



The Institute of Environmental Sciences and the Faculty of Science would like to thank the evaluation commission for their insightful assessment of our institute's research. In this response, we would like to address a number of reflections and recommendations of the committee, offer some thoughts on how we will seek to further improve the institute in the coming evaluation period and highlight a number of particularly relevant recommendations.

The committee rates the scientific quality of the institute's research with a 2 (i.e. *very good*), and its impact with a 1 (i.e. *world-leading/excellent*), the highest score. Although CML will look for ways to further improve the scientific quality rating in the coming evaluation period, it is imperative that its research remains as societally relevant as the evaluation commission currently judges it, and we are pleased with the committee's assessment. CML's viability was also rated *very good*, similar to 2014. However, by tripling its size to 150 staff and increasing its turnover to around 9 M€, CML now has much broader capacities and a much more robust position compared to 2014, and a size similar to other institutes in the Faculty. The fast growth obviously has resulted in its own challenges. We interpret this judgment of the committee as an encouragement to keep paying attention to a stable development of staff and institute despite the fast growth we had, and addressing issues related to teaching load and academic leadership.

1. The committee advises CML to further explore, identify and communicate specific research themes where the institute is—or is able to become—world-leading.

CML has become one of the largest three university institutes in its field in the Netherlands. However, given the competition in the themes in which it is active, focus is an important topic for the coming evaluation period. CML has identified a number of research themes where it excels, drawing not only from its own strengths but also those of the ecosystems in which it is embedded. CML has clear strengths to focus on already: CML's work on LCA, resources and input-output analysis is already world leading, and forms an excellent basis to further specialize in ex-ante technology evaluations and scenario studies. In addition, the research on ecotoxicology at the community level combines unique outdoor testing approaches (Living Lab) and e-DNA techniques, and was recently strengthened with a prestigious ERC grant.

In the coming years, emphasis will be put on the ability to translate laboratory derived data (mechanistic & process-based research) to field data (in realistic settings with the biotic & abiotic interactions), to make this a unique selling point of CML. On data science, currently a game-changer in our field, we collaborate with LIACS, our Faculty's computer science institute. On remote sensing & spatial analysis, we will expand collaboration with space research institute SRON, which has recently moved to our campus. In addition, this is an important topic within the Space theme of the Leiden-Delft-Erasmus (LDE) collaboration, opening a path to nearby institute ESA-ESTEC. On the topic of biodiversity and ecosystem services, Leiden's Biodiversity Research Cluster with Naturalis and the Institute of Biology Leiden provides excellent embedding. Leiden's Livable Planet research program allows setting up field labs like 'Land van Ons' and provides a platform for linking CML's natural science-based research to social science and governance expertise.

CML's established profile as a well-embedded multidisciplinary center of sustainability and circularity is instrumental to its success, and CML must keep maintaining and building on that profile in the coming evaluation period, sharpening the focus where needed. CML will strengthen its position in LDE and more visibly demarcate its role in the LDE Centre for Sustainability, so that potential partners in the region and within Leiden University recognize which expertise CML can contribute to strategic multidisciplinary research programs. Additionally, better visibility of CML's expertise in circular economies could benefit the institute's ambitions.

- 2. The committee advises CML to consider reforming the present strong research groups into more independent research units, headed by assistant, associate or full professors.**

- 5. The committee advises CML and the Faculty of Sciences to develop a more structured policy for helping junior staff with their careers inside and outside CML and with further developing academic leadership and outreach skills.**

- 8. The committee advises to continue to work towards a more balanced gender position of CML's staff.**

The committee urges us to reconsider our organization's structure, to balance the ratio of junior and senior staff and encourages us to help develop junior staff and improve gender balance.

CML has grown quickly in a short time. This has been a conscious decision: our themes are more relevant than ever, leading to significant growth opportunities that CML has seized. CML acknowledges that fast growth brings challenges, particularly in staff, but is confident that it will pay off. It is possible that due to our expansion, CML's organization structure is no longer optimally aligned with its activities and strategic ambitions. For this reason, CML has discussed restructuring with staff since mid-2021. This has led to a matrix structure, where the current IE and EB departments will keep responsibility for HR and method development, and 5-6 'Research themes' will be responsible for project acquisition and external communication and networking (likely: Biodiversity & Natural Capital; Agro-Food; Circularity and Resources, Climate Change Impacts and Mitigation, Ecotoxicology & Water, Urban Metabolism).

Senior talent with expertise that is complementary to CML's own is scarce and difficult to recruit. As a result, CML's staff skews toward more junior personnel. However, new vacancies and a promotion bring the CML roster up to 7-8 full professors in 2022. For further development of seniority, CML will have to increase efforts to nurture its own talent. There is ample potential among its assistant professor level staff, and many that we see reaching associate level and beyond.

Improving the gender balance among senior staff by external hires remains a challenge. Female top talent at associate or full professor level is exceedingly scarce and sought after in our field. CML will need to assess whether talented (female) junior researchers can be recruited for staff positions to improve gender balance in the future. CML already applies this strategy: virtually all hires between 2020 and 2022 were at the assistant professor level, and five (over 50%) were promising young



female scientists. However, there remains a possibility that CML will not achieve significant improvements in gender balance in senior personnel in the upcoming evaluation period.

To stay relevant in the competitive research themes that CML is active in, it will need to dedicate attention to the professional growth of its junior staff in addition to seizing opportunities for new hires. Many current and future research opportunities for CML depend on collaboration with societal partners and partnering and leading in large multidisciplinary international consortia. Senior staff should continue the already fruitful efforts to involve junior staff in their strategic partnerships, to help increase their visibility in- and outside academia and support the next generation of thought leaders in our field. CML has a sophisticated staff review procedure that already incorporates many of these recommendations, and that where relevant will be enriched based on the suggestions of the committee.

Attention for career development should also extend to our PhD candidates. Some have expressed to the evaluation committee that they would benefit from more possibilities to develop digital skills, and training aimed at future career paths, also outside of academia. CML and the Faculty of Science can offer such training opportunities by implementing such wishes in the dedicated training programs that supervisors agree up with their PhDs, and will also be taken into account in the ongoing development of its Graduate School.

4. The committee recommends that Leiden University offers more researchers a permanent contract and provides them with opportunities to do independent research.

In particular, the committee recommends to reduce the teaching load of starting staff to a 20% maximum, to facilitate them in starting up new research lines. CML acknowledges that the teaching load is high: the education programs that CML contributes to are in high demand, and the influx of new students has grown quickly. CML also acknowledges it should make an effort to reduce the teaching load for starting staff. The opportunities for this however are clearly limited by the available finances. Since education and PhD supervision is paid with a delay, institutes always have less financial room for the (supervision) tasks they perform during a growth phase. Fortunately, CML is expecting a (semi-structural with a view to becoming structural) funding increase resulting from the 'sector plan' for Earth and Environmental Sciences, which aims to strengthen the financial base of these academic disciplines nationally. This then allows a) to hire additional staff to get workloads, including education loads, to proper levels, and b) to structurally invest in (e.g. lab) infrastructure and consumables, which until now was done in a rather improvised way due lack of finances (e.g. lab technicians paid through projects and the Living Lab being crowdsourced). On the longer term, CML aims to enter a consolidation phase where and PhD numbers should see limited growth or stabilization, allowing finances to catch up with the increased demand.

However, the suggestion to maximize teaching load to 20% is unfortunately not feasible. With the increasing relevance of our research subject matter, interest in our education programs has also greatly increased. A maximum of 20%, or one day per week, is not a target we recognize as a

standard in our field or elsewhere within Leiden University or any other university in the Netherlands. It is hence not a target CML can commit to. We do recognize a high teaching load impedes starting up a new research line, and we will make efforts to limit teaching load for starting staff to facilitate the embedding of their research. One way to optimize the distribution of research and education tasks is to allow greater opportunities to specialize a career track in education, so that those who distinguish themselves in this regard have the same career opportunities as those who excel in research. We will explore possibilities here together with the Faculty of Science.

In conclusion

We thank the committee for their recognition of CML's quality, and their constructive criticism to help us to keep improving on it. Considering the ongoing developments in the research and funding landscapes, the still rapidly improving relevance of CML's themes of focus and the institute's many possibilities for multidisciplinary collaboration, it is very possible that CML has yet another period of rapid growth ahead of it. We will certainly benefit from the committee's recommendations in adapting to these developments.