

# Appliance Labelling Program for Energy Efficiency

by

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## INTRODUCTION

The economic development and progress in South Asian countries is associated with the need of a massive growth in the electricity sector. With the advent of current economic policies and resulting foreign investments, the supply demand gap of electricity widens at a rate that was not observed before. Thus, governments of these countries need to take measures to provide and maintain a sufficient and reliable electricity supply to all their potential consumers.

In this context, South Asia regional Initiative on Energy (SARI/E) of the United States Agency for International Development (USAID) has played a key role in bringing the countries together in promoting rational use of energy and hence reducing dependence on fossil based power generation. This revitalised the concept of Energy Efficiency Standards & Labeling (EES & L) of appliances with the fervent aim of the harmonization of test procedures and related standards in the region and a suitable network among national bodies & policy makers.

Under this framework a joint Research Study and Mutual Exchange Programme was initiated between VOICE, India and SLEMA, Sri Lanka as a SARI/Energy small grants program managed by Winrock International, USA.

The project initially commenced in Phase I of the small grants program, with the aim of disseminating data from a market survey on in energy efficiency of some identified products. The project objectives are:

- Generation of data on five identified products

- Collection of label information including energy performance
- Dissemination of results through publications and a cross comparison between the two countries

In the Phase II of the small grants program, the project embarked on its second stage, which is a logical continuation of the first stage. The project objectives for the second stage are:

- Conduct laboratory testing on selected samples on identified products
- Report test results and their compliance with label information
- Provide a ranking of appliance as per a pre-determined criteria
- Dissemination of results through publications and a cross comparison between the two countries

## Approach

### a) First stage (Phase I of Small Grants Program)

The selected products/appliances for the first stage (Phase I of the program) were the ceiling fans, refrigerators, air conditioners, compact fluorescent lamps and ballasts. The basis of selection was that they are the most commonly used electricity consuming household appliances that are already coming under or ear-marked to be encompassed under energy labeling in either country in the region.

To gather relevant data, a market survey was carried out in four main metropolises in India and in the Colombo City in Sri Lanka. Selected dealers and retailers were visited and data such as label information, availability in the market, retailers' perception, etc. were collected by questionnaire survey.

The gathered data were synthesized and analyzed to identify the trends and make comparisons across the board for these five energy consuming products. The results were also extended to make cross country comparisons.

b) Second stage (Phase II of Small Grants Program)

The selected products/appliances for the second stage (Phase II) of the program were Ceiling fans, compact fluorescent lamps (CFLs) and ballasts for fluorescent lamps were selected for comparative testing and establishing safety and performance data. The VOICE conducted testing in all selected equipment whereas SLEMA tested only magnetic ballasts and CFLs due to limitations in testing facilities in Sri Lanka.

The performance tests and marking tests of CFLs were carried out in National Engineering Research and Development Centre (NERD) Centre laboratory. This is an accredited laboratory as per ISO/IEC 17025 by IECQ.

The testing of magnetic ballasts and safety testing of compact fluorescent lamps were carried out in the electrical & electronic laboratory of Sri Lanka Standard Institution (SLSI).

The testing was carried out as per the relevant standards for each of the appliance. The Magnetic ballasts were tested on the basis of SLS 1200 and SLS 1150 part 1 and part 2. SLS 1200 is the standard used for energy efficiency rating of fluorescent lamp ballasts. This standard specified a test method for measuring energy consumption loss and determination of energy rating of ballast used for 18/20W and 36/40W fluorescent lamps.

Similarly, SLS 1150: Part I: 1992 gives the general and safety requirements of ballasts for tubular fluorescent lamps. This standard is identical with IEC 920: 1990 of ballasts for tubular fluorescent lamps, general & safety requirements, published by the International Electro technical Commission (IEC). Further, SLS 1150: Part II: 1996 gives the performance requirements of ballasts for tubular

fluorescent lamps. This standard is identical with IEC 921: 1988 ballast for tubular fluorescent lamps.

The Compact Fluorescent Lamps were tested on the basis of SLS 1231 and SLS 1225. The SLS 1231: Part I: 2002 gives the performance requirements of self-ballasted lamps (Integral type compact fluorescent lamps) for general lighting services. This standard is similar to IEC 969: 1988 performance requirements, of the International Electro technical Commission (IEC). SLS 1231: Part II gives the safety requirements of self - ballasted lamps for general lighting services. This standard is a direct adoption of IEC 968:1988, safety requirement of self-ballasted lamps for general lighting services by IEC.

In addition, SLS 1225:2002 is the standard used for energy labeling of CFLs. This standard specifies the method of determination of the efficiency ratings by numbers of STARS assigned for a specific rating. It also specifies method of measurements of luminous flux, power consumption and the requirements for the energy label.

Eight brands of 15W CFLs available in the Sri Lankan market were selected for testing. The weight age factor defined, combining factors of performance requirements, general & safety requirements and markings and packing were evaluated. The ranking was done based on this weighting factor.

As for Magnetic Ballasts used in 36/40 W fluorescent lamps in Sri Lanka 05 brands were selected for testing. The weight age factor defined, combining factors of performance requirements, general & safety requirements and markings and packing were evaluated for ranking.

## Results

Out of this study, the following recommendations and/or conclusions are made:

### First Stage:

- Manufacturers should provide adequate product information on labels.

- Durable products should be brought into the market, after being tested through an EES&L program with a benchmark for minimum energy performance standards.
- Existing national standards should be upgraded in such a way that the regional standards harmonize, which in-turn will facilitate free flow of trade.

Second Stage:

- The mean value of the Marks for CFLs based on weight age of the sample was found to be 58.80% with a standard deviation of 13.92. The brand with the highest weight age of 81.75% received a star rating of 4 in the energy labeling scheme on a scale of 0 to 5. In the contrary, the brand with the lowest weight age of 34.27% was found to have exceptionally low values in almost all indices envisaged with a zero star rating.

- The mean value of the Marks for Ballasts based on weight age of the sample was found to be 58.9% with a standard deviation of 19.52. The brand with the highest weight age of 84.5%, received a star rating of 2 on a scale of 0 to 5 and all the other brands fell within this one standard deviation band with zero stars.
- Many brands have a potential of improving their weight age values through enhancement of parameters studied here, in both countries, India and Sri Lanka.
- Information will also be extremely useful in evaluating the energy saving potential through a standards & labeling program thus creating awareness among policy makers not only in these countries but also in the region notably for a common goal of harmonization of standards & labeling programs.