



# Using Life Cycle Thinking for Industrial Decision Making



Life cycle thinking is a concept that has gained much traction in the recent times with the global drive towards sustainability and responsible resource consumption. It is based on the life cycle sustainability assessment (LCSA) methodology, which combines life cycle assessment (LCA), life cycle costing (LCC), and social life cycle assessment (SLCA). It transcends beyond the popular and conventionally accepted view of sustainability, which is centred upon simply reducing emissions and other environmental impacts. Instead, it enables a more holistic vision that incorporates the economic, environmental, and social impacts of a product, process, or a system throughout its life cycle, from raw material extraction to the eventual end-of-life. If the entire life cycle is not considered in sustainability initiatives, impacts are merely pushed from one life cycle stage to another or will be shifted from one geographic region to another. The life cycle concept is increasingly being used in the developed world for improving the performance of their products or processes holistically, while also emphasizing on gaining competitive advantage and branding. However, the life cycle thinking based decision making for all aspects of operation in the Sri Lankan industry sector has a lot of room to improve.

## Speakers

### Dr. JR Gamage

Senior Lecturer, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

### Dr. Hirushie Karunathilake

Lecturer, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

### Dr. Himan Punchihewa

Head/Senior Lecturer, Department of Mechanical Engineering, University of Moratuwa, Sri Lanka

## Workshop Programme

Topic	Presenter	Time
Life cycle thinking, sustainable development, and responsible resource consumption - <i>Lecture</i>	Dr. Himan Punchihewa	30 minutes
Life cycle assessment and life cycle costing techniques and tools - <i>Lecture and interactive session</i>	Dr. JR Gamage Dr. Hirushie Karunathilake	1 Hour
Interpreting results and holistic engineering decision making - <i>Lecture and interactive session</i>	Dr. Hirushie Karunathilake	30 minutes
<b>Break</b>		<b>20 minutes</b>
Group activity	Dr. JR Gamage Dr. Hirushie Karunathilake	30 minutes
Experience sharing and practical examples - <i>Discussion</i>	Dr. JR Gamage Dr. Hirushie Karunathilake	30 minutes
Q&A session	Dr. JR Gamage Dr. Hirushie Karunathilake	30 minutes

## Workshop Objectives

The purpose of this workshop is to provide an understanding of the concept of life cycle thinking, state-of-the-art tools and techniques for life cycle environmental and economic assessments, and the practical application of this concept in industrial settings for holistic performance improvement. This is with a view to promote the use of life cycle thinking among relevant stakeholders including industry practitioners, government bodies in charge of policy and regulations development, and researchers focusing on directions such as sustainable manufacturing, clean energy, and circular economy.

## Expected outcomes:

Upon the completion of this workshop, the participants should be able to:

- 1) Explain the concept of life cycle thinking and life cycle sustainability assessment
- 2) Define the goal, scope, and system boundary of a life cycle assessment problem
- 3) Demonstrate how a life cycle inventory for a product, process, or a system is constructed based on the inflows and outflows
- 4) Make use of the state-of-the-art LCSA tools and techniques for impact assessment and interpret the results of an assessment for a simplified problem
- 5) Demonstrate how recommendations are provided for holistic sustainability enhancement and sustainability decision making in an organisation

Participation is **FREE** of charge!

## Target audience

Individuals and groups involved in decision making, operations and maintenance in the following entities would benefit from this workshop.

- Manufacturing organisations
- Energy service providers and utilities
- Government and regulatory bodies
- Researchers and research students

**Only 20 participants are expected considering the effectiveness of the workshop.**

WORKSHOP 8

7<sup>th</sup> International Multidisciplinary Engineering Research Conference

29<sup>th</sup>  
July 2021

1.30 pm -  
5.30 pm

