REQUIREMENTS FOR THE DEVELOPMENT OF A STANDARD AND CERTIFICATION SYSTEM FOR SUSTAINABLE FUEL WOOD TRADE IN SRI LANKA

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DECLARATION

I declare that this is my own work and this thesis/dissertation does not incorporate without acknowledgement, of any material previously submitted for a Degree or Diploma in any other University or 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 acknowledgement is made in the text.

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ABSTRACT

A standard and certification system for sustainable fuel wood trade suitable for local context is presented. The situation analysis of fuel wood trade in Sri Lanka emphasize on the need for the development of such standard and certification system as the present supply chain system is not sustainable at large and there is an increasing demand particularly in the industrial thermal energy application due to fuel switching and an emerging demand as a source of electricity generation. Development of standard and certification system for sustainable biomass and biofuel including fuel wood has been undertaken by several developed countries such as Netherland, United Kingdom and Germany and international organization such as International Organization for Standardization (ISO), International Energy Agency Bio-energy task 40 and Global bio-energy partnership. Usually these systems comprises of set of principles, criteria and indicators covering sustainability aspect, which are dependent on country to country and therefore need to adopt to the local context with appropriate changes.

The information collected through literature survey and consultation of foreign experts in the field was used to identify 8 principles that are considered to be relevant to local context. In order to establish locally relevant and acceptable standard and certification system for sustainable fuel wood, key stake holders who are involved in Sri Lankan biomass industry were consulted. The output of the consultation process is based on the principle of consensus distillation of successful thinking and expert judgment. Accordingly, 5 principles namely legal and regularity compliance, environment values and impact, benefit to the community, group support and chain of custody (traceability) from the standing-tree to the farm-gate have been established as those relevant to Sri Lanka. Further 11 criteria and 42 indicators were identified under the five principles, covering social, economic and environmental aspects. Further a set of verifiers for each indicator is proposed.

The validation of the proposed standard and certification system for sustainable fuel wood trade was done through field testing in a Community Based Organization

(CBO) covering home garden and small plantation. In order to facilitate the enforcement of the certification system, a cell matrix was designed which could identify the applicability or non-applicability of indicators on supply chain. Further comprehensive procedure manual was developed for the conformity assessment of the fuel wood certification system. The proposed certification system comprises of 8 steps namely pre-assessment, fuel wood producer's preparation, document review, on-site evaluation, reporting, certification, surveillance and re-certification. The last two steps reflect the continuity and reassurance of the established system. It is concluded that the principles, criteria and indicators identified in the standard and certification system could ensure that fuel wood sector contribute to the economic development while ensuring sustainability. It is recommended to test the proposed indicators via application to a divers set of sample cases (large plantation) will help to evaluate the availability of necessary data, prioritize data and methodological efforts, and generate ideas for improvement.

Key words:

Renewable energy, Standards and Certification, Sustainable fuel wood, Sustainability indicator

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TABLE OF CONTENT

LIST OF FIGURES

LIST OF TABLE

LIST OF ABBRIVATIONS

Abbreviation	Description
ADB	Asian Development Bank
ANP	National Agency for Petroleum
ARENA	Australian Renewable Energy Agency
BECS	Biomass Energy Conversion Systems
BP	British Petroleum
CAR	Corrective Action Report
CB	Certification Body
CBD	Convention on Biological Diversity
CBO	Community Based Organization
CDA	Coconut Development Authority
CEN	European Committee for Standardization
CH	Certificate Holder
CSD	Commission on Sustainable Development
COC	Chain of Custody
DC	Desiccated coconut
DG	Development Group
EC	European Commission
EU	European Union
EIA	Environment Impact Assessment

EO	Economic Operator
FAO	Food and Agriculture Organization
FSC	Forest Stewardship Council
FMU	Forest Management Units
GDP	Gross Domestic Product
GHG	Green House Gas
GMO	Genetically Modified Organism
GSMB	Geological Survey and Mines Bureau
IBEP	International Bioenergy Platform
IEA	International Energy Agency
ILO	International Labour Organization
ILUC	Indirect Land used Change
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LCA	Life Cycle Analysis
LPG	Liquid Petroleum Gas
LRS	Long Rotational Species
LRC	Long term Rotation Crop
MDF	Medium Density Fibre
MS	Member State
MSL	Mean Sea Level

NCVA	Non Conformance Verification Audit
NGO	Non-Governmental Organization
NMC	National mirror committee
NTA	Netherland Technical Agreement
NTFP	Non-timber forest plantation
PCI	Principle Criteria and Indicators
PMU	Plantation Management Units
RED	Renewable Energy Directive
RSB	Roundtable on Sustainable Biofuels
RSPO	Roundtable on Sustainable Palm Oil
RTFO	Renewable Transport Fuel Obligation Programme
RTRS	Round Table on Responsible Soy
SAN	Sustainable Agriculture Network
SEA	Sustainable Energy Authority
SFWC	Sustainable Fuel Wood Certification
SLSI	Sri Lanka Standards Institution
SRC	Short Rotation Crops
SMI	Small and medium Industries
SRCS	Short Rotational Crop Species
TPES	Total Primary Energy Supply
UNDP	United Nation Development Programme

UNEP	United Nations Environment Programme
UOM	University of Moratuwa
USAID	United States Agency for International Development
WSSD	World Summit on Sustainable Development