

Energy Access in Urban and Peri Urban Buenos Aires

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Presentation Outline

- Argentina Current Poverty Profile
- Argentina Some Policy Measures - energy & poverty
- Greater Buenos Aires- Budge and Villa Fiorito case study
- Recommendations

- 9% of children below 17 years did not have enough to eat in 2007 - 22% in 2004. Survey on urban centres, Córdoba and Rosario outstand.
- Undernourishment in Argentina: 8 dead by day in 2007 (12 in 2003). 7 out of 10 live in peri urban areas of big cities.

By the end of 2008:

- 30% of population below **poverty** threshold \approx 12 million people (21.8 by 2002); and
- 11% \approx 4.2 million people (10.4 by 2002) below **indigence** or deprivation.

Considering respectively the **income needed to buy a market basket of consumption goods and services**, and the **income needed to buy just a basket of basic alimentary goods**.

What is the Urban & peri-Urban energy access problem?

- Different nature of the problem:
 - Definition of peri-Urban, its origins
 - Urban-interruption (including affordability), rural- lack of services. small relevance of firewood.
 - Incidence of non monetary economy effects on family (issue of \$ per day threshold vs. purchase power).
- Reduced choice to satisfy basic needs
 - Access to energy constitutes an indispensable element.
 - Issue of inadequate equipment and fuel burning.
 - Consumption in other relevant aspects - such as nutrition quality, access to basic information, educational level, access to credit, among others - is thus modified. (link with MDG considering energy as a pre-requisite).
- Increased feeling of social injustice / Dual society

Argentina Some Policy Measures

- Regularization of electricity users in the GBA area illegally connected, Framework Agreements. First signed in 1994, updated up to 2011. “Temporary” Common meters for 700.000 slum homes.
- Social Tariff for electricity and gas, a pending issue, although it should be considered in every contract renegotiation (gas and electricity) between governments and Utilities from April 2005. But such programs have not been implemented yet.

GBA (roughly 10/40 million Argentine inhabitants) about 1.5 million people with unmet basic needs.

3.4 million homes of the country without access to Gas ($\approx 40\%$)

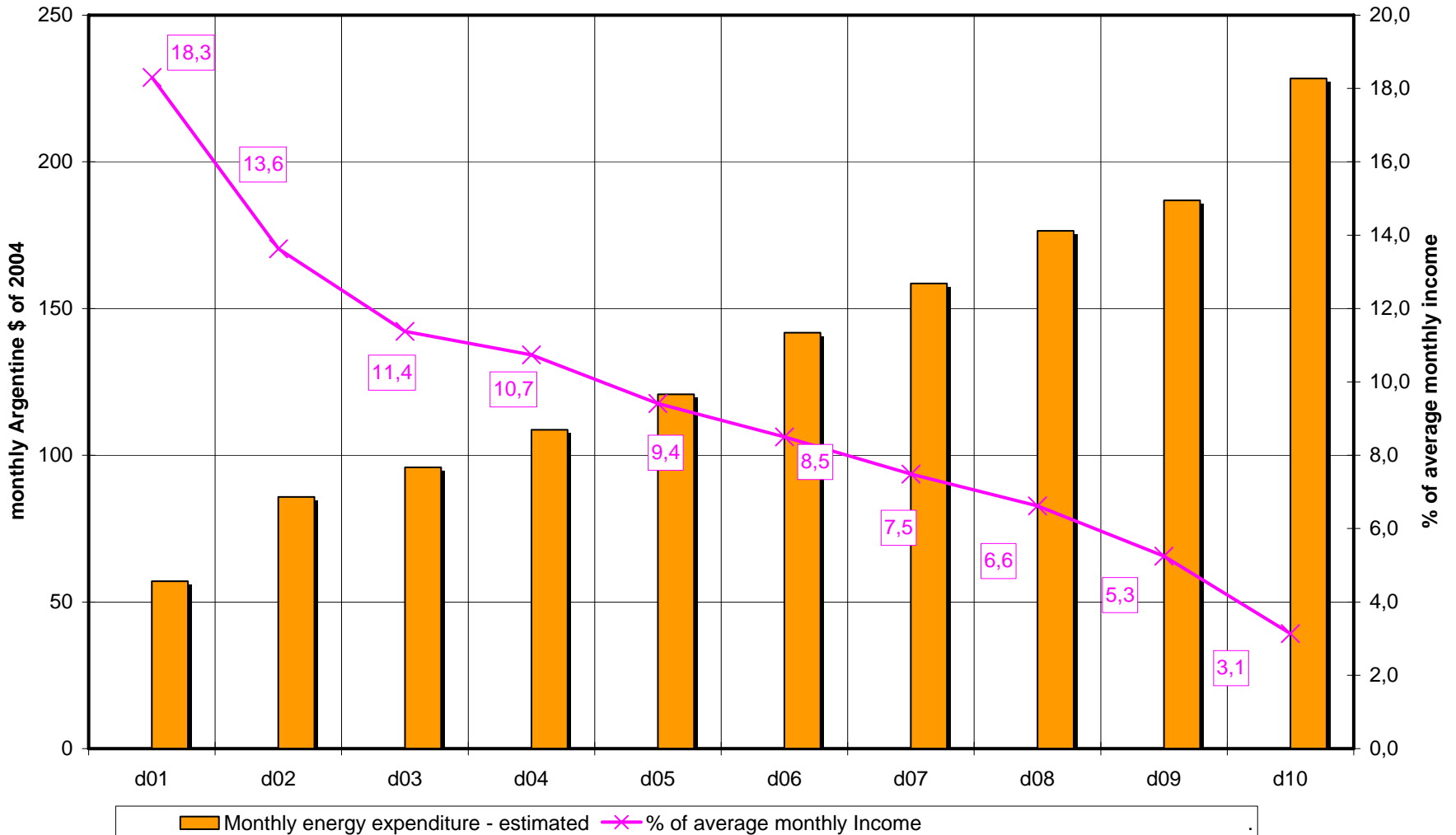
4 out of 11 gas utilities re-negotiated their contracts, only one was ratified by the executive, but a social tariff can only be enacted by a Congress law. Nothing enacted yet.

450 thousand homes lack grid electricity - ENRE estimated a cost of 5.2 million pesos (1.5 MMus\$) by month to help the 600 thousand more needed users.

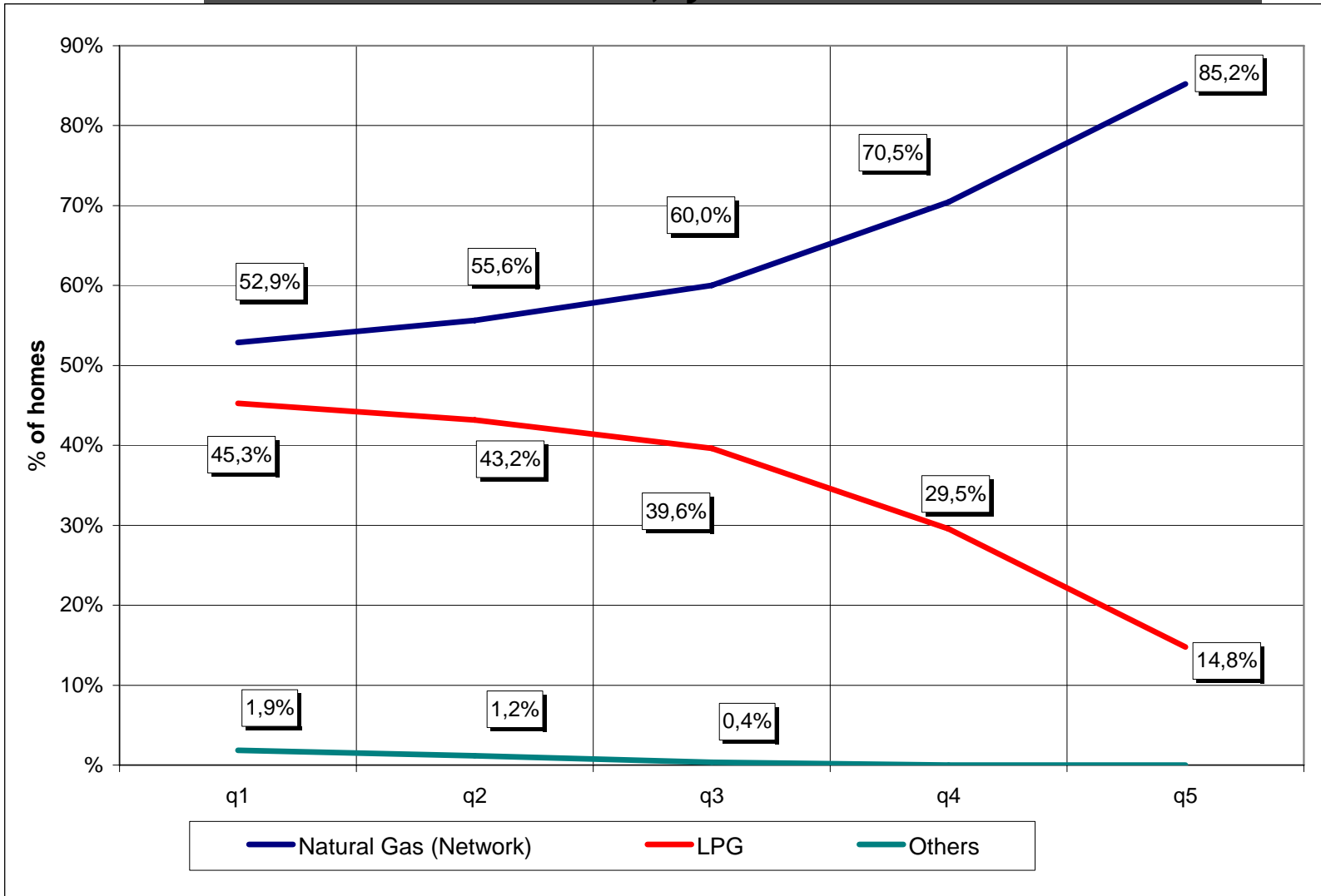
Poverty must be justified in order to be exempted from tariff increases. Money collected from those increases not employed for investments, but operative costs.

- Social Gas Cylinder Plan first agreement 2003 - *garrafa social*. September 2008, fiduciary fund (charge on tariffs) for LPG cylinders and gas grid expansion. Not reaching all users, few sales points, quality problems. *garrafa para todos Jan-09*

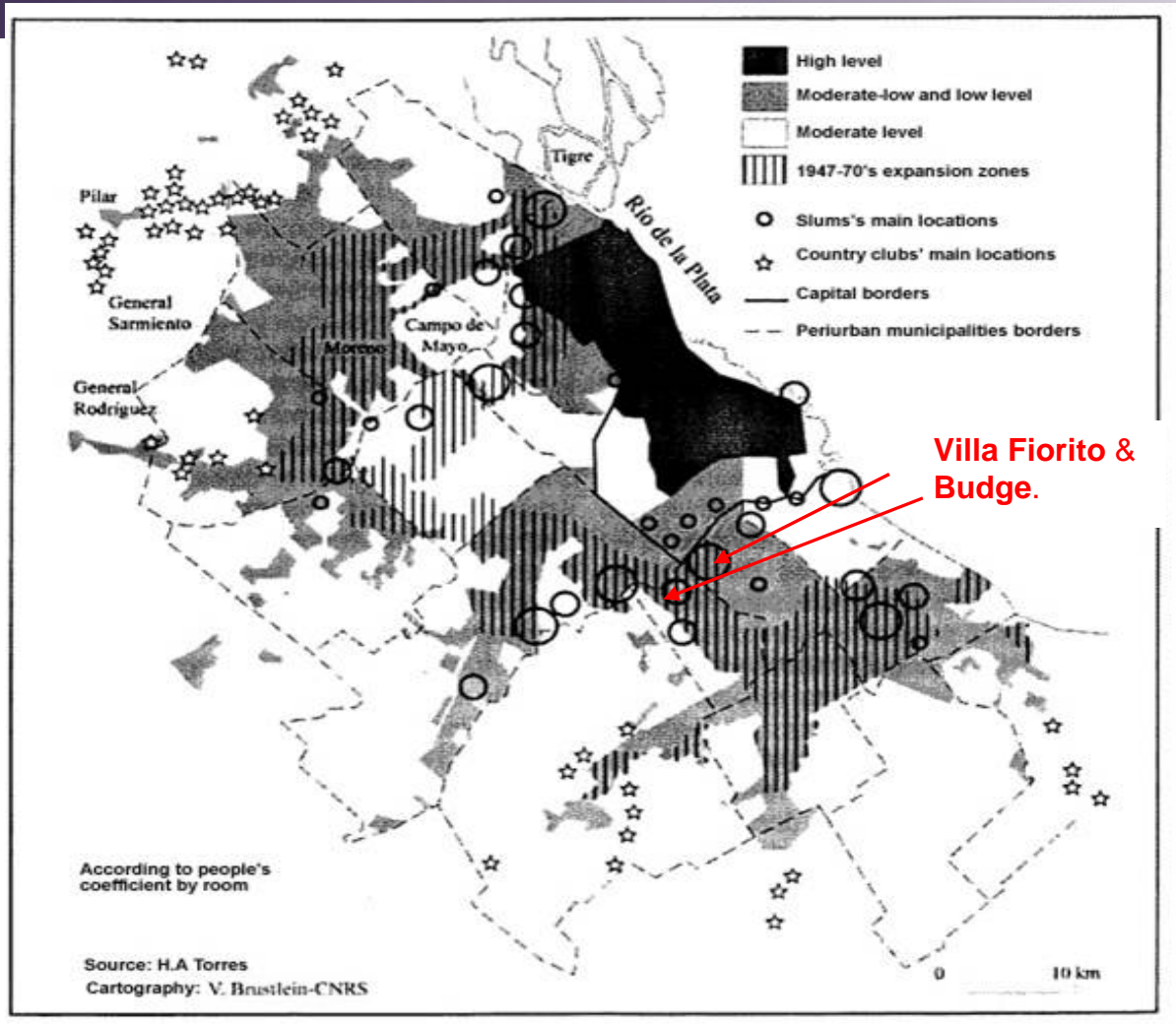
Average Households' Energy Expenditure in 2004 Total country as % of total household income



Cooking fuels (in %) according to quintiles of household income, urban households, GBA, year 2005



Greater Buenos Aires- Slums and case study locations



Source: Prevot Schapira, Marie-France. "Buenos Aires in the '90: metropolis y inequalities". EURE (Santiago), December, . 2002, vol.28, no.85.

Notes: high/ moderate/ low levels refers broadly to socio economic profile, proxy being coefficient by room.

- Collaboration of community-based NGO: Fundación de Organización Comunitaria.
- survey objective: gathering information on the satisfaction levels of energy needs. Basic energy requirements by use were defined, adjusted to the local environmental and climatic conditions, and then these parameters were contrasted with those obtained in the survey. At last assessment of most appropriate sources for fulfilling basic needs.
- little information was found regarding productive activities: potential for encouraging construction related activities - construction sector is the main source of income for at least 23 % of surveyed households. Food related shops are the most important productive activity within slum (more than 50%). 1 out of 4 people work within slum limits.
- Electricity is the most universalized energy service, issues of quality and reliability; illegal connections (repair workshops, welding machines and small electric motors - three phase; tailoring and commercial cooking).
- LPG, issues of cost and availability; charcoal, scrap wood, cardboard and other solid waste. (appliance: burner, *brasero*).
- study of household energy consumption patterns should include an evaluation of appliance efficiency and building insulation. These considerations would be better approached if basic needs were defined and then compared with real consumption - as case-study.
- subsidizing low-income household LPG or kerosene consumption, instead of electricity tariff, in order to discourage thermal uses

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Greater Buenos Aires- Budge and Villa Fiorito case study

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- 106 dwellings surveyed in November 2007 - average of 4.9 people per household.
- although low-income households, their energy needs are mostly met by high-quality fuels: electricity and LPG. All households use electricity and 92 % use LPG. Other fuels consumed: charcoal (23 % of households), kerosene (7 %), natural gas (4 %) and biomass wood waste - no firewood(4 %).
- useful energy analysis (final or net energy - minus appliance conversion losses derived from use)
- our intention: determine the degree to which different energy needs are satisfied. The extent to which the need is not satisfied will be larger in those cases with:

**smaller energy consumption,
poorer fuel quality, and
more inefficient appliances.**

Budge and Villa Fiorito case-study Fuel consumption by end-use, November 2007 (per household per year)

USES \ SOURCES	LPG	NG	KE	CH	BR	EE
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in kg in m3 in lt. in kg in kg in kWh

Lighting						215,0
Cooking	124,3	5,2	2,8	47,9	7,0	5,4
Water Heating	25,0	9,9	5,7	12,9		307,0
Space Heating	3,8	2,7	3,1	41,4	0,8	182,9
Food Conservation						746,6
Ventilation						28,9
Other Devices						261,6
	153,1	17,8	11,6	102,2	7,7	1.747,4

In KOE:

4,5%

42,8%

18,3%

12,6%

15,7%

0,6%

5,5%

} **74%**

100%

In KOE:

40,9%

3,6%

2,3%

16,2%

0,3%

36,6%

Budge and Villa Fiorito case-study Fuel consumption by end-use, November 2007 (in KOE of **useful energy** per household per year)

USES \ SOURCES	LPG	NG	KE	CH	BR	EE	TOTAL	
Lighting						1,0	1,0	0,5%
Cooking	61,3	2,2	0,8	2,0	0,1	0,4	66,8	34,4%
Water Heating	12,3	4,1	1,6	0,8		21,1	40,0	20,6%
Space Heating	1,9	1,1	1,0	6,7	0,03	12,6	23,4	12,0%
Food Conservation						41,7	41,7	21,5%
Ventilation						2,2	2,2	1,2%
Other Devices						19,0	19,0	9,8%
TOTAL	75,4	7,4	3,5	9,6	0,2	98,0	194,1	100%
	38,9%	3,8%	1,8%	4,9%	0,1%	50,5%	100%	

} 67%

Budge and Villa Fiorito case-study Basic Energy Needs satisfaction level

Most households – 70 % of the sample – have three or more end-uses with unfulfilled basic requirements.

space-cooling, basic threshold is not reached by 85% of the households;

lighting 72%
space-heating 71%
water-heating 54%
cooking 47%

Refrigerators 7%
other devices 20%

USES \ SOURCES (in KOE)	Basic Requirements (A)	Unfulfilled Requirements (B)	(B) / (A)
Lighting	128	32	24,9%
Cooking	6.480	508	7,8%
Water Heating	4.271	1.328	31,1%
Space Heating	4.571	2.525	55,2%
Food Conservation	3.785	286	7,5%
Ventilation	449	238	53,0%
Other Devices	1.423	58	4,1%
TOTAL	21.107	4.975	23,6%

Budge and Villa Fiorito case-study Annual expenditure on energy estimation total survey (in AR\$)

USES \ SOURCES	LPG	NG	KE	CH	BR	EE	TOTAL	
Lighting						20,3	20,3	2,8%
Cooking	310,8	1,3	5,3	71,9	3,0	0,5	392,8	53,8%
Water Heating	62,6	2,5	10,8	19,4		28,9	124,2	17,0%
Space Heating	9,4	0,7	5,9	62,1	0,3	17,2	95,7	13,1%
Food Conservation						70,3	70,3	9,6%
Ventilation						2,7	2,7	0,4%
Other Devices						24,6	24,6	3,4%
TOTAL	382,8	4,5	22,0	153,4	3,3	164,6	730,5	100%
	52,4%	0,6%	3,0%	21,0%	0,4%	22,5%	100%	

Total energy expenditure represented, by December 2007:

- 14 % of the cost of the indigence-level basic basket of food (AR\$ 442 by month)
- 6 % of the officially defined poverty income (AR\$ 955 by month),
- 41 % of most important households social welfare plan (AR\$ 150 by month), and
- 27 % of the unemployment subsidy (AR\$ 225 by month).

- The availability and affordability of LPG for the poorest households should be secured and monitored by the authorities
- LPG should replace charcoal immediately and as far as possible for slum dwellers
- In the longer run - together with a land tenure/housing policy – natural gas network connection should be available,
- Facilitating access to efficient appliances and tariff subsidies up to a certain consumption limit
- (Participation of slum-dwellers in construction activities and community coordinated actions)

- No simple measures for improving the efficiency of cooking with LPG.
- Compact fluorescent lamps would lead to relatively small savings, lighting = 4.5% of total consumption
- Replacing refrigerators, but 2nd hand market.
- All saving measures in space-heating and cooling must be closely related to improvements in construction characteristics of the houses

- Increase of **personal income** & issue of **land/property tenure**

- Survey on 2500 homes in urban centres; Observatorio de la Deuda Social de la UCA, Clarín, 01/06/08, Claudio Savoia. <http://www.clarin.com/suplementos/zona/2008/06/01/z-03215.htm>
- Ecolatina Argenpress 26/01/09 <http://www.argenpress.info/2009/01/la-pobreza-en-argentina-ya-alcanza-el.html>
- Decreto 732/2009 Gob pcia Bs As, Bolsafe Valores S.A. 10/06/09. <http://www.bolsafevalores.com/BolsafeValores-WebApp-context-root/faces/noticias/articulo.jsp?idnoticia=11697&idimagen=null&titulopagina=Ultima%20Noticia&tituloarticulo=>
- Asociación Civil por la Igualdad y la Justicia (ACIJ). Clarín 29/03/09, Claudio Savoia.
- Gonzalo Bravo, Roberto Kozulj, and Raul Landaveri, Energy access in urban and peri-urban Buenos Aires, Energy Economics Institute, Fundación Bariloche / GNESD. Energy for Sustainable Development. Volume XII No. 4. December 2008. <http://www.sciencedirect.com/science>
- FB estimates based on INDEC data: Annual Expenditure Survey of year 2004 and the National Input-Output matrix.

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Thanks for your attention



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Greater Buenos Aires- Budge and Villa Fiorito Basic energy consumption by fuels and final uses for the average case-study household

USES AND DEVICES	Power	Unit	hours / year	kWh /year	Efficiency	useful koe /year
Lighting						
1 Bedroom	40	W	548	21,9	0,045	0,1
Kitchen/dining-room	120	W	1.278	153,3	0,045	0,6
Bathroom	40	W	548	21,9	0,045	0,1
Outside	80	W	1.095	87,6	0,045	0,3
Sub-total	280	W		284,7		1,1
Cooking						
LPG Cooking Stove	0,196	kg/hr	420		0,450	40,6
LPG Oven	0,224	kg/hr	130		0,450	14,3
Sub-total	0,420	kg/hr				54,9
Water Heating						
Useful Energy estimate						32,9
Space Heating						
LPG Stove	2.250	kcal/hr	315		0,450	31,9
Food Conservation						
Fridge	250	W	2.555	638,8	0,650	35,7
Ventilation						
Fan	75	W	360	27,0	0,900	2,1
Other Devices						
Iron	625	W	98	60,9	0,800	4,2
Washing-machine	250	W	130	32,5	0,800	2,2
Sound system	40	W	840	33,6	0,900	2,6
TV set	40	W	980	39,2	0,900	3,0
Sub-total	955	W				12,1
TOTAL						170,7

- Making the “social gas cylinder” available and affordable to all potential LPG consumers
- For increased natural gas provision, relevant actors – distribution companies, the regulatory agency, neighborhood associations must coordinate actions.
- A plan for the normalization of electricity users can be implemented, by means of a set of complementary measures.
- A rational use of energy (RUE) plan affecting all users, can be developed, including substitution of inefficient equipment (most of the electrical heaters and incandescent lamps).
- Argentine Census Bureau (INDEC) should include in its Permanent Home Survey data collection about existing energy devices; energy sources consumption and expenditure.
- Accompanied by plans for the improvement of precarious houses, securing home tenure and unemployment reduction.