

Your partner: ESU-services Ltd.

Supplementary information for tenders

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Commercial registry by the canton of Schaffhausen: [CHE-112.959.660](#)

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Schaffhausen, 17. April 2024

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Imprint	
Citation	Niels Jungbluth (2024) Your partner: ESU-services Ltd.. ESU-services Ltd., Schaffhausen, Switzerland, https://esu-services.ch/address/tender/
Contractor	ESU-services Ltd., fair consulting in sustainability Vorstadt 10, CH-8200 Schaffhausen https://www.esu-services.ch/ Phone 0041 44 940 61 32 jungbluth@esu-services.ch
About us	ESU-services Ltd. was founded in 1998. Its core objectives are research, consulting, review, and training in the fields of life cycle assessment (LCA), carbon footprints, water footprint in all sectors including e.g. energy, civil engineering, basic minerals, chemicals, packaging, telecommunication, food and lifestyles. Fairness, independence, and transparency are substantial characteristics of our consulting philosophy. We work in an issue-related manner and carry out our analyses without prejudice. We document our studies and work transparently and comprehensibly. We offer fair and competent consultation, which makes it possible for the clients to control and continuously improve their environmental performance. The company has worked for various national and international companies, associations, and authorities. In some areas, team members of ESU-services performed pioneering work such as development and operation of web based LCA databases or quantifying environmental impacts of food and lifestyles.
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1 Your partner [ESU-services Ltd.](#)

On the following pages we present us as your project partner for this project in the field of life cycle assessment.

1.1 Our philosophy “fair consulting in sustainability”

The core business of [ESU-services](#) is consulting (case studies, EU research), expertise (review, and training) and tools (SimaPro, data, software) in the field of life cycle assessment (LCA), carbon footprint and environmental product declaration (EPD). Fairness, independence, and transparency are the characteristics of our consulting philosophy since 1998. We offer fair and competent consultation, which enables our clients to monitor and continuously improve their environmental performance. We work in an issue-related manner and carry out our analyses without prejudice. We document our work in a transparent and comprehensible manner.

Our customers include various national and international companies, universities, associations, and administrations. Our team has pioneered the development and operation of web-based life cycle assessment databases, as well as research into the environmental impacts of food, biofuels, and consumption patterns.

1.2 Wide range of consulting services

ESU-services offers a wide range of services around the topic of life cycle assessment¹ (LCA):

- Consulting:
 - LCA case studies on energy systems, biofuels, food, packaging, lifestyles, transport, electronics, materials, construction products, and many other sectors².
 - Environmental declarations (EPD), Product Environmental Profile (PEP), Product Environmental Footprint (PEF) and verification of such statements. Development of Product Category Rules (PCR, PEFCR) for EPDs.
 - Balance of a company's total emissions including the flow of goods (organizational life cycle assessment, OLCA).
 - Consulting on life cycle and supply chain management.
 - Project management in ground-breaking life cycle assessment projects such asecoinvent and the "Life Cycle Assessment of Energy Products".
 - Other assessment methods such as CO₂-balances (carbon footprint), water footprint, environmental footprint, energy analyses, ecological footprint, biodiversity footprint, or transport balances.
 - Material and substance flow analyses (MFA and SFA).
 - Environmental extended input-output analysis
 - Development of impact assessment methods, e.g. method of ecological scarcity (environmental impact points).
- Software:
 - Sales of for the world's leading LCA software SimaPro.

¹ Download of further information regarding the LCA methodology and how to start a study on <https://esu-services.ch/address/tender/>

² Download of further information regarding the LCA methodology and how to start a study on <https://esu-services.ch/address/tender/>

- Simplified web tools and Excel parameter models.
- Education:
 - Training and coaching for LCA software and application.
 - Education and training, lectures, support for journalists.
 - Organization of workshops such as the life cycle assessment discussion forum and conferences (International LCA foods conference).
- Data:
 - Life cycle inventory analysis, e.g., for oil and gas products for third party databases likeecoinvent, KBOB or CarbonMinds.
 - Sales of own and third party life cycle inventory data for various areas of interest (e.g. food production and consumption, energy systems, chemicals or social life cycle assessment).
- Review:
 - Critical review according to ISO 14040, 14044, 14067, and other standards.
 - Advice on the development of standards for life cycle assessment.
 - Articles for scientific journals, review, editor for the Int J LCA.

1.3 Experienced project team

Different experts work for ESU-services who are all experienced in the field of ecological assessment of life cycles and profit from a network of renowned experts in the fields required for the study. One person will be appointed as project manager at the start of the project. He or she will be the main contact for the customer. Other staff members might assist the work depending on experience and availability. Niels Jungbluth, CEO at ESU-services, will oversee the project lead.

1.3.1 Dr. Niels Jungbluth, chief executive officer (CEO)

[Niels Jungbluth](#) studied environmental engineering at the Technical University of Berlin. He started working with LCA in 1994 and prepared his diploma thesis during a six month stay at the TATA Energy Research Institute in New Delhi, where he carried out a life cycle assessment for cooking fuels in India. Between 1996 and 2000 he worked on a Ph.D. Project at the Swiss Federal Institute of Technology (ETH) in Zurich at the chair of Natural and Social Science Interface. His Ph.D. thesis on the environmental consequences of food consumption has been awarded the Greenhirm Prize 2000 by the German Öko-Institut. In this thesis, he investigated food consumption patterns by means of life cycle assessment.



He started working with ESU-services in 2000. Since 2006 he has been the owner and managing director. Since 2000 he has worked on more than 250 consultancy projects in the areas food, biomass, energy systems, input-output-analysis, sustainable consumption, as well as several other topics. Besides managing ESU-services, he also conducts critical reviews, verification, and validation according to different standards. Niels is listed as an [approved individual verifier](#) for the [international EPD® System](#) and can also work for other systems like IBU-Bau, PEP or KBOB.

Niels Jungbluth is in the editorial board of the “Int. Journal of LCA” and in the board of the LCA foods conference. He works as reviewer for other scientific journals.

1.3.2 Dr. Maresa Bussa, project manager

Dr. rer. nat. TU Munich, M.Sc. in Energy and Environmental Engineering

[Maresa Bussa](#) studied energy and environmental engineering at the École des Mines de Nantes and the Technical University of Madrid. In her master thesis, she analysed options to adapt to climate change on the Koh Rong Archipelago in Cambodia.



Between 2017 and 2020 she worked for the Weihenstephan-Triesdorf University of Applied Sciences as a research associate in an EU project on the utilisation of cyanobacteria. She was responsible for the environmental and economic assessment of the product system developed. As part of her doctorate at the Technical University of Munich, she conducted life cycle assessments on different microalgae cultivation systems and extraction methods. Maresa Bussa started working for ESU-services in 2020. Since then she investigated alternatives to cow's milk as a drink and was leading the life cycle assessment work in the European PROFUTURE project on algae. In addition, she conducted Environmental Product Declarations for electric components. Furthermore, she works for the SimaPro Centre providing support for our clients and is leading our training centre.

1.3.3 Christoph Meili, project manager

M.Sc. ETH in Environmental Engineering

[Christoph Meili](#) studied environmental engineering at ETH Zurich with major in ecological system design, air quality control and waste management, and in soil protection. In his master thesis he carried out a material flow analysis and LCA for hydrothermal gasification of biomass.



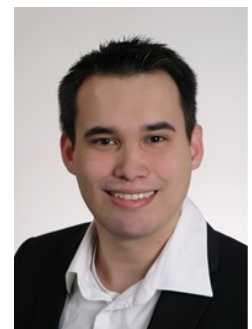
Christoph Meili has been as project manager for ESU-services since 2016. Here he is responsible for software sales and support in the Regional SimaPro Centre for Switzerland, Germany, Austria, and Liechtenstein. Since starting at ESU-services he has conducted several LCA projects on the extraction of energy sources, local energy systems, various electronic devices, packaging materials, drinking water and food recipes. He also assessed the quality of cotton labels and developed characteristic value models for run-of-river power plants, lifestyle analyses, transport routes and raw material extraction. He leads software training courses as well as introductory courses and lectures on various LCA topics.

He has also been working part-time for WWF Switzerland since 2012. In the Markets department, he is responsible for the Footprint Calculator, environmental tips for everyday life, as well as scientific work and external enquiries on consumption topics.

1.3.4 Samuel Solin, project manager

B.Sc. ZFH in environmental engineering

Samuel Solin did an apprenticeship as a chemical laboratory assistant at Dottikon ES and worked there in the wastewater laboratory. He then studied environmental engineering at the ZHAW Wädenswil, specializing in natural resources and renewable energies. In his bachelor thesis, he conducted a feasibility study on a possible power-to-gas plant at a sewage treatment plant in the canton of Zurich.



From 2017 to 2022 he worked as a research assistant at the University of Applied Sciences Northwestern Switzerland. As part of this activity, he carried out life cycle assessments for various products, services, and companies, such as edible insects, Swiss shrimp, and all locations of the University of Applied Sciences Northwestern Switzerland. Samuel Solin has been working for ESU-services since 2022. While working at ESU-services, EPDs were conducted for a construction product and various switch cabinets, as well as life cycle assessments for various medical devices, coffee and - with a chemical focus – a resin for the plastics industry. He also helps with SimaPro sales and support.

1.3.5 Martin Ulrich, project manager

M.Sc. ETH in Environmental Engineering

Martin Ulrich studied environmental engineering at ETH Zurich with a major in ecological system design about resources management. In his master thesis he evaluated the relation between cost and environmental impact of products and services throughout the broad spectrum of consumption in Switzerland.



In 2020 Martin had his first experiences with ESU-services during a 6-month internship and returned to the company in 2021. Martin also worked as the team leader of a bicycle courier team of the Familie Wiesner Gastronomie AG. There he remains a bicycle courier which he sees as a good sporting balance.

Martin Ulrich is working as a project manager at ESU-services since 2021. Since then, he has completed various LCA projects in different industrial sectors such as the paper, chemical, machinery and food industries. Investigations around agricultural production, consumption and nutrition recommendations or LCAs of public institutions such as the Zurich City Parliament are also part of his field of experience. In addition, Martin Ulrich is responsible for data sales and the distribution of LCA databases for SimaPro. For this purpose, he manages the broad "data-on-demand" offer of ESU-services and is in daily contact with our customers and partners.

1.4 Environmental and social responsibility

We care about the environmental impacts and other sustainability aspects with regards to the services offered. Our environmental key figures and sustainability related information is reported annually.³ The service offered in one of our projects also causes an environmental impact. ESU-services has developed a key parameter model which allows calculation of the impacts per project (Jungbluth & Rocha 2023; PCR 2012). Business trips are key factor for the impacts of single projects. Therefore, they are calculated separately from the general impacts of the service per consulting hour. Tab. 1.1 shows an example for the calculation of impacts due to executing a project. We can also report the true environmental impacts of our services after finalization of the project without any extra costs for the commissioner.

Tab. 1.1 Example calculation of the environmental impacts due conducting a consulting project at ESU-services

Calculation of impacts per project	Expenses	Greenhouse gas	Ecological scarcity
		emissions	method
		kg CO2-eq	UBP'21
Time budget consultancy	d 12.3	142	354'674
Train trips, CH	km 100	1	2'988
Train trips, DE	km 500	25	42'626
Airplane travel	km -	-	-
Hotel nights	- 2	45	102'537
Total		213	502'826

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³ <https://esu-services.ch/news/reporting/>

1.5 Global Partner Network

ESU-services cooperates closely with partners in the global SimaPro network.⁴ With a wide range of expertise available, we can offer you unparalleled services and facilitate large international or multi-client projects. We can easily contact these partners to get access to data or information in all regions of the world. Collaborating with partners all over the world is crucial for ESU-services as we work to meet your precise needs. Furthermore, we share the following ethical values and commitments⁵ with this network.



Science-based sustainable solutions are for everybody:

- We love our planet, it's our home.
- We work to restore its resilience through sustainable practices and metrics.
- LCA is at the heart of sustainability metrics and must be accessible for everybody.
- SimaPro and LCA-based practices will be pivotal in a vibrant ecosystem that connects a diversity of worlds, systems, people.
- Within that ecosystem we will co-create solutions together with clients, partners, fellow companies, and each other.

Our commitments:

- We commit to quality, accuracy, and transparency.
- We commit to the fact-based results. We won't engage in fact-distortion.
- We use our experience and knowledge to inform our customers and to facilitate sustainable development and practices (co-create better solutions).
- We take every opportunity to maximise our positive impact.
- We welcome everybody to embrace a sustainable transition and see them as a collaborator.

1.6 More than 25 years of experience

Niels Jungbluth started working on LCA in 1994. ESU-services has provided consultancy in the field since 1998. See below for a list of the most relevant projects over the last 25 years. A full list of about 400 project references can be found on the internet (<https://www.esu-services.ch/projects/fulllist/>).

1.7 Pioneering Projects

ecoinvent database: ESU-services was project leader to design, build-up and introduce v1.0 of the international, harmonised and quality controlled life cycle inventory database. We elaborated the LCIs of about 900 out of 4000 datasets in v2.0.

OneTwoWe: ESU-services analysed the environmental impacts due to the purchases of the SV Group. The company operates about 300 hundred canteens in Switzerland. Afterwards, improvement potentials have been proposed. They are applied in the program "One Two We", which was initiated in collaboration with the WWF Switzerland. This initiative was awarded with the Zurich Climate Prize in 2013.

⁴ <https://esu-services.ch/network-customers/partner/>

⁵ Download on <https://esu-services.ch/address/tender/>

Biofuels: Several LCA studies on biomass based fuels commissioned by Swiss Federal Offices, the European Commission and private organizations were conducted under the project lead of ESU-services. One study is the basis for tax exemption of biofuels in Switzerland.

SENSE: FP7 project HarmoniSed ENvironmental Sustainability in the European food and drink chain. ESU-services elaborated the LCA for orange juice, dairy products and beef in different European regions. Now the project team develops a simple online tool which will allow SME in the food sector to calculate their environmental product footprint.

Green energy: ESU-services contributes to the "naturemade star" labelling scheme run by the Association for Environmentally Friendly Energy (VUE). We developed the LCA criterion and carried out the LCA of electricity, heat and biomethane from renewable energy sources such as biogas or photovoltaics.

Environmental extended input-output analysis: ESU-services quantified the total environmental impacts due to international trade, the so-called embodied emissions, of Switzerland. The analysis complements the national inventory and provides a realistic picture of Switzerland's contribution to climate change and environmental impacts. The Swiss Federal Office for the Environment commissioned this pioneering study.

SUSMILK - Re-design of the dairy industry for sustainable milk processing The dairy industry accounts with 13% turnover for the total food and drink industry in Europe. Within the European research project SUSMILK a detailed model of dairy processes has been developed. This serves for identifying the best improvement options for reduced energy and water use.

LCA of food styles This study compares the environmental impact of food consumption scenarios. The analysis includes the full life cycle of the food products until they are purchased in the Swiss supermarket. The study was commissioned by the WWF Switzerland to provide guidance to consumers.

The role of packages in the life cycle of food products: The evaluation of packages usually concentrates on a comparison of different packaging materials or types of packaging. In a broader approach, which focuses on the whole life cycle of the goods packed, the full environmental footprint of the system has been investigated in collaboration with packaging manufacturers. The environmental relevance of the life cycle stages, food wastage and their interdependencies was analysed while also taking into account consumers' behaviour and portion sizes.

Environmental impacts of food trade: ESU-services quantified the environmental impacts due to international trade, the so-called embodied emissions. The same methodology has been used for quantifying environmental impacts of food purchased by the City of Zurich, goods traded by a large food retailer and food purchases by a catering service.

LCA for tap water, mineral water, and other beverages: ESU-services compared the consumption of several beverages in an LCA. The study has been cited in several dozens of media reports.

2 Initial questions when planning an LCA

To provide an offer we need some information about the goal and scope of your LCA or carbon footprint study. This can also be clarified by phone. Key questions are shown below:

- Who is demanding the service (legal address, contact details, key persons involved)?
- Why do you want to start this project?
- Which products should be analysed (please provide product information available, photos, links to your webpage, etc.)?

- Do you assume any advantages from environmental point of view for your product and can you describe them?
- What are the key questions to be answered?
- Which stages of production should be investigated (cradle-to-gate, cradle-to-grave)?
- What are the main inputs and outputs for this product (materials, energy uses, etc.)?
- Can you provide environmental data for your production processes (energy use, water use, emissions, etc.)?
- Will suppliers be involved in the data collection?
- Which comparisons should be made?
- How do you want to disseminate or publish the LCA (internal, customer, public)?
- Which standards or product category rules (PCR) should be followed (e.g. ISO 14040, EN 15804, etc.)?
- Which environmental indicators should be calculated?
- What is your timeframe and budget?

3 Initial questions for offering a critical review, verification, or validation

Dr. Niels Jungbluth has great deal of experience in conducting, reviewing, validating, and verifying LCA case studies. We are happy to provide this type of quality control for your LCA, carbon footprint or EPD. The timeline is according to the needs of the customer (about 1-3 weeks per review stage for the feedback). To provide a binding offer we need some information about the goal and scope of your study. This can also be clarified by phone. Key questions are shown below:

- Full legal address of the commissioner for the review, verification or validation?
- Standard/PCR against which validation or review is performed (ISO 14040, PCR, EN 15084, etc.)?
- Key questions of the study? Are comparisons are planned?
- Number of pages in the LCA/EPD report, summary, documentation, etc to be read?
- Number of newly modelled process steps (foreground data)?
- Format and documentation of the life cycle inventory data (preferably a complete export from SimaPro)?
- Individual review or panel (with chair or panel member in addition)?
- Stages of the review (individual review of the 4 LCA stages or review of the complete draft report)?
- Personal meetings, online meetings, etc. desired?
- Number of studies previously authored that have gone through a peer review, validation, or verification?

4 Literature

Jungbluth & Rocha 2023 Jungbluth N. and Rocha C. (2023) Environmental report and product declaration 2022. ESU-services GmbH, Schaffhausen, CH, retrieved from: <https://esu-services.ch/news/reporting/>.

PCR 2012 PCR (2012) Product Category Rules (PCR) for Research and Experimental Development Services in Natural Sciences and Engineering (UN CPC 811). The International EPD System.