THE SOCIAL RATE OF ENERGY IN LATIN AMERICA AND THE CARIBBEAN

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Organización Latinoamericana de Energía
Latin American Energy Organization
Organisation Latino-americaine d'Energie
Organização Latino-Americana de Energia

NETWORKING EXPERTS

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OLADE

2013

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Summary

The Social Rate of Energy in Latin America and the Caribbean

OLADE - CIDA
Mercedes Canese
March 2013

This paper aims to introduce the study of the social tariff, subsidies and grants in the energy sector.

First we will discuss these definitions, to highlight a historical introduction to these subjects and determine the main questions that this paper seeks to answer.

Then we will discuss the status of Social Rates and subsidies in Latin America and the Caribbean (LAC), in order to analyze their impact on various aspects; economic, social, environmental. In what way countries apply the Social Rate, what are its main characteristics and barriers encountered.

We will analyze both, the electricity sector as well as fossil fuel and public transport.

Finally, the main conclusions and recommendations of the study will be presented, which can serve as a guide to the countries of the region to implement or improve their systems of social rate and subsidies.

Definition of subsidy, grant and social tariff in the energy sector

CHAPTER I

The Social Rate of Energy in Latin America and the Caribbean

a. Definiciones

DEFINITIONS

energy._

(Dellat. Energy, and east of gr.ένέργεια).
1. f. Efficacy, power, virtue to act.
2.f. *Phys.* Ability to perform work. It is measured in joules. (Símb. E).

subsidy._

(From lat. subsidium).
1. m. Public provision of economic assistance and of fixed term. *Unemployment subsidy.*
2. m. Tax on trade and industry.
3. m. *Nic.* Temporary lay-off on a worker in case of illness, while earning wages.
4. m. desus. Certain aid granted by the Apostolic See to the kings of Spain on the ecclesiastical revenues of their kingdoms.

grant._

(From lat. *subventĭo,-ōnis*).
1. f. Action and effect of providing for.
1. f. Quantity to cover the expenses.

defray._

(From lat. *subvenīre*).
1. intr. Help someone or something.
MORF. Bl. c. come.

rate._

(From thear. Hisp. *ta'rífa*, and this tre. classi. *ta'rīfah* Of *ta'rīf* , Definition).
1. f. Table of prices, duties or tax fees.
2. f. Unit Price set by the authorities for public services performed under their expense.
3. f. Amounts paid for the same service.

expense._
~ Social

1. m. Part of **public expense** to cover basic needs of citizens.
U. t. in pl. with the same meaning as in sing.

b. Energy. Industry and social development.

Energy, defined as "The ability to undertake a work" has undergone a profound transformation in recent human history. Before the Industrial Revolution, energy use was intended to cover the same basic needs of primitive man: cooking, heating, reduction of human labor in the production of rudimentary tasks of handmade furniture, housing materials and clothing, artisan food processing, defense, transportation.

The main source of energy was then biomass, firewood and charcoal, vegetable oils, animal fats, and animal traction. To a lesser extent, wind energy and water used in the mills.

The Industrial Revolution (C. XVII) starts with these traditional energy, but gains momentum with the invention of the steam engine and the replacement of charcoal by coal. The coal, initially used for heating and cooking, becomes the main engine of transformation in production processes.

Electricity generation for purposes such as industrial, communication-the telegraph, house lighting it just started two centuries later (C XIX).

Simultaneously it started (C XIX) the industrial use of oil for energy purposes, performing the first refined products and well drilling. The internal combustion engine transformed the use of oil products and its first use was for marine transportation, then it was used for land transportation and industrial use, as well as power generation through steam turbines.

That explosion of modern energy in the industrial revolution contributed to the use of the same energy at home, but with serious limitations of access to the majority.

Proof thereof is that in the XXI century, it is estimated that "1,400 million people lack access to modern energy, while 3,000 million depend on" traditional biomass "and coal as the main energy sources" (UN). That is, over 42%

of the world population (close to 7,000 million in 2012)[1].

This deficit is higher in developing regions and countries, although it is estimated that "40 million people lack access to modern electricity services" (IDB)[2] in Latin America and the Caribbean, with a population close to 600 million inhabitants. It is estimated that the use of biomass (wood and coal) for cooking is around 40% of the total, and in some countries represent more than 60%.

The use of coal, oil and natural gas, as if it were an infinite resource and accelerate the industrial revolution has meant an escalation in the prices of energy which worsens energy poverty and proposes new challenges around the social inclusion in energy development models.

c. Subsidy, grant and social tariff in the energy sector

The subsidy, defined as "Public Provision of economic assistance and with a fixed term" in the energy field is a policy that includes price regulation, subsidies to businesses, grants to users, among other measures. The determination of the subject of the grant awarded may be universal or segmented. The subsidy may be direct, where the State or the supplier companies are in charge of covering the difference between the price and the cost of an energy or crossed good, when a reduction in certain rates or prices inferior to the cost are compensated by other eates or prices higher than the cost. The subsidy may be indirect, when through a reduction in the price of a government good , it wishes to increase the spending power of the benefited subject.

The grant is unlike the subsidy, a contribution, usually in cash, which is done to contribute to a particular expense, either to businesses or users.

1 http://www.un.org/es/events/sustainableenergyforall/ (Tue, 25 Sep 2012 14:31:21 GMT)

2 http://www.iadb.org/es/temas/energia/energia–en–america–latina–y–el–caribe,1272.html (Tue, 25 Sep 2012 17:25:47 GMT)

This contribution, in the case of grants to unemployment or family benefits to fight poverty-conditional transfers, for example, allows the beneficiary to meet their basic needs, among which is the power consumption.

The Social rate is a reduced rate which aims to reduce energy costs to low-income families and thereby facilitate access to modern energy for these sectors. This rate is subject to a subsidy, either straight or crossover and usually sets socio-economic, technical conditions and consumption limits.

Clearly these concepts aren't purely economic operations, but they have equally important social and environmental dimensions.

d. Questions

Reducing the energy gap is still a work in progress. One wonders whether grants, subsidy policies and social rate contributed to the reduction and elimination of "energy poverty", meaning the lack of access to modern energy, structurally-the lack of access to distribution networks due to geographic, public infrastructure or equipment issues to use them, or because of the high prices.

We will also analyze what were the policies that have favored the achievement of goals as the "universal access to energy services."

Another purpose of the grants and subsidies in the energy sector is to provide greater "competitiveness" in the production and local industry, contributing to the generation of employment and added value, and therefore economic growth, with income redistribution. Have these assumptions been met, and what are the energy policies of subsidies and grants more suitable for this purpose?

The relationship between the role of the State in the energy sector - while it is a highly complex issue that can not be addressed in all its dimensions in this article-and the results and final beneficiaries of subsidy policies, subsidies and social tariffs , is another question posed.

Where is state budget mostly intended : subsidies, grants, social tariffs or concessions? This is a key question regarding the role of the State in the energy sector, and you can not ignore the controversy generated by economic models applied to analyze the industry and its effects, but considering that the main focus of this article is the analysis of Social Rates in Latin America and the Caribbean, we won't discuss its analysis but we will try to give conclusions for future studies, considering its importance and relationship to the subject matter.

Contextualize these policies analyzing its impact on foreign trade, climate change and social inclusion. Have they helped improve the country's trade balance? Do implemented policies reduce emissions of greenhouse gases and contribute to energy efficiency? What are the most appropriate policies and which ones should be overcome?

Finally, countries policies certainly also affect the mechanisms and energy integration initiatives. What have been their impacts and what strategies are suggested to contribute to the goals proposed by subsidy policies, grants and social eates and energy integration?

Current situation of social rates in OLADE's member countries

CHAPTER II

The Social Rate of Energy in Latin America and the Caribbean

Three main sectors were identified. These sectors are objects of social tariffs, subsidies or grants in Latin America and Caribbean; fossil fuels, including diesel oil (or gas oil), gasoline, fuel oil, liquefied petroleum gas (LPG) and natural gas (GN), the electric power , and transportation. Transportation has been included, considering that social rates applied to public transport are largely based on subsidies of fuel prices. In many countries, renewable energy and agro-fuel such as ethanol and biodiesel; solar and wind energy are also subject to tax incentives or grants.

Similarly, there are grants to consesions and infrastructure in the energy sector, which is not a minor issue since it is excels the scope of this article.

Analyzing the totality of the cases, subsidies to oil fuels and natural gas -either in final consumption or for processing into electricity, - are without a doubt the subsidies that cause most expenditures for the countries.

Rising of oil prices and infrastructure problems that have called into question the role of the State in the sector have precipitated energy subsidies that in many countries has a by no means negligible portion of the tax pie.

By studying the origin of such rates, we can see that most of them are about social pressure of accessing to affordable modern energy. In many countries, social tariffs have been implemented to mitigate the increases in

energy prices, especially due to the rising cost of electricity generation from fossil sources and processes resulting from deregulation of the electricity sector. Thus they were incorporated as social policies. Energy efficiency plans and commitments of countries to climate change have also contributed to the implementation of social rates.

But, from the case study we have analyzed, it is inferred that there are limitations for optimal implementation of the social rate, considering the fundamentals of these measures:

- Universal access to modern energy
- Subsidies targeted to lower income sectors (as an instrument of redistribution)
- Incentive of efficient and rational use of energy (by increasing tariffs on consumer segments higher than basic needs).

These limitations emanate especially from the instruments available to categorize the target population of the social tariff. Many researchers agree that the mere power consumption is not enough, noting that in many cases there is no correlation between consumption and income ob the benefited user, leading to errors of inclusion and exclusion. "Economic studies have shown that consumption of electricity and natural gas were weakly correlated with household income, but which, however, depends largely on the size of the family and its socioeconomic and housing conditions." (CEARE, 2009)

However, the incorporation of other indicators such as socioeconomic indicators -can mean excessive bureaucracy to implement social tariffs, especially if these indicators are not universalized.

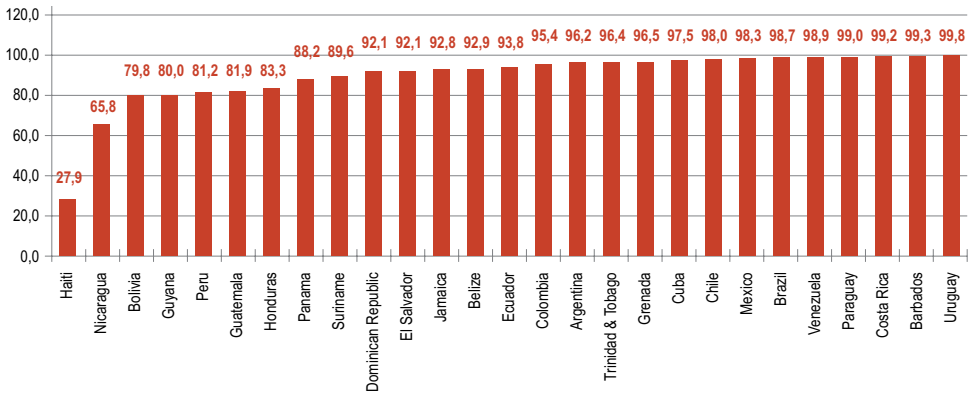
It is a challenge for the countries to build and update their database to have a single system of subsidies, since the Latin American and the Caribbean countries have budget constraints that often force them to prioritize other public spending. It is hoped that this study will contribute to the visibility the alternatives that may be valid in this situation.

Next, we will discuss the range of subsidies allocated to each identified sector.

a. Electric social rate

OLADE consists of 27 member countries. Most of them have a high electricity coverage; in 18 countries, the coverage is above 90% and only in 3 countries, it is less than 80%. See Graph No. 1.

GRAPH 1:
Electricity Coverage in LAC year 2011 (in %)



Source: Energy Economic Information System (SIEE)-OLADE

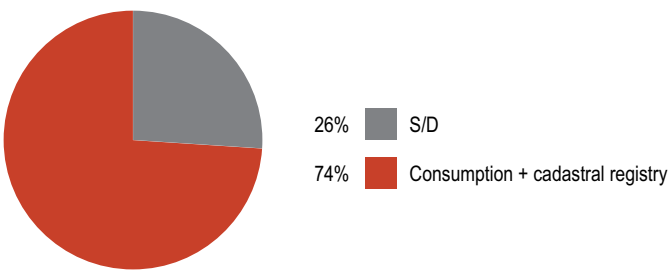
This high coverage determines that the impact of the electric Social rate may be important depending on the application conditions.

Countries with Social rate or subsidies

Information was found on subsidies in the electricity sector in 20 member countries (74%): Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Ecuador, El Salvador, Guatemala, Haiti-subsidy fuel for electricity generation, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, Dominican Republic, Uruguay and Venezuela.

The countries where we could not verify the existence of subsidies were 7 (26%): Barbados, Belize, Costa Rica, Grenada, Guyana, Suriname and Trinidad & Tobago. See Graph No. 2.

GRAPH 2:
Countries with electric social rate in LAC



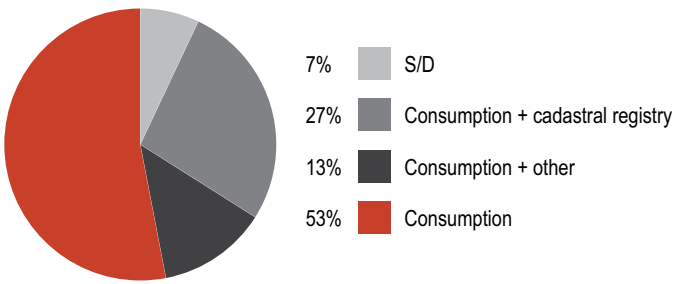
Source: Own source based on OLADE's Database.

Indicators for the application of Social rates

Application forms of social rates are as diverse as the universe of countries analyzed, however it was found that most of the subsidies are applied directly

to energy consumption, either as a single indicator or with other indicators such as contracted power , limiting key, retired status, student or rural user (66% overall). Only 27% of the countries with Social Rate in LAC, the user must be registered in a database that identifies it as of low-income or similar (Argentina, Brazil, Chile and Colombia), in addition to measuring consumption limits. See Graph No. 3.

GRAPH 3:
Social rate according to indicators



Source: Own source based on OLADE's Database.

Number of beneficiaries

In terms of percentage of beneficiaries over total users of electrical service, while data was not found from all countries, in the cases analyzed the correlation with the percentage of poverty or extreme poverty is weak and varies from country to country . See Table No. 1.

TABLE 1:

Correlation between poverty and extreme poverty indexes and % of those benefitted from the social electricity rate

Country	% of beneficiaries	Population under the poverty line	Population under the extreme poverty line	Relation beneficiaries /poverty	Relation beneficiaries /extreme poverty
Bolivia	47,00%	54,00%	31,20%	0,87	1,51
Brazil	34,00%	24,90%	7,00%	1,37	4,86
Ecuador	70,00%	39,10%	16,40%	1,79	4,27
El Salvador	60,60%	46,60%	16,70%	1,3	3,63
Guatemala	87,00%	54,80%	29,10%	1,59	2,99
Honduras	86,00%	67,40%	42,80%	1,28	2,01
Jamaica**	89,86%	17,60%	--	5,11	--
Paraguay	34,00%	54,80%	30,70%	0,62	1,11
Peru	60,00%	31,30%	9,80%	1,92	6,12
Dominican Republic*	12,32%	41,40%	10,70%	0,3	1,15

**Source: Own source from OLADE's Database, rates of CEPAL - CEPALSTAT (different year s)*
***poverty rate of Jamaica Planning Institute of Jamaica (PIOJ)*

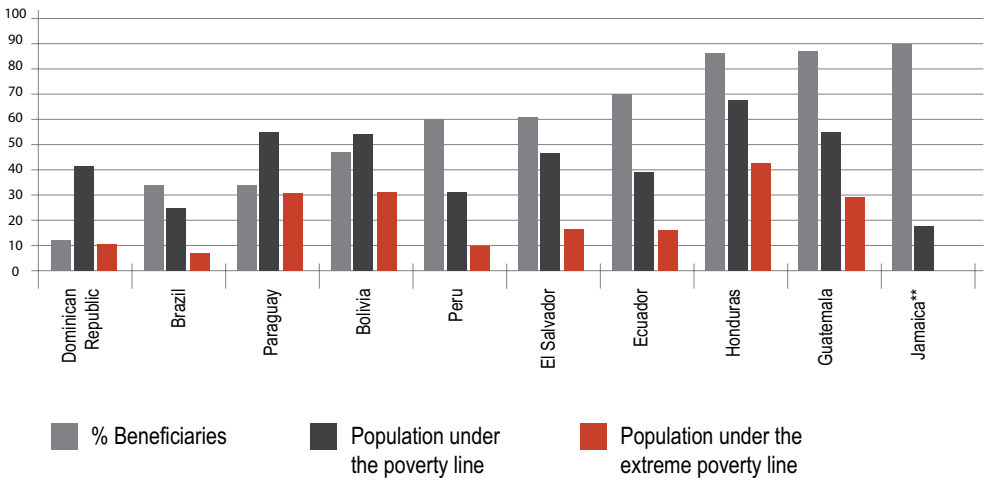
Source: Own source from OLADE's Database and CEPAL indexes - CEPALSTAT (various years).

Only in Paraguay and Bolivia, the relationship between beneficiaries and "poor" population is less than one, ie not all the population below the poverty line receive the subsidy. It is also the case of the Dominican Republic with respect to BONOLUZ , but also the entire population (100%) receive some form of subsidy on their electric bill. These numbers provide partial information, for two reasons: (i) electricity coverage varies from country to country, so that people who are not connected to the network are excluded from the benefit regardless of their economic status and (ii) it is possible that are errors of inclusion, so those excluded (population below the poverty line who do not receive the subsidy) could be even greater. Still, the most extreme case is Paraguay, with the slightest connection between the social tariff beneficiaries and population below the poverty line (1,11).

All other countries are benefiting a population greater than the population below the poverty line, with the most extreme cases in Jamaica, Ecuador and Peru which would indicate that, if the target population of social rate is a population below poverty line, there are inclussion errors in most countries. See Graph No. 4.

GRAPH 4:

Population that benefits from social rate, compared to poverty and extreme poverty



Source: Own source from OLADE's Database, rates of CEPAL - CEPALSTAT (different year s) and poverty rate of Jamaica Planning Institute of Jamaica (PIOJ)

Consumption levels

As to consumption levels considered, the values range from 70 kWh / month (Bolivia) to 600 kWh / month (Panama)-retirement-and 900 kWh / month (Mexico), in summer time, to certain geographical areas. However typical values are between 200 and 300 kWh / month. See Graph No. 5.

GRAPH 5:

Maximun allowed consumption to have access the Social Rate (in kWh/month)

Source: Own source based on OLADE's Database.

The following table lists the various ranges of consumption. See Table No. 2.

TABLE 2:

Maximum consumption to have access to the social electricity rate in in kWh/month

Country	Consumption strip with social rate
Argentina	Variables according to the province in GBA 150 kWh/ month in other provinces between 80-250
Bolivia	below 70 kWh / month
Brazil	0-30 kWh/month
	between 31 and 100 kWh / month
	between 101 and 220 kWh/ month
	Up to 50%
Chile	s/d
Colombia	Up to 200 kWh/ month
Cuba	0-100 kWh / month
	101-150 kWh / month
	151-200 kWh / month
	201-250 kWh / month
	251-300 kWh / month
Ecuador	Up to 110 kWh/ month in the mountains
	Up to 130 kWh/ month on the coast
	Up to 120 kWh/ month subside for the elderly
El Salvador	Up to 99 kWh/ month or up to 200 kWh / month
Guatemala	Up to 300 kWh/ month
Honduras	Up to 300 kWh/ month
	s/d
Jamaica	Up to 100 kWh/ month
	Up to 300 kWh/ month
Mexico	Between 0 and 75 kWh/ month
	Between 76 and 140 kWh/ month
	Various ranges up to 900 kWh/ month in summer
Nicaragua	Less than 50 kWh/ month
	Between 51 and 150 kWh/ month
	kWh150 / month
Panama	Up to 100 kWh/ month
	Up to 600 kWh/ month
	s/d
Paraguay	0-100 kWh/ month
	101-200 kWh/ month
	201-300 kWh/ month
Peru	Up to 30 kWh/ month
	From 31-100 kWh/ month
Dominican Republic	0-100 kWh/ month + consumption unsubsidized
	0-200 kWh/ month
	200-300 kWh/ month
	300-700 kWh/ month
	Up to 300 kWh/ month non-residential
Uruguay	Up to 100 kWh/ month
	kWha140 101 / month
Venezuela	Up to 300 kWh/ month

less than 200 / month
between 200 and 300 kWh/ month
above 300 kWh/ month

Source: Own source based on OLADE's Database.

No one can define a typical power consumption to meet the basic needs of a family, as this consumption varies according to: (I) household size, (ii) geographical area (iii) seasonality, (iv) cultural customs and (v) energy available, which adds complexity to the instruments used to determine the conditions of a family to access social rate.

So much so, that for example in Argentina, it was found that consumption criteria and other indicators to access the social rate varies in each province. In the case of Mexico, it is used a complex table of maximum summer temperatures to define the social rate corresponding to each geographical area. In Brazil, the upper limit of consumption varies by geographic region, as in Ecuador. In the first two cases, we were unable to obtain the percentage of beneficiaries of the social rate and it is very likely that this figure is difficult to calculate precisely because of the way the system is applied and the variations that occurs every month in its application .

In Brazil, the determination of maximal by geographical area, which includes values between 140 and 220 kWh/mes- was made according to scientific research at the University of Campinas (Achao and Shaeffer, 2003)[3] which analyzed the baseline of a typical family. This type of research can help governments to validate considered consumption . Still, the number of beneficiaries (34%) exceeds 9.10 percentage points to the population below the poverty line.

In the case of Paraguay, in addition to the restriction on the maximum consumption, other technical restrictions were introduced: limiting key of 16 Ampere (allowing a maximum power consumption of 3.52 kW, similar to Uruguay, which allows a power of up to 3 , 7 kW) and single-phase installation. These technical limitations seem difficult to fulfill for families who are not poor, as an electric shower requires 4.5 kW of power, and other more expensive appliances such as washing machines, air conditioners and electric stoves

3 http://www.ppe.ufrj.br/ppe/production/tesis/cclachao.pdf (sábado, september 29th, 2012, 20:41:36 GMT)

also require a greater capacity to that permitted for the social tariff.

The availability of energy and equipment is also an element that varies the basic consumption needs of a family. In some countries, the only way to heat water for bathing is electricity. Others use NG or LPG, including solar water heaters. In such cases, the electricity consumption can be very different.

Applied discounts

The discounts applied to normal residential rate without subsidies, to implement social tariffs ranging from 5% to 100%, can be seen in the following table. See Table No. 3.

TABLE 3:

Discount in Social rate on normal rate

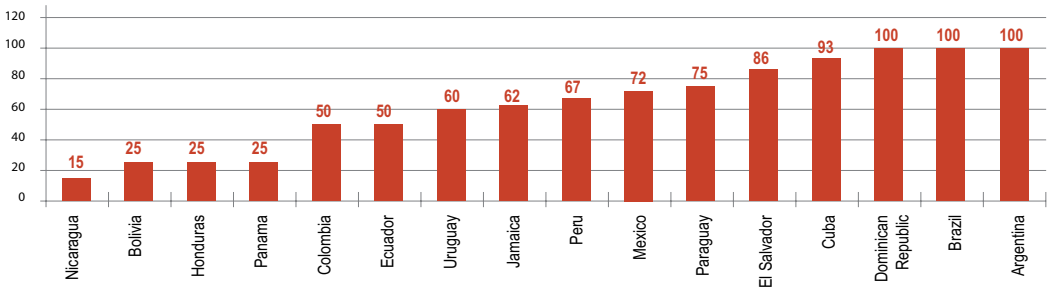
Country	Country Consumption strip with social rate	Discount
	Variables according to the province in GBA up to 150 kWh/month in other provinces varies between 80 to 250 kWh/month	GBA 40%, in other provinces the discounts are fixed or gradual between 100% and 5%
Bolivia	Less than 70 kWh/month	25,00%
Brazil	0-30 kWh/month	65,00%
	Between 31-100 kWh/month	40,00%
	Between 101-220 kWh/month	10,00%
	Up to 50%	100,00%
Chile	s/d	
Colombia	Up to 200 kWh/month	Stratum I: Up to 50% Stratum II: Up to 40% Stratum III: Up to 15%
Cuba	0-100 kWh/month	93,08%
	101-150 kWh/month	76,92%
	151-200 kWh/month	69,23%
	201-250 kWh/month	53,85%
	251-300 kWh/month	38,46%
Ecuador	Up to 110 kWh/month in the mountains Up to 130 kWh/month in the coast Up to 120 kWh/month subsidies for the elderly	50,00%
El Salvador	Up to 99 kWh/month or up to 200 kWh/month	86,00%
Guatemala	Up to 300 kWh/month	fixed rate 0,08 US$/kWh
Honduras	Up to 300 kWh/month	275 Lm (aprox. 14 US$/year)
	s/d	25,00%
Jamaica	Up to 100 kWh/month	62,44%
	Up to 300 kWh/month	14,16%
Mexico	Between 0 -75 kWh/month	72,00%
	Between 76-140 kWh/month	65,00%
	Various ranges up to 900 kWh/month in summer	65% or more
Nicaragua	Less than 50 kWh/month Between 51 and 150 kWh/month Up to 150 kWh/month	exoneration of VAT (IGV= 15%)
Panama	Up to 100 kWh/month	Hasta 20%
	Up to 600 kWh/month	25,00%
	s/d	5,00%
Paraguay	0-100 kWh/month	75,00%
	101-200 kWh/month	50,00%
	201-300 kWh/month	25,00%
Peru	Up to 30 kWh/month	25 a 62,5%
	From 31-100 kWh/month	7,5 a 49%
Dominican Republic	0-100 kWh/month + unsubsidized consumption	100% the first 100 kWh
	0-200 kWh/month	60,4% in energy + fixed charges
	200 - 300 kWh/month	37.2% + fixed charges
	300 -700 kWh/month	2,2% + fixed charges
	Up to 300 kWh/month	47,2 - 23,7%
Uruguay	Up to 100 kWh/month	20% on consumption, 80% in the fixed charge
	From 101 – 140 kWh/month	60% aprox.
Venezuela	Until 300 kWh/month	

Up to 25%
Between 25 y 75%
Over 75%

Source: Own source based on OLADE's Database.

Countries applying lower discounts are Nicaragua (15%), Bolivia, Honduras and Panama (25%) and those who apply higher discounts are Brazil and Argentina (100%), Cuba (93.8%) and El Salvador (86%). See Graph No. 6.

Graph 6:
Maximum discount per Social Rate in relation to Normal Rate



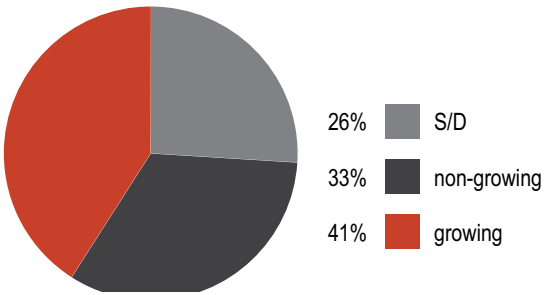
Source: Own source based on OLADE's Database.

In most countries (41%) of social rates are rising as consumption ranges also grow.

In a smaller number of countries (33%) there is a single strip of consumption and a single discount, therefore, the family must stay below the maximum level of consumption to remain in the social rate, and other conditions that vary from country to country. This group also includes Ecuador, which has three consumption bands, two if the user is on the coast or the mountains and the other for senior citizens;, and Panama, which have different discount ranges for general users, for retired citizens and agricultural sectors, but it discount is unique to each case.

About the other countries (26%), there is not available information.

GRAPH 7:
Countries with growing Social Rates



Source: Own source based on OLADE's Database.

These numbers are relevant, especially if correlated with consumption levels; there are studies on basic family consumption to analyze the contribution of the Social Rate to energy efficiency and reduction of greenhouse gases.

The economic signal is significant to determine the behavior of the users. In the case of Argentina, Brazil, Colombia, Cuba, Mexico, Nicaragua, Peru, Paraguay and Uruguay tariff signal is clear: the higher the consumption, the higher the energy costs and lower the subsidies. Argentina, Cuba and Mexico are the countries that have higher consumption levels, which vary also according to the geographical area (Argentina) and climate (Mexico). The other countries, have between 2 and 3 consumption ranges.

If there is no increasing rates or the Social Rate it is extended for consumptions far beyond the basic needs of a family, the economic signal may even be counterproductive. A lower cost of energy, which is of no longer basic need, for users who are used to paying more, can make flexible those consumption patterns.

Impact on the family economy

It is therefore useful to measure the impact on the household economy of the discounts obtained throug Social rate. The following will be analyzed based on the next assumptions (i) target population: population below the poverty line, defined as such to that which has 1.25 (U.S. $) or less to survive per day per member of the family, for a typical family of 5 members[4] (ii) obtained unsubsidized electricity tariff obtained form the Yearbook of the Regional Energy Integration Commission (CIER) 2010-except in the case of Cuba, Jamaica and Mexico whose values are based onOLADE's database-adopting, in cases of more than a fee simple average consumption of 400 kWh / month of each country, (iii) social category consumption equal to the average between the minimum and maximum consumption range considered.

The results are equally diverse. In very few countries (Bolivia, Honduras and Peru) the incidence of social rate is minimal, as it means an increase in purchasing power for families below the poverty line, less than 1%, which in any case represents a reduction of the cost of energy that helps a family member to access food in a timeframe of 8-11 days a year.

In most countries, the incidence is significantly (1 to 5%) or highly significant (greater than 5%). In simple terms, we consider a significant impact on the social rates that allow families to have the equivalent of feeding a family member for 23 days a year (1.3%, Peru) to 80 days (4.8%, The Salvador). The significant incidence was considered for countries where the social rate allows to avoid spending on electricity the equivalent of feeding a family member for 96 days (5.3% Colombia) or more (Mexico, Dominican Republic and Uruguay). See Table No. 4.

4 It is defined as homeless or people below the poverty line (extreme poverty) to those with incomes below U.S. $ 1.25 / day. http://datos.bancomundial.org/indicador/SI.POV.GAPS (Sunday, 2 December 3:53:33 pm GMT)

TABLE 4:

Incidence of Social rate on the buying power of families

Country	Residential rate in US$/MWh simple average with taxes for 400 kWh/month	Normal annual billing	annual savings	on maximum family income in extrem poverty (365x5x1,25=2281 US$/year)
Argentina	61,67	74	29,6	1,3%
Bolivia	95	39,9	9,98	0,4%
	290	52,2	33,93	1,5%
		226,2	90,48	4,0%
		522	52,2	2,3%
Brazil		87	87	3,8%
Chile	238,5	429,3		
	167,25	301,05	150,53	6,6%
		301,05	120,42	5,3%
Colombia		301,05	45,16	2,0%
	68,42	41,05	38,21	1,7%
		102,63	78,95	3,5%
		143,68	99,47	4,4%
		184,74	99,47	4,4%
Cuba		225,79	86,84	3,8%
Ecuador	96,5	69,48	34,74	1,5%
El Salvador	214,4	128,64	110,63	4,8%
Honduras		0	14	0,6%
	193,27	115,96	72,4	3,2%
Jamaica		347,89	49,27	2,2%
	210,94	91,13	65,61	2,9%
		273,38	177,69	7,8%
Mexico		759,38	493,59	21,6%
	84	50,4	37,8	1,7%
		151,2	75,6	3,3%
Paraguay		252	63	2,8%
	147,67	26,58	10,63	0,5%
Peru		115,18	28,8	1,3%
	163	97,8	97,8	4,3%
		195,6	131,05	5,7%
		489	235,7	10,3%
Dominican Republic		978	187,78	8,2%
		293,4	88,02	3,9%
	259	155,4	93,24	4,1%
Uruguay		372,96	223,78	9,8%
Venezuela	41,83	75,3		

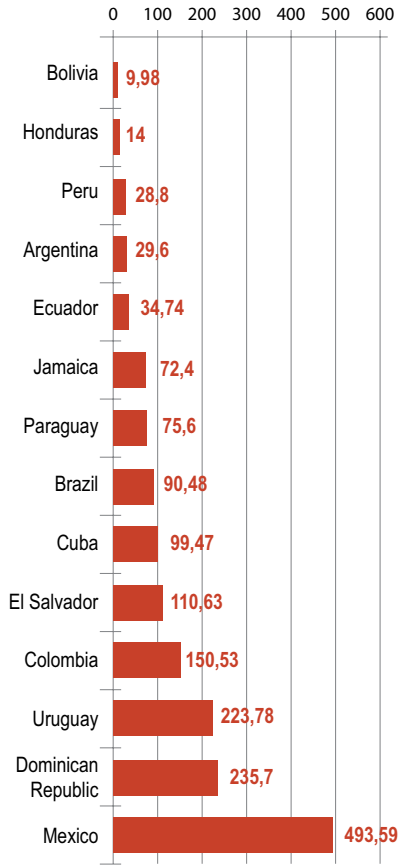
Up to 1%
Between 1 y 5%
Over 5%

Source: Own source based on OLADE's Database and Annual book of the CIER 2010.

The incidence of the Social Rate in the ability of spending of an indigent family can be seen more clearly in the following chart. See Graph No. 8.

GRAPH 8:

Maximum annual average saving for the application of social rate for a family (in US$/year)



Source: Own source based on OLADE's Database and Annual book of the CIER 2010.

Funding Sources

Regarding funding sources, even when we have failed to identify them in all cases, they come from: cross-subsidies from the central government contributions or funds created for the purpose, in which case the contributions are typically companies and central government. In some cases, payment of tax is exempt or tax payment of the sector has been reused to finance the subsidy. In several countries, the law does not allow cross-subsidizing. See Table No. 5.

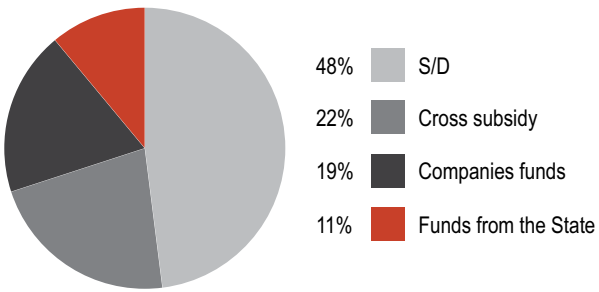
TABLE 5:
Funding for social rate

Country	Funding
Argentina	Governmental funds, cross-subsidy it is prohibited by law
Barbados	s/d
Belize	s/d
Bolivia	Contributions from companies
Brazil	Global reversal reserve –GRR which is composed by monthly collection of Companies
Chile	s/d
Colombia	s/d
Costa Rica	s/d
Cuba	Support from the State
Ecuador	cross-subsidy
El Salvador	s/d
Grenada	s/d
Guatemala	prohibited cross-subsidy, but funds come from rates
Guyana	s/d
Haiti	The government subsidizes the acquisition of fuels for electricity generation
Honduras	Paid by the central government
Jamaica	cross-subsidy
Mexico	s/d
Nicaragua	cross-subsidy
Panama	Subsidy to companies for tariff stabilization fund paid by customers which consumption exceeding 500 kWh / month
Paraguay	VAT collected in the electricity sector + treasury funds
Peru	cross subsidy to consumers of more than 100 kWh / month
Dominican Republic	cross subsidies paid by consumers of more than 500 kWh / month. Single System of Beneficiaries (SIUBEN), FETE and BONOLUZ
Suriname	s/d
Trinidad & Tobago	s/d
Uruguay	s/d
Venezuela	s/d

Source: Own source based on OLADE's Database.

The classification of Social Rate funding will be discussed next . See Graph No. 9.

GRAPH 9:
Social Rate Funded by country



Source: Own source based on OLADE's Database.

These fundings are extremely expensive to the countries, especially those where the dependence on fossil fuels for electricity generation is higher. While total subsidy that the countries allocate for electricity generation to meet the Social Rates was not quantified, specialized items confirm that the values are increasing.

Summary of characteristics of the Social Rate

The main features of the social rates for the electricity sector in LAC are summarized below:

- Most LAC countries subsidize electric power through Social rates, for certain sectors, stablishing consumption conditions, and additional socio-economic conditions.

- Most of the countries benefit a larger population than the population living below the poverty line and access to electricity. In short, regardless of the reason, it can be concluded that governments have chosen mostly to ensuring the inclusion before exclusion of profit.

• Most of the ranges of maximum consumption is in values between 200 and 300 kWh / month, which is related to consumption , geographical and environmental characteristics in LAC.

• The application of the social rate has a redistributive effect of income in most countries that have this benefit.

• Most of the Social Rates help with economic signal for a more rational and efficient use of energy, and thus help reduce the effects of climate change.

• Cross-subsidies or funds provided by the companies are the mechanisms used to ensure the sustainability of the Social Rate, although many countries opt for direct State contributions.

b. Subsidies to fossil fuels and public transportation

LAC countries, several of them which are fossil fuel producers and net exporters have felt the impact of the global energy crisis and rising oil prices and its derivatives. Their effects on the electricity sector and the Social Rate have been analyzed, and now its impact on the fuels and public transportation will be measured.

According to the study conducted by OLADE , in 2005 it was estimated that the subsidy of the LAC countries to fossil fuels (LPG, diesel oil, gasoline and fuel oil) was 25.6 billion of U.S. dollars in current terms [5].

5 http://www.iadb.org/intal/intalcdi/PE/2009/02996.pdf (Friday , October 5th 2012, 1:19:55 GMT)

TABLE 6:
Subsidies to oil products LAC 2005

Country	Liquified Gas (MUS$)	Gasoline (MUS$)	Diesel Oil (MUS$)	Fuel Oil (MUS$)	TOTAL (MUS$)
Argentina	597.52		2,486.68	110.09	3,194.29
Barbados			29.70	30.17	59.87
Bolivia	35.39	12.99	135.10		183.49
Brazil					
Chile				77.41	77.41
Colombia	168.17		1,196.85	13.94	1,378.96
Costa Rica			45.17		45.17
Cuba	73.39	63.19	623.43	235.12	995.13
Ecuador	488.89	275.61	1,562.91	115.96	2,443.37
El Salvador	53.35		193.93		247.28
Grenada			11.01		11.01
Guatemala			112.49		112.49
Guyana			18.89		18.89
Haiti	4.16		123.73	2.32	130.21
Honduras					
Jamaica					
Mexico			3,580.14	1,064.91	4,645.05
Nicaragua				52.43	52.43
Panama			112.88		112.88
Paraguay			50.04		50.04
Peru					
Dominican Republic	181.07		441.61		622.68
Suriname			54.37	62.15	116.51
Trinidad & Tobago		25.46	81.35		106.81
Uruguay					
Venezuela	531.33	6,451.83	4,087.20	486.83	11,025.85
Latin America and the Caribbean	**2,133.27**	**6,829.08**	**14,947.48**	**2,251.33**	**25,629.82**

Source: "Targeting of fuel subsidies in Latin America and the Caribbean. Analysis and proposal. (OLADE 2007)

These subsidies were then aimed for electricity generation, public transportation, end users: individuals, industries, businesses, and others. There is a difference in the supply regarding electrical energy: the structural conditions for access.

Except in electricity generation from fossil fuels, whose coverage was seen to be high in most countries, public transportation, which is primarily a public service to lower income sectors-but not exclusively-the subsidy to fossil fuels benefits a much smaller universe of users, for the simple fact that in many LAC countries families cook by 40% or more with biomass and LPG or NG and only a minority has used taxis or their own cars.

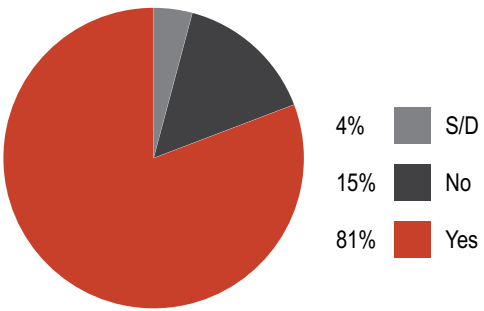
Since each country and geographical area has a different reality, the LPG subsidized is an alternative in countries where there are distribution networks of natural gas (NG). Precisely, lower-income families are those who are often unable to access the distribution network. Also NG subsidy focused to low-income families may be an option if the necessary infrastructure is subsidized for access.

The other drawback with oil vs electric power is its relative ease of transportation, which becomes an intense cross border traffic when price differences-largely because of subsidies-, provides a sufficient margin. In regards to use control, it is also complex for the same reason, which may imply that a subsidized fuel intended for family use, ends up being used by a business or industry.

Updating the 2005 data, we found that very few countries do not have a subsidy on fuels. Among them, Brazil, Honduras and Jamaica. Paraguay has removed the subsidy on gas oil (diesel oil) but it has subsidized public transportation. Uruguay currently subsidizes LPG (super gas), for lower income sectors.

Most of the countries surveyed (81%) have subsidies for transportation or fuel,while a small portion has not registered their subsidies (15%). See Graph No. 10.

GRAPH 10:
Countries that subsidize fuels or transportation



Source: Own source based on OLADE's Database.

No doubt these subsidies are the most complex when we analyze their impact on the family economy, in the redistribution of income and their contribution to energy efficiency and reduction of greenhouse gases.

Untargeted subsidies, as they are in most countries subsidies for motor fuel (diesel oil, gasoline, natural gas and even in some countries GLP) have the following effect:

- the users who have benefitted the most are those who have more consumption capacity and not necessarily those of lower income that mostly lacks from their own vehicles;
- intermediation chain can also benefit from price differences relative to the market;

- border traffic increases before price differences;

- the “economic signal” is contrary to energy efficiency and emissions reduction, as low prices encourage waste and it is very complex to use increasing rates;

- lower prices produce price premium on the State due to increased vehicle circulation, in terms of increased need for infrastructure, greater public health cost, due to higher emissions, congestion costs.

On the other hand, subsidies for public transport are much more efficient in terms of transport capacity, emissions reduction, public health, public infrastructure, coverage and control. Transport subsidy requires to develop monitoring tools and measurement of indicators, so that its implementation is more complex.

Focus subsidies in the fuel sector is a challenge to streamline the sector and contribute to its sustainability.

Need for subsidies and social energy rates in the region as a means to improve social inclusion

CHAPTER III

The Social Rate of Energy in Latin America and the Caribbean

The Latin American and the Caribbean Region as a whole can be self-sufficient in regards to energy. Also, as we analyzed at the beginning of the article, one of the wealthiest regions in renewable and non-renewable energies-, with a high rate of electricity coverage, although there are limitations on access to other modern energy.

Subsidies and social tariffs, are a powerful tool for social inclusion, which actually contribute to improving the purchasing power of families living in poverty in most countries.

But as all measures, subsidies and social rates must combine efficiency and control, in order to reduce errors of inclusion and exclusion that have been analyzed.

So much so, that we have seen that the implementation mechanisms of the social rate for the electricity sector and subsidies in the transport sector, are much more efficient than subsidies in the fuel sector.

The electricity sector, for its high coverage in most countries, also ensures a greater social inclusion. But it is recommended that the application of such rates establish gradual rates and increasing rates in order to give a clear economic signal that contributes to energy efficiency.

Given the complexity of using socioeconomic indicators that not all countries have developed, it is recommended to establish consumer criteria with the help of research on the subject, taking the number of family members, conditions of access to energy, seasonal and geographical area; and that controls are carried out subsequently. If the country already has a record of poor families, the better. The control of these mechanisms is an unavoidable expense, it must be constant since all different rate is subject to risks of fraud.

In massive transportation, subsidies that may be applied also generate an income redistribution effect that favors users, mostly poor.

The contribution to improving the quality of this transport, which can cause the migration of higher income sectors, is equally suitable for its global effects in environmental, public health, public infrastructure savings and even savings in fuel sector subsidies . While it requires more complex work to construct the indicators and control companies providing the service, the result will be clearly focused.

In the fuel sector, we analyzed the incidence of subsidies to redistribute income and improve the purchasing power of low-income families is relative.

Perhaps the subsector that mostly contribute to this goal is LPG but whose specific gravity is also lower than the electrical energy, as a modern energy that has a much lower degree of coverage. It is a theme to be further explored, as LPG is in terms of overall energy efficiency, a better substitute for biomass than electricity in cooking and other uses requiring heat (water heaters, heating) therefore appropriate subsidy policy to this sector can reduce the pressure that exists in many countries on native forests on the electrical infrastructure and contribute at the same time to public health -reduction of respiratory diseases caused by smoke from inefficient stoves.

The fuel subsidy, applied universally, as has been seen in several countries in the region, is probably far less help-and may even have the opposite effect-to social inclusion. This is because, except LPG and NG as discussed, provided they are targeted subsidies- lower-income sectors usually do

not have the means to use this type of fuel. Then the fuel subsidies applied without segmentation criteria, end up favoring the sectors that have more purchasing power.

The effect of fuel subsidies universally may be contrary to the redistribution of income, as it requires to allocate public funds to higher income sectors rather than using them just to enhance social inclusion. The opportunity cost of energy, in oil producing countries, should also be considered in this calculation.

The fuel subsidies to fuel for industrial or production may eventually contribute to the increased competitiveness of countries and thus generate employment and added value, with a positive effect on social inclusion, but in that case should be dedicated just to the production that generate more employment and added value.

As such subsidies are the result of a process of many years, is too complex for the countries to reverse it , but at some point it should be initiated and perhaps the best way is promoting public transport and segmenting the most vulnerable food-cooking , production-to slowly reduce- subsidies to higher income sectors.

Conclusions and Recommendations

CHAPTER IV

The Social Rate of Energy in Latin America and the Caribbean

We analyzed the social rates applied to electricity and fuel subsidies and transportation.

The largest grants are intended to fossil fuels, with devastating consequences: concentrating effect of resources, increased sector inefficiency, increased greenhouse gases, public health expenditures and infrastructure, except in specific consumer stripes as the GPL and mass tranportation.

In contrast, the electricity subsidy, applied through Social rates or bonds, while it is much lower than before, has a redistributive effect of income. If rates are growing and there is instruments to define whether or not the beneficiary should be included, it contributes to energy efficiency and reduction of emissions.

All systems of subsidies and social rates are susceptible to fraud, so that control and update of data and tools must be constant.

In conclusion, we recommend applying Social Rates for increasing electricity, and with consumption ranges according to the characteristics of each country and geographical area, the elimination of subsidies to non-productive sectors that are not poor; segmented application of subsidies for LPG and redistribution of subsidies to fuels to clearly segmented sectors such as mass transportation and production with higher generation of labor and added value.

These measures will contribute to social inclusion and universal access to modern energy sources in Latin America and the Caribbean.

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The Social Rate of Energy
in Latin America and
the Caribbean

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