

Abstract

Project Code : TRG5780218

Project Title : Development and Application of Consequential Life Cycle Assessment Method for Food and Fuel in Thailand and Asia

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Abstract: Currently, Thailand and many Asian countries have applied life cycle assessment (LCA) as a tool for impact assessment towards green economy. The main approach being applied is generally the “status-quo” or “attributional” approach, considering only average data and applying different allocation methods when dealing with co-products. The application of another approach which has been widely applied in Europe and many countries – so called consequential LCA (CLCA) is still rare in Thailand and Asia. This approach considers the actual impacts from change in demand of a product. It deals with cause-effect relationship by identifying what will happen if we increase the production of the product in question. The results of CLCA reflect reality addressing the consequences of changes. The main objective of this project was to develop the guideline for consequential life cycle assessment method with case studies on food and fuel in Thailand and Asia. Firstly, the CLCA method for assessing food and fuel crops was developed by providing clear modelling steps, important marginal suppliers and recommended applications. The guideline could be used for LCA researchers and practitioners in Thailand and other countries in Asia. Afterwards, case studies applying the CLCA method on biofuel in Thailand and food consumption in Asia were carried out. In the case studies, both CLCA and attributional LCA (ALCA) modelling approaches were used. Specific questions and conditions which could be more suitable for each modelling choice are addressed. The attributional modelling is more suitable for national environmental taxation and emission labelling/accounting for import-export while the consequential modelling is more appropriate for new production development and eco-design. Due to the potential environmental risks arising from the modelling limitations, the consideration of both the widely applied approaches could support decisions more comprehensively.

Keywords : Life cycle assessment method; LCI modelling; Cause-effect relationship; CLCA; ALCA.