

THE POTENTIAL OF ENERGY SAVING BY IMPLEMENTATION OF A VOLUNTARY APPLIANCE ENERGY LABELLING PROGRAM IN SRI LANKA

**A Research Project submitted to the
Department of Mechanical Engineering, University of Moratuwa
in partial fulfillment of the requirement for the
Degree of Master of Engineering in Energy Technology**

By

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DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and behalf, it contains no material previously published or written by another person nor material which to substantial extent, has been accepted for the award of any other academic qualification of a university or other institute of higher learning except where acknowledgment is made in the text.

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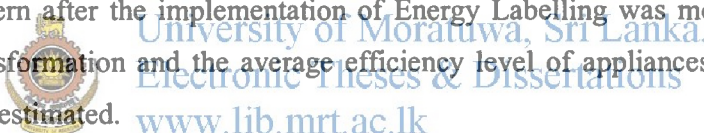
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ABSTRACT

The potential of energy saving by the implementation of a voluntary appliance energy labeling program in Sri Lanka was studied by analyzing the appliance market and the system load profiles. End use load profiles for 2006 were derived from the Load Research findings and energy statistics published by Ceylon Electricity Board and Energy Conservation Fund. Air-conditioners, Lighting, Motors, Refrigerators and Fans were identified as potential end uses for energy labeling. The market distribution of efficiencies and prices were gathered for the identified end uses and the existing market picture was modeled. Average efficiency level of appliances in the present market was calculated.

Market transformation anticipated by implementation of a voluntary Energy Labelling Program was established under a hypothesis consists of a set of assumptions bases on incremental cost associated with the decision of purchasing a more efficient appliance, pay back period of the additional investment, market penetration of labels, consumer preference on making use of energy efficiency and other related factors. Anticipated market pattern after the implementation of Energy Labelling was modeled based on the market transformation and the average efficiency level of appliances in the transformed market was estimated.



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Overall improvement of the average efficiency for each identified appliance was estimated and the energy and demand saving due to that was calculated. It was found that implementation of an voluntary energy labeling program for above identified appliance would result in an annual energy saving of 217.8 GWh and system peak demand reduction of 47.6 MW. Over 9 million US\$ and can be saved annually by the energy saving while assuring 60 million US\$ avoided capital investment due to the peak demand chipping by 47.6 MW.

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ABBREVIATIONS

CEA	Central Environmental Authority
CEB	Ceylon Electricity Board
CFL	Compact Fluorescent Lamp
DSM	Demand Side Management
ECF	Energy Conservation Fund
EI	Electrical and Electronic Institute
GDP	Gross Domestic Product
IEA	International Energy Agency
ITS	Intertek Testing Services
IIEC	International Institute for Energy Conservation
LR	Load Research
NERD	National Engineering and Research Center
LBNL	Lawrence Barkeley National Laboratory
LECO	Lanka Electricity Co. Limited
SLSI	Sri Lanka Standard Institute
SLEMA	Sri Lanka Energy Managers Association



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