Cross-border sustainability limitations

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Abstract

The concept of sustainable development [4] although sometimes subject of critics [9] is at present globally accepted as sole development pathway for continuous of economic growth with attention for environmental issues [14, 16]. Wide acceptance of sustainable development concept resulted in emerging interest for new forms of mobility such as electric vehicles and zero emission logistics i.e. cargo-handling-equipment. The transition from fossil burning engines to electric engines in all forms of transportation is recognised by related industries and policy makers as way towards sustainable form of transport [16, 19]. Unfortunately, the story behind the scene of zero emission transportation systems, reveal significant number of environmental risks. One of important risks is identified after the imposing question of cross-border sustainability. It is of vital importance for industry and policy makers to evaluate this risk before adapting any long-term or major development strategies. In order to evaluate sustainability risks in transition from fossil burning engines to electric engines in transport systems it is recommended to apply evaluation of environmental efficiency by way of life cycle assessment [15, 16, 19]. The life cycle assessment offers evaluation of impact of power grid mix to environmental efficiency of transportation system. The vast difference between inventories of power grid mixes of countries [2, 5] implicates that sustainability outcome changes with border crossing. Thus, well-to-wheel assessment or plug-to-wheel assessment as part of life cycle stages assessment is with strong belief mandatory in order to pinpoint the week spots in sustainability strategies in each country [1,7]. It this paper the examples of cross-border sustainability are given for several forms on transportation systems (vehicles, cargo-handling-equipment) and several cross-border scenarios. All cases are verified with data of previously conducted full life cycle assessments and every stage of life cycle that relates to environmental effects of power grid mix supply is evaluated.

Keywords: Sustainable development, life cycle assessment, future of mobility, zero emission, cross-border sustainability, environmental efficiency.

References


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