

SOCIAL AND ENVIRONMENTAL ASPECTS OF LIGHTING IN URBAN AND RURAL AREAS

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The demands and preferences of people about lighting are strongly biased by social, cultural and environmental factors. The knowledge of those indexes is important for the generation and success of proposals and methodologies for improving the rational energy consumption on lighting among the users. Recently the Argentinean government launched a national campaign for reducing electric energy consumption. One of the proposed measures is the exchange of incandescent for compact fluorescent lamps.

This paper deals on the subject describing and discussing the results obtained from a survey of groups of inhabitants at urban and rural areas. The research includes preliminary evaluations of the exchange lamps campaign.

Groups of inhabitants of medium, low and very low incomes were interviewed in cities, towns and rural areas of the Northwestern region of Argentina. The characteristics of the interviewed vary from inhabitants of medium size cities (700.000), small cities (20.000), towns (2.000), villages (400) and dispersed rural houses. The inhabitants sample size was 200 persons.

The aims of the survey were to record:

- Use and opinions about technology for artificial indoors lighting
- The distribution and power of lamps and luminaires installed in the houses
- Frequency of use and activities performed in each space
- Daily operating periods of artificial lighting
- Opinions about quality of lighting
- Electrical energy domestic consumption
- Modifications wanted in the houses lighting systems
- Use of daylighting in the houses
- Assessments of outdoors artificial lighting
- Evaluations of intruding lights

The data already processed show differences and coincidences between the groups of urban and rural inhabitants. For example, the urban groups install a wider selection of electric lamps: incandescent (69%), fluorescent lineal (12%), fluorescent circular (1%), fluorescent compact (27%). In the areas where the lamp exchange started, the percentages are incandescent (42%) and fluorescent compact (42%). The last figures show the impact of the lamp retrofitting on the families electrical energy consumption. While the rural inhabitants concentrate their choices about electric lamps in incandescent (96,5%), fluorescent lineal (1,4%) and fluorescent compact (2%). Although the electric energy is accessible for 96% of the rural sample, another no electric luminous sources are also used: kerosene lanterns (37%), pressurized kerosene lanterns (7%) and stearin candles (30%), due to economical limitations, deficiencies in the electrical energy provision, failures in the

electrical installations of the houses, difficulties for the acquisition of lamps and religious practices (candle lighting of domestic altars). The barriers for the introduction of higher luminous efficiencies, such as lineal fluorescent or CFL in the rural houses are costs of CFL against incandescent, technical and mounting difficulties as well as transportation and fragility in particular in relation to lineal fluorescent lamps.

It is also remarkable the low use of daylight, in the rural areas where this source of light is highly available and offers a low cost alternative for lighting the indoor spaces. The urban groups control their energy consumptions using lower power incandescent and fluorescent lamps with higher proportion of compact fluorescent

The urban groups highly appreciate the natural light in their houses. The urban users don't show complaints about the public light intrusion, which in most of the cases is much higher than the values established in international recommendations.

At the city of San Miguel de Tucumán, 700.000 inhabitants, was interviewed a group of 27 neighbors in a quarter where the government distributed two 20 W CFL at each house, receiving in return two incandescent lamps. The results of the survey about assessments of the CFL lighting, is summarized in the following graph. The places where most of the CFL were installed are bedrooms and kitchen.

