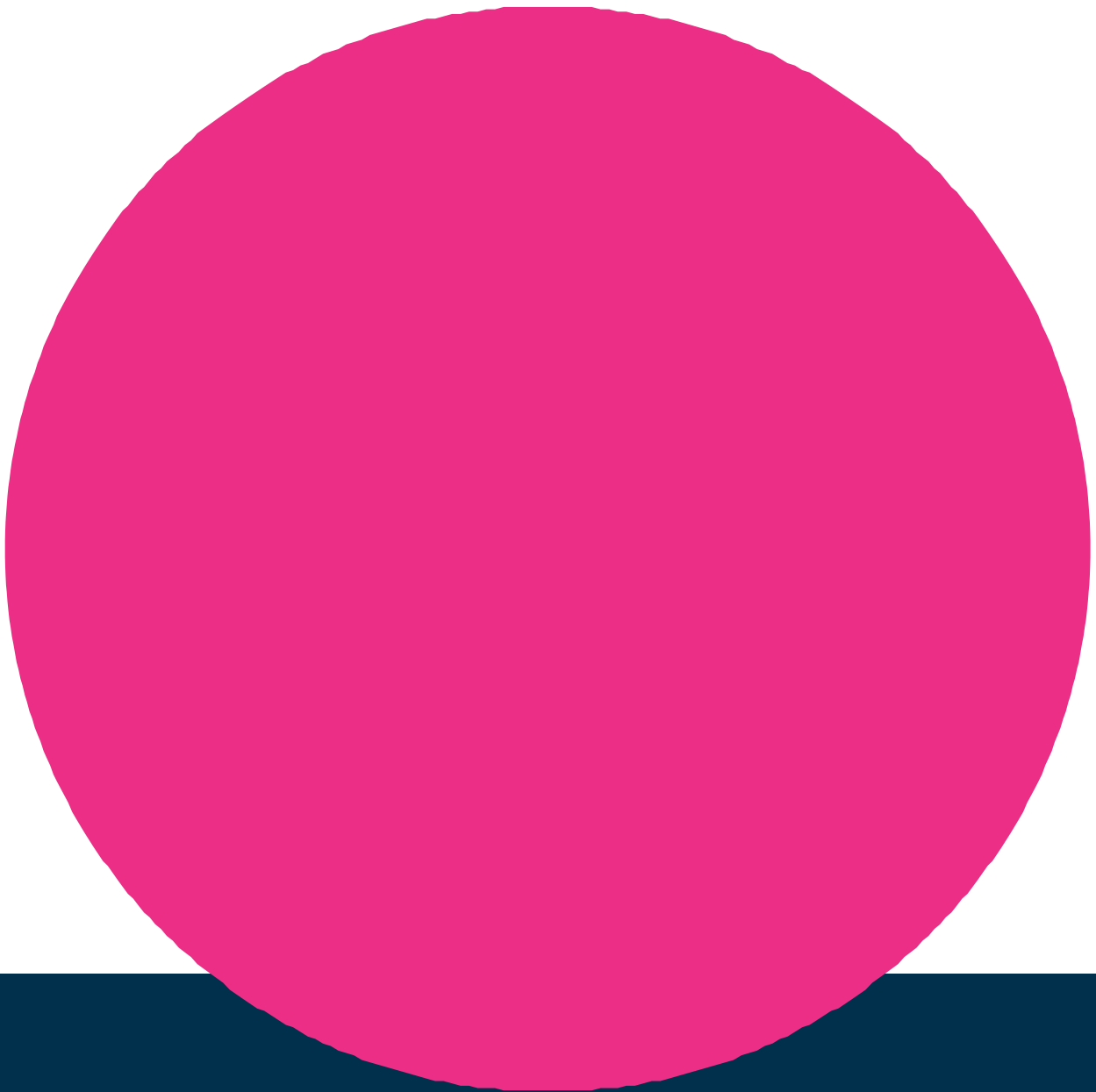




SWEDISH
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In-Depth Assessment of the Need for Life Cycle Competence in Swedish Industry and Authorities

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Summary

The project aimed to identify competence needs related to life cycle perspective (LCP) in Swedish industry and public authorities. A survey was sent to 49 organizations, with a 63% response rate.

Results show that industry conducts more LCP activities than authorities, mainly through LCA studies, product development, and database work. Authorities focus more on stakeholder communication, management of LCP databases, and the integration of LCP into the development of national, EU, and global regulations or policies. Both sectors face challenges such as limited data and methodological issues.

On-the-job learning and collaboration with external experts (for industry) and collaboration with experts and staying informed via news and media (for authorities) were seen as key ways to strengthen competence. Demand for LCP is increasing, and future needs include skills in conducting simplified LCA, effective LCP communication and basic understanding (for industry) and basic understanding, LCP policy and compliance and reporting (for authorities).

Overall, the findings underline the importance of both technical and practical skills to effectively apply life cycle perspectives across sectors.

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Project information

Project title

In-Depth Assessment of the Need for Life Cycle Competence in Swedish Industry and Authorities

Funded by

The Adlerbertska Foundations

Aim

This project aims to deepen our understanding of the competence needs in relation to life cycle thinking, within both industry and national authorities.

Project manager

Anna Wikström

Coordination of the project

Swedish Life Cycle Center

Project management team

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Time period

2024-01-01 – 2025-10-01

Acknowledgements

Thanks to all partners, authorities, and other stakeholders who responded to the survey.

About Swedish Life Cycle Center

Swedish Life Cycle Center is a collaboration platform for universities, industries, research institutes and government agencies for competence building and the exchange of experience to move the life cycle field forward. Current partners are Chalmers University of Technology (host for the Center), Amiblu, Asker Healthcare, Electrolux, Essity, Höganäs, IVL Swedish Environmental Research Institute, KTH Royal Institute of Technology, Luleå University of Technology, Swedish Environmental Protection Agency, RISE Research Institutes of Sweden, SKF, SLU Swedish University of Agricultural Sciences, Tetra Pak, Volvo Car Group, and Volvo Group. The Center hosts a dialogue group with thirteen government agencies in Sweden. For more information about Swedish Life Cycle Center, please visit www.lifecyclecenter.se

1. Introduction and Survey Structure

The aim of the project is to deepen our understanding of the competence needs in relation to life cycle thinking, within both Swedish industry and national authorities.

We sent out a survey to 33 companies and 16 authorities in May 2024. The survey was sent to the partners of the Swedish Life Cycle Center and some additional companies working with the life cycle perspective, life cycle thinking and/or LCA. The survey was also sent to the authorities that the center collaborates with. The survey was distributed in May 2024 with a deadline in September 2024. It was a survey with 11 questions that took 10-15 minutes to complete. We got 20 answers (of 33) from companies and 11 answers (of 16) from authorities, to a total response rate of 63%.

The survey consisted of a total of 11 questions, grouped into three main parts:

Current practices – what organizations have done so far.

Reflections – their assessment of this work.

Future outlook – their expectations and anticipated needs moving forward.

The first section focused on life cycle-related practices, both current and over the past five years. The aim was to identify the types of life cycle perspective (LCP) activities organizations have undertaken, the life cycle assessment (LCA) studies they have conducted, and the main motivations behind these efforts.

The second section examined how organizations perceive their use of the life cycle perspective. Questions addressed overall satisfaction with the way LCP is being applied, the challenges encountered, and the practical barriers faced, whether internal organizational issues, limited resources, or a lack of knowledge. Respondents were further asked whether they perceived a shortage of expertise in this area, and, if so, what types of support or solutions would be most beneficial.

The final section explored expectations for the future, including how demand for the LCP is anticipated to evolve and what competencies will be most important in the coming years.

2. Results

The survey results provide insights into how industry and public authorities are currently applying the LCP, the motivations behind their efforts, and the challenges they face. They also highlight expectations for future demand and the competencies needed to strengthen LCP implementation across sectors.

LCP Activities

As shown in Figure 1, The results indicate that industry engages in LCP activities more frequently than public authorities.

For industry, the most commonly reported activities include: conducting or commissioning LCA studies, incorporating LCP into product development processes, and establishing or maintaining LCP databases for internal or external use.

By contrast, public authorities reported a greater focus on activities such as stakeholder communication, management of LCP databases, and the integration of LCP into the development of

national, EU, and global regulations or policies. However, their involvement in other LCP activities was generally lower compared to industry.

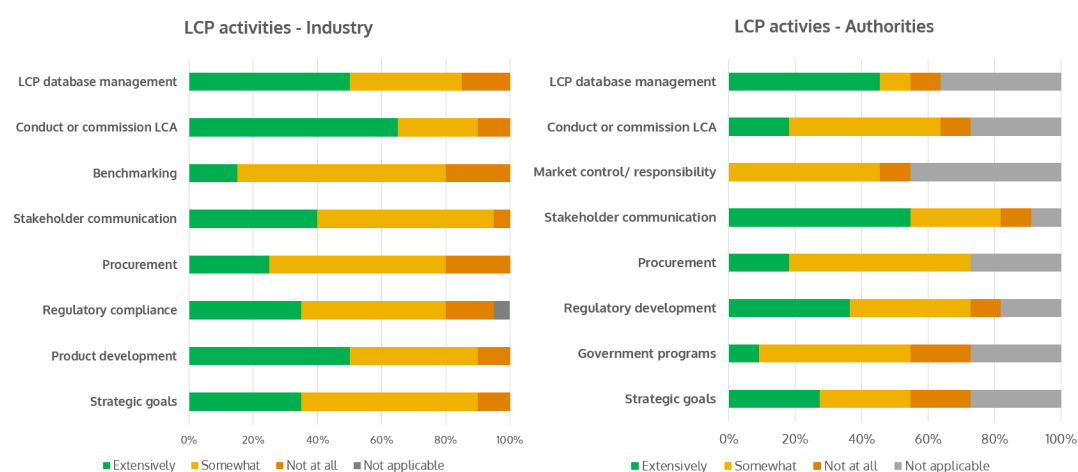


Figure 1. LCP activities: industry vs. authorities.

Motivations and satisfaction

Figure 2 illustrates the main motivations reported by organizations for engaging in life cycle-related activities. Participants were asked to select relevant motivations from a predefined list and to identify their top three priorities. For industry, the most frequently cited motivations were environmental performance monitoring, alignment with organizational sustainability goals, gaining a competitive advantage, and meeting customer demands. These results indicate that LCP activities are driven by a combination of internal and external factors: organizations are motivated both by the desire to improve their own operations and by the need to respond to stakeholder and market expectations.

In addition, participants were asked to rate their satisfaction with how the life cycle perspective is being applied in their organizations, relative to each motivation. The green line in Figure 2 shows the reported satisfaction levels. Satisfaction tended to be higher for the top motivations, suggesting that when LCP efforts align closely with organizational goals, stakeholders view implementation more positively. By contrast, satisfaction was noticeably lower for risk management and for gaining a competitive advantage. In particular, competitive advantage emerged as a strong motivation but with relative lower satisfaction, pointing to a potential gap between expectations and the benefits actually realized.

Interestingly, motivations such as learning and regulatory compliance, although not among the top drivers, were associated with relatively high satisfaction. This may reflect the maturity of many organizations in these areas, where experience and established practices contribute to smoother and more effective implementation.

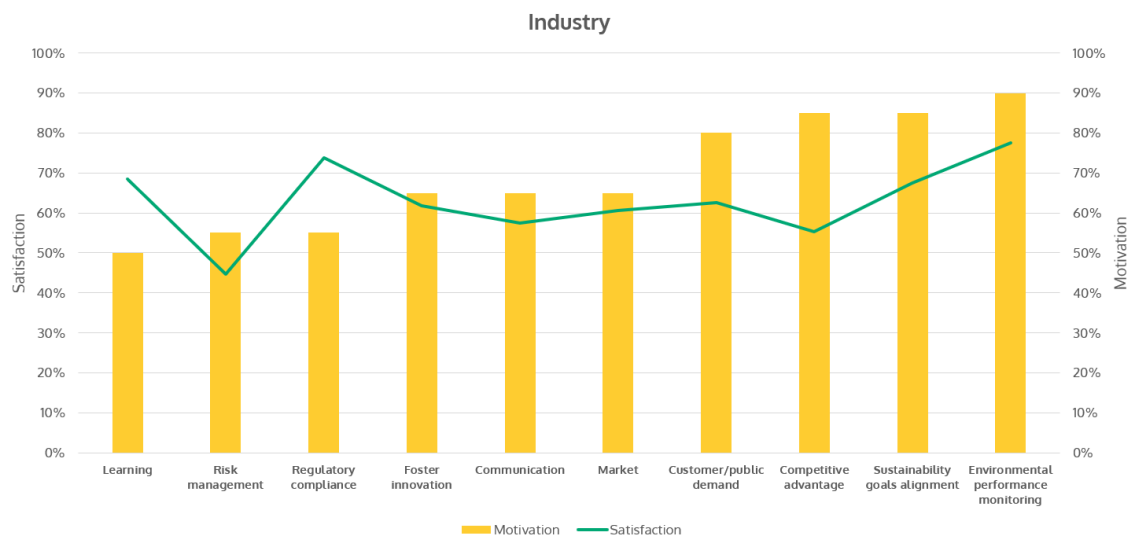


Figure 2. Industry motivation and satisfaction.

Figure 3 presents the motivations and satisfaction levels reported by public authorities regarding their use of the LCP. The strongest drivers identified were alignment with sustainability goals and compliance with instructions, regulatory letters, and government mandates.

However, in contrast to industry, satisfaction levels among authorities were generally low across most motivations. Even for high-priority drivers such as sustainability alignment and government mandates, satisfaction did not increase significantly. One possible explanation is that when LCP is not supported by strong internal drivers, its implementation may be less developed, which in turn limits satisfaction with outcomes.

These findings highlight a potential area for improvement: there is a need to explore how authorities can more effectively integrate life cycle thinking into their internal processes in order to strengthen both engagement and effectiveness.



Figure 3. Authority motivation and satisfaction.

Challenges

Figure 4 compares the main challenges reported by industry and public authorities in implementing the LCP. Several common issues emerged across both groups. The most prominent challenge for both sectors was the availability and reliability of data. In addition, organizations from both sides mentioned methodological limitations of LCA and difficulties in integrating LCP into internal processes as significant barriers.

Beyond these shared concerns, sector-specific challenges were also evident. In industry, IT infrastructure compatibility ranked as the second most significant challenge, indicating that system limitations can hinder the broader adoption of LCP. For public authorities, limited in-house LCA expertise emerged as a key obstacle, highlighting a gap in technical capacity that constrains effective implementation.

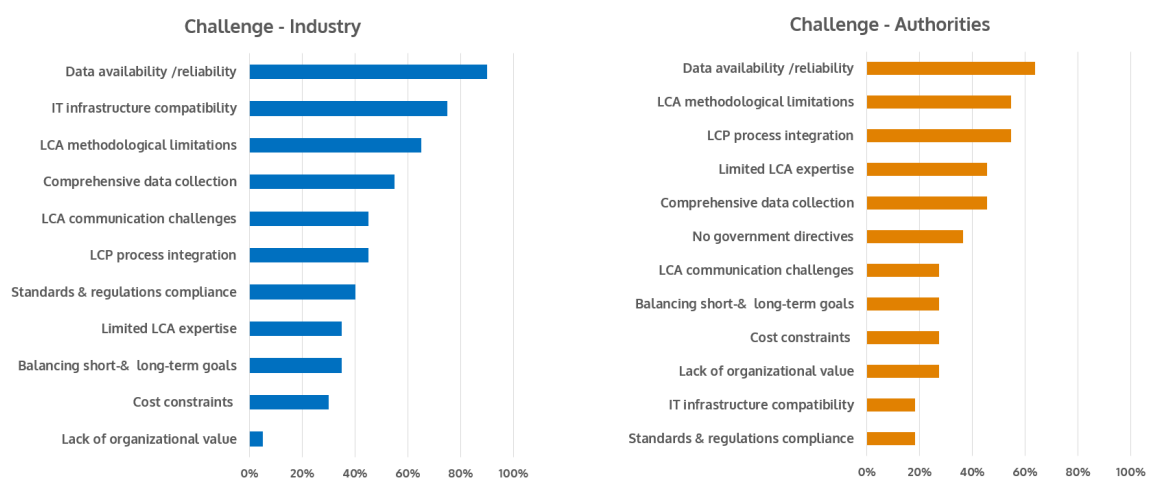


Figure 4. Challenges in implementing LCP.

Expertise enhancement solution

To better understand how organizations can overcome the lack of expertise in LCP, participants were asked to indicate how they would address this challenge. As shown in Figure 5, collaboration with external experts arose as the most widely preferred solution among both industry and public authorities.

Beyond this common approach, the two groups demonstrated different strategies. In industry, there was a strong emphasis on building internal capacity, with organizations highlighting on-the-job learning, training programs, and staying informed through professional news and media as key approaches. Authorities, by contrast, reported a greater reliance on external support, such as consulting services or partnerships with specialized experts, rather than prioritizing internal development.

Recruiting new talent was however not seen as a primary strategy by either group. This may suggest limitations in hiring or a stronger preference for upskilling existing staff rather than expanding teams through recruitment.

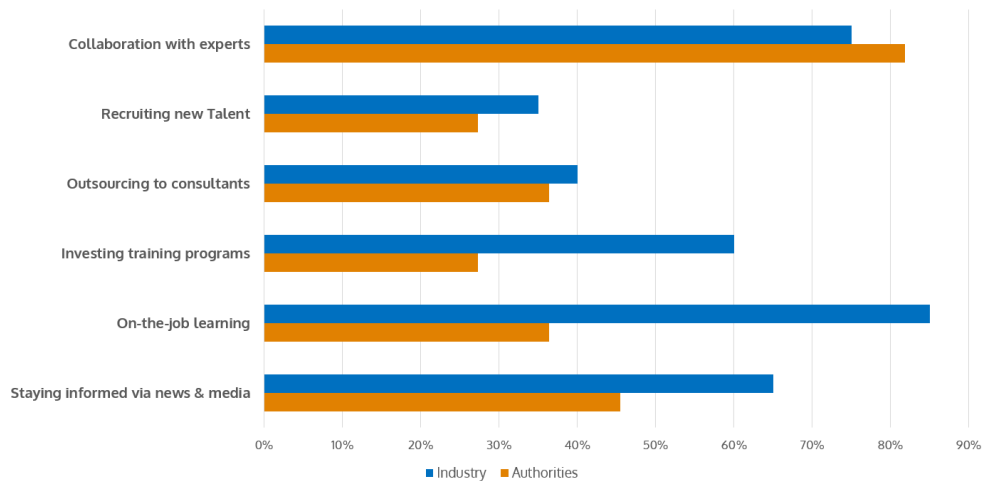


Figure 5. Strategies to address expertise gaps.

Evolution of Demand for LCP

Figure 6 illustrates how participants perceive the evolution of demand for LCP. When asked to reflect on the past five years, both industry and public authorities reported an overall increase in demand, with only a single respondent noting a significant decrease.

Looking ahead, the expectation is even stronger. Both groups anticipate continued growth in the demand for LCP, with the majority of responses falling under the category of “significantly increase”.

These findings point to a clear trend: life cycle perspective is becoming increasingly relevant and necessary across sectors, both as a framework for internal decision-making and as a response to external pressures from markets, regulations, and stakeholders.

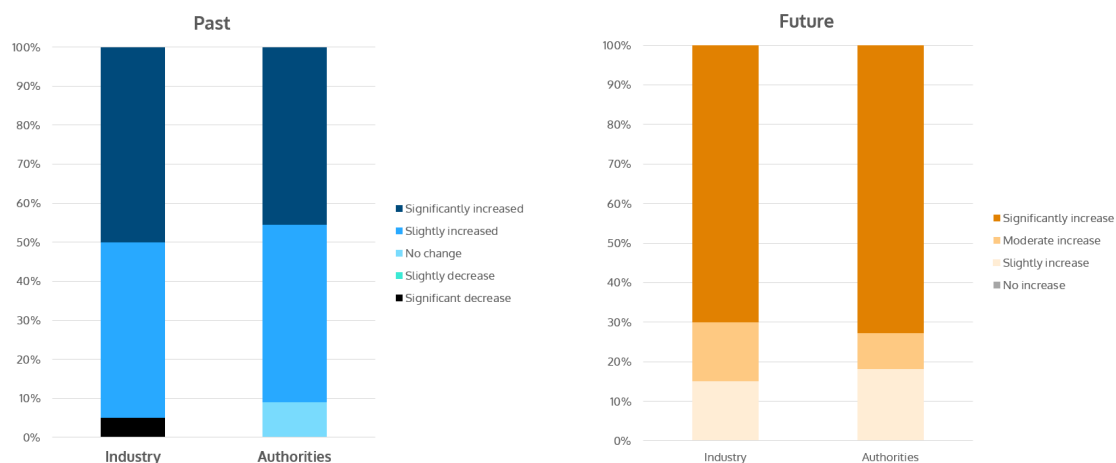


Figure 6. Trends in demand for LCP

Future Competence needs

Figure 7 highlights the competencies that organizations expect will be most important for the future application of LCP. Overall, industry reported a broader and stronger need for competence compared to government agencies, reflecting its role in operationalizing LCP across products and processes.

For industry, the most frequently mentioned needs included the ability to conduct simplified LCA, effective communication skills for explaining and interpreting LCP-related information, a basic understanding of core concepts such as LCA, LCM, and LCT, life cycle management, and LCP-based policy compliance and reporting. Authorities, by contrast, placed greater emphasis on developing capacity to enforce regulatory compliance, gaining LCP knowledge related to specific materials and processes, and building a basic understanding of the core concepts. These differences reflect the distinct roles that industry and authorities play: while industry focuses on integrating LCP into operations and strategy, authorities concentrate on oversight, compliance, and policy implementation.

The survey also included an open-ended question asking participants what competencies and skills they believed would be most in demand to meet upcoming legal requirements and standards, or to maintain a leading position in sustainability. One of the most frequently mentioned answers, not included in the predefined list, was the ability to scale up LCA. This suggests that organizations are looking beyond traditional LCA expertise and beginning to consider how to implement LCA at a larger, systemic level. In addition, respondents emphasized the importance of digitalization, IT solutions, and cross-domain data sharing, viewing these as critical enablers for applying LCP in more integrated and scalable ways.

For industry specifically, effective communication skills for conveying and interpreting LCP related information and LCP based policy compliance and reporting were highlighted as particularly valuable. For authorities, the top priorities were LCM integration and basic understanding of LCP concepts.

These findings point to a clear shift: as sustainability expectations continue to rise, the ability to communicate, scale, and integrate LCP is becoming just as important as technical expertise.

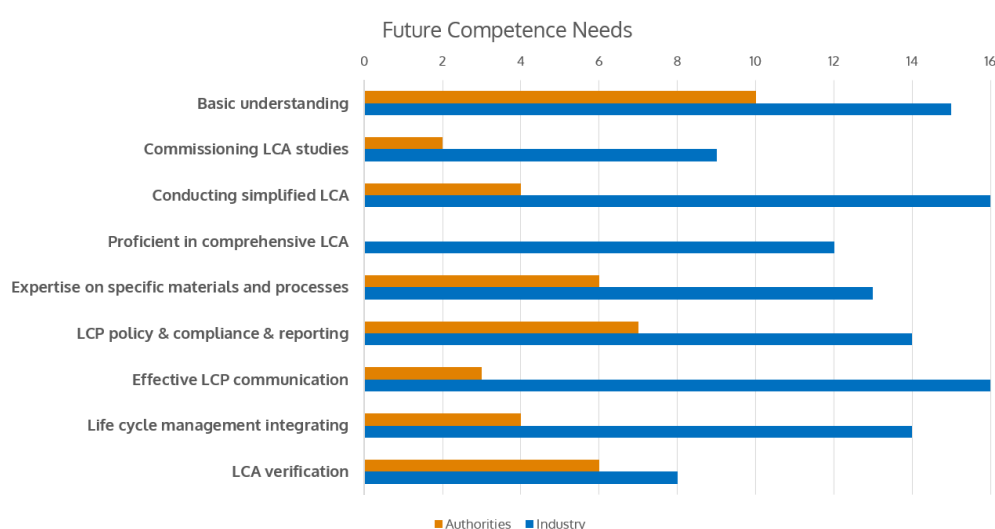


Figure 7. Future competence need.

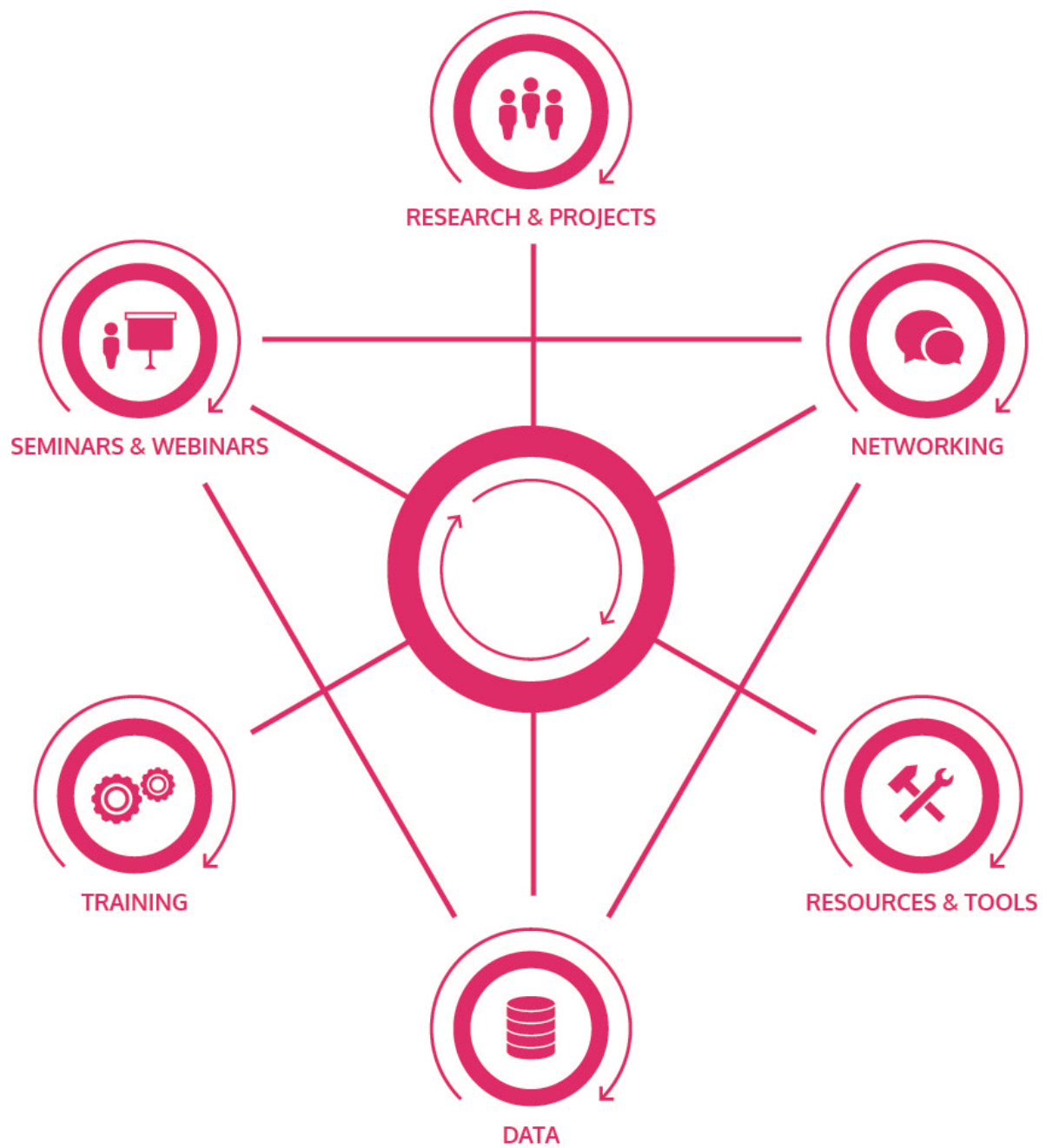
3. Discussion and reflection

Since this project is aimed at understanding competence needs, it is useful to conclude with some reflections on the competencies required for applying LCP.

The findings suggest that different roles require different types of competence. Some roles, such as those involved in methodology development or conducting comprehensive LCA studies, demand deep technical expertise. Others focus more on broad application, for example in regulatory compliance, communication, or integrating LCP into business processes.

The specific competencies that organizations require are closely linked to the challenges they face, such as data availability, methodological limitations, or difficulties with process integration. At the same time, the motivations driving organizations, such as regulatory compliance, achieving sustainability goals, and gaining competitive advantage, create additional demand for stronger and more effective LCP skills.

In reflection, to truly scale and embed LCP across both industry and public authorities, there is a need for a balance between deep technical expertise and broad application-oriented skills. Training should therefore not only build technical LCA competence but also emphasize cross-functional collaboration and practical integration. Strengthening both dimensions will help organizations overcome existing barriers and maximize the potential of life cycle perspective.



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