

Your Partner for Life Cycle Assessments and Sustainability Evaluations - Special Expertise in Bio- and CO₂-based Products

Your company develops innovative products that offer environmental benefits and you want to tell the market? Life Cycle and Sustainability Assessments, carried out by an independent, competent and credible partner, are the perfect way to communicate the advantages of your products!

Sustainability is becoming increasingly important for establishing and growing in today's ever changing markets.

Life cycle assessment (LCA) is a scientific method to analyse the potential environmental impacts of a product system. It is internationally standardised according to ISO 14040 and 14044. It takes into account the potential environmental impacts throughout the life cycle of a product - from "cradle to grave". This means it covers all consecutive and interlinked stages of a product system from the extraction of resources, the manufacturing of the product through its use phase, recycling and the final disposal of the remaining waste.

Our services

- Comparing the environmental impact of your products with the competing products or new in-house production routes.
- Identifying hot spots of environmental concern.
- Technology improvement by using sustainability feedback loops (Sustainability Integrated Technology Development, SUITED).
- Benchmarking the sustainability of your processes and products and providing information to your customers.
- Supporting you in communication strategies including certification and labelling.
- Providing peer-reviews for scientific articles and third party critical reviews of LCA studies according to ISO 14040.
- Add-on services for Sustainability Certification, Social LCA, Life Cycle Costing (LCC) and Techno-Economic Evaluation.

Running research projects

- **"OekoStoff - Deriving recommendations for the implementation and political valorisation of life cycle assessments for the material use of biomass considering the case examples of bio-based plastics and the cascading use of wood"** for the Federal Ministry of Food and Agriculture Germany (FKZ: 22007014): 07/2015 - 12/2016
- **"MultiHemp - Multipurpose Hemp for industrial bioproducts and biomass."** EU FP7 grant agreement no 311849: 09/2012 - 02/2017
- **"MIRACLES - Multi-product Integrated bioRefinery of Algae: from Carbon dioxide and Light Energy to high-value Specialities"**. EU FP7 grant agreement no 613588: 11/2013 - 10/2017
- **"COSMOS - Camelina & crambe Oil crops as Sources for Medium-chain Oils for Specialty oleochemicals"**. EU Horizon 2020 grant agreement No. 635405: 03/2015 - 08/2019
- **"PULP2VALUE - Processing Underutilised Low value sugarbeet Pulp into VALUE added products"**. EU Horizon 2020 grant agreement No. 669105: 07/2015 - 06/2019

Selected Industrial Customers

BMW, Evonik, Ford, KPMG, LOGOCOS, Uhde-Inventa Fischer, Reifenhäuser, ESE Expert, VW, WWF.

nova-Institute is a private and independent institute, founded in 1994; nova offers research and consultancy with a focus on bio-based and CO₂-based economy in the fields of feedstock, techno-economic evaluation, markets, LCA, dissemination, B2B communication and policy. Today, nova-Institute has 25 employees and an annual turnover of more than 2 million €.












nova-Institute looks back at more than 10 years of experience in the areas of life cycle assessment, sustainability evaluation and policy consulting. Our interdisciplinary and dynamic team is your partner for scientifically sound, pragmatic and effective solutions. Profit from our outstanding experience in the fields of bio-based and CO₂-based chemicals and materials.

Selected publications

- "Carbon Footprint and Sustainability of Different Natural Fibres for Biocomposites and Insulation Material (2015). Barth, M. & M. Carus. nova-Institut, Hürth. <http://bio-based.eu/ecology>.
- "Life cycle assessment of biomass-based ethylene production in Sweden - is gasification or fermentation the environmentally preferable route?" (2015). International Journal of Life Cycle Assessment 20 (5): 632-644: Liptow, C., Tillman, A.-M. & M. Janssen.
- "A comparative life cycle assessment study of polyethylene based on sugarcane and crude oil". Journal of Industrial Ecology 16 (3):420-435 (2013); Liptow, C. & A.-M. Tillman.
- "Critical aspects in the life cycle assessment (LCA) of bio-based materials - Reviewing methodologies and deriving recommendations". In: Resources, Conservation and Recycling 73 (2013); Pawelzik, P., Carus, M., Hotchkiss, J., Narayan, R., Selke, S., Wellisch, M., Weiss, M., Wicke, B. & M. K. Patel.
- "Ethylene based on woody biomass—what are environmental key issues of a possible future Swedish production on industrial scale". The International Journal of Life Cycle Assessment 18 (5):1071- 1081 (2013); Liptow, C., Tillman, A.-M., Janssen, M., Wallberg, O. & GA Taylor.
- "A Review of the Environmental Impacts of Biobased Materials". In: Journal of Industrial Ecology, Vol. 16, Number S1 (2012): Weiss, M., Haufe, J., Carus, M., Brandao, M., Bringezu, S., Hermann, B. & M. K. Patel (13 p).
- "An Ecological Alternative? Bio-based Polymers". In: Kunststoffe international 8/2012; Essel, R., Carus, M. & A. Raschka (4 p).
- "Meta-Analysis of life cycle assessments for bio-based polymers in the production of Proganic©" (2012). In: bioplastics MAGAZINE 02/12 (7): 46-49; Essel, R. & M. Carus. <http://bio-based.eu/ecology>.
- "Life Cycle Analysis of Biodiesel from Alternative Plant Oils: Palm Oil and Jatropha Oil" (2009). In: Bartz, W.J. (Hrsg.): Fuels 2009 - Mineral Oil Based and Alternative Fuels. Proceedings, 7th International Colloquium, 14 - 15 Jan 2009. Technische Akademie Esslingen: 677 - 684; Rettenmaier, N., Reinhardt, G. & R. Essel.
- "Hemp fibres for Green Products - An assessment of life cycle studies on hemp fibre applications" (2011). Haufe, J. & M. Carus. nova-Institut, Hürth.

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| | <p>Stephan Piotrowski PhD</p>  <p>Techno-Economic Evaluation, Life Cycle Costing (LCC) & Statistics</p> |
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