SWEDISH
LIFE CYCLE
CENTER

2020

SWEDISH LIFE CYCLE CENTER ANNUAL REPORT

Swedish Life Cycle Center Annual report 2020

No 2021:1

Meeting the need for life cycle skills

There is an increasing need for life cycle skills and a capacity building in the life cycle field. We are seeing how more organizations and industries are waking up to this. More are starting to apply this perspective in their own organizations or are turning to us to get the results of research projects, take part in webinars and seminars or looking to join the collaborative efforts within the Swedish Life Cycle Center.

Anna Wikström, Acting Director, Swedish Life Cycle Center

Photo by Ulrika Ernström

During 2020, we were able to start 5 new projects and provide over 20 different webinars/seminars to an audience of over 600 people. We are not alone in seeing this increased requirement of skills and build-up of capacity – partners, SMEs, public authorities and LCA consultant companies are also seeing similar patterns. The incentive comes from more stringent demands from public authorities as well as current and future legislation requiring higher standards of sustainability performance and reporting. Clients and customers also make greater demands in terms of increased transparency and the ability to compare products or services from a life cycle perspective much of this is driven by our global sustainability targets, Agenda 2030, and the fact that we need to make the right choices from an overall perspective in the transition our communities, industries, energy systems, and so on, need to make. Applying the life cycle perspective makes that possible.

We are seeing the role and activities of the Swedish Life Cycle Center becoming more and more relevant for the skills and knowledge requirements in society to be able to be met. In June 2020 we were delighted to launch a continuation of the Swedish platform for the life cycle perspective in the form of the project Innovation cluster for the life cycle perspective. The aim of the project is to coordinate several skills-enhancing and networking activities, in the hope of being able to reach out further to more organizations and individuals. “The Innovation cluster for the life cycle perspective” provides a meeting place where industry, academia, authorities, and other parts of society come together to create opportunities for an increased understanding and use of the life cycle perspective. During 2020, this project enabled us to promote several of the activities, working and expert groups, and new research projects which are also presented in this annual report. The project is financed by the Swedish Energy Agency and Swedish Life Cycle Center’s partners and will run until May 2024.

We look forward to continuing this collaboration during 2021, and to being able to pool our efforts to collaborate, work together and strive for more life cycle action and skills in society.

Best Regards
/Anna Wikström
Acting Director, Swedish Life Cycle Center

> “During 2020, we were able to start 5 new projects and provide over 20 different webinars & seminars to an audience of over 600 people.”

> “The market will not solve the issue fast enough. We need to work together with the authorities, the academy and the civil society or we will never reach our sustainability goals.”

- Holger Wallbaum, Professor in Sustainable building at Architecture and Civil Engineering at Chalmers, being interviewed for the film “The Life Cycle Perspective at Chalmers University of Technology”.

Influencing the national and international agenda

Environmental Footprint in Sweden – what's in it for us?

The interest in the EU Environmental footprint process among Swedish actors are increasing, but the understanding of the methods, Product Environmental Footprint and Organisation Environmental Footprint, and how its related legislative proposals will affect Swedish industry is lacking. During the year, a smaller group of Environmental footprint experts have been working on a common effort for next year, based on outcomes from the Environmental footprint network conference. It has resulted in a new project "Environmental footprint in Sweden - increased competence and communication", financed by Vinnova, Sweden's innovation agency. The overall aim is to give business, government and the public sector in Sweden good knowledge and understanding of the Environmental footprint methodology and product policy instruments and how to use it from their own perspective. Furthermore, the project aims for a better national collaboration among life cycle experts to influence the methodology development and to meet the coming needs from Swedish actors.

> *"The learning process of Product Environmental Footprint is one of the greatest benefits when it comes to knowledge building around a product, especially internally for companies, but it could also be a way to inform consumers and other about environmental impacts of different products, which will contribute to more informed decisions and a responsible production and consumption."*
>
> *- Outcome from round table discussion, February 20*

Arena for interactions and joint actions

The network conferences are arranged on a yearly basis and creates invaluable cross roads for interaction between researchers, decision-makers and practitioners. These are highly appreciated by center partners; partly for the networking opportunity provided and partly for the topics covered, this year The Environmental Footprint process and The Swedish research front within LCA were in focus. The arrangements have been organized through the project Swedish platform for the life cycle perspective and Innovation cluster for the life cycle perspective.

The conference Environmental Footprint process took place on February 20 in Stockholm. The conference gathered 60 life cycle professionals from our partner organizations, government agencies in collaboration with the center and invited guests. The main focus was the Environmental footprint transition phase – from methodological discussions to benefits and obstacles for the application and policy development. Imola Bedo, Policy Officer European Commission and part of the Environmental Footprint team at the European Commission, and Cecilia Mattsson, Swedish Environmental Protection Agency, gave the audience an overview of the process for developing the Environmental footprint methodology, ongoing activities in the transition phase and the policy making development process. The main part of the conference was the round table discussions, divided into three perspectives: Methodology development, Industry application and Policy development. All round tables agreed on that the Environmental footprint process has given credibility to LCA as a method and an increased interest in life cycle assessment and life cycle perspective in general. Furthermore, the process has been a driving force for consensus discussions in some long standing LCA questions. Summary of the round table discussions is available in our publication series. The preparation of the conference and its content has been developed in collaboration with the center Environmental Footprint expert group.

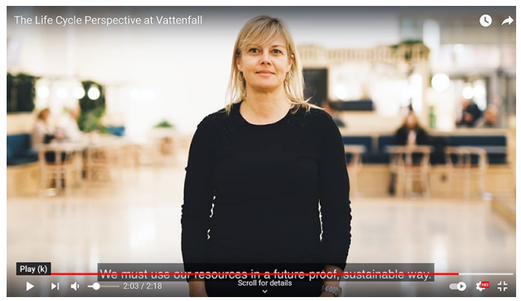
Johan Widheden, Senior Climate & Energy Advisor and Climate Savers Lead at WWF, presenting at the network conference in November 2020

The Network conference The Swedish research front within LCA took place online on November 26, 2020. Over 100 people joined the conference to get updated on the latest LCA research from Sweden. With a mix of plenary sessions, networking activities and parallel sessions the conference covered six research areas within the conference theme. Johan Widheden, Senior Climate & Energy Advisor and Climate Savers Lead at WWF, held the keynote presentation about how LCA is an enabler for a Net Zero Economy. The presentation was recorded and can be found on our YouTube channel. After the keynote session the conference had two blocks with parallel sessions, three topics in each block. Online networking is not the same as networking in person but with a virtual coffee machine, break out rooms in Zoom and the possibility to continue the discussions from the parallel sessions at the end of the day, the networking was possible online as well. The topics for the sessions were:

- Attributional and consequential LCA
- Biological Diversity
- From CO2 to CEO
- Prospective LCA
- LCA of foods
- Social LCA

Important upscaling of competence and collaboration opportunities to more people

For three years, Swedish Life Cycle Center has had the opportunity to run the project "Swedish platform for the life cycle perspective", with funding from the Swedish Energy Agency and partners in the center. The aim of the project has been to strengthen Swedish cooperation in the life cycle area and to spread an applied life cycle thinking to more organizations. The project, which ended in May 2020, has been very important to spread activities, and life cycle knowledge to more organizations. The project has organized open activities such as webinars and face-to-face seminars, as well as to conduct courses in applied life cycle thinking, and invest in communication efforts, e.g., newsletters and educational materials. Besides that, the project has also enabled us to expand collaboration with external actors developing research projects and working groups. The project has been important to increase the academic collaboration among our partner universities, which resulted in the PhD-course "Advances in life cycle assessment. The project has also been crucial to coordinate the dialogue forums for government agencies, which aims to increase the collaboration among government agencies and to contribute knowledge building among these agencies and create forum for sharing experiences. More results and outcomes from the project can be found in the final report in our publication series.



Helle Herk-Hansen, Head of Environment at Vattenfall, in the film "The Life Cycle Perspective at Vattenfall"

Inspirational films about the life cycle perspective

As a final part of the project "Swedish platform for the life cycle perspective", a number of films were developed and produced to inspire and learn other about the life cycle perspective. Representatives from our partner organizations was interviewed in their workplaces to give their perspectives on why applied life cycle thinking is important and how the concepts are used in their organizations. In the films you will meet Eva Ahlner, senior advisor at Swedish Environmental Protection Agency, Helle Herk-Hansen, Head of Environment at Vattenfall, and Holger Wallbaum, Professor in Sustainable building at Chalmers University of Technology. All films are available at the Swedish Life Cycle Center's YouTube-channel and is free to be used by all.

> *"Our goal is to enable fossil free living within one generation. We must use our resources in a future proof, sustainable way."*
>
> *- Helle Herk-Hansen, Head of Environment at Vattenfall, in the film "The Life Cycle Perspective at Vattenfall".*

Working group on harmonization of LCA for buildings

During the fall of 2019 a new working group started, Nordic Working group for LCA, climate and buildings, in collaboration with the Nordic building authorities. The group brings key actors from the Nordic construction industry, academia, and the building authorities together with the purpose to give input to Nordic harmonization of LCA of climate emissions from buildings. Meetings in the group has given valuable input into the process of developing methods and regulations for climate emissions in LCA of buildings. The group also took part in arranging the second Nordic Climate Forum for construction that was held online in August 2020.

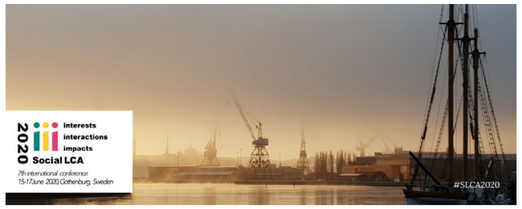
Increased interest in Social LCA shown in both project and conference

In March 2020 the center project: "Social life cycle assessment – experiences from Swedish users" ended. The project aimed to map experiences and ideas regarding social LCA (SLCA) in Swedish industry and enable a more thorough understanding of SLCA practice. There is a growing interest for the method its possibilities to complement the environmental LCA in creating a picture of sustainability performance during the life cycle. The results from the project were presented at the 7th international conference on Social Life Cycle Assessment that was held online in June 2020. The conference was organized by Chalmers University of Technology, KTH Royal Institute of Technology in collaboration with the Swedish Life Cycle Center. 130 delegates from universities, institutes, and companies took part of latest research and development in the social life cycle assessment field through video presentations that could be followed on YouTube, twitter poster presentations and daily keynotes, panel discussions and live sessions for discussions and interactions.

Mathias Lindkvist, presented results from project "Social life cycle assessment – experiences from Swedish users" at the conference Social Life Cycle Assessment 2020.

Joint actions for life cycle data along the value chain

A common interest among industry partners in the center is to improve the collection of life cycle data from suppliers. What strategies exist? And what incentives are there to motivate the suppliers? And how to deal with lack of understanding and a differentiated documentation format? In the fall, these issues have received attention to from both life cycle professionals and purchasers. Three online workshops have been arranged to gather the different needs and perspectives with the overall aim to build up a research project and to share work done by industry already today.



Course in Applied life cycle thinking attracts different roles and companies

The popular two-day course in Applied life cycle thinking was given for the fifth time in November 2020. Due to the COVID-19 pandemic the course was given, for the first time, as a digital course. The course gathered 14 professionals from both industry, academia, research institutes and government agency. Course leaders were Emma Rex (RISE Research Institutes of Sweden) and Kristian Jelse (Greendesk AB), and together with the invited guest lecturers Annica Isebäck (Essity) and Jimmy Yoler (Swedish Institute for Standardization, SIS) the course participants got in-depth knowledge of the life cycle perspective and LCA and how this can be applied and implemented in their own organizations and business. The course contains both presentations, many practical examples, several group exercises and a lot of dialogue between course participants and the teachers, and also provided space for networking between the participants. The course evaluation showed that the participants were very satisfied with both the format and content and received 9 out of 10 in the latest evaluation.

> "The course Applied life cycle thinking gave me commitment and inspiration for continued work."
>
> — *Course participant, November 2020*

Research projects gathers professional voices in important arenas

The center has historical participated in a great amount of research projects and contributed to many successful research results within the area of life cycle thinking. The project "Modeling of Recycling", led by Tomas Ekvall at IVL Swedish Environmental Institute and Chalmers University of Technology, has been coordinated within the center. The project has led to increased knowledge among Swedish industrial companies and authorities about how recycling should be modeled and has also contributes to the ongoing debate and the development of the EU Guidelines for environmental impact of products and other international harmonization of the LCA methodology. The project also resulted in the spin-off project "Incentives for recycling and incineration in Product Environmental Footprint", with the aim to investigate the risk that Product Environmental Footprint of plastics give incentives to send plastic waste to incineration instead of recycling even when recycling is the best option from an environmental point of view. Furthermore, increase the knowledge about the extent to which correct incentives can be obtained through a deeper understanding of how to model energy recovery.

Tomas Ekvall, project manager of research project "Modeling of Recycling".

> "During 2020, the center started up four new research projects, involving over 31 organizations and over 100 people in total."

> "We now have a good toolbox and increased understanding of the dynamics of different allocation methods when modeling recycling in LCA."
>
> - *Project participant Modeling of recycling, May 2020*

During the 2020, the center started up four new research projects, involving over 31 organizations and over 100 people in total. One of the projects started up in 2020 is "Impacts on producers and customers of conflicting rules for LCA" which during 2021 will analyze how different frameworks for assessing the environmental impact of fuels might be leading to conflicting decisions. The EU Renewable Energy Directive (RED), the EU framework for Product Environmental Footprints (PEF), and the frameworks of Environmental Product Declarations (EPD) are applied on selected fuels such as e.g. Hydro Vegetable Oil (HVO) and biomethane. The project is coordinated within Swedish Life Cycle Center and is financed with funding from Swedish Energy Agency and f3 through the collaborative research program "Renewable transportation fuels and systems, 2018-2021". All projects coordinated within the Swedish Life Cycle Center during 2020 can be found in this annual report at "Research projects" below.

Research projects

Nature Capital and Value Creation

Project manager: Tomas Rydberg, IVL
Time period: 2018-11-15 - 2020-10-31
Funded by: RE:Source
Participating organizations: IVL Swedish Environmental Research Institute, Chalmers University of Technology, Volvo Cars, Volvo Group, Nouryon, Swedish EPA, Swedish Transport Administration, Nordeconsult Sweden, Sustainability Circle, Svensk Handel, Lanson International, Theorema Scandinavia, Scorett Footwear, Stockholm Fashion District Nacka Strand
Outcomes from the project: Several case studies have been carried out within the project, such as sustainability accounting with EPS, and calculation of socioeconomic infrastructure investment, Scientific presentations (posters) at LCM 2019 in Poznan, and at Act Sustainable Research Conference, involvement in ISO- and CEN-work, a report with application of ISO 14007 and 14008 (manuscript to ISO for publication), Publication of the book "Monetary Valuation of Environmental Impacts" (B. Steen, 2020), update of the environmental damage cost in the EPS-system, Report "EPS weighting factors - version 2020d, article in Dagens industry about the project's monetary valuation of environmental impacts, Publication and supervision of two master thesis, many workshops and seminars with results from the research project.
Read more here.

Modeling of Recycling

Project manager: Tomas Ekvall, Chalmers University of Technology / IVL Swedish Environmental Research Institute & coordinated by Jenny Lagergren & Maria Rydberg, Technical Secretariat, Swedish Life Cycle Center
Time period: 2018-11-15 - 2020-05-31
Funded by: Swedish Energy Agency (RE:Source)
Participating organizations: Chalmers University of Technology, IVL, KTH, Essity Hygiene and Health, Volvo Group (Buses), Nouryon, Volvo Cars, RISE, Vattenfall, SSAB, Swedish Transport Administration, Outokumpu Stainless, Stena Recycling, Tetra Pak, Jernkontoret, Swerea IVF, Miljögiraff, Swedish Energy Agency, Swedish Environmental Protection Agency, SKF, Stora Enso
Outcomes from the project: Several case studies and workshops has been carried out during the project to test, evaluate and discuss the different ways to model recycling in LCA. Tentative results were presented at LCM 2019 in Poznan, abstract and presentation material can be found here. The results from the project were presented in report nr. 2020:05 "Modeling of recycling in life cycle assessment" in Swedish Life Cycle Center publication series. The results were also presented at a webinar that was recorded and made available on YouTube, watch it here.
Read more here.

Impacts on producers and customers of conflicting rules for LCA

Project manager: Sofia Poulikidou and Tomas Rydberg / IVL Swedish Environmental Research Institute & coordinated by Anna Wikström, Technical Secretariat, Swedish Life Cycle Center
Time period: 2020-06-15 - 2021-12-31
Funded by: Swedish Energy Agency (within the collaborative research program Renewable transportation fuels and systems) et. al.
Participating organizations: IVL Swedish Environmental Research Institute, Chalmers University of Technology, KTH, Royal Institute of Technology, RISE Research Institutes of Sweden AB, Scania CV AB, Volvo Technology, BASF AB, CIT Industriell Energi AB, FordonsGas Sverige AB, Lantmännen Aspen AB, Nätverket För Transporter & Miljön, Preem AB, Scandinavian Enviro Systems AB, SEKAB Biofuel Industries AB, SPBI Service AB, St1 Sverige AB, TERRA AB
Outcomes from the project: The project will be evaluated and presented after the projects is being finalized in December 2021.
Read more here.

SCOPES - Simplify Complexity of Environmental Scope declarations

Project manager: Raul Carlsson, RISE
Time period: 2019-03-01 - 2020-01-10
Funded by: Vinnova
Participating organizations: RISE, Chalmers University of Technology, Swedish Institute for Standards, SIS
Outcomes from the project: A draft for a new work item proposal for ISO (NWIP): "Scope options for environmental assessments- Requirements and guidelines, Workshop on ISO meeting: Environmental management in Berlin (June 2019), Presentation at Swedish Life Cycle Center's network conference (Sep 2020), Final research seminar (Nov 2019).
Read more here.

Social life cycle assessment - experiences from Swedish users

Project manager: Mathias Lindqvist, Chalmers
Time period: 2019-10-01 - 2020-03-20
Funded by: Adlerbertska forskningsstiftelsen
Participating organizations: Chalmers University of Technology
Outcomes from the project: Report "Insights on social life-cycle-assessment in practice in Sweden" (report no 2020:3 in Swedish Life Cycle Center publication serie). Oral presentation at the 7th Social LCA conference: Impacts, Interests, Interactions that was held online, the recorded presentation can be seen here.
Read more here.

Environmental footprint in Sweden - increased competence and communication

Project manager: Sara Palander, Swedish Life Cycle Center
Time period: 2020-11-01 - 2021-12-31
Funded by: Vinnova
Participating organizations: IVL Swedish Environmental Research Institute, RISE Research Institutes of Technology, Chalmers University of Technology, Swedish Environmental Protection Agency, KTH Royal Institute of Technology, SSAB, Stora Enso and all partners in the Swedish Life Cycle Center Environmental footprint expert group.
Outcomes from the project: The project will be evaluated and presented after the projects is being finalized in December 2021.
Read more here.

Coordination of LCA-data for increased traceability and recycling of plastics

Project manager: Tatjana Karpenja, RISE Innventia AB and coordinated by Anna Wikström, Swedish Life Cycle Center
Time period: 2020-10-29 - 2021-01-31
Funded by: Swedish Environmental Protection Agency
Participating organizations: RISE Innventia AB, RISE Research Institutes of Technology, Chalmers University of Technology, IVL Swedish Environmental Research Institute
Outcomes from the project: Round table dicussions: "Resource-efficient recycling of LDPE-film" (December 1) and "Best practices of traceability in value chains for sharing material and environmental data" (December 16), Report "Samordning av livscykeldata för ökad spårbarhet & plaståtervinning, report number 2021:03 in Swedish Life Cycle Center's publication series, Final seminar with Swedish Environmental Protection Agency (Feb 2021).
Read more here.

Incentives for energy recovery in LCA for plastics

Project manager: Maria Rydberg, Technical Secretariat, Swedish Life Cycle Centre and Tomas Ekvall, Chalmers University of Technology / TERRA AB
Time period: 2020-11-01 - 2021-01-31
Funded by: Swedish Environmental Protection Agency
Participating organizations: TERRA AB, Chalmers University of Technology, IVL Swedish Environmental Research Institute
Outcomes from the project: Report "Incentives for recycling and incineration in LCA: Polymers in Product Environmental Footprints" report number 2021:02 in in Swedish Life Cycle Center's publication series. Results were presented in a webinar and a recording of the webinar has been made avaliable here. Oral presentation at the virtual conference SETAC Europe 31st annual meeting. Poster presentation at the online conference LCM2021 5-8 September 2021. Read more here.
Read more here.

Working groups

Academy group
Biodiversity & land use online (online)
Get the prices right
LCA data & methodology
Social LCA (online)
Nordic Working Group for LCA, climate and buildings

Expert group

Environmental footprint

Board 2020

Anna Hedlund Åström, KTH Royal Institute of Technology
Anna Malmström, Swedish Energy Agency (adj)
Anna Widerberg, Volvo Cars
Anna Wikström, Acting Director Swedish Life Cycle Center (adj)
Elin Eriksson, IVL Swedish Environmental Research Institute
Eva Ahlner, Swedish Environmental Protection Agency
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Erik Nellström, Scania
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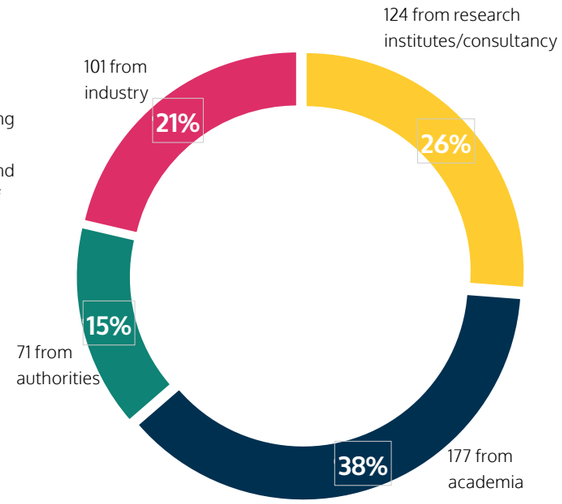
Susanna Widstrand, Swedish Energy Agency (adj)
Tobias Borén, Nouryon
Torun Hammar, SLU Swedish University of Agricultural Sciences

Read more about our projects, working and expert groups at: www.lifecyclecenter.se

The network in numbers

Applied life cycle thinking has always remained in focus and this has gathered experts from the partners, building a critical mass of researchers and practitioners who use the center as their common arena upon which further activities and perspectives are developed over time. Below is a summary of 2020 in numbers:



388 network members 2019

473 network members 2020

7 reports, papers, posters or conference presentations

610 audience at webinars

510 subscribers to public newsletters

14 attendants at course in applied life cycle thinking

8 working and expert group meetings

261 Twitter followers 2019

338 Twitter followers 2020

555 LinkedIn followers 2019

1453 LinkedIn followers 2020

Activities 2020

Many of the events during 2020 was arranged within the project "Swedish platform for the life cycle perspective and Innovation cluster for the life cycle perspective" (from May 2020), funded by the Swedish Energy Agency and Swedish Life Cycle Center partners. A selection of events are presented below.

FEBRUARY 20
Network conference: Let's meet and talk LCA. Theme: Environmental Footprint process. Stockholm

MARCH 5
Webinar: Improved communication of LCA results with Frida Røyne, RISE

APRIL 16
Webinar: Monetary valuation of environmental impacts - models and data with Bengt Steen, Chalmers University of Technology

MAY 19
Webinar: How should recycling be modeled in LCA? with Tomas Ekvall, IVL/Chalmers

MAY 29
Webinar: LCA, climate and buildings

JUNE 15-17
7th Social LCA Conference: Impacts, Interest, Interactions

OCTOBER 22
Information meeting for universities, to become a partner in Swedish Life Cycle Center

OCTOBER 26
Public consultation: Sustainable products initiative, with Swedish Life Cycle Center's Environmental footprint expert group

NOVEMBER 3
Public consultation: Green Claims, with Swedish Life Cycle Center's Environmental footprint expert group

NOVEMBER 11-12
Two-day course in Applied life cycle thinking 2020, organized by Swedish Life Cycle Center through a close collaboration with IVL, RISE and SIS. Online

NOVEMBER 26
Network conference: Let's meet and talk LCA. Theme: Swedish research front within LCA. Online

DECEMBER 1
Round table discussion for resource-efficient recycling of LCPE-film, within the research project "Coordination of LCA-data for increased traceability and recycling of plastics"

DECEMBER 16
Round table discussion "Best practices of traceability in value chains for sharing material and environmental data", within the research project "Coordination of LCA-data for increased traceability and recycling of plastics"

Short facts about Swedish Life Cycle Center

Organization type: A center of excellence

Location: Hosted by Chalmers University of Technology, Gothenburg

Vision: Credible & applied life cycle thinking globally

Age: 24 years

The center in 3 words: Collaboration, knowledge building, life cycle thinking

Partners: 14 partners and in collaboration with 8 government agencies

A neutral platform

The partners of Swedish Life Cycle Center is the foundation. Partners contribute to activities, start cross-sector research projects, hold a seat in the Board and form the agenda of the center. Contact us if you are curious about partnership!

The center is financed jointly by partners and Chalmers University of Technology (host for the center). From June 2020 Swedish Life Cycle Center is managing the project Innovation cluster for the life cycle perspective, funded by the Swedish Energy Agency and Swedish Life Cycle Center partners.

Contact

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Swedish Life Cycle Center

@Lifecyclecenter

Partners 2020

CHALMERS · essity · IVL Svenska Miljöinstitutet · KTH · Naturvårdsverket · Nouryon · RI.SE · SCANIA · SKF · SLU · SWECO · VATTENFALL · VOLVO · VOLVO

In collaboration with

Boverket · Jordbruksverket Swedish Board of Agriculture · Konsumentverket · KO · Swedish Energy Agency · TRAFIKVERKET · Upphandlingsmyndigheten · SWEDISH GEOTECHNICAL INSTITUTE · Tillväxtanalys

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Chalmers University of Technology
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