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A Combined Application of LCA and MCDA Methodologies on Sustainability Assessment Studies

As sustainability concept emerges with increasing awareness about the impacts of human acts on nature, research activities have evolved to include environmental and social aspects as well as the economic factors. Since sustainability is defined as “meeting the needs of the present without compromising the ability of future generations to meet their own needs”, it is important to analyze the preferences we make in order to satisfy the requirements of today. For this aim, Life Cycle Assessment (LCA) and Multi-Criteria Decision Analysis (MCDA) methodologies can be combined together to conduct a comprehensive sustainability analysis. LCA is a methodology of compilation and evaluation of the inputs, outputs and potential impacts of a product or service throughout its life cycle especially from an environmental perspective. However, MCDA covers all of the concepts related to economic, technical, environmental and social aspects. This character of MCDA methodology allows us to combine it with LCA and perform sustainability analyses in a wide range of research areas. In this presentation, a brief methodological basis is introduced and two case studies are discussed concerning the sustainability analysis of electricity generation technologies and packaging waste collection systems.