neighbourhood**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**III. ACCESS TO CYLINDER OF LPG**

**5. Have the conditions improved for LPG cylinder supply in the last five years?**

- NO → Skip to question 6.
- SI

**If your reply was YES; what have these improvements been?:**

*There may have been more than one improvement, please mark all replies*

- Due to the Government cylinder programme "Garrafa Social"
- Improvements in the economic situation of the inhabitants
- More (closer) points of sale for cylinders
- Other improvements, which?: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**6. As regards the Programme called "Garrafa Social" please reply to the following questions:**

- |   |                             |                              |
|---|-----------------------------|------------------------------|
| Is it availed of by most of the residents in the neighbourhood? | <input type="checkbox"/> NO | <input type="checkbox"/> YES |
| Are there points of sale in the neighbourhood?                  | <input type="checkbox"/> NO | <input type="checkbox"/> YES |
| Can you buy the necessary quantities?                           | <input type="checkbox"/> NO | <input type="checkbox"/> YES |
| Is there always supply on hand?                                 | <input type="checkbox"/> NO | <input type="checkbox"/> YES |
| Do you pay the official price of \$ 16 for a 10 Kg. cylinder?   | <input type="checkbox"/> NO | <input type="checkbox"/> YES |

**Comments that you may wish to make on the "Garrafa Social" Programme:** \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

**7. In your opinion, what should be done to improve access to LPG cylinder in the neighbourhood ?**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



#### IV. CONNECTION TO NATURAL GAS

8. If you don't currently have a natural gas connection: Have you thought of getting one?

- NO → Skip to question 9.  
 YES → Have you looked into the procedure?:  NO  YES

9. What are the principle problems associated with connecting natural gas:

*There may be more than one problem, mark all responses by interviewee*

- There is no natural gas network in the neighbourhood and no plans to add one  
 The installation within the dwelling is very expensive  
 The devices are very expensive (cookers, stoves, water heaters, etc.)  
 The dwelling has not been regularized  
 The dwelling does not comply with the required safety features  
 Other reasons, which?: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

10. In your opinion; what should be done to bring a natural gas supply to the neighbourhood?:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### V. CONSUMPTION OF FIREWOOD AND CHARCOAL

11. Do you think the availability of firewood and charcoal have improved or disimproved in the last five years?

- NO CHANGE → Skip to question 12.  
 INCREASED  
 DROPPED

If the supply has improved or disimproved, what is this a result of? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

#### VI. EQUIPMENT IN THE HOME

12. Do you think that families in the neighbourhood have improved (energy consuming) devices in the last five years? (cookers, stoves for heating, ventilators, washing machines etc.):

- NO → Skip to question 13.  
 YES → Which kinds of equipment?:

- |   |   |
|---|---|
| <input type="checkbox"/> Cookers/Stoves for cooking<br><input type="checkbox"/> Heating or Water heating<br><input type="checkbox"/> Stoves<br><input type="checkbox"/> Fridges<br><input type="checkbox"/> Freezers<br><input type="checkbox"/> Microwave Ovens<br><input type="checkbox"/> Stoves<br><input type="checkbox"/> Ventilators/fans<br><input type="checkbox"/> Air conditioners | <input type="checkbox"/> Televisions<br><input type="checkbox"/> Music Equipment<br><input type="checkbox"/> Washing Machines<br><input type="checkbox"/> Iron (for clothes)<br><input type="checkbox"/> Others (indicate which): _____<br>_____<br>_____<br>_____<br>_____ |
|---|---|

**VII. OTHER QUESTIONS AND COMMENTARIES**

**13. In your understanding, what role are being played by the following actors in improving access to energy?**

	IMPORTANT	NOT IMPORTANT
National Government	<input type="checkbox"/>	<input type="checkbox"/>
Provincial Government (Buenos Aires Prov.)	<input type="checkbox"/>	<input type="checkbox"/>
Municipality	<input type="checkbox"/>	<input type="checkbox"/>
Service providing companies for electricity	<input type="checkbox"/>	<input type="checkbox"/>
Service providing companies for natural gas	<input type="checkbox"/>	<input type="checkbox"/>
Community Organizations	<input type="checkbox"/>	<input type="checkbox"/>
Neighbourhood Unions	<input type="checkbox"/>	<input type="checkbox"/>

**14. Please, mention other comments you would like to make to do with the provision of energy and how to improve access to energy in the home:**

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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3er.Informe: Estudio Cuantitativo - Cualitativo. Casas nuevas, refacciones, Talleres.

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