

Life-Cycle Assessment: The Praxis of Environmental Footprinting

Adapting to the new energy paradigm requires action. For businesses, this means measuring their emissions, making informed investment decisions, filing accurate reports, and managing data through the lens of emission accounting. EcoEngineers, recently acquired by leading global assurance partner LRQA, has helped thousands of businesses gain control of this journey, guiding them through the energy transition without disrupting their core activities.

Global clean energy regulations, investment opportunities in voluntary carbon markets (VCM), and incentive programs such as the U.S. Inflation Reduction Act of 2022 (IRA) all have product life-cycle assessment (LCA) as their foundation. Therefore, in addition to measuring Scope 1, 2, and 3 emissions, understanding the product life-cycle carbon footprint (PCF), fuel carbon intensity (CI), or a more comprehensive environmental product declaration (EPD) is one of the first steps in a successful transition to net zero. LCAs are the praxis and application of emission accounting. It is a systematic and comprehensive method for evaluating the environmental impact of a product, service, or system, from its inception to its end-of-life (cradle-to-grave). It assesses the environmental aspects and impacts throughout the entire lifecycle of a product, including the extraction of raw materials, production, transportation, use, and disposal. LCAs are used by regulators to create a performance-based standard for incentives or to identify compliance issues. EcoEngineers performs LCAs to support regulatory compliance and to inform decision-makers on priority areas to focus on by identifying emission hotspots associated with a product and their potential for improvement.

EcoEngineers' team of industry-renowned scientists, led by Dr. Zhichao Wang, has performed more than 1,000 carbon LCAs since 2015, on a variety of products, including grains, oils, fuels, plastics, farm products, supplements, lubricants, metals, and more. Our LCAs follow International Organization for Standardization (ISO) standards 14040, 14044, and 14067. Our team is fully adept at utilizing all available LCA tools, such as the Argonne GREET (Greenhouse gases, Regulated Emissions, and Energy use in Technologies) model and its derivative CA-GREET, GHGenius, SimaPro, Sphera's LCA for Experts (fka GaBi), and openLCA.

We advocate for establishing an international LCA standard and database for the global good. EcoEngineers is accredited by the American National Standards Institute (ANSI) National Accreditation Board (ANAB) as a GHG verification body in accordance with ISO standards ISO/IEC 17029:2019, ISO 14065:2020, and ISO 14064-3:2019.

Global Regulations and Carbon Accounting Schemes That Provide Incentives to Use Low-Carbon Fuels Based on an LCA:

- U.S. Renewable Fuel Standard (RFS)
- California Low Carbon Fuel Standard (CALCFS)
- Oregon Clean Fuels Program (OR-CFP)
- Canada Clean Fuel Regulations (CFR)
- British Columbia LCFS (BC-LCFS)
- EU Renewable Energy Directive (RED) and its implementing measures
- Brazil RenovaBio
- Emerging voluntary carbon markets:
 - International Sustainability and Carbon Certification (ISCC)
 - Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

Tax Credits Under the Inflation Reduction Act of 2022 (IRA) Requiring LCAs:



Section 45Z
Clean fuel production credit



Section 45V
Clean hydrogen production credit



Section 45Q
Carbon capture, utilization, and sequestration (CCUS) credit



Section 45W
Commercial vehicle credit



Section 45X
Advanced manufacturing tax credit for components of wind, solar, and battery technologies



Section 45U
Zero-emission nuclear power production credit

About EcoEngineers

EcoEngineers, an LRQA company, is a consulting, auditing, and advisory firm with an exclusive focus on the energy transition and decarbonization. From innovation to impact, EcoEngineers helps its clients navigate the disruption caused by carbon emissions and climate change. EcoEngineers helps organizations stay informed, measure emissions, make investment decisions, maintain compliance, and manage data through the lens of carbon accounting. Its team of engineers, scientists, auditors, consultants, and researchers live and work at the intersection of low-carbon fuel policy, innovative technologies, and the carbon marketplace. EcoEngineers was established in 2009 to steer low-carbon fuel producers through the complexities of emerging energy regulations in the United States. Today, EcoEngineers' global team is shaping the response to climate change by advising businesses across the energy transition. For more information, visit www.ecoengineers.us.

To learn more about our LCA services and capabilities, contact us at clientservices@ecoengineers.us