

NA-17

COMPENDIUM OF
RESEARCH AND DEVELOPMENT PROJECTS
IN SRI LANKA
ON ENERGY — RELATED PROBLEMS
1981

NA-17

National Science Council of Sri Lanka

1620.9.001.5 (548.7)
DES

COMPENDIUM OF
RESEARCH AND DEVELOPMENT PROJECTS
IN SRI LANKA
ON ENERGY-RELATED PROBLEMS - 1981

NATIONAL SCIENCE COUNCIL OF SRI LANKA
47/5, Maitland Place
Colombo 7

February 1982

(Compiled for the National Science Council by M.A.T. de Silva)

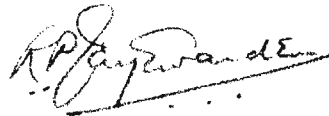
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FOREWORD

The emergence of a global crisis in the supply and demand for energy in the early part of the last decade, resulted in a spurt of activity in research and experimental development in energy-related fields. This survey shows that even with limited resources, Sri Lanka has not been slow to get into this activity.

While parallel investigations by different groups of researchers need not be discouraged, it is clear that some type of co-ordination and collaboration in these studies would be desirable for the country to reap optimum benefits from these projects. In order to assist in this process the National Science Council stepped in to carry out this survey and prepare a compendium of projects on energy-related problems for the guidance of planners and managers of research.

I wish to thank Mr. M.A.T. de Silva, Assistant Secretary General for initiating and completing this useful project.



Secretary General

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INTRODUCTION

The National Science Council in pursuance of its role of collaborating and co-ordinating activities in the field of energy resources, initiated a survey of scientific and technological research in Sri Lanka on energy-related projects. The main objective of this survey was to compile a compendium of R & D projects which were on-going, or planned during 1981.

The contents of this Compendium are based on the information supplied by institutions and individuals in response to a questionnaire sent out by the Council in February 1981 (see annexure I).

In order to achieve a near-complete study, direct contacts were made with researchers wherever necessary. However, in spite of these efforts, it is felt, that at least a few of the R & D projects on energy may have been left out. It is also possible that activities related to energy-conservation and energy-saving would have been left out, largely due to the fact that reference to such work is not specifically mentioned in this questionnaire.

In classifying and summarizing the information, no effort has been made to analyse the data. It is hoped that future editions of this Compendium will provide analytical information for the guidance of planners and managers of scientific research on energy-oriented fields.

The grouping of projects into areas of interest is provisional, and is based on literature of comparable content. However, the incorporation of several indexes, and a glossary of terms should offset any inadequacies in the classification, when reference work is to be done.

Acknowledgement

The compiler wishes to thank Mrs. B. Sathichanandan and Mr. K.W. Chandrasekera, staff assistants for processing and recording of survey information. Thanks are also due to Mrs. G.S. Fernando for the preparation of typescripts, and Messrs. S.D. Gnanasiri, C. Attapattu and K.A. Andrayas for offset printing and binding of the compendium.

COMPILER

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Atomic Energy*

PROJECT: *Preservation of Mangoes, spices and dryfish using gamma irradiation*

ORGANISATION: *Department of Botany
University of Jaffna
Thirunelveli
Jaffna*

SCOPE/ACTIVITIES: *Teaching and Research*

DESCRIPTION OF PROJECT:

Objectives: *To minimise the loss of these food items and to increase the shelf life period*

Project leader: *Prof. K. Theivendirarajah*

Other members: *Dr. S. Sivapalan*

Period: *July 1981 - July 1983*

FUNDS: *Rs. 75,000/- (Foreign) - Provisional*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Atomic Energy</i>
PROJECT:	<i>Use of Radiation for curing of natural rubber latex</i>
ORGANISATION:	<i>Rubber Chemistry Department Rubber Research Institute Telawala Road Ratmalana</i>
SCOPE/ACTIVITIES:	<i>Rubber Research</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>To improve the products in certain ways</i></p> <p><u>Project leader:</u> <i>Mr. S.W. Karunaratne</i></p> <p><u>Other members:</u> <i>Mr. M.C.S. Perera Mr. R. Goonethileka</i></p> <p><u>Period:</u> <i>1980 - 1985</i></p>
FUNDS:	<i>Rs. 10,000/- (Government) Rs. 150,000/- (foreign)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Atomic Energy</i>
PROJECT:	<i>To report on the use of atomic energy for electric power generation in Sri Lanka</i>
ORGANISATION:	<i>National Science Council of Sri Lanka 47/5, Maitland Place Colombo 7.</i>
SCOPE/ACTIVITIES:	<ol style="list-style-type: none"><i>1. To advise the Minister in-charge of Scientific Affairs on matters pertaining to science and technology policy</i><i>2. To initiate, promote and sponsor scientific research</i><i>3. To co-ordinate collaborative research</i><i>4. To promote dissemination of information on S & T</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>To examine and report on the use of nuclear energy for electric power generation in Sri Lanka, taking into account</i></p> <ol style="list-style-type: none"><i>a. the biological and environmental hazards associated with nuclear power reactors, and counter-measures against such hazards</i><i>b. the demand for electric power and energy in Sri Lanka</i><i>c. ways and means of meeting the energy and power requirements</i> <p><u>Project leader:</u> <i>Prof. J.A. Gunawardena (NSC & University of Peradeniya) Chairman, Study Committee</i></p> <p><u>Other members:</u> <i>Dr. R.S. Jayatilake (Govt, Cancer Institute) Prof. G.A. Dissanaike (University of Peradeniya) Mr. Lyn de Alwis (Dept, of Wild life Conservation) Prof. J.K.P. Ariyaratne (University of Kelaniya) Dr. P.L.T. Fernando (Govt, Cancer Institute)</i></p> <p><u>Period:</u> <i>1980 - 1981</i></p>
FUNDS:	<i>Rs. 10,000/- (approx)</i>

SECTION 2.0

PROJECTS ON BATTERIES

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Batteries</i>
PROJECT:	<i>Storage Battery Light Battery Bicycle/Car</i>
ORGANISATION:	<i>National Engineering Research and Development Centre of Sri Lanka Ekala Ja-ela</i>
SCOPE/ACTIVITIES:	<i>Development of indigenous technology; technology assessment, technology transfer; design, manufacture and test prototype machinery and pilot plants; consultancy services, technological services and training.</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Energy efficient fluorescent light for rural areas</i>
<u>Project leader:</u>	<i>Dr. A.N.S. Kulasinghe</i>
<u>Other members:</u>	<i>Dr. Susil Weeraratna Mr. K.S.K. Fernando</i>
<u>Period:</u>	
FUNDS:	<i>Estimate not available.</i>

SECTION 3.0

PROJECTS ON BIOMASS

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Construction of Biogas Digesters for
M/S Kelani Cables Ltd., Athurugiriya
Farm*

ORGANISATION: *Industrial Development Board
615, Galle Road
Katubedda
Moratuwa*

SCOPE/ACTIVITIES: *Promotion of small and medium scale industries.
Research, Development and promotional activities
on Biogas and fuel-wood*

DESCRIPTION OF PROJECT:

Objectives: *Generation of Electricity*

Project leader: *Mr. Ivon Cooray, Mr. S.K. Rajapakse*

Other members:

Period: *August 1980 - April 1981*

FUNDS: *Rs. 50,000/- (Private)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Construction of Biogas digesters for schools and other organizations</i>
ORGANISATION:	<i>Industrial Development Board 615, Galle Road Katubedda Moratuwa</i>
SCOPE/ACTIVITIES:	<i>Promotion of small and medium scale industries. Research, Development and promotional activities on Biogas and Fuel-wood</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>For laboratory use and demonstration purposes</i>
<u>Project leader:</u>	<i>Mr. Ivon Cooray, Mr. S.K. Rajapakse</i>
<u>Other members:</u>	
<u>Period:</u>	<i>1974</i>
FUNDS:	<i>Rs. 120,000/- (Foreign)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT:

Design of digesters

ORGANISATION:

*Faculty of Engineering
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES:

Teaching, Research and Development

DESCRIPTION OF PROJECT:

Objectives: *Structural behaviour of digesters*

Project leader: *Prof. M. Amaratunge*

Other members:

Period: *1973 - Continuing*

FUNDS: *Rs. 3,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Development of a Cheap Biogas unit*

ORGANISATION: *Sri Lanka school of agriculture
Angunakolapelassa*

SCOPE/ACTIVITIES: *Training; extension and rural development*

DESCRIPTION OF PROJECT:

Objectives: *To make Biogas popular among poor sectors*

Project leader: *Mr. G.K. Upawansa*

Other members: *Mr. K.C. de Silva
Mr. S. Wathuhewa
Mr. G. Gamage*

Period: *October 1980 - Continuing*

FUNDS: *Rs. 2,500/- (Private)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Biogas for electricity generation in the Model village - Suwodagama</i>
ORGANISATION:	<i>Ceylon Electricity Board Energy Unit (Biogas section) P.O. Box 540 Colombo 2.</i>
SCOPE/ACTIVITIES:	<i>Pr o p a g a t i o n o f t h e u s e s a n d a p p l i c a t i o n s o f Biogas, as an alternate source of energy for the rural sector in Sri Lanka.</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Rural Electrification (alternate source)</i>
<u>Project leader:</u>	<i>Mr. H.S. Subasinghe</i>
<u>Other members:</u>	<i>Mr. D.S.R. Seneviratne Mr. N. Disanayake Mr. R.M. Amarasekara Mr. S.A.B. Senanayake Mr. A.S.M. Abeyratne Mr. A.M.M.D. Asiriwathan</i>
<u>Period:</u>	<i>March 1980 - August 1981</i>
FUNDS:	<i>Rs. 250,000/- (Government) Rs. 12,500/- (Private)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Pilot project for popularising the use of Biogas for lighting and cooking in rural houses, farms, estates and model villages</i>
ORGANISATION:	<i>Ceylon Electricity Board Energy Unit (Biogas section) P.O. Box 540 Colombo 2.</i>
SCOPE/ACTIVITIES:	<i>Prpagation of the uses and applications of Biogas, as an alternmate source of energy, for the rural sector in Sri Lanka</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Saving kerosine and firewood, providing an alternmate source of energy, encouraging animal husbandry, providing a source of fertilizer, environmental pollution control, transfer of technology</i>
<u>Project leader:</u>	<i>Mr. H.S. Subasinghe</i>
<u>Other members:</u>	<i>Mr. D.S.R. Seneviratne Mr. N. Disanayake Mr. R.M. Amarasekara Mr. S.A.B. Senanayake Mr. A.S.M. Abeyratne Mr. A.M.M.D. Asiriwathan</i>
<u>Period:</u>	<i>January 1980 - December 1983</i>
FUNDS:	<i>Rs. 600,000/- (Government) Rs. 12,500/- (Private)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Gasifier*

ORGANISATION: *National Engineering Research and Development
Centre of Sri Lanka.
Ekala
Ja-ela*

SCOPE/ACTIVITIES: *Development of Indigenous technology; technology
assessment, technology transfer; design,
manufacture and test prototype machinery and pilot
plants; consultancy services, technological
services and training*

DESCRIPTION OF PROJECT:

Objectives: *Fuel for Internal Combustion Engine*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Dr. M.B. Nanayakkara
Dr. Susil Weeraratna*

Period: *1981*

FUNDS: *Estimate not available*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Wood fueled power for rural requirements</i>
ORGANISATION:	<i>Ceylon Institute of Scientific and Industrial Research (CISIR) Wood and Cellulose Technology Section 363, Bauddhaloka Mawatha Colombo 7.</i>
SCOPE/ACTIVITIES:	<i>Industrial Research and Development</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Develop wood gas powered Internal Combustion Engines</i>
<u>Project leader:</u>	<i>Mr. D de Silva</i>
<u>Other members:</u>	<i>Mr. D Nugawela Mr. M.B. Herath</i>
<u>Period:</u>	<i>January 1982 - December 1984</i>
FUNDS:	<i>Rs. 115,000/- (Government) Rs. 2,700,000/- (Foreign)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT:

Biogas Generation

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka*

IDB Industrial Estate

Ekala, Ja-ela

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assessment, technology transfer; design manufacture
test prototype machinery and pilot plants;
Consultancy services; technological services and
training*

DESCRIPTION OF PROJECT:

Objectives: *Material Selection for low cost fuel*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Dr. M.B. Nanayakkara
Mr. H.M.A.B. Herath
Mr. A.B. Udawatte
Mr. J.E. Godakumbura*

Period: *1980 - Continuing*

FUNDS: *Estimate not available*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Biogas yields*

ORGANISATION:
*Faculty of Engineering
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES:
Teaching, Research and Development

DESCRIPTION OF PROJECT:

Objectives: *Determination of gas yields of different
raw materials*

Project leader: *Prof. M. Amaratunge*

Other members:

Period: *1973 - 1975*

FUNDS: *Rs. 3,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Finding optimum combination of Salvinia and Cow-dung for maximum Biogas production*

ORGANISATION: *Sri Lanka school of Agriculture
Angunakolapelassa*

SCOPE/ACTIVITIES: *Training; extension and rural development*

DESCRIPTION OF PROJECT:

Objectives: *Introduce Biogas usage to Salvinia infested areas*

Project leader: *Mr. G.K. Upawansa*

Other members: *Mr. K.C.de Silva
Mr. S.Wattuhewa
Mr. G.Gamage*

Period: *April 1981 - April 1982*

FUNDS: *US\$ 8,000/- (Foreign)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT:

*Use of paper mill effluents in generating
Biogas*

ORGANISATION:

*Ceylon Electricity Board
Energy Unit
P.O. Box 540
Colombo 2.*

SCOPE/ACTIVITIES:

*Development and deployment of alternate energy
resources
Energy supply and management
Energy policy development*

DESCRIPTION OF PROJECT:

Objectives: *Waste disposal and pollution control*

Project leader: *Mr. H.S. Subasinghe*

Other members:

*Mr. B.P. Sepalage
Mr. D.S.R. Seneviratne
Mr. R.M. Amarasekera*

*Mr. A.S.M. Abeyratne
Mr. D.T. Nimalasiri
Mr. S.A.B. Senanayake
Mr. A.M.B. Asiriwathan*

Period: *1980 - 1981*

FUNDS:

Rs. 10,000/- (Government)

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY									
SUBJECT AREA:	<i>Biomass</i>								
PROJECT:	<i>Use of Salvinia and Waterhyacinth etc. in generation of Biogas</i>								
ORGANISATION:	<i>Ceylon Electricity Board Energy Unit P.O. Box 540 Colombo 2.</i>								
SCOPE/ACTIVITIES:	<i>Development and deployment of alternate energy resources Energy supply and management Energy policy development</i>								
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>Development of alternative raw materials. Provision food, fuel and fertilizer</i></p> <p><u>Project leader:</u> <i>Mr. H.S. Subasinghe</i></p> <p><u>Other members:</u></p> <table><tr><td><i>Mr. B.P. Sepalage</i></td><td><i>Mr. A.S.M. Abeyratne</i></td></tr><tr><td><i>Mr. D.S.R. Seneviratne</i></td><td><i>Mr. D.T. Nimalasiri</i></td></tr><tr><td><i>Mr. R.M. Amarasekara</i></td><td><i>Mr. S.A.B. Senanayake</i></td></tr><tr><td></td><td><i>Mr. A.M.B. Asiriwathan</i></td></tr></table> <p><u>Period:</u> <i>1981</i></p>	<i>Mr. B.P. Sepalage</i>	<i>Mr. A.S.M. Abeyratne</i>	<i>Mr. D.S.R. Seneviratne</i>	<i>Mr. D.T. Nimalasiri</i>	<i>Mr. R.M. Amarasekara</i>	<i>Mr. S.A.B. Senanayake</i>		<i>Mr. A.M.B. Asiriwathan</i>
<i>Mr. B.P. Sepalage</i>	<i>Mr. A.S.M. Abeyratne</i>								
<i>Mr. D.S.R. Seneviratne</i>	<i>Mr. D.T. Nimalasiri</i>								
<i>Mr. R.M. Amarasekara</i>	<i>Mr. S.A.B. Senanayake</i>								
	<i>Mr. A.M.B. Asiriwathan</i>								
FUNDS:	<i>Rs. 10,000/- (Government)</i>								

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Utilization of cellulosic materials for
Biogas production*

ORGANISATION: *Ceylon Institute of Seientific and Industrial
Research (CISIR)
Industrial Microbiology Section
363, Baudhaloka Mawatha
Colombo 7.*

SCOPE/ACTIVITIES: *Industrial Research and Development*

DESCRIPTION OF PROJECT:

Objectives: *To investigate the possibility of utilizing
easily available raw materials as alternative
substrates for Biogas production*

Project leader: *Dr. S.P. Amarakone*

Other members: *Mr. K. Sivayogasunderam*

Period: *1980*

FUNDS:

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>A study on the energy production potential of an Ipil Ipil plantation</i>
ORGANISATION:	<i>National Science Council of Sri Lanka 47/5, Maitland Place Colombo 7.</i>
SCOPE/ACTIVITIES:	<ol style="list-style-type: none"><i>1. To advise the Minister in-charge of Scientific Affairs on matters pertaining to Science & Technology Policy</i><i>2. To initiate, promote, and sponsor scientific research</i><i>3. To co-ordinate collaborative research</i><i>4. To promote dissemination of information on S & T</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>To study the feasibility of using the biomass of an Ipil Ipil plantation for energy production by an integrated system using gasification and biogas production process</i></p> <p><u>Project leader:</u> <i>Solar Energy Group of the National Science Council functioning as co-ordinator</i></p> <p><u>Other members:</u> <i>Dr. A.N.S. Kulasinghe (NERD Centre) Mr. G.P. Joseph (Ceylon Plywoods Corporation) Mr. G.K. Upawansa (Department of Agriculture) Dr. F.R. Senanayake (State Timber Corporation)</i></p> <p><u>Period:</u> <i>1981 - 1982</i></p>
FUNDS:	<i>Resources of the respective institutions will be used to fund the project components</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT: *Ipil-Ipil Plantation*

ORGANISATION:
*Wood Working Complex
Ceylon Plywoods Corporation
Kosgama*

SCOPE/ACTIVITIES:
Wood Industry

DESCRIPTION OF PROJECT:

Objectives: *Generation of fuel wood*

Project leader: *Mr. P.G. Joseph*

Other members: *Mr. U.P.R. Amarasinghe*

Period: *January 1980 - December 1984*

FUNDS: *Rs. 100,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Basic simple measurements of Biogas</i>
ORGANISATION:	<i>Department of Physics University of Sri Jayewardenapura Nugegoda</i>
SCOPE/ACTIVITIES:	<i>University</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>To interest Physics Honours students on the "Energy" problems. Develop creativity and an adaptability to working with the severe constraints present in a less developed country</i></p> <p><u>Project leader:</u> <i>Prof. P.C.B. Fernando</i></p> <p><u>Other members:</u> <i>Miss. A.D.B.C.R. Gnanatissa Mr. D.M. Kulawansa Mr. H.G. Gnanatilleka</i></p> <p><u>Period:</u> <i>March 1981 - April 1981</i></p>
FUNDS:	<i>Nominal (Government)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Biomass</i>
PROJECT:	<i>Calorific value of Coconut Components</i>
ORGANISATION:	<i>Coconut Research Institute Bandirippuwa Estate Lunuwila</i>
SCOPE/ACTIVITIES:	<i>All aspects of research into production, protection and processing of coconuts and their Intercrops</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Balance sheet energy values</i>
<u>Project leader:</u>	<i>Dr. S. Mohandas, Dr. U. Samarajeewa</i>
<u>Other members:</u>	<i>Technical Assistants</i>
<u>Period:</u>	<i>January 1981 - December 1987</i>
FUNDS:	<i>Rs. 8,000/- (Government)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Biomass*

PROJECT:

*Research, Development and Extension work
on Biogas*

ORGANISATION:

*Industrial Development Board
615, Galle Road
Katubedda
Moratuwa*

SCOPE/ACTIVITIES:

*Promotion of small and medium scale industries.
Research, Development and promotional activities
on Biogas and fuel-wood*

DESCRIPTION OF PROJECT:

Objectives:

Promotion of Biogas in Sri Lanka

Project leader:

*Mr. Ivon Cooray
Mr. S.K. Rajapakse*

Other members:

Period:

1973

FUNDS:

*Rs. 15,000/- (Government)
(per year)*

SECTION 4.0

PROJECTS ON DRAUGHT ANIMALS

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Draught Animals

PROJECT:

Evaluation of draught capabilities of 3 buffalo breeds (Murah, Surti and Local)

ORGANISATION:

*Department of Agricultural Engineering
Faculty of Agriculture
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES:

*Teaching and research at University level
in fields related to Agricultural Engineering*

DESCRIPTION OF PROJECT:

Objectives:

To determine the suitability of buffalo breeds for draught

Project leader:

Dr. S.G. Ilangantileke

Other members:

Mr. D.N. Jayatissa

Period:

Estimated duration 8 months

FUNDS:

Rs. 81,500/- (NSC/SAREC)

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Draught animal*

PROJECT:

Improvement of Bullock cart

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka
IDB Industrial Estate
Ekala, Ja-ela*

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assessment; technology transfer; design manufacture
test prototype machinery and pilot plants;
consultancy services; technological services and
training*

DESCRIPTION OF PROJECT:

Objectives: *Development of a low cost more efficient
bullock cart*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Dr. M.A.R.V. Fernando Mr. Nistar Buhary
Mr. R.G. Rathnapala Mr. Neville Jayalath
Mr. H.M.V.A. de Silva*

Period: *1980 - Continuing*

FUNDS:

Government from general allocation for research

SECTION 5.0

PROJECTS ON FUEL-WOOD AND CHARCOAL

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Fuel-Wood & Charcoal*

PROJECT:
Carbonization of Crop residues

ORGANISATION:
*Ceylon Institute of Scientific and Industrial
Research (CISIR)
Wood and Cellulose Technology Section
363, Bauddhaloka Mawatha
Colombo 7.*

SCOPE/ACTIVITIES:
Industrial Research and Development

DESCRIPTION OF PROJECT:

Objectives: *Produce Charcoal pellets from crop residues*

Project leader: *D. de Silva*

Other members: *D. Nugawela
M.B. Herath*

Period: *June 1980 - December 1983*

FUNDS: *Rs. 50,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Fuel-Wood & Charcoal</i>
PROJECT:	<i>Coconut shell and timber as energy for thermal and motive power</i>
ORGANISATION:	<i>Coconut Research Institute Bandirippuwa Estate Lunuwila</i>
SCOPE/ACTIVITIES:	<i>All aspects of research into production, protection and processing of coconuts and their Intercrops</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Drying produce and working machines</i>
<u>Project leader:</u>	<i>Dr. S. Mohandas, Dr. U. Samarajeewa</i>
<u>Other members:</u>	<i>Technical Assistants</i>
<u>Period:</u>	<i>January 1982 - December 1987</i>
FUNDS:	<i>Rs. 75,000/- (Government)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Fuel-Wood and Charcoal*

PROJECT: *Improved Domestic Utilization of fuel-wood and charcoal*

ORGANISATION: *Ceylon Institute of Scientific and Industrial Research(CISIR)
Wood and Cellulose Technology Section
363, Baudhaloka Mawatha, Colombo 7.*

SCOPE/ACTIVITIES: *Industrial Research and Development*

DESCRIPTION OF PROJECT:

Objectives: *Improve efficiency of utilizing fuel*

Project leader: *D. de Silva*

Other members: *D. Nugawela
M.B. Herath*

Period: *January 1979 - December 1984*

FUNDS: *Rs. 50,000/- (Government)
Rs. 108,000/- (Foreign) (IES)
Rs. 32,000/- (NSC)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Fuel-Wood and Charcoal*

PROJECT: *Wood Charcoal Project*

ORGANISATION: *State Timber Corporation
No. 7, Vajira Lane
Colombo 5*

SCOPE/ACTIVITIES: *State Organisation to harvest and supply timber from State owned forests and plantations to local requirements. Manufacture and sales of other wood based products.*

DESCRIPTION OF PROJECT:

Objectives: *Utilize available resources of fire-wood from forests/clearings to convert wood charcoal for domestic/Industrial use*

Project leader: *Mr. N.B. Jayasiri*

Other members: *Mr. Rohan Gamage
Mr. J. Subawickrama*

Period: *March 1980 - December 1982*

FUNDS: *Rs. 2,646/- Corporation funds (per annum)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Fuel-wood and charcoal

PROJECT:

Research Development and extension work on kitchen hearth

ORGANISATION:

*Industrial Development Board
615, Galle Road
Katubedda
Moratuwa*

SCOPE/ACTIVITIES:

*Promotion of small and medium scale industries.
Research, Development and promotional activities
on Biogas and fuel-wood.*

DESCRIPTION OF PROJECT:

Objectives:

Efficient use of fire wood

Project leader:

*Mr. Ivon Cooray
Mr. S.K. Rajapakse*

Other members:

Period:

1973

FUNDS:

15,000/- (Government)

SECTION 6.0

PROJECTS ON HYDROCARBON

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Hydrocarbon*

PROJECT: *Coconut oil as fuel*

ORGANISATION: *Coconut Research Institute
Bandirippuwa Estate
Lunawila*

SCOPE/ACTIVITIES: *All aspects of research into production,
protection and processing of coconuts
and their Intercrops*

DESCRIPTION OF PROJECT:

Objectives: *Use in operating internal combustion
engines*

Project leader: *Dr. S. Mohandas, Dr. U. Samarajeeva*

Other members: *Technical Assistants*

Period: *January 1982 - December 1987*

FUNDS: *Rs. 75,000/- (Government)*

SECTION 7.0

PROJECTS ON HYDROGEN

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Hydrogen</i>
PROJECT:	<i>Hydrogen Burner</i>
ORGANISATION:	<i>National Engineering Research and Development Centre of Sri Lanka Ekala Ja-ela</i>
SCOPE/ACTIVITIES:	<i>Development of indigenous technology; technology assessment, technology transfer; design, manufacture and test prototype machinery and pilot plants; consultancy services, technological services and training</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Utilizing Waste Hydrogen</i>
<u>Project leader:</u>	<i>Dr. A.N.S. Kulasinghe</i>
<u>Other members:</u>	
<u>Period:</u>	<i>1981</i>
FUNDS:	<i>Estimate not available</i>

SECTION 8.0

PROJECTS ON HYDROPOWER

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Hydropower*

PROJECT:
Double shot cross flow turbine development

ORGANISATION: *National Engineering Research and Development
centre of Sri Lanka
IDB Industrial Estate
Ekala, Ja-ela*

SCOPE/ACTIVITIES:
*Development of indigenous technology; technology
assessment; technology transfer; design manufacture,
test prototype machinery and pilot plants;
Consultancy services; technology services and
training*

DESCRIPTION OF PROJECT:

Objectives: *Development of this type to suit local fabrication
and installation*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Dr. M.A.R.V. Fernando Mr. Nistar Buhary
Mr. R.G. Rathnapala Mr. Neville Jayalath
Mr. H.M.V.A. de Silva*

Period: *Completed*

FUNDS:

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Hydropower</i>
PROJECT:	<i>Propeller turbine development</i>
ORGANISATION:	<i>National Engineering Research and Development Centre of Sri Lanka Ekala Ja-ela</i>
SCOPE/ACTIVITIES:	<i>Development of indigenous technology; technology assessment, technology transfer; design, manufacture and test prototype machinery and pilot plants; Consultancy Services, technological services and training</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>Development of this type to suit local conditions and suitable installation - particularly for low head</i></p> <p><u>Project leader:</u> <i>Dr. A.N.S. Kulasinghe</i></p> <p><u>Other members:</u> <i>Dr. M.A.R.V. Fernando Mr. Neville Jeyalath Mr. R.G. Rathmapala Mr. Nistar Buhary Mr. H.M.V.A. de Silva</i></p> <p><u>Period:</u> <i>1980 - continuing</i></p>
FUNDS:	<i>Estimate not available</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Hydropower*

PROJECT:

Feasibility of harnessing Mini-Hydro sources

ORGANISATION:

*Faculty of Engineering
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES:

Teaching, Research and Development

DESCRIPTION OF PROJECT:

Objectives: *Study of Baseline turbines*

Project leader: *Prof. M. Amaratunge*

Other members:

Period: *1981 - 1982*

FUNDS: *Rs. 200/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Hydropower*

PROJECT:

Survey of local mini hydro potential

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka
IDB Industrial Estate
Ekala, Ja-ela*

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assessment; technology transfer; design manufacture
test prototype machinery and pilot plants;
consultancy services; technology services and
training*

DESCRIPTION OF PROJECT:

Objectives:

Improvement of Mini-Hydro potential

Project leader:

Dr. A.N.S. Kulasinghe

Other members:

*Dr. M.A.R.V. Fernando
Mr. R.G. Rathmapala
Mr. H.M.V.A. de Silva*

*Mr. Nistar Buhary
Mr. Neville Jayalath*

Period:

1980 - June 1981

FUNDS:

SECTION 9.0

PROJECTS ON PEAT

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Peat/Gaseous fuel*

PROJECT: *Peat gasification*

ORGANISATION: *G.O.B.U. of Colombo gas and water company
P.O. Box - 64
160, Gas works street
Colombo 11*

SCOPE/ACTIVITIES: *Distribution of L.P. gas in cylinders
Manufacture and distribution of town gas by
pipeline
Manufacture and sale of gas appliances*

DESCRIPTION OF PROJECT:

Objectives: *To utilize Sri Lanka's peat deposits to produce
fuel gas.
Distribution of any residual matter as fertilizer
etc.*

Project leader: *Mr. U.C.S. Fernando*

Other members: *Mr. R.B.A. Perera
Mr. M. Nanayakkara*

Period: *Pre-feasibility studies on at present*

FUNDS:

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Solar Refrigeration*

ORGANISATION: *Ceylon Institute of Scientific and Industrial
Research (CISIR)
Pilot Plant and Designs Section
363, Bauddhaloka Mawatha
Colombo 7.*

SCOPE/ACTIVITIES: *Industrial Research and Development*

DESCRIPTION OF PROJECT:

Objectives: *To produce ice*

Project leader: *Dr. S.A. Abeysekara*

Other members: *Mr. P. Jayachandran Mr. C.L. Punchihewa
Mr. U.A. Siripala Mr. C. Udawatta
Mr. M.S. Mannapperuma Mr. N.T. Amarasinghe*

Period: *1980 - 1982*

FUNDS: *Rs. 20,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Solar Refrigerator*

ORGANISATION: *Mechanical Engineering Department
University of Moratuwa
Moratuwa*

SCOPE/ACTIVITIES: *Teaching and Research*

DESCRIPTION OF PROJECT:

Objectives: *Refrigeration*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period: *1981*

FUNDS: *Rs. 400/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT:

Development of a Solar Cooker/hotwater system

ORGANISATION:

*Sri Lanka school of agriculture
Angunakolapelassa*

SCOPE/ACTIVITIES:

Training; extension and rural development

DESCRIPTION OF PROJECT:

Objectives: *To reduce fuel consumption*

Project leader: *Mr. G.K. Upawansa*

Other members: *Mr. K.C. de Silva
Mr. S. Wattuhewa
Mr. G. Gamage*

Period: *May 1981 - December 1982*

FUNDS: *Rs. 3,000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Solar Cooker*

ORGANISATION: *Mechanical Engineering Department
University of Moratuwa
Moratuwa*

SCOPE/ACTIVITIES: *Teaching and Research*

DESCRIPTION OF PROJECT:

Objectives: *For Cooking purpose*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period:

FUNDS: *Rs. 200/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Hot Box*

ORGANISATION: *National Engineering Research and Development
Centre of Sri Lanka
IDB, Industrial Estate
Ekala, Ja-ela*

SCOPE/ACTIVITIES: *Development of indigenous technology; technology
assessment, technology transfer; design manufacture
and test prototype machinery and pilot plants,
Consultancy services, technological services and
training*

DESCRIPTION OF PROJECT:

Objectives: *Domestic cooker*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Mr. D.B.J. Ranatunga*

Period: *1981*

FUNDS: *Estimate not available*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Solar Energy

PROJECT:

Solar Steam Cooking

ORGANISATION:

*Ceylon Institute of Scientific and Industrial
Research (CISIR)
Pilot Plant and Designs Section
363, Baudhaloka Mawatha
Colombo 7*

SCOPE/ACTIVITIES:

Industrial Research and Development

DESCRIPTION OF PROJECT:

Objectives:

Domestic cooking

Project leader:

Dr. S.A. Abeysekara

Other members:

*Mr. P. Jayachandran
Mr. U.A. Siripala
Mr. M.S. Mannaperuma*

*Mr. C.L. Punchihewa
Mr. C. Udawatta
Mr. N.T. Amarasinghe*

Period:

1980 - 1981

FUNDS:

Rs. 10,000/- (Government)

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT:

Solar Water heater

ORGANISATION:

*University of Moratuwa
Mechanical Engineering Department
Moratuwa*

SCOPE/ACTIVITIES:

Teaching and Research

DESCRIPTION OF PROJECT:

Objectives: *Collection of Solar Energy*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period: *1981*

FUNDS: *Rs. 200/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Solar Water heating systems for domestic applications*

ORGANISATION: *Electronic Engineering Services
77/2, 1st Lane
Abeyratne Mawatha
Boralesgamawa*

SCOPE/ACTIVITIES: *Consultancy, Design, Manufacture,
Maintenance, Education, Personnel Training*

DESCRIPTION OF PROJECT:

Objectives: *To produce a dependable, long-lasting cost-effective design*

Project leader: *Mr. Gramini T. Rubaroe*

Other members:

Period: *January 1981 - August 1981*

FUNDS: *Rs. 5,000/- (Private)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Solar Energy</i>
PROJECT:	<i>Solar Thermal</i>
ORGANISATION:	<i>National Engineering Research and Development Centre of Sri Lanka</i> <i>IDB, Industrial Estate Ekala, Ja-ela</i>
SCOPE/ACTIVITIES:	<i>Development of indigenous technology; technology assessment, technology transfer; design manufacture and test prototype machinery and pilot plants; consultancy services, technological services and training.</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Industrial pre-heat and steam generation</i>
<u>Project leader:</u>	<i>Dr. A.N.S. Kulasinghe</i>
<u>Other members:</u>	<i>Mr. D.B.J. Ranatunge</i>
<u>Period:</u>	<i>1981</i>
FUNDS:	<i>Estimate not available</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Solar Energy</i>
PROJECT:	<i>Solar Desalination</i>
ORGANISATION:	<i>Ceylon Institute of Scientific and Industrial Research (CISIR) Pilot Plant and designs section 363, Bauddhaloka Mawatha Colombo 7.</i>
SCOPE/ACTIVITIES:	<i>Industrial research and development</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>To produce drinking water</i>
<u>Project leader:</u>	<i>Dr. S.A. Abeysekara</i>
<u>Other members:</u>	<i>Mr. P. Jeyachandran Mr. C.L. Punchihewa Mr. U.A. Siripala Mr. C. Udawatta Mr. M.S. Mannapperuma Mr. N.T. Amarasinghe</i>
<u>Period:</u>	<i>1974 - 1980</i>
FUNDS:	<i>Rs. 10,000/- (Government)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT:

Solar Drying

ORGANISATION:

*Ceylon Institute of Scientific and Industrial
Research (CISIR)
Pilot plant and designs section
363, Bauddhaloka Mawatha
Colombo 7*

SCOPE/ACTIVITIES:

Industrial research and development

DESCRIPTION OF PROJECT:

Objectives:

*To dry vegetables, fish, fruits and spices on
a small scale*

Project leader:

Dr. S.A. Abeysekara

Other members:

Mr. P. Jeyachandran

Mr. C.L. Punchihewa

Mr. U.A. Siripala

Mr. C. Udawatta

Mr. M.S. Mannapperuma

Mr. N.T. Amarasinghe

Period:

1976 - 1982

FUNDS:

Rs. 10,000/- (Government)

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Use of Solar Energy for
drying of crepe rubber*

ORGANISATION: *Rubber Chemistry Department
Rubber Research Institute
Telawala Road
Ratmalana*

SCOPE/ACTIVITIES: *Rubber Research*

DESCRIPTION OF PROJECT:

Objectives: *To cut down cost of drying and
consumption of fuel*

Project leader: *Mr. S.W. Karunaratne*

Other members: *Mr. M.C.S. Perera
Mr. R. Goonethileka*

Period: *1980 - 1983*

FUNDS: *Rs. 10,000/- (Government)
Rs. 140,000/- (Private)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT:
Photo - Voltaic Cells

ORGANISATION:
*Mechanical Engineering Department
University of Moratuwa
Moratuwa*

SCOPE/ACTIVITIES:
Teaching and Research

DESCRIPTION OF PROJECT:

Objectives: *Lighting*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period: *1981*

FUNDS: *Rs. 25,000/- (Private)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT:
Solar Voltaic

ORGANISATION:
*National Engineering Research and Development
Centre of Sri Lanka
IDB, Industrial Estate
Ekala, Ja-ela*

SCOPE/ACTIVITIES:
Development of indigenous technology; technology assessment, technology transfer; design, manufacture and test prototype machinery and pilot plants; consultancy services, technological services and training

DESCRIPTION OF PROJECT:

Objectives: *Evaluation studies*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Mr. D.B.J. Ranatunge
Mr. C.W.W. Palihawadena*

Period: *1981*

FUNDS: *Estimate not available*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Solar tracking device*

ORGANISATION: *Mechanical Engineering Department
University of Moratuwa
Moratuwa*

SCOPE/ACTIVITIES: *Teaching and Research*

DESCRIPTION OF PROJECT:

Objectives: *Uses of Solar Energy*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period:

FUNDS: *Rs. 200/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Solar Energy</i>
PROJECT:	<i>Basic simple measurement Cylindrical Reflector</i>
ORGANISATION:	<i>Department of Physics University of Sri Jayewardenapura Nugegoda</i>
SCOPE/ACTIVITIES:	<i>University</i>
DESCRIPTION OF PROJECT:	<p><u>Objectives:</u> <i>To interest Physics Honours students on the "Energy" problems. Develop creativity and an adaptability to working with the severe constraints present in a less developed country.</i></p> <p><u>Project leader:</u> <i>Prof. P.C.B. Fernando</i></p> <p><u>Other members:</u> <i>Miss A.D.B.C.R. Gnanatissa Mr. D.M. Kulawansa Mr. H.G. Gnanatilleka</i></p> <p><u>Period:</u> <i>March 1981 - April 1981</i></p>
FUNDS:	<i>Nominal (Government)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Solar Energy*

PROJECT: *Basic simple measurement
flat plate*

ORGANISATION: *Department of Physics
University of Sri Jayewardenapura
Nugegoda*

SCOPE/ACTIVITIES: *University*

DESCRIPTION OF PROJECT:

Objectives: *To interest physics Honours students on the "Energy" problems. Develop creativity and an adaptability to working with the severe constraints present in a less-developed country*

Project leader: *Prof. P.C.B. Fernando*

Other members: *Miss A.D.B.C.R. Gnanatissa
Mr. D.M. Kulawansa
Mr. H.G. Gnanatilleka*

Period: *March 1981 - April 1981*

FUNDS: *Nominal (Government)*

SECTION 11.0

PROJECTS ON THERMAL GRADIENT

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Thermal Gradient*

PROJECT:

*Feasibility of Ocean Thermal Energy Conversion
for power generation in Sri Lanka*

ORGANISATION:

*National Science Council of Sri Lanka
47/5, Maitland Place
Colombo 7.*

SCOPE/ACTIVITIES:

- 1. To advise the Minister in-charge of Scientific Affairs on matters pertaining to Science and Technology Policy*
- 2. To initiate, promote and sponsor scientific research*
- 3. To co-ordinate collaborative research*
- 4. To promote dissemination of information on S & T*

DESCRIPTION OF PROJECT:

Objectives: *To study the feasibility of using OTEC power for electricity generation in Sri Lanka by carrying out measurements of depth, profiles, temperature gradients ocean currents and biological aspects around the Eastern Coast of the Island.*

Project leader: *Dr. A.N.S. Kulasinghe with the assistance of the Solar Energy Group of the National Science Council*

Other members: *Mr. S.R. Amarasinghe, (Coast Conservation division
Ministry of Fisheries)
Prof. P.C.B.Fernando, (Univ. of Sri Jayewardenapura)
Mr. D.M.E.S. Bulathsinghala, (Ceylon Petroleum Corp.)
Capt. K.R.L.Perera, (Sri Lanka Navy)*

Period: *Mr. H.S. Subasinghe (CEB)*

Period: *Dr. J.Jinadasa (University of Sri Jayewardenepura)
1981 - 1983*

FUNDS:

Partly through available resources of the participating organisations, partly arranged through NSC

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Thermal Gradient*

PROJECT: *Ocean Thermal Energy Conversion*

ORGANISATION: *National Engineering Research and
Development Centre of Sri Lanka
Ekala, Ja-ela*

SCOPE/ACTIVITIES: *Development of indigenous technology; technology
assessment, technology transfer; design,
manufacture and test prototype machinery and
pilot plants; Consultancy Services, technologi-
cal services and training*

DESCRIPTION OF PROJECT:

Objectives: *Evaluation studies*

Project leader: *Dr. A.N.S. Kulasinghe*

Other members: *Mr. D.B.J. Ranatunge*

Period: *1981*

FUNDS: *Estimate not Available*

SECTION 12.0

PROJECTS ON TOTAL ENERGY

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Total Energy

PROJECT:

Survey of activities on energy

ORGANISATION:

*Ceylon Electricity Board
Energy Unit
P.O. Box 540
Colombo 2.*

SCOPE/ACTIVITIES:

*Development and deployment of alternate energy
resources
Energy supply and management
Energy policy development*

DESCRIPTION OF PROJECT:

Objectives:

*For matters dealing with overall
energy policy development*

Project leader:

Mr. H.S. Subasinghe

Other members:

*Mr. B.P. Sepalage Mr. A.S.M. Abeyratne
Mr. D.S.R. Seneviratne Mr. D.T. Nimalasiri
Mr. R.M. Amarasekara Mr. S.A.B. Senanayake
Mr. A.M.B. Asiriwathan*

Period:

1980 - 1981

FUNDS:

Rs. 5,000/- (Government)

SECTION 13.0

PROJECTS ON WIND ENERGY

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Wind

PROJECT:

Wind mill for power generation

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka*

IDB Industrial Estate

Ekala, Ja-ela

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assessment, technology transfer; design manufacture
test prototype machinery and pilot plants;
consultancy services; technology services and
training*

DESCRIPTION OF PROJECT:

Objectives:

for battery charging

Project leader:

Dr. A.N.S. Kulasinghe

Other members:

Dr. M.B. Nanayakkara

Mr. H.M.A.B. Herath

Mr. A.B. Udawatte

Mr. J.E. Godakumbura

Period:

1980 - continuing

FUNDS:

Estimate not available

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Wind*

PROJECT:

*Development of Wind mills for pumping
of water and generation of electricity*

ORGANISATION:

*Ceylon Electricity Board
Energy Unit
P.O. Box 540
Colombo 2*

SCOPE/ACTIVITIES:

*Development and deployment of alternate
energy resources
Energy supply and management
Energy policy development*

DESCRIPTION OF PROJECT:

Objectives:

*Provision of energy to rural areas
Reduction of production cost*

Project leader:

Mr. H.S. Subasinghe

Other members:

*Mr. B.P. Sepalage Mr. A.S.M. Abeyratne
Mr. S.S.R. Seneviratne Mr. D.T. Nimalasiri
Mr. R.M. Amarasekara Mr. S.A.B. Senanayake
Mr. A.M.B. Asiriwadan*

Period:

1981

FUNDS:

Rs. 10,000/- (Private)

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Wind

PROJECT:

Wind energy utilization Project

ORGANISATION:

*Water Resources Board
2A, Gregory's Avenue
Colombo 7*

SCOPE/ACTIVITIES:

*Investigation and exploration of ground water
Research and development of wind energy Social
forestry*

DESCRIPTION OF PROJECT:

Objectives:

*To investigate the wind potential in Sri Lanka
To design and develop wind power machines for local
manufacture. To organise and train a group of
scientific personnel in all aspects concerned with
the harnessing of wind as an alternate source of
energy*

Project leader:

Mr. K.S. Fernando

Other members:

*Mr. A. Satchitanandan Mr. H.K. Ruben
Mr. P. Jeyakumar Mr. M.H.M. Zarook
Mr. H.N.N. Fonseka Mr. A.D.M. Karunaratne
Mr. D.A. Lokupathagamage Mr. V.S.M. Mubarak*

Period:

April 1977 - continuing

FUNDS:

*Rs. 5,000,000/- (Government)
Rs. 8,000,000/- (Foreign) for 1981/1982*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA:

Wind

PROJECT:

Wind mill for lift irrigation

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka*

IDB Industrial Estate

Ekala, Ja-ela

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assessment; technology transfer; design manufacture
test prototype machinery and pilot plants;
consultancy services; technological services and
training*

DESCRIPTION OF PROJECT:

Objectives:

To irrigate up to five acres

Project leader:

Dr. A.N.S. Kulasinghe

Other members:

Dr. M.B. Nanayakkara

Mr. H.M.A.B. Herath

Mr. A.B. Udawatte

Mr. J.E. Godakumbura

Period:

1980 - continuing

FUNDS:

Estimate not available

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Wind*

PROJECT: *Wind mill pump*

ORGANISATION:
*Mechanical Engineering Department
University of Moratuwa
Moratuwa*

SCOPE/ACTIVITIES:
Teaching and Research

DESCRIPTION OF PROJECT:

Objectives: *Pumping water*

Project leader: *Mr. K. Herath*

Other members: *Prof. P.A. de Silva
Dr. C.K. Somasundaram*

Period:

FUNDS: *Rs. 2000/- (Government)*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Wind*

PROJECT:

Wind mill for domestic supply

ORGANISATION:

*National Engineering Research and Development
Centre of Sri Lanka*

IDB Industrial Estate

Ekala, Ja-ela

SCOPE/ACTIVITIES:

*Development of indigenous technology; technology
assesment; tehcnology transfer; design manufacture
test prototype machinery and pilot plants;
consultancy services; technological services and
training*

DESCRIPTION OF PROJECT:

Objectives:

*Drinking water and to irrigate about
 $\frac{1}{2}$ acre*

Project leader:

Dr. A.N.S. Kulasinghe

Other members:

*Dr. M.B. Nanayakkara
Mr. H.M.A.B. Herath
Mr. A.B. Udawatte
Mr. J.E. Godakumbura*

Period:

1979 - continuing

FUNDS:

Estimate not available

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Wind*

PROJECT:

Augmentation of power in vertical axis wind rotar by using wind deflector vanes

ORGANISATION:

*Department of Mechanical Engineering
Faculty of Engineering
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES:

Teaching and Research

DESCRIPTION OF PROJECT:

Objectives: *Augmentation of power in vertical axis wind rotar by using wind deflector vanes*

Project leader: *Prof. S. Sivesegaram*

Other members: *Mr. S. Sivapalan*

Period: *1978 - 1981*

FUNDS:

Departmental Resources

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY

SUBJECT AREA: *Wind*

PROJECT: *Optimization of Sectoral Geometry and other design parameters for slow running vertical axis wind rotors. Stage II*

ORGANISATION: *Department of Mechanical Engineering
Faculty of Engineering
University of Peradeniya
Peradeniya*

SCOPE/ACTIVITIES: *Teaching and Research*

DESCRIPTION OF PROJECT:

Objectives: *Optimization of sectoral Geometry and other design parameters for slow running vertical axis wind rotors*

Project leader: *Prof. S. Sivasegaram*

Other members: *Mr. S. Sivapalan*

Period: *1981 - 1982*

FUNDS: *Departmental Resources*

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Wind</i>
PROJECT:	<i>Transient behaviour of Wind power systems Stage II</i>
ORGANISATION:	<i>Department of Mechanical Engineering Faculty of Engineering University of Peradeniya Peradeniya</i>
SCOPE/ACTIVITIES:	<i>Teaching and research</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>Transient behaviour of wind power systems</i>
<u>Project leader:</u>	<i>Prof. S. Sivasegaram</i>
<u>Other members:</u>	<i>Mr. S. Sivapalan</i>
<u>Period:</u>	<i>1981 - 1982</i>
FUNDS:	<i>Departmental Resources</i>

SECTION 14.0

MICELLANEOUS PROJECTS

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Alcohol production</i>
PROJECT:	<i>Fermentation of Palmyrah palm sap</i>
ORGANISATION:	<i>Department of Botany University of Jaffna Thirunelveli Jaffna</i>
SCOPE/ACTIVITIES:	<i>Teaching and Research</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>To improve the production of Alcohol</i>
<u>Project leader:</u>	<i>Prof. K. Theivendirarajah</i>
<u>Other members:</u>	<i>Dr. A. Sivapalan</i>
<u>Period:</u>	<i>January 1981 - 1982</i>
FUNDS:	<i>Rs. 5,000/- (University)</i>

SRI LANKA - RESEARCH & DEVELOPMENT PROJECTS IN ENERGY	
SUBJECT AREA:	<i>Power Alcohol</i>
PROJECT:	<i>Project on power alcohol</i>
ORGANISATION:	<i>Sri Lanka Sugar Corporation 651, Alvitigala Mawatha Narahenpita</i>
SCOPE/ACTIVITIES:	<i>Production of Sugar from Sugar cane to maximise local sugar production</i>
DESCRIPTION OF PROJECT:	
<u>Objectives:</u>	<i>To study the use of ethanol as an alcohol-gasoline mixture in combustion engines</i>
<u>Project leader:</u>	<i>Operations Manager and Staff</i>
<u>Other members:</u>	
<u>Period:</u>	<i>This project has been completed</i>
FUNDS:	

SURVEY ON R & D PROJECTS IN ENERGY SOURCES

QUESTIONNAIRE

Section A (Characteristics of Institution)

1. Name of the Department, Institution, Organization etc.

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2. Postal Address

3. Telephone No.

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4. Functions

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5. Head of Institution

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Section B (R & D Projects on Energy)

6. Informations about the personals working on Energy Projects

Project Leader	Designation

Other Members	Designation

7. Area of Interest

Source of Energy	Tick		Tick
Coal		Wind	
Oil		Tidal	
Oil shales		Wave	
Natural Gas		Thermal Gradient	
Hydrogen		Geothermal	
Solar		Batteries	
Biomass		Tar Sands	
Hydropower		Peat	
Fuel cells		Photo Chemical	
Draught Animals		Fuel Wood & Charcoal	
Total Energy		Other (please specify)	
Petroleum			
Atomic Energy			

SURVEY ON R & D PROJECTS IN ENERGY SOURCES

QUESTIONNAIRE

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Biomass		Tar Sands	
Hydropower		Peat	
Fuel cells		Photo Chemical	
Draught Animals		Fuel Wood & Charcoal	
Total Energy		Other (please specify)	
Petroleum			
Atomic Energy			

8. Informations about the projects

Title of the project	Objectives	Date of Commencement	Approx. date of Completion

9. Source of Funds

Project No.	Funds				
	Government Rs	Private Rs	Foreign Rs	Other Rs	Total Rs
1.					
2.					
3.					

Signed

Position

Date

GLOSSARY

- Atomic Energy** : Energy released by the process of nuclear fission or nuclear fusion
- Balance Sheet**
energy values : Values of energy to be taken in the preparation of a Balance Sheet, giving the energy balance as energy input and output
- Batteries** : Rechargeable electricity storage devices. Energy is stored in the form of Chemical energy, which is then converted to electrical energy upon demand
- Biogas** : When organic waste is enclosed under anaerobic conditions, biological decomposition takes place in which microbes convert the organic waste to methane and CO_2 . This gas mixture represents a combustible fuel with a calorific value
- Biomass** : Any organic matter which is available on a renewable basis, including agricultural crops, Agricultural wastes and residues, animal wastes and aquatic plants
- Charcoal** : This is produced by the slow burning of wood, with a very restricted air supply. Charcoal when used as fuel provides much greater useful heat energy than wood.
- Combustion engines** : An engine that operates by the energy of combustion of fuel

Cylindrical

Reflector : A reflector having a shape of a cylinder
(or a section of a cylinder)

Digester : A devise in which anaerobic bacteria
decompose organic matter to produce
methane and Carbondioxide

Draught

Animal : Animals used for drawing of implements
like ploughs, bullock carts etc. where
motive power is provided by the animal

Draught

Capability : Capability of draught animals-reference to
energy or power that could be provided
by such draught animals like bulls, horses
etc.

Energy

Production Potential : Potential available for production of
energy

Fermentation : The process of anaerobic enzymatic decom-
position of organic substances especially
carbohydrates generally accompanied with
the evolution of carbondioxide, producing
alcohol or acid

Forest

Resources : Resources obtained from the forest land

Gaseous fuel : A combustible gas that could be burned in
a furnace or an engine

Gasification : The process by which the biomass is trans-
formed in to gas and fuel oil

- Gasifier** : A vessel in which gasification takes place
- Hotbox** : A simple Solar cooker or solar oven consisting of an insulated box with a matt black interior covered with a lid having reflecting surfaces
- Hydrocarbon** : Large number of plant species produce hydrocarbon of milky, colloidal suspension. This low molecular weight substance can be processed to yield crude oil, which also can be used to yield energy
- Hydrogen** : The first chemical element, symbol 'H' in the periodic table. During the oxidation process of the Hydrogen molecule the energy is generated
- Hydrogen Burner** : A burner using hydrogen as a fuel
- Hydropower** : Power produced by falling waters
- Internal Combustion Engine** : A prime mover in which the fuel is burned within the engine and the products of combustion serve as the thermodynamic fluid, as with gasoline and diesel engines
- Irradiation** : The exposure of material or object to rays (x-rays, gamma rays Ullraviolet rays) or to other ionizing radiations
- Lift irrigation**: Artificial application of water to land by lifting under-ground water or that from perrenial rivers and streams

Minihydro potential : The power potential available at any source that could be tapped using mini hydro turbines or similar means. This refers to hydropower potential which is suitable for tapping using minihydropower plants

Ocean Thermal Energy Conversion : Process of using the temperature difference between the warm surface waters and much colder deeper waters (1000 meters) to vaporise a working fluid to run a turbine to produce electricity

Photo-Voltaic Cell : A type of semiconductor in which absorption of light energy creates a separation of electrical charges. This separation creates a electrical potential. The net effect is the direct conversion of light into electricity

Power Alcohol : Usage of alcohol for power generation

Propeller turbine : A form of reactive type hydraulic turbine using an axial flow propeller rotor

Rural Energy Centre : An experimental and demonstrational attempt to harness a number of renewable energy sources, such as biogas, wind and solar and to try out new mechanisms to convert and store these energy forms in order to supply the needs of a typical rural community

Solar Energy : The energy transmitted from the sun in the form of electromagnetic radiation

Solar Energy

Laboratory : A laboratory to carry out experiments and development works on Solar Energy and related aspects

Solar Desalina-

tion : The process of removing dissolved salts notably Sodium chloride from seawater and brackish water using solar energy to yield potable water for human consumption

Solar thermal : Incoming solar energy is converted for heating process

Solar tracking

device : A device used to track the sun's path, as applied to solar devices such as solar concentrators etc.

Solar Voltaic : See photovoltaic cells

Thermal

gradient : The rate of temperature variation with the increase of depth below the surface of rock, sand or sea

Turbine : A machine that converts the energy stored in a fluid commonly water, steam or gas in to mechanical energy

Waste Hydrogen : This refers to hydrogen that is produced as a by-product in a number of chemical reactions, but being wasted

- Wind Energy** : It is the kinetic energy associated with the movement of large masses of air in the atmosphere
- Wood fuel** : The wood of trees used as fuel
- Wood fueled power** : Power produced using the wood as fuel
- Windmill** : Any of the various mechanisms, such as a mill, pump or electric generator, operated by the force of wind against vanes or sails radiating about a horizontal shaft
- Windmill pump** : A pump incorporated or connected with a windmill