ANALYSIS OF ENERGY EMBODIED IN CEMENT PRODUCED IN SRI LANKA

By

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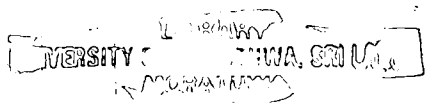

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DECLARATION

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 acedemic qualification of a university or other institute of higher learning except where acknowledgment is made in the text.

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Abstract

Analysis of the embodied energy in cement produced in Sri Lanka was carried out considering national boundaries. National energy input to the cement manufacturing was the main focus of this study and therefore any energy involvement outside Sri Lanka was not taken in to consideration in this analysis. The total embodied energy content was analyzed in three levels. In level 1, direct energy consumption in manufacturing of cement at Puttalam cement factory was analyzed and energy consumption for ancillary inputs was considered in the level 2. Energy consumption for raw material extraction and transportation within the country was analyzed in level 3.

The direct delivered energy consumption was assessed by carrying out an energy survey at Puttalam cement factory. Then this direct energy was referred to primary energy by considering the national energy mix in electricity generation together with transmission and distribution losses in electricity distribution, power plant efficiencies, and energy consumption in refining petroleum fuels.

The total national energy requirement to produce one ton of cement in Sri Lanka was found to be 4896 MJ based on the present energy mix of electricity generation. This varies between 4982 MJ/MT and 4732 MJ/MT according to the future energy mix of the electricity generation and the transmission loss reduction plan of Sri Lanka.

The outcome of this study can be used to select the best material for building construction from cement based products and in the formulation of energy conservation policies like the Building Code. In addition the outcome of the study can be used as inputs for further research relevant to energy content of materials.

CONTENTS

Item			Page No.
Declaration			i
Abstract			ii
Contents			iii
List of Tables			vii
List of Figures			x
Acknowledgement			xii
1. Chapter 1:		Research Problem Being Analyzed	1
1.1		Background of the Energy Scenario of Sri Lanka	1
	1.1.1	Energy Resources	2
	1.1.2	Electrical Energy	3
	1.1.3	Petroleum Energy	3
1.2:		Research Problem at the Scene	4
1.3		Objectives of the Study	5
1.4		Rationale and Justification	5
2. Chapter 2:		Literature Survey	7
2.1		Introduction	7
2.2		Energy Analysis	8
	2.1.1	End Use Energy Analysis	8
	2.1.2	Primary Energy Analysis	9
	2.1.3	Embodied Energy Analysis	9
	2.1.4	Life Cycle Energy Analysis	9
2.3		Theory of Embodied Energy Analysis	10
2.4		Factors Affecting the Embodied Energy	12
	2.4.1	Recycling and Reuse	12
	2.4.2	Energy Source	13
	2.4.3	Production Process	14
	2.4.4	Transport	15
	2.4.5	Raw Material	17
	2.4.6	System Boundary	18

2.5 Embodied Energy in Fuel & Energy 20
2.6 Practical Problems and Issues 22
2.7 Embodied Energy and Global Warming 24
2.8 Benefits of Embodied Energy Analysis 27
2.9 State of the Art of Embodied Energy Studies in the World 28
2.9.1 Life Cycle Embodied Energy in Office Furniture 29
2.9.2 Life Cycle Analysis of Heavy Vehicles 30
2.9.2 Energy Payback Time of Photovoltaic Vehicles 31
2.9.3 The Energy Intensity of Photovoltaic Systems 31
2.9.4 Energy Payback ratio and CO_2 Emission Associated with Electricity Generation from a Natural Gas Power System 31
2.9.5 Which is Better? Steel, Concrete or Wood 31
2.9.6 Energy use from Cradle to Grave for Three Single Family Houses 32
2.9.7 Using Monte-Carlo simulating in Life Cycle Assessment for Electric & Internal Combustion Vehicles 32
2.9.9 Embodied Energy and Life Cycle Energy Analysis in Built Environment 32
2.9.10 Data for Life Cycle Energy Calculation 36

3. Chapter 3: Methodology and Scope of the Study 43
3.1 Scope of the Study
3.2 Energy and Material Consumption at Puttalam Cement Factory 43
3.2.1 Energy for Raw Material 43
3.3 Referring Delivered Electrical Energy to Primary Energy 44
3.4 National Energy Embodied in the Petroleum Fuels 44
3.5 Energy Requirement in Transport 44
3.6 Referring Delivered Thermal Energy to Primary Energy 45

4. Chapter 4: Assessment of Cement Manufacturing Process at Puttlam Cement Factory 46
4.1 Raw Material 46
4.2 Energy 48
4.3 Production Process 51
4.4 Human Resources 54

4.5 Ancillary Inputs 55
4.6 Extraction of Limestone 57
4.6.1 Fuel Consumption in Heavy Vehicle and Other Machinery 57
4.6.2 Electrical Energy Consumption 58
4.6.3 Water Consumption 59
4.6.4 Production 59
4.6.5 Oil Consumption 59
4.6.6 Human Resources 61

5. Chapter 5: Analysis of National Energy Supply 62
5.1 Electricity Mix – Past, Present and Future 62
5.2 Efficiency of Power Generation 74
5.3 Transmission and Distribution Losses 75
5.4 Lakdhanavi Power Project 75
5.5 Petroleum Energy 76
5.5.1 Refinery 77

6. Chapter 6: Analysis of Embodied Energy in Cement 80
6.1 Embodied Energy in Delivered Energy 80
6.1.1 Petroleum Fuel 80
6.1.2 Calculation of Transport Energy 83
6.1.2.1 Energy Consumption to Produce Lubricant Oil 83
6.1.2.2 Energy Consumption for Servicing Vehicle 84
6.1.2.3 Energy Consumption for Fuel Pumping 85
6.1.2.4 Total Energy Consumption for Vehicle Operation 86
6.1.3 Electricity 87
6.2 Embodied Energy in Cement 92
6.2.1 Level 1 Analysis 92
6.2.2 Level 2 Analysis 93
6.2.2.1 Energy Consumption for Employee Transport 93
6.2.2.2 Energy Consumption for Employees Uniform 94
6.2.2.3 Energy Consumption for safety Shoes 94
6.2.2.4 Energy Consumption for Lubricating Oil 94
6.2.3 Level 3 Analysis 95

7. Chapter 7: Discussion and Conclusion 101
7.1 Embodied Energy in Cement 101
7.1.1 Level 1 Energy 102
7.1.2 Level 3 Energy 103
7.2 Sensitivity Analysis 103
7.2.1 Sensitivity to National Electrical Energy Mix 103
7.2.2 Sensitivity to Reduction of Transmission and Distribution Losses 105
7.3 Self Generation of Electricity 106
7.4 Comparison of Embodied Energy of Cement Found in Literature 107
7.5 Use of the Result 107

Reference 109
Annex 1: Energy Requirement in Producing Lubricating Oil 112
Annex 2: Energy Consumption for Shoe Manufacturing 113
Annex 3: Energy Consumption at Kabool Lanka Ltd. 114
Annex 4: Energy Consumption for Petroleum Fuel Filling Stations 116
Annex 5: Properties of Fuel 117

List of Tables

Chapter 2

2.1 Energy Breakdown of a Loaf of Bread in the UK
2.2 Effect of Recycling in Embodied Energy
2.3 Efficiency of Thermal Power Plants
2.4 Comparison of Transport Energy of Steel
2.5 CO_2 Emission - kg/passenger km
2.6 CO_2 Produced from Varying Raw Material in Steel Production
2.7 Embodied Energy of Some Building Material
2.8 The Main Green House Gases
2.9 Embodied Energy of Building Materials
2.10 Embodied Energy of Fuel Oil
2.11 Comparison of Embodied Energy Data Available for Steel
2.12 Comparison of Embodied Energy Data Available for Wood
2.13 Comparison of Embodied Energy Data Available for Concrete
2.14 Global Warming Potential (20 year time horizon)
2.15 Specific CO_2 equivalent Emissions for Fuels
2.16 Potential Production Energy Saving of Recycle Material
2.17 Average Fuel Consumption of Vehicle
2.18 Energy used by Mode of Transport (MJ/passenger km)
2.19 Embodied Energy Coefficients

Chapter 4

4.1 Details of Raw Material Supply
4.2 Annual Consumption of Raw Material
4.3 Consumption of Limestone
4.4 Quantity of Limestone - Year 2001
4.5 Consumption of the Laterite
4.6 Monthly Electricity Consumption of the Factory - 2001
4.7 Furnace oil Consumption - 2001
4.8 Diesel Consumption in Shunting Train Engine - 2001
4.9 Fuel Consumption in Heavy Equipment - 2001
4.10 Heavy Vehicle Running Hours
4.11 Crusher Output - 2001
4.12 Raw Mill Output - 2001
4.13 Clinker Production & Energy Consumption - 2001
4.14 Cement Production - 2001

4.15 Details of the Employees at Cement Factory - 2001
4.16 Employees Transport Details
4.17 Details of Uniform
4.18 Annual Consumption of Explosives
4.19 Details of Heavy Vehicles & Machinery - 2001
4.20 Monthly Diesel Consumption - 2001
4.21 Monthly Electricity Consumption - 2001
4.22 Monthly Production - 2001
4.23 Details of Oil Consumption - 2001
4.24 Annual Oil Consumption - 2001

Chapter 5

5.1 Existing Hydro Power Plants - 2000
5.2 Details of Existing Thermal Plants - 2001
5.3 Committed and Candidate Power Plants
5.4 Forecasted Annual Electrical Energy Demand - GWh
5.5 Annual Generation - Base Case Plan
5.6 Efficiency of Thermal Power Plants
5.7 Planed T&D Loss Reduction
5.8 Operating Energy Data
5.9 Employee Data
5.10 Employee Transport Details
5.11 Petroleum Imports
5.12 Refined Petroleum Product Mix - 1999
5.13 Petroleum Production - 2001
5.14 Monthly Fuel Consumption - 2001

Chapter 6

6.1 Energy Content of Petroleum Fuel at Delivery
6.2 Sequence of Engine Oil Changes
6.3 Energy Consumption of Vehicle Service
6.4 Energy Consumption of Vehicles
6.5 Energy Consumption per passenger km
6.6 Employee Transport Energy Consumption
6.7 Fuel Transport Energy Factors
6.8 i Factors of the Power Plants
6.9 Embodied Energy of Cement

Annexes

A-1-1 Energy Consumption: Year 2001- Caltex Lubrication Lanka Ltd.

A-2-1 Electrical Energy Consumption & Production

A-3-1 Energy Consumption & Production

A-4-1 Monthly Fuel Sold & Energy Consumption

A-4-2 Monthly Energy Consumption & Vehicle Serviced

A-5-1 Properties of Fuel

List of Figures

Chapter 1

1.1 Energy Supply by Source - 2000
1.2 Energy Consumption by Sectors
1.3 Petroleum Demand Growth
1.4 Fossil Fuel Requirement for Power Generation

Chapter 2

2.1 Different Levels of Embodied Energy Analysis
2.2 Embodied Energy in Reuse & Reprocessing
2.3 Energy Profit Ratio
2.4 Extent of Up Stream Process
2.5 Energy Loss Chain in Coal Based Power Generation
2.6 Global Temperature Change
2.7 Sea Level Rise
2.8 Green House Effect
2.9 GHG Emission in Sri Lanka - 1994
2.10 Global CO_2 Emission
2.11 Embodied Energy of Office Furniture

Chapter 3

3.1 Referring Delivered Energy to Primary Energy

Chapter 4

4.1 Share of Energy by Source
4.2 Process Flow Diagram - Puttalm Cement Factory

Chapter 5

5.1 Historical Electricity Generation
5.2 Future Energy Generation
5.3 Thermal Hydro Mix

Chapter 7

7.1 Breakdown of Embodied Energy of Cement
7.2 Breakdown of Level One Energy
7.3 Breakdown of Heat Energy

7.4 Breakdown of Level 3 Energy
7.5 Variation of Electrical Energy Mix
7.6 Variation of Primary Energy Required to Deliver One kWh of Electricity from the National Grid
7.7 Variation of Embodied Energy of Cement with Energy Mix in Electricity Generation
7.8 Variation of Embodied Energy of Cement with Energy Mix in Electricity Generation and Planed T&D Loss Reduction