Road Testing Organisational Life Cycle Assessment at Universitas Pelita Harapan: A Pilot at Faculty of Science and Technology

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PREFACE

With great pleasure we would like to present our report on the road testing of UNEP/SETAC Life Cycle Initiative Organizational Life Cycle Assessment. The work we are presenting in this report is a pilot project at Universitas Pelita Harapan, conducted specifically at the Faculty of Science and Technology.

First, I would thank God Almighty for His blessings so that we could finish this research and report as a road tester for UNEP/SETAC Life Cycle Initiative Organizational Life Cycle Assessment (LCA). I would like to thank the team from Technische Universität Berlin, Prof. Matthias Finkbeiner, Dr. Julia Martinez-Blanco, Silvia Forin for giving us the opportunity to work on this project and Prof. Atsushi Inaba from Kogakuin University for his feedback during the 12th Biennial EcoBalance Conference in Kyoto. We hope that we could contribute to the knowledge and expand our network in the field of LCA.

I would like to express gratitude to Universitas Pelita Harapan Foundation, the Rector of Universitas Pelita Harapan Dr. Jonathan Parapak, the Dean of Faculty of Science and Technology Prof. Manlian R. A. Simanjuntak and all the faculty members for supporting us in our work in every way, the Quality Assurance Department of Universitas Pelita Harapan, Head of Industrial Engineering Department Mr. Laurence and all of our friends in the department, and also our research group team Laurence and Priskila. Without them we would not be able to conduct this research.

A special thanks to my students at Project Management Class who have contributed their hard work for collecting data for this project and presented the preliminary results for this project. To Miss Anggie Rahma Pratiwi, my thesis student, who has worked on this project endlessly, you are greatly appreciated.

Our work would not be successful without the on-going support from the Indonesian Life Cycle Assessment Network (ILCAN). I am eternally grateful to Dr. Edi Iswanto Wiloso, our chairman, who has given me the chance to serve at ILCAN. I greatly admire his vision, spirit and commitment to support the development of LCA in Indonesia.

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Last, we realize that we could improve the work better and we hope that you could provide us with critics and suggestions so that we could provide better understanding about organizational Life Cycle Assessment. We hope that the findings that we have could not only provide improvements to Universitas Pelita Harapan for a better future but also can contribute to the development of knowledge in Life Cycle Assessment community in the world. Towards sustainable development!

Tangerang, 22 February 2017

Jessica Hanafi

Lead Researcher

ABSTRACT

Universitas Pelita Harapan (UPH), a private university in Indonesia, is known as a green and non-smoking campus. However, environmental management has not been included in the university's strategic policy. In this research, UPH is given the opportunity to be a road tester for UNEP/SETAC Life Cycle Initiative flagship program on Life Cycle Assessment in Organization (O-LCA). With Organizational Life Cycle Assessment (O-LCA), the potential environmental impact arising from the whole operational activities in an organization can be identified and assessed. In this report, O-LCA is implemented at the Faculty of Science and Technology (FaST) as a pilot project. The goal of the study is to raise environmental awareness around the university and incorporate environmental indicators into the overall university performance. Data collection were carried out by interviews, surveys, observations, online research and measurement. The system boundary in this study includes indirect upstream activities and direct activities. LCIA is conducted using 4 methods i.e. ReCiPe Midpoint (H), IPCC 2013 GWP 100a, Cumulative Energy Demand and Pfister 2009 (Water Scarcity). Based on the result of the study, it was concluded that the dominant impact categories are marine ecotoxicity, freshwater ecotoxicity, freshwater eutrophication, human toxicity and particulate matter. The main contributors to those impacts was the usage of electricity, commuting, and electronic waste generated. Total of GHG resulted from FaST pilot project is equal to 1.63×10^6 kg CO2 equivalent while the total of Cumulative Energy Demand amounts to 2.45×10^7 MJ. This finding could provide the development of university wide policy on environmental management system toward sustainable university.

Keywords: Organizational Life Cycle Assessment, Life Cycle Impact Assessment, Sustainable University

TABLE OF CONTENT

TABLE OF FIGURES