

Preface

Recent years have seen increased interest in LCA-based environmental impact assessments, including the European Commission (EC) conducting a test run of an Environmental Footprint project. In March 2017, we launched the LIME3 Utilization Assessment Workgroup within the LCA Society of Japan to work with participating corporate members to study LIME3 usages. This report introduces those results as a collection of case studies.

LIME (Life Cycle Impact Assessment Method based on Endpoint) is an environmental impact assessment method based on a life cycle assessment (LCA). LIME1 was published in book format in 2005 and LIME2 was published in 2010. Both of these were published based on the assumption of being used in assessments conducted in Japan. LIME3 adapts these methods for international use. LIME3 was published as a book of detailed explanations in August 2018.

Put simply, these methods provide a way to use the results of life cycle inventory analysis to estimate the impact of environmental emissions volume and resource consumption volume on human health and biodiversity, and to calculate (aggregate) those analysis results into a single numerical value. In particular, this system provides methods for converting the cost of those calculations into monetary amounts. This is based on the belief that converting impact into a monetary value makes it possible to calculate various damages. The portion used to estimate damage volume is grounded in scientific theory and the portion used to calculate monetary value is based on surveys of perceived value by people in various G20 countries. This method is garnering attention around the world in the LCA field as the method to understand the importance of impacts on various environments and to weight those impacts by summarizing them into a single numerical value.

Methods for converting environmental impact into economic value have been researched in the field of environmental economics for years. These methods were summarized in ISO14008 (2019), which was published in March of this year. These methods will also be used in ISO14007 (work in progress), which calculate the environmental expenses and benefits of corporate activities. ISO/TC207 (environmental management) is also moving to adopt ISO14097 (climate change finance), which includes financial aspects in the control of climate change caused by greenhouse gases, ISO14030 (green bonds), and ISO14100 (green finance). Furthermore, ISO/TC322 (sustainable finance), which is related to ESG investments, was established in 2018. This suggests that when evaluating activities related to the environment, it is necessary to convert environmental impact into monetary amounts.

Looking beyond ISO, discussions based on the Paris Accords about carbon pricing, converting greenhouse gas emissions into monetary amounts, are being conducted on a global scale. Also, the monetary conversion of environment impact is believed to play a critical role when considering the effective utilization of natural resources.

I hope that through this report the LIME3 utilization case studies introduced here will

serve as a catalyst for more companies to engage in environmental impact activities as we strive to create a sustainable society.

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