FUEL WOOD AS AN ALTERNATIVE SOURCE OF THERMAL ENERGY IN THE RUBBER INDUSTRY IN SRI LANKA

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Thesis/Dissertation submitted in partial fulfillment of the requirements for the degree of Master of Business Administration

Department of Management of Technology

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Sri Lanka

December 2011

DECLARATION

I declare that this is my own work and this thesis does not incorporate without acknowledgment any material previously submitted for a Degree or Diploma in any other University institute of higher learning and to the best of my knowledge and belief it does not contain any material previously published or written by another person except where the acknowledgment is made in the text.

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The above candidate has carried out research for the Masters dissertation under my supervision.

Signature of the Supervisor Date

Acknowledgement

I would like to express my appreciation to CEOs, DCEOs GMs, other senior managers and all employees in rubber estates in western province of Sri Lanka, belongs to the plantation companies I visited for their invaluable insights, advice, patience and encouragement throughout this research.

I had the opportunity to visit mass scale manufacturers in value added rubber industry in Sri Lanka. I wish to make this an opportunity to offer my gratitude to their top managements and all employees who permitted and helped me to collect data for this research. They were not reluctant to repetitively answer my clarification questions until I was pleased on accuracy of the data collected.

Special thanks to my friends for providing me the opportunity to build up new contacts with industry experts who were behind me throughout this research journey and the staff of the RRISL and UNDP officials for their assistance to find relevant text books and other resources.

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Finally, great thanks to my supervisor, Prof. SWSB Dasanayaka for continuously encouraging and guiding me to find vital information, helping me to keep into the timeline by quickly making comments for my questions and reviewing the draft reports.

Abstract

Main purpose of this research is to switch the rubber industry in Sri Lanka from fossil fuels to fuel wood in the process of generation of thermal energy and consequently to reduce foreign exchange spending on oil imports and to protect the environment through energy efficiency, environmentally benign energy sources and energy conservation.

This study utilizes three key concepts: sustainable competitive advantage in cost of production, reduce emission of greenhouse gas and an Integrated National Plan to acquire bare land and grow a suitable fuel wood crop to fulfill the future demand. This study was carried out through a situational analysis and an in-depth questionnaire surveys in both raw and value added sectors in Sri Lankan rubber industry. The questionnaire survey was carried-out covering main plantation companies and key value added manufacturers.

This study shows that biomass application is already happening in raw rubber sector without using any fossil fuels. Problem exists in value added industry since a massive amount of thermal energy is required for their processes. This research has estimated the equivalent fuel wood quantity required by their machines to be switched in to fuel wood and a national level program is proposed to assure a strong and sustainable supply chain of fuel wood. This study only covers rubber industry in western province, concentrating on high-end consumers of thermal energy and hence SME sector was not covered.

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Policy recommendations are proposed to assure a strong and sustainable supply chain of fuel wood. This starts from acquiring bare land, selecting a suitable fuel wood crop, a criterion to decide priority order for firms to be switched and sufficient financial assistance for selected firms. All these tasks have been treated as ongoing parallel activities.

Motivation and convincing programs are proposed to address all stakeholders on this switching by changing their mindsets from going for easy solutions to achieve sustainable competitive advantage and environmental conservation. This is to signify the future global requirements for environmental conservation and to take precautions in advance by taking early initiatives.

Key words: Rubber industry, Energy crops, Green house effect, Carbon footprint, Sri Lanka.

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LIST OF ABBREVIATIONS

Abbreviation	Description
ADS	AIR DRIED SHEET
ANRPC	ASSOCIATION OF NATURAL RUBBER PRODUCING COUNTRIES
ARRPEEC	ASIAN REGIONAL RESEARCH PROGRAM IN ENERGY, ENVIRONMENT AND CLIMATE
BET	BIOMASS ENERGY TECHNOLOGIES
CBSL	CENTRAL BANK OF SRI LANKA
CDM	CLEAN DEVELOPMENT MECHANISM
CEA	CENTRAL ENVIRONMENTAL AUTHORITY
CEB	CEYLON ELECTRICITY BOARD
CER	CERTIFIED EMISSION REDUCTION
CHP	COMBINED HEAT AND POWER
CP	CLEANER PRODUCTION
CPC	CEYLON PETROLEUM CORPORATION
CPIPM C	CENTRL PLANNING, INTEGRATION & PROGRESS MONITORING COMMITTEE
CRTA	COLOMBO RUBBER TRADERS ASSOCIATION
DCS	DEPT. OF CENSUS & STATISTICS
DRC	DRY RUBBER CONTENT
ECC	EXPERT CONSULTANCY COMMITTEE
ERU	EMISSION REDUCTION UNIT
FAO	FOOD AND AGRICULTURE ORGANIZATION
FFEC	FINANCIAL FEASIBILITY EVALUATION COMMITTEE
GHG	GREEN HOUSE GASES

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GOSL	GOVERNMENT OF SRI LANKA
GRG	GENERAL RUBBER GOODS
GRP	GENERAL RUBBER PRODUCTS
GS	GRAMA SEVAKA
GTC	GIGA TONS OF CARBON
ICS	IMPROVED COOKING STOVE
IDB	INDUSTRIAL DEVELOPMENT BOARD
IPP	INDEPENDENT POWER PRODUCERS
IRSG	INTERNATIONAL RUBBER STUDY GROUP
ITI	INDUSTRIAL TECHNOLOGY INSTITUTE
JI	JOINT IMPLEMENTATION
LAPC	LAND ACQUIRING & PLANNING COMMITTEE
LIOC	LANKA INDIAN OIL COMPANY
LPG	LIQUIFIED PETROLEUM GAS
MT	METRIC TONS
NERDC	NATIONAL ENGINEERING RESEARCH AND DEVELOPMENT CENTRE
NR	NATURAL RUBBER
PAAC	PUBLIC ADDRESS & AWARENESS COMMITTEE
PCFFE	PROJECT COMMITTEE FOR FINAL FEASIBILITY EVALUATION
PSFC	POLICY & STRATEGY FORMULATION COMMITTEE
RDD	RUBBER DEVELOPMENT DEPARTMENT
RDD	RUBBER DEVELOPMENT DEPARTMENT
REC	REGIONAL EXECUTION COMMITTEES
RRI	RUBBER RESEARCH INSTITUTE
RRISL	RUBBER RESEARCH INSTITUTION OF SRI LANKA
RSS	RIBBED SMOKED SHEET

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SBU	STRATEGIC BUSINESS UNIT
SGF	SUSTAINABLY GROWN FUEL WOOD
SEASL	SUSTAINABLE ENERGY AUTHORITY OF SRI LANKA
SLEDB	SRI LANKA EXPORT DEVELOPMENT BOARD
SME	SMALL AND MEDIUM ENTERPRICES
SMERMA	THE SME RUBBER MANUFACTURERS ASSOCIATION
SR	SYNTHETIC RUBBER
SRC	SHORT ROTATION CROPS
SRI	THE SRI LANKA SOCIETY OF RUBBER INDUSTRY
TFEC	TECHNICAL FEASIBILITY EVALUATION COMMITTEE
TSR	TECHNICALLY SPECIFIED RUBBER
UNDP	UNITED NATION'S DEVELOPMENT PROGRAM
UNEP	UNITED NATION'S ENVIRONMENT PROGRAM
UOM	UNIVERSITY OF MORATUWA
VER	VERIFIED EMISSION REDUCTION

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