

CONNECTING

Consequential Life Cycle Assessment of multi-modal mobility policies - the case of Luxembourg

Inspiration

Life Cycle Assessment (LCA) is a universally recognized methodology aiming at quantifying the environmental impacts of a product or a process throughout its lifecycle. A specific LCA approach, called consequential LCA (C-LCA), is increasingly being developed and used to assess the environmental consequences of strategic policy actions affecting large scale systems and markets, from a decision making support perspective. A seminal example of large scale systems requiring the development of ad hoc consequential LCA methodologies, and at the same time offering unique opportunities for research due to its specificities, is the case of mobility.

In Luxembourg, national level policy actions on electric mobility are of the highest importance and strategic for the fulfilment of CO2 reduction objectives, with the target of introducing 40,000 electric vehicles by 2020. The specific situation of Luxembourg, which employs 150,000 daily cross-border commuters, raises additional issues related to the recharge and use of the electric vehicles. The multimodal dimension, with the personal use of electric vehicles combined with public transport, enlarges the scope of the analysis, both in terms of policy actions to be defined and evaluated and of simulation complexity.

Innovation

The CONNECTING project aims to address the question: how should the positive and negative environmental consequences of policy actions targeting the future mobility challenges of society be assessed? More specifically, the project will focus on proposing an operational tool for the consequential LCA of mobility scenarios, rooted in the development of an integrated agent-based environmental assessment model for the specific case of Luxembourg's cross-border commuters and their choice of transport mode. The development of a combined agent-based/LCA approach is, to the best of our knowledge, unique in the research community. Therefore it represents a meaningful research endeavour which will make a substantial contribution to the community and will allow a more accurate assessment of the effects of mobility policies, as compared to conventional (scenario based) practices. In addition, the project will combine the knowledge and tools that have been developed by the Luxembourg Institute of Science and Technology (LIST), and the Luxembourg Institute of Socio-Economic Research (LISER) and further develop them following a precise research strategy.

Impact

The consequential LCA tool developed by the project will play a pivotal role in the consolidation of the competences and the international visibility of the two partner institutes. CONNECTING will provide new scientific knowledge, clearly beyond the current state of the art of sustainability science and LCA, and an operational simulation tool. In addition, practical information and data of high relevance at national level will be elaborated regarding the sustainability of mobility systems in Luxembourg. Namely, the project will make it possible to discuss, refine and evaluate mobility policies for the specific case of cross-border commuting from France, in collaboration with decision makers and stakeholders. The results will therefore represent the ideal basis for the further application of the developed methodology at wider scale, namely the Greater Region, with the implication of further key partners and stakeholders from the other neighbouring countries.



Partners

- Eindhoven University of Technology (NL)
- Luxembourg Institute of Socio-Economic Research (LU)

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