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EFFECTIVENESS OF RURAL ELECTRIFICATION
SCHEMES TO
ENHANCE THE LIVING STANDARD OF
RURAL COMMUNITIES

A dissertation submitted to the
Department of Electrical Engineering, University of Moratuwa
in partial fulfillment of the requirements for the
Degree of Master of Science

by

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DECLARATION

The work submitted in this dissertation is the result of my own investigation, except where otherwise stated.

It has not already been accepted for any degree, and is also not being concurrently submitted for any other degree.



S.D.A. Padmasiri

I endorse the declaration by the candidate.

UOM Verified Signature

Prof. Kanjit Perera

ABSTRACT

Government of Sri Lanka spends large amounts of money to implement Rural Electrification (RE) schemes with the support of concessionary loans from various funding agencies such as Asian Development Bank, Japanese Bank of International Corporation and Kuwait Fund. The expectation of the government is to develop rural areas by providing electricity to those areas and enhance the living standards of rural people.

The aim of this study is to investigate the implemented RE schemes and to examine whether the desired targets have been achieved as planned in the initial stage and the reasons for failures if expected results have not been achieved, and to propose corrective actions to overcome those problems.

Nine RE schemes were selected from Kalutara, Monaragala and Badulla districts which are implemented in the period of year 1998 to year 2000 by CEB under Project – RE 3 funded by Asian Development Bank for investigation.

1. Social and Economical development achieved by these schemes
2. Technical problems related to these schemes and reliability of electricity supply.

The present situations of these schemes were investigated through a structured survey and compared the results with expectation of the planning stage. At the occasions of present results are deviated from the expected targets, corrective actions are proposed for implementation in existing RE schemes and also in future RE schemes.

The development in social and economic benefits in the villages due to rural electrification schemes can be summarized as,

Achievement on economic benefits, poverty alleviation, household benefits, education level, community benefits and incentive to build houses are found to be satisfactory. Improvements on employment opportunities, small industries, commercial and agricultural activities and health services are found to be not satisfactory. Migration of villagers to urban areas was reduced and no harmful environmental effects are observed.

It is further revealed that reliability of electricity supply provided for rural villages are not satisfactory, Energy losses are considerably high, Load factor, Power factor and All-day efficiency of RE substations are at acceptable levels, Safety levels provided by the RE schemes are fairly low, The effectiveness of RE schemes were considerably reduced due to above technical reasons.

ABC (Ariel Bundle Conductor) conductors are recommended in place of bare aluminium conductors to minimize reliability and safety problems. Small size transformers are recommended to reduce overall losses and cost of implementation. Electronic energy meters are recommended to reduce revenue losses.

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