

BIOFUEL LCAS AND TEMPORAL ISSUES

Don O'Connor
(S&T)² Consultants Inc.

Introduction

Life cycle assessment's role in public policy development has traditionally been focused on informing public policy positions of industry and government. This appears to be changing. Over the past few years there have been several announcements related to incorporating life cycle-based standards directly into climate change regulations for transportation fuels. These regulatory initiatives include those covering all transportation fuels in a particular jurisdiction, as well as the more numerous initiatives, which are focused on biofuels. One of the most prominent initiatives is California's Low Carbon Fuel Standard (LCFS), which will consider all light-duty transportation fuels sold into State. The European Unions Renewable Energy Directive and Fuels Directive, and a number of other programs.

The application of lifecycle analyses in a regulatory framework is not without its challenges. The work underway in the EU and North America to develop LCA criteria for regulatory purposes differs significantly from more scientific LCA work. Temporal issues have not been addressed in these regulatory LCAs. IEA Bioenergy Task 39 has supported two projects that considered temporal issues with respect to ethanol and biodiesel. The results of both projects highlighted the importance of the topic.

Results and Conclusions

While each biofuel is expected to exhibit unique characteristics with respect to GHG emission reductions over time, it is expected that all biofuels will exhibit significant reductions in GHG emissions as the technology matures. In the case of corn ethanol, it was demonstrated that the GHG emission reductions are expected to double between 1995 and 2015. Rapeseed biodiesel exhibits the same trend, but at a lower rate of improvement, with GHG emissions increasing by about 50% over a 20 year period. While sugar cane ethanol was not included in the studies, it is expected that similar trends will exist in this system.

The lack of attention being paid to temporal issues during policy development should be a concern to the biofuel industry and to regulators. The current situation where policy is being developed with data from 10 to 20 years old is unlikely to result in optimal solutions. Viable future solutions may be discarded as being insufficient or too costly.

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