Ensuring life cycle assessment becomes life cycle management

Although life cycle assessment (LCA) is a widely accepted method for supporting decision-making, it can face difficulties when being translated into practical life cycle management. A recent case study on local waste management has led to the development of several principles to ensure that LCAs are understandable and applicable.

The EU recommends the use of LCA or life cycle thinking in the waste management plans of Member States. However, for LCAs to be successful in developing waste management plans they must be transparent, both in terms of their results and their links with policy practice.

The waste agency of Catalonia (Spain), commissioned the UNESCO Chair in Life Cycle and Climate Change to explore the LCA of different waste management options, with the specific aim of examining whether it is preferable to treat waste in Catalonia or to export it for treatment. The research group analysed the process and compiled a set of principles to guide those undertaking LCAs to ensure they are understood and used by decision makers. Although focused on Catalonia, the study is general in its scope and does not depend on any specific local conditions, so its recommendations could apply to other regions as well.

Four waste management options were identified with different combinations of treatments (energy recovery, solvent recovery and landfill) and a choice of whether to export the waste or treat it within Catalonia. The authors estimated the environmental impact in terms of energy, the expenditure associated with transport and treatment of each type of waste, and developed a model for each management option, using LCA techniques to identify the maximum distance that the waste could be transported for treatment while managing environmental impact.

The approach, using four models, was adopted by the Catalan government as a scientifically robust and practical approach to waste management. On the basis of the experience gained in the project, the researchers developed the following recommendations for life cycle management, which could be applied to other regions and environmental policies:

‘Consensus beats reality’ principle – From the start, it should be acknowledged and understood that LCA can never completely represent reality and it will be affected by its assumptions and that the different stakeholders have preconceptions. Although LCA itself cannot be totally realistic, it is important to have consensus about the expectations placed upon it.

‘The three-thirds’ principle – To ensure LCA studies can be useful for, and correctly understood and interpreted by non-LCA experts, resources should be distributed as follows: one third to seek consensus with the client on the goal and scope of the LCA, one third to help the customer understand and use the results, and finally, one third to perform the LCA study itself.

‘Trust beats certainty’ principle – Scientific robustness is important in an LCA, but so is the decision-makers’ level of trust in the method and in the LCA practitioner. Trust must be in place if the LCA is to translate into effective life cycle management and social skills are needed.

‘Good enough is best’ principle – This addresses the issue of whether to base a decision on an incomplete or limited LCA. The study suggests that a suitable approach is to start by settling for simplified LCAs and allow the possibility of a full LCA if there is disagreement on the results.

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