

Programme evaluation of Master of Science Programme in Environmental Studies and Sustainability Science (LUMES): Statement from external expert group

Jun 22, 2021

Introduction

This report describes the findings of our evaluation of the LUMES programme, conducted in accordance with the programme evaluation policies and procedures of the Faculty of Social Sciences at Lund University. Such evaluations are “to drive development and quality, focussing on strengths and challenges”¹

The external expert group consists of:

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Our conclusions were based on

- (i) review of the extensive written material submitted to the external expert group before the site visit, including a very helpful self-evaluation report, and detailed information on the programme, policies and procedures, course guides, syllabi and evaluations, academic and professional staff, publications lists, students, a sample of theses, and alumni information
- (ii) a two day virtual site visit on Jun 3 and 4, which involved discussions with the Director of LUCSUS; the Director of Studies at LUMES; faculty teaching core courses and electives; faculty coordinating the thesis course and supervising theses; the student coordinator; and three students at different stages of their programme (including one graduate).

This report consists of 13 sections:

- this introduction,
- a section on each of the 11 criteria we were asked to consider:

¹ Instructions for external experts regarding programme evaluation at the Faculty of Social Sciences, Reg. no STYR 2019/1262, Sept 19, 2019

1. That the actual study results correspond to learning outcomes and exam goals
 2. That the programme focuses on students'/doctoral students' learning
 3. That the programme is based on a scientific and/or artistic foundation and proven experience
 4. That teaching staff, including supervisors, have appropriate expertise in terms of subject, teaching and learning in higher education and subject teaching as well as other relevant expertise, and that teaching capacity is sufficient
 5. That the programme is to be relevant for the students and doctoral students and meets the needs of society
 6. That the students and doctoral students have an influence on planning, implementation and follow up of the programme
 7. That an appropriate study and learning environment is available to all and includes a well-functioning support system
 8. That there is continuous follow up and development of the programme
 9. That internationalisation and an international perspective is promoted in the programme
 10. That gender equality and equal opportunities perspectives are integrated in the programme
 11. That subject-relevant perspectives on sustainable development are promoted in the programme
- A concluding section containing some overall conclusions

Discussion of the Evaluation Criteria

1. That the actual study results correspond to learning outcomes and qualitative targets

We begin this evaluation with congratulating LUCSUS on an excellent programme. The LUMES programme has an excellent organisation and content of its curriculum. On the whole, the learning outcomes and qualitative targets are both ambitious and achieved. We deem the education and training LUMES students receive to be at a very high level. The evaluation of this criterion covers strengths and areas for development related to the *content* of the programme, while criterion #2 will focus on the *delivery* of the programme.

Strengths

The organization of the programme is excellent. The core courses' content and their progression provide a solid base covering key aspects of sustainability with a nice and relevant mixture of natural and social science perspectives. A wide array of electives are offered that allow tailoring of the programme to individual interests and needs. These prepare students to be ready and able to engage in their thesis work at the end of the programme and equip them for sustainability practice and employment..

There is a good articulation of learning outcomes at the course and programme levels. We were pleased that these include 'soft' skills that are key but often overlooked in curricula. The ongoing reform is both updating and further developing the syllabi. Based on the documents provided and our conversations with teaching staff, we deem this process to be working well and with a programme-view in mind.

We identified a wide range of teaching activities – from classroom-based to field-based and assignments and assessment forms. This again ensures covering the stated learning outcomes, but is also a pedagogic approach to teaching and learning. The emphasis on group work is highly relevant in inter- and transdisciplinary science, and we see much group work and in different forms throughout the courses. This contributes to fulfilling many learning outcomes.

Challenges and areas for development

We are supportive of the existing learning objectives in the syllabus, but see a need to further strengthen how transdisciplinarity is embedded in the programme. We also see a great potential of increasing the focus on transdisciplinarity in the programme to enhance the value of the programme for its students and society. Transdisciplinarity is therefore raised throughout the remaining criteria as well. Here the focus remains on content.

We find limited mention of transdisciplinary approaches (explicitly) in the programme despite the very applied nature of the programme. We recommend this be addressed in the ongoing reform. This can go from simply making current learning outcomes and programme content explicit to developing a transdisciplinary focus on the programme. Some examples of what we identified are: talking about transdisciplinarity and the breadth/depth challenge, formulating learning outcomes that embrace academic plurality and soft skills. This would also address the noted challenge of having a diverse class. This would be of high value, given teachers and students alike named the diversity as one of the best aspects of the programme.

We have identified the following concrete aspects that would benefit from attention, although in light of the ongoing reform of the programme, we are aware that some of these points might be redundant:

- Some syllabi need updating e.g. MESS32, MESS33 and MESS36; and the natural science foundation (in MESB01) does not seem to be built upon in a systematic way in courses and electives in the 2nd & 3rd semesters. If this is a communication matter, we recommend this being clarified in subsequent course syllabi. If this is intentional, we recommend this being communicated to students already when they are applying to the programme;
- It could be useful to map out learning activities and assessments across all courses and the programme's learning outcomes. This would help ensure a diversity of activities and the development of core competencies, as well as assess if activities, for example, group work is over-emphasised.

- The new methods course(s) – we are not entirely clear on the plans for the new/reformed methods courses. The Knowledge to Action course is the only one that focuses on transdisciplinary methods: we recommend this emphasis is kept in the new course(s). We understand the challenge of methods courses from our own teaching experiences, and support your efforts in addressing your students' learning needs. There is a need to ensure the two new modules do not fragment knowledge creation from knowledge application. We offer some suggestions for addressing this challenge later in the report.
- Thesis – We believe the assessment process could use some more formalization (e.g. specified criteria). From our discussion with the thesis examiners, it seems these criteria exist, albeit tacitly, and it would help students in their thesis process to see these. We would recommend some reform in terms of permitting more practice-based theses. This would entail revisiting the learning outcomes and assessment criteria to ensure true transdisciplinary skills and knowledge are rewarded.
- Re-examination conditions: we recommend these are made standard across courses. If there are variations, then these should be made clearly and be well-motivated by the specifics of that course (e.g. Social Movements' is different from the previous courses).

In the current syllabi and documentation we found weak engagement with the humanities and the arts. In our conversations with LUCSUS staff it became clear that there is more engagement than appears at present. We recommend this is made explicit in course descriptions and learning outcomes and activities. We also understand that engagement with both is developing in LUCSUS research, and it seems that with time and establishment, this will be incorporated into the programme – we look forward to this.

2. That the programme focuses on students'/doctoral students' learning

From analysis of the materials provided and discussions with teaching staff and students, it is evident that the LUMES programme has been designed effectively to develop key competencies and skills for sustainability. The programme syllabus has been developed with appropriate reference to scholarship on education in sustainability science, and we were encouraged that the learning outcomes appear to be, on the whole, appropriately achieved via the learning activities embedded throughout courses. While evaluation criterion #1 focused on the *content* of the programme, this section will cover strengths and challenges related to the *delivery* of the programme.

Strengths

The structure of the programme effectively enables students to develop their learning: the chronological movement from core courses (establishing foundations of environmental studies and sustainability), to electives and finally the thesis allows

students to hone their interests and skills. The continued provision of a diverse set of elective courses is particularly important to ensure students are able to build the knowledge and skills needed for their independent research thesis and further employment.

The mixture of assessment types (written, oral, group and creative tasks) throughout the programme is a strength, and is much needed to ensure graduates have the necessary experience and skills. Similarly, we were pleased to see a variety of modes of teaching delivery offered, such as lectures, seminars and field trips. The teaching team should be particularly commended for adapting these in the context of Covid-19 restrictions (e.g. the development of online field trips).

Written feedback from students, meetings with students and discussions with faculty demonstrated a clear picture of a teaching staff that is strongly engaged in the programme, committed to delivering high-quality education and that takes genuine care for students. Teachers are typically made available to students outside of class. This has facilitated ongoing dialogue and an effective learning journey for students as they engage in their courses. The somewhat intangible quality of staff commitment has led to the programme's success and impressive international reputation. It was clear that a strong identity forms amongst students, and that this is instrumental in shaping their learning experience. Both staff and students lamented the loss of interpersonal interactions during the pandemic, which further emphasizes the need to uphold and maintain the 'community of learning' in coming years that is so characteristic of LUMES .

In addition to staff commitment and engagement, a number of structural elements appear to be important for enhancing students' learning experience. The student coordinator position is invaluable for helping students to 'settle in' and navigate their learning. Similarly, the provision of a dedicated physical space for LUMES students was regularly cited as a strength of the programme as it facilitated effective study and interpersonal connections. We recommend that this space is maintained into the future.

Challenges and areas for development

The current LUMES programme is built on a strong foundation. Yet with the programme review presently underway, we offer some points of suggestion which may be incorporated into the revised version. Firstly, given the challenges involved with shifting the programme to online delivery, we suggest that there is a formal process of learning from this and incorporating the best elements of digital learning technology in the future. We stress that face-to-face interaction is a strength of LUMES and should be maintained, but the use of digital tools could enhance student experience in a blended way, for example making it easy for academic and practitioner guests to join teaching sessions, and for mobilising transdisciplinary practice with stakeholders and different publics.

We are encouraged to see that the development of a new 'methods' course is well underway, as this was a need identified by students and teaching staff alike. However, it may be worthwhile considering how to structurally integrate the methods content so as to avoid a false division of 'theory' from 'practice', and to bolster training in

transdisciplinarity from the beginning of the programme. One possibility may be to merge the two proposed 7.5 credit courses into a single 15 credit course in the first year, that allows students the opportunity to learn about theories of knowledge, techniques for (co)producing knowledge and approaches to leading change in an integrated manner. Alternatively, if it is desirable to have two methods courses, we might suggest that the Knowledge to Action course form the substance of the first course (with a strong focus on the theory and practice of transdisciplinary knowledge co-production, including epistemological and ontological aspects), while the second might focus more on specific tools and methods. This emphasis on transdisciplinarity could be enhanced even further in other areas of the curriculum through field trips and projects based on local problems. While this is a particular strength of the Knowledge to Action course, more could be made of this elsewhere. To this end, it would be worthwhile exploring formal established agreements with key practitioner organizations to ensure long-term stability of these partnerships and transparent financial agreements.

We identified a broad challenge of joining up learning across the programme to provide students with a greater sense of cohesion throughout their two years. This is a common challenge in interdisciplinary programmes. To help students integrate knowledge and skills from different courses in the programme, we recommend exploring the use of assessment tasks that can be extended or built upon over multiple teaching blocks. This may also assist students to identify the unique set of skills offered by LUMES, including skills in interdisciplinary translation.

While an appropriate breadth of learning activities and assessment tasks that have been intentionally designed by course convenors are provided in the programme, we recommend that these be strategically mapped across all the whole programme. We observed that there was some imbalance between courses in terms of class time and credits. For example, the course “Governance of Sustainability” (7.5 credits) was 49 hours and “Urban and Rural Systems and Sustainability” (10 credits) was 82 hours. Further, student feedback mentioned some frustration with the amount of group work. Programme-level strategic mapping of learning activities and assessments will provide helpful evidence to ensure that (i) there is alignment between learning outcomes, teaching activities and assessments, (ii) there is not an over-representation of types of assessments, and (iii) any gaps in the programme can be readily identified. Additionally, this mapping could support the inclusion of more diverse assessment tasks that enable students from non English speaking backgrounds to demonstrate competencies in non-written form. Outputs from this mapping could also be provided to students on the programme to demonstrate why particular assessment tasks are offered at different points in their learning journey, and may help them to see the ‘bigger picture’ earlier in their studies. With respect to group work specifically, this could be designed to create opportunities for specialists to lead and support peers with less experience in a particular topic. The group tasks could thus be designed to allow class members to demonstrate these skills, and would have the added value of providing a space to navigate differences in cultural backgrounds. Finally, it may be worth exploring how personal competencies for sustainability (such as leadership capacity and ability to address inner eco-anxieties) can be more firmly embedded. The elective MESS41 does attend to these inner dimensions of sustainability, but some further introduction to these themes may be useful in other parts of the curriculum.

Other student feedback mentioned a lack of clarity around assessment grades. While a robust grading system is already in place, greater transparency could be introduced via utilization of rubrics for assessment tasks, with these coordinated across modules. This may also help to increase staff time efficiencies in marking. We also suggest that the specifications and assessment for the thesis course in term 4 be revisited as part of the programme reform. Although the course works well at present, with appropriately robust systems of assessment in place (e.g. independent marking and dialogue among teaching staff regarding grades), the structure of the course does not easily enable inclusion of transdisciplinary approaches. We recommend exploring revising the learning outcomes and marking criteria to also accommodate and reward action-oriented, practitioner engaged projects. This could help to ensure it remains a ‘capstone’ for the transdisciplinary nature of the programme. It may also be worthwhile having students co-design projects with partner organizations. We recognize that this may require more staff time and faculty resources to facilitate this, but we suggest that it would help to maintain LUMES’s position as a global leader in sustainability education.

We observed that the size of the cohort has grown in recent years (especially in 2020/21). Feedback from both students and staff expressed challenges in teaching such large classes. It was evident that uncertainty in the admissions process has partly led to the present situation. We therefore recommend that care is taken to cap each year’s cohort at approximately 50 students. Ensuring a high calibre and diverse group of students of this number would help to maintain the class dynamics and culture of learning that has built the success of the programme. It would also be worth looking at whether entrance criteria can be assessed more broadly to consider not only past academic performance and English literacy, but also capacity to work professionally in diverse groups.

3. That the programme is based on a scientific and/or artistic foundation and proven experience

Strengths

We want to recognize that the LUMES programme stems from a strong intellectual heritage at LUCSUS, that has been addressing sustainability-related questions and approaches throughout its existence. This foundation puts LUMES in a setting of high scientific relevance.

LUCSUS has a remarkably broad set of competencies in the field of sustainability science among its researchers, with some very strong faculty members with good networks. This together with a high motivation for teaching provides a high quality scientific foundation for LUMES.

The sustainability science focus of the programme provides coherence across the courses and depth in learning.

Challenges and areas for development

A challenge for staff is that teaching time competes with research time. Teaching time usually increases given the interdisciplinary field and the diversity in the class. This quality depends on teachers having research experience, and being up-to-date as well as having time to be able to maintain the quality of teaching. We deem this a challenge needing to be addressed given it was raised by several staff members and as there are teachers who do not seem to be carrying out research based on their publication lists. We recommend this be addressed at the department, or possibly faculty level in order to support high quality teaching. This can be done with explicit teaching obligations in contracts; reducing dependence on individuals for courses by having core-content not so person-dependent and teachers can then add their cases/skills to the existing course; and research support to staff who have taken on heavy teaching loads and need time and support to maintain research.

As the programme is updated, this is an opportunity to more clearly formulate the programme goals – for students and for LUCSUS. This is related to the question asked of the evaluation team: How can LUMES stay relevant? We see potential in making transdisciplinarity more central to the programme. We understand that there was a push for this in 2005, and this did not reach the vision at the time but there is renewed energy for this now, and we think this is encouraging. This does not mean that all courses or staff should have a transdisciplinary focus. During our conversations we were told that some staff are more interested in interdisciplinarity. We think this is an asset, and a teaching opportunity as it trains students in both approaches and supports their mapping of the approaches to sustainability science.

We recommend developing the possibility of accounting for and evaluating non-academic work students carry out. This is a means of supporting students' efforts to develop their training outside the LUMES curriculum.

4. **That teaching staff, including supervisors, have appropriate expertise in terms of subject, teaching and learning in higher education and subject teaching as well as other relevant expertise, and that teaching capacity is sufficient**

LUMES is fundamentally an inter- and trans-disciplinary programme, with the social sciences at its core. As such the teaching staff required to deliver the programme must have expertise across a range of subject areas related to sustainability.

Strengths

Overall, teaching staff have an impressive breadth of scholarly backgrounds, reflecting the strong diversity of subjects covered in programme. Further, many teachers have explicit expertise in interdisciplinary research and exchange. This is due in part to LUCSUS's history and ongoing cultivation of interdisciplinarity, which is central to the field of sustainability science. A number of faculty members have world-leading research track records, which translates to students being immersed in cutting edge, contemporary issues in sustainability.

At present, there appears to be a reasonable ratio of administrative staff (7) to teaching staff (32). The staff is also relatively young overall, with approximately $\frac{2}{3}$ under the age of 50. This suggests that LUMES is well positioned to have a vibrant teaching staff for years to come.

One particularly positive procedural feature of the programme is the regular “teacher meetings”, designed for teacher to teacher peer support and pedagogical development. This intentional, regular structure for facilitating collective reflective practice is excellent, and should continue. We were encouraged to learn that these meetings have recently been modified to focus more centrally on pedagogical learning rather than administrative concerns. We suggest that time and resources are given to these in the future to ensure they are well attended, effective and maintain a spirit of constructive support, especially as the programme undergoes reform.

Challenges and areas for development

A common challenge, which has been mentioned previously in this report, is navigating the tension between scholarly breadth and depth. The teaching staff at present has a particular strength in the social sciences, which should remain the core of the programme in our opinion. However, we suggest exploring opportunities to bolster expertise in the environmental humanities (e.g. literature, art, philosophy), which could be used to provide an even more rounded programme of study for students. This should be a consideration if and when the Faculty is in a position to recruit future staff.

The other area where additional expertise may be required is the field of transdisciplinarity. To support the more explicit attention given to transdisciplinary sustainability practice mentioned earlier in this report, this expertise could come in the way of additional staffing, but also training for all staff on the programme. The need for more expertise in training students in effective co-production with external stakeholders is particularly apparent in the thesis course, given the demands placed on individual supervisors to offer guidance for specific projects. Within the ethos of transdisciplinarity, it would be worth exploring mechanisms to allow external teaching input by practitioners to be formalised. To ensure long-term financial and relational stability, official arrangements could be made with external actors so that they are willing to contribute time and resources for guest teaching or project supervision. These could include financial honorariums, official affiliations with LUCSUS, or mutually beneficial co-produced outputs.

Regarding the publication outputs by teaching staff, we observed a large variability, even within staff categories. We recognize the common tension between research and teaching in academic departments and the challenge this presents for staff with limited time and capacity. There is a need therefore to ensure there are structural incentives to enable productive research alongside excellent teaching. This includes both mechanisms for individual staff who want to prioritize teaching to be rewarded for success, as well as time and resources made available to staff to conduct research alongside teaching if this is their preference.

5. That the programme is to be relevant for the students and doctoral students and meets the needs of society

Students reported being very happy with the programme, and based on applicant numbers, there is strong demand for the programme. We deem the LUMES programme to be highly relevant to its students as well as for society by providing a breadth of understanding of sustainable development in theory, methods and skills.

Strengths

Students are provided with a very well-designed curriculum that provides a good basic and common understanding in the core courses, followed by a wide selection of electives that allow students to tailor their learning to their specific areas of interests and needs, such as for the thesis. This set-up ensures understanding of key aspects of the sustainability dilemma, its challenges and approaches to addressing these. Followed by the ability to maintain breadth or focus on certain areas e.g. energy. With the focus on sustainability science, the training in the courses and in the thesis work, students are delving into societally-relevant questions throughout the programme, and on several occasions engage in collaborations with non-academic partners through field trips, theses and assignments.

Once on the programme there is excellent retention and graduation rates of students. This again indicates high satisfaction in the programme as well as being a reflection of the learning environment provided. In addition to the course evaluation procedures that ensure recognizing and responding to student responses, the close contact between staff and between staff and students allows for adjustments to be made based on ongoing feedback in courses, which will contribute to keeping the programme relevant to students. We again want to note the important roles of the student coordinator and programme head in these processes.

In the documents and meetings the students report that one of the best aspects of the programme is the diversity of students and staff. This diversity contributes to the students' training in inter- and transdisciplinarity approaches to sustainable development.

Areas for development

The students reported that on beginning the programme, they realized this was not the programme they thought it would be. That LUMES is a social science degree, and the training on natural sciences is limited and that they did not feel they spent enough time to master tools and skills. When we interviewed LUCSUS staff, it is clear the ambition with LUMES is to provide a breadth of understanding and training in the field of sustainability science. This breadth is both a legacy of how LUCSUS has developed over time, but also a formulated ambition today. We identify two steps that would help reduce students' dissatisfactions. The first centres on communication and the second on curriculum development.

Communication of the programme's content, focus and goals needs to be improved to prospective students. The website programme and course descriptions should make clear that LUMES is a social science programme, that the core courses' pedagogical approach is to provide a base of understanding required to engage in sustainability issues, and that the emphasis throughout the programme is on breadth. It should also clarify how this equips students to be able to pursue a career in this field upon graduating.

These aspects should then be communicated throughout the programme, to remind students of the programme's goals and approaches. In addition, it may be important to clarify how the programme equips and enables graduates to (i) secure employment, (ii) conduct leading sustainability research, and (iii) drive societal transformation. The skills for each of these are quite different. We identify the following points that could support these three areas, with respect to curriculum development:

Breadth vs depth challenge: this is a common challenge in interdisciplinary fields. We recommend LUMES keeps its current goal of providing breadth in training and makes clear that there is *depth in breadth*. This can be raised in the programme introduction week and the first methods course, but should also be incorporated in courses: make explicit the skills and knowledge being gained and how these can be applied. Based on our assessment of the current curricula this would require clarification/ making this explicit in existing course components e.g. role and approaches to group work and becoming connectors. We also recommend framing this in terms of transdisciplinarity, and that this is a unique skill set.

Develop the transdisciplinarity focus of the programme: The programme aims to prepare students to be managers, for application and to do research. These three targets can differ in needs and expectations. Putting greater emphasis on transdisciplinarity could unite many needs and expectations. We also see this training as a space that would keep LUMES highly relevant in the future, and a space that LUCSUS is very well prepared to provide. This could be done by having a problem-solving focus and making stronger links to practitioner communities. These measures would both support training in transdisciplinarity as well as prepare students for future careers by being exposed to how their skills and knowledge can be applied in different circumstances, as well as help students develop real-world skills to enable change.

Leadership and agent of change: We suggest LUMES add greater focus on leadership and agent of change in the curricula to prepare students for future careers both within and outside of academia as well as being equipped to be able to engage in societal transformation processes.

Career marketing sheets: We suggest further development of the current alumni profiles into a career marketing sheet, so students can see the range of sectors and careers that alumni have moved into, and how LUMES has supported them in their career path.

The self-evaluation report also raised concerns about coherence and connections among courses and the student evaluations suggested there was too much repetitiveness. Since the programme head leads both the redevelopment of the programme's courses as well as the restructured teaching team meetings, this is an excellent opportunity to identify connections between courses to ensure repetition is done in a pedagogically planned manner – we note that this is already happening among cluster of courses that know to have overlapping and related content. We strongly support these endeavours. We also support the revising of literature lists, which are at times dated. We also suggest opening the option for students to pick electives outside of LUCSUS if they identify an area of interest or need that is not covered by LUCSUS courses but that is deemed relevant to their LUMES education (e.g. thesis). This could be assessed by the programme head.

6. That the students and doctoral students have an influence on planning, implementation and follow up of the programme

Strengths

We were impressed by the level of feedback students are able to provide via the course evaluations. The combination of both qualitative and quantitative information is a useful tool for ongoing programme development. Similarly, the full programme evaluation we reviewed demonstrated both a thorough process for gathering information and enthusiastic engagement by the student body. There also seems to be a culture of encouraging informal feedback to teaching staff throughout the terms, which is testament to an overall high level of trust and a welcoming atmosphere.

In terms of student engagement with programme implementation, there was a good amount of student freedom in choice and focus of assessments, particularly the thesis.

Challenges and areas for development

Our chief recommendation in this matter is that there is a process for systematic consideration of student comments and concerns through the upcoming programme reform. This includes concerns related to programme cohesion, description of content and clarity of assessment criteria.

In the future, it would be good to explore mechanisms for capturing and using informal student feedback that arises in 'real time' during the delivery of courses. For example, there could be space given to this during the regular 'teacher meetings'. Feedback could also be captured by the student coordinator and disseminated to teaching staff. Finally, it may be helpful to explore practices such as course teachers asking students about what elements of their teaching should continue or be changed, part way through teaching a course. This may improve the timeliness of student feedback, and open important conversations with students, even if this meant simply better explaining why certain teaching methods were being used.

We also think it is important that students be represented on formal decision-making bodies within the LUMES programme. This will be particularly important during the current process of curriculum reform.

7. That an appropriate study and learning environment is available to all and includes a well-functioning support system

As LUMES is entirely embedded in LUCSUS, both in terms of courses, teachers and place of study, it puts a large responsibility on LUCSUS in its provision of a learning environment of merit. We assess LUCSUS to be doing an outstanding job in providing a welcoming, generous and stimulating learning environment in both the physical space and facilities provided and the teaching staff's roles and approaches to both teaching and students. LUCSUS clearly values the LUMES programme and its students' experiences and learning. This was perceived and appreciated by the students we spoke to who had very positive feelings about the people and space where they felt very supported by staff and that their teachers were passionate about their work.

Strengths

The "Third Floor" provides an excellent physical space and facilities for teaching and learning. In both the self-evaluation report and in our conversations with staff and students, this space was highly appreciated and seen as much more than access to rooms, being a space for community-building and out-of-class activities. The Third Floor's proximity to staff offices and staff's approachability are creating an exemplary academic culture to its students. This is further supported by roles of student coordinator and programme head who are key to the programme coordination as well as student support. Both of these are to be commended on their work.

The SPACE initiative is another example of the LUCSUS providing support for non-curricular spaces for their students to engage in and become practitioners in sustainability initiatives. We strongly recommend this is maintained.

Challenges and areas for improvement

The student coordinator position is crucial and extremely well-received by students and teaching staff alike. We identify a need to formalize, or at least document, the student coordinator's activities, especially with respect to diversity. We identify this need to both strengthen the curriculum by cataloguing the training and support given to students to share with teaching staff and to mitigate the risk of losing tacit knowledge currently held by one, key, individual.

The university provides excellent student support through the Library and in particular the Academic Support Centre. The latter is incredibly important in supporting students who are not strong in English, academic writing and scientific writing. This is highly pertinent to LUMES where at least one of these areas is new to most, if not all of its students. The self-evaluation report reported that the centre is

losing capacity through reduced funding. We identify this as a challenge and strongly encourage the university to maintain this centre in order to avoid departments, as this is not a LUCSUS-only issue, needing to spread thin their teaching resources.

8. That there is continuous follow up and development of the programme

Strengths

It is evident that effective systems are in place to continually develop, refine and evolve LUMES to ensure it remains relevant to contemporary sustainability challenges. Our conversations with contributing staff painted a picture of a programme with a rich heritage that has managed to shift emphasis strategically at different points. That the programme is currently undergoing a process of reform is testament to a process of continuous development. In addition to structural development, we were pleased to see processes in place for pedagogical development, such as the regular teachers' meetings (four per year), annual staff appraisals, frequent one-on-one talks between teaching staff and the Director of Studies, yearly quality dialogues with the Faculty and student union, and monthly meetings with students.

Challenges and areas for improvement

With the programme currently in a process of reform, there is a need to ensure not only that independent courses are revised, but that there is a shared vision for the programme across all teaching staff. Although the reform process is being completed in stages (term by term), we recommend that the whole teaching team participates in the process and not only convenors of directly affected courses.

Furthermore, with the current reform comes an opportunity for strategic emphasis of cross-cutting themes that could help LUMES to stand out among competitor programmes. One suggestion to this end would be to explicitly build in concepts of leadership, which is mentioned in the Programme Syllabus: "LUMES graduates are problem-solving leaders". The need for graduates to not only understand and critique sustainability challenges but to also *lead* change, is particularly acute in the current global context.

9. That internationalisation and an international perspective is promoted in the programme

Strengths

The LUMES programme presents students with global perspectives on sustainability issues and allows for deep exploration of international topics across a range of courses. The composition of students is highly international, with approximately 25 nationalities represented per batch, and this contributes to students being exposed to different world-views and perspectives. Additionally, the teaching staff has varied

cultural and geographical backgrounds. Overall, the international ‘flavour’ of the programme is very impressive and is a strong selling point.

Challenges and areas for development

We consider that there are even more opportunities to create a balanced and diverse international character to the programme. We note that at present there are no opportunities for LUMES students to study abroad. There may be potential to align the programme strategically with other partner universities internationally via an exchange programme. We also noted that no scholarships are presently available for international students. Anecdotal information from our site visit indicated that most students from the Global South are from high socio-economic backgrounds, and not necessarily representative of these regions. We suggest that a strategy be developed for future internationalization, which considers not only potential student markets, but also geographical regions and targeted students based on creating a diverse learning environment and welcoming different international perspectives on sustainability.

While the degree of internationalization is an existing strength, there may be potential for more to be made of this in terms of students’ learning experiences. We would encourage teachers to (sensitively) facilitate the inclusion of alternative perspectives on topics based on students’ past experiences and backgrounds, recognizing that students can learn much from one another and not only from the teachers ‘up front’.

With the international composition of student cohorts comes potential for cultural misunderstandings and insensitivity - something that was mentioned in the self-evaluation document. It was clear from our conversations with teaching staff that this is a well recognized issue, and thus these suggestions are in the spirit of constructive development. We suggest that activities may be formalized both within class and as part of co-curricular activities (e.g. induction events) to help students identify and sensitively discuss cultural differences and perspectives. This could potentially be facilitated by the Student Coordinator, but we also encourage engaging external experts in designing such activities.

Notwithstanding the immense value of international perspectives, we stress the need to balance this with attendance to local issues and contexts. We also observed potential to further strengthen research activity *locally* in order to address sustainability challenges in the cities and regions proximate to the University. This could have the added bonus of facilitating direct student engagement with study sites and cases. LUCSUS should be applauded for the excellent international research conducted, especially in the Global South, yet given the international profile of many LUMES students, local research activity would itself be considered international.

10. That gender equality and equal opportunities perspectives are integrated in the programme

Strengths

There is an impressive degree of careful attention paid to gender equality within the LUMES programme. For example, the explicit identification of female authors of publications in reading lists, and the inclusion of an optional module on gender and sustainability (MESS47), as well as active engagement with the Gender, Diversity and Equality Committee in LUCSUS. Conversations with staff and students indicated that sensitive and critical perspectives on gender are indeed integrated throughout the programme and graduates carry these into their careers. In a broader sense, we were pleased to learn that effort is made to facilitate environments where students are included, made to feel comfortable and do not need to “adjust”. The Student Coordinator role and the physical space for students is instrumental here, and is a highlight of the programme.

Challenges and areas for development

Our recommendations pertain to going beyond gender to also consider other dimensions of equal opportunity. With such a culturally diverse and international student body, there are opportunities to bring together students’ interpersonal experiences with formal teaching within courses. There is a growing recognition within the international environment and sustainability community of pervasive, systemic and deeply rooted barriers to appropriate inclusion of diverse racial and ethnic perspectives. We suggest that particular attention is paid to incorporating aspects of equity, diversity and inclusion beyond gender in both taught content and informal dimensions of the student experience - dimensions such as race, ethnicity, culture, religion, socio-economic circumstance. As this is a large, complex and sensitive topic, a starting point may be to formally (or informally) align with professional associations or movements addressing diversity and equality in the environmental sustainability profession. Example organisations include Green 2.0, based in the USA (<https://diversegreen.org/>) and the Diverse Sustainability Initiative, based in the UK (<https://www.diversesustainability.net/>).

11. That subject-relevant perspectives on sustainable development are promoted in the programme

LUCSUS has since its inception addressed sustainability questions. It has done this both internally through its research and teaching, and as a member of Lund University contributing to research, teaching and sustainability discussions at the university. We deem it has done this with great success based on its publications, engagement in scientific panels, invitations to teach at various departments and courses at Lund (and other universities) and the attractiveness of the LUMES programme over time, to name a few. Given the LUMES programme is set in the field of sustainability science and that LUCSUS has an excellent breadth of expertise and experience in the field, we focus here on the wider scope for LUMES and LUCSUS to engage in sustainability.

Based on our meetings and documents for this evaluation, we see LUCSUS as a leader in education for sustainable development at the university. We see clear potential to further leverage the role of LUCSUS and LUMES in Lund University, as they are a rich resource for the university. This would be to further develop/ formalize existing interactions in four areas: 1) More actively contributing the incorporation of

sustainable development in the university's curricula through teaching, supporting departments in curriculum development and developing campus initiatives that would treat the campus as a living lab; 2) Using LUMES students as ambassadors at the university, for example by opening courses to non-LUCSUS students (we recognize the problem of class size restrictions) and allowing programme students to interact more actively on courses and sustainability initiatives at the university; 3) Engaging with non-academic partners and furthering the development of transdisciplinarity in teaching, research and practice; 4) As leaders in education and research for sustainable development, LUCSUS is well placed to lead advocacy for sustainability issues at the university level.

The self-evaluation report presented the travel policy that has been developed at LUCSUS. We understand that this has been done at its own initiative as the university currently lacks this. This is naturally an excellent and needed initiative. In order to further develop this effort we recommend developing collective responses at the department level, as the policy currently individualizes the issue, and to showcase this policy to the university to encourage it adopt a similar approach to travel to support its engagement in sustainability.

Conclusions

The external expert group were unanimously of the view that LUMES is a very strong master's program: coherent, relevant, well-designed, and well-managed. There is a strong structure, organized around the seven core courses, eleven electives, and the thesis; excellent communication with students and between colleagues; and a powerful sense of community among the staff and the students. In many ways it is a model programme of which LUCSUS and the university can be proud.

Recognizing that the LUMES programme is undergoing a process of reform, we have written this concluding section in order to suggest some considerations that might be helpful for that process. As a result, this section will not repeat all of the findings expressed in the preceding subsections on each of the eleven evaluation criteria we were given. Those findings represent our official response to those eleven criteria. Here we want to pull together some overall conclusions about possible future directions, organized in terms of six themes that emerged from our reading of the material, the discussions in the site visit, and our conclusions regarding those criteria:

- (i) The role of transdisciplinarity within the program
- (ii) Clarity and coherence of the programme
- (iii) Missing or under-developed content
- (iv) Equity, diversity and inclusion
- (v) Maintaining relevance of the programme
- (vi) Relationship to the wider university

What is offered in these six sections are some suggestions that we believe will make an excellent programme even stronger.

(i) The role of transdisciplinarity within the programme

While strong interdisciplinarity is a core, visible, and laudable attribute of the LUMES programme, it was less clear how central transdisciplinary approaches (which combine interdisciplinarity with strong connections to and involvement of non-academic partners or practitioners, based on knowledge co-production and co-creation methods) are in the programme. The concept of transdisciplinarity was not highly visible in the programme descriptions we reviewed (e.g. programme syllabus, course guides), but it is strongly present in the Knowledge to Action course, and in the comments of some of the staff about their research or teaching during the site visit. We were told that there had been a strong effort to make transdisciplinary knowledge co-production approaches central to LUMES in the past but this had not in the end been carried out. We also heard that some academic staff were strongly committed to transdisciplinarity, but others were more focussed on interdisciplinary approaches.

Given growing interest in the sustainability field around the world in developing strong relationships with practitioner communities and in the various forms of knowledge co-production and co-creative partnerships, it might be advantageous for the LUMES programme to build on its strong interdisciplinary history with a more explicit additional focus on transdisciplinarity. While many research partners and funding agencies are increasingly calling for transdisciplinary work, this is a relatively new development and it remains true that few places that really focus on it as an approach central to sustainability. Indeed, most university faculty are not trained in transdisciplinary theories, methods or practices. There is thus an opportunity for the LUMES programme to make transdisciplinarity a defining feature of their programme and offer such training to their students, equipping them with skills and expertise that are in increasing demand in society.

Such training could equip students to straddle the academic/practitioner divide and engage in the production of actionable knowledge on sustainability issues. This might involve embedding practitioner perspectives more deeply into the programme (e.g. practitioners in residence; embedding students in external organizations; living lab course assignments). It would have implications for the new methods courses being developed. As noted above, in the discussion of criterion #2, this suggests merging the two proposed courses into a single more integrated 15 credit course in the first year, or, if two courses are retained, then reversing the proposed order, having the Knowledge to Action course (with a strong focus on the theory and practice of transdisciplinary knowledge co-production, including epistemological and ontological aspects), come first, while the second might focus more on specific tools and methods.

An explicit focus on transdisciplinarity in the LUMES programme would not preclude offering many courses and theses that are primarily interdisciplinary rather than transdisciplinary. Rather it would complement such activities and provide an overall framework in terms of which the actionable opportunities for such interdisciplinarity could be expressed.

(ii) Clarity and coherence of the programme

All three students we talked to said that the programme they experienced was not what they expected. In particular, they had anticipated a more even mix of natural science and social science courses. This suggests the importance of making the nature of the programme, which is essentially rooted in the social sciences, more explicit, especially in the material sent to prospective and actual applicants. We will say more about the content of the programme in the next subsection of these conclusions but whatever decisions are made about adding the content suggested there, the point being made here is the need for clarity in the programme's descriptive material, and in the open sessions for applicants that have recently been established.

A related issue has to do with the particular mix of breadth and depth in the LUMES courses. The students and a number of staff commented on the fact that the design of the LUMES programme means that students are exposed to a wide range of concepts, theories, methods and approaches in the sustainability field in the core courses. This breadth of treatment means that there is not in-depth treatment of such topics as GIS, DPSIR, LCA, etc. in those courses. Instead students are given a basic understanding of such topics, with the possibility of pursuing the ones they choose to utilize in their thesis in one or more of the elective courses. The goal is to keep a breadth of course topics and approaches to teaching, as this supports creativity and exposes students to a diversity of approaches.

We will return to these issues in the "Relevance" subsection of these conclusions. Here we simply want to express the view that it is important that the nature of the LUMES approach be made very clear. In fact, we believe this breadth can be a point of pride and a differentiator relative to other programs with a narrower focus.

In terms of coherence, we recognize the significant efforts that have been made to incorporate student views (from course evaluations and meetings) and to engage in various forms of planning sessions with staff. We encourage a continuation of the intentions we heard to increase efforts in both of these domains. In terms of staff there seems to be scope for some more shared overview across courses and with the program's goals. With students, expanding on the ways the programme is presented to prospective and existing students would be useful to convey more clearly the vision of the programme (breadth vs depth), to reinforce trust in the design, and to situate them in the programme's "map" during their studies. Modes of communication we recommend considering include website text, orientation materials, curricula and programme descriptions, as well as informal communication.

We note that a more explicit emphasis on transdisciplinarity might help with increasing both clarity and coherence in the programme.

(iii) Missing or under-developed content

Given the highly interdisciplinary nature of the LUMES programme, it was somewhat surprising not to see more explicit inclusion of humanities-related courses in that programme. It was pointed out that such content is not absent from the LUMES courses (especially perhaps Social Theory and Sustainability, Sustainability and Inner Transformation, and Sustainability and Popular Culture), but given the strong growth

in environmental humanities in recent decades, and the critical importance of the historical, philosophical, religious, artistic, literary and legal dimensions of sustainability, it is our view that the humanities should be explicitly addressed in the LUMES programme, either in the form of a new core course (which would be logistically difficult and perhaps difficult to find teachers for from within LUCSUS), or else by building explicit humanities content into a number of course courses, such as Sustainability Science, Politics of Sustainability, Geographies of Sustainability, Economy and Sustainability, and the methods courses (to use the title from the new course structure we were given).

Another suggestion we heard was to strengthen the natural science content of the program. However, it is our view that, in keeping with the LUMES approach to breadth of education in sustainability science discussed above, it is more important to add humanities content, than to strengthen the natural science content.

A second area where we think the programme might be strengthened has to do with the topic of leadership. If the LUMES programme is intended to train leaders across the broad array of issues, problems, theories, methods and approaches in the sustainability field, then perhaps the question of leadership skills could be given more explicit treatment in the programme.

(iv) Equity, diversity and inclusion

In keeping with a general thrust in Swedish higher education, the LUMES programme has a strong and laudable focus on gender issues. As noted in our discussion of criterion #10, we think this might be usefully supplemented by a stronger focus on other types of equity, diversity and inclusion issues, including those associated with race, culture, religion, and socio-economic circumstance. These issues are moving to the forefront of political and institutional agendas around the world and it would be appropriate for them to receive more emphasis in the LUMES programme. This is especially true given the highly international and intercultural nature of the student body, and to some extent the staff.

(v) Maintaining relevance of the programme

The field of sustainability is evolving and changing very quickly all over the world. Sustainability considerations that were once fringe issues for governments, companies and various civil society actors are quickly becoming mainstream, and more students across the university can be expected to receive some form of sustainability training in the future. This raises the question of how a programme like LUMES, which is intended to produce graduates who are sustainability professionals, should evolve to reflect these changing circumstances and maintain intellectual leadership in this field.

The first point is perhaps obvious. Sustainability problems are pervasive, deeply rooted and require changes across the spectrum of societal practices and institutions across the world. They demand both a general population that is more literate on sustainability issues and also sustainability professionals trained to address them in explicit ways in

multiple sectors of society. We see a continuing demand for the kind of sustainability professionals trained in the LUMES programme.

We also believe that several characteristics of the LUMES programme constitute a particular approach to sustainability that is somewhat different from more disciplinary and academic programs focussed on sustainability. The deeply interdisciplinary nature of the programme, with a focus on what might be called ‘depth in breadth’, the transdisciplinary focus on working with partners and practitioners in mutually respectful and reciprocal ways, and the emphasis on developing solutions, not simply critiques, are all important characteristics of LUMES that will not go out of fashion. It might be useful, for example, to articulate the distinct skills associated with strong interdisciplinarity and transdisciplinarity, such as boundary spanning, pattern recognition, shape-shifting, identifying and working with leverage points, etc. Such continuing relevance will only be enhanced by the strong practitioner focus associated with transdisciplinary approaches. This in turn suggests an explicit commitment to relationality and supporting positive societal change.

(vi) Relationship to the wider university

We believe there is potential for LUMES to be a programme that is looked to for experience in education for sustainability across Lund University, as such education becomes more common in other programs. It is at least important to remain aware of, and ideally connected to, such developments. It might be considered whether LUMES courses could be opened to external students in some cases. In other universities, such opening is sometimes accompanied by allowing students in the programme to take courses elsewhere, on the assumption that inflows and outflows would balance out.

More generally, universities around the world today are being asked to engage much more actively in sustainability activities, including research, teaching, operations and community engagement, and their interconnections. We think it is important for LUMES and LUCSUS to consider what their role is in such activities at Lund University. Could LUCSUS, for example, take an active role in moving Lund University in this direction, with LUMES serving as an example on the teaching and research front, which is already strongly connected to external partners? Could LUMES build in living lab types of assignments that engage students in sustainability problems in the local community, or on campus, connected explicitly to practitioners both on- and off-campus? We think there is the opportunity for leadership in this domain.



LUCSUS

CENTRE FOR SUSTAINABILITY
STUDIES

LUMES evaluation site visit

3-4 June, 2021

Lund University Centre for Sustainability Studies

Zoom link: [https://lu-](https://lu-se.zoom.us/j/62218051557?pwd=RGxVK3A5TG9ESHJWMXFLZkRPTEFaQT09)

[se.zoom.us/j/62218051557?pwd=RGxVK3A5TG9ESHJWMXFLZkRPTEFaQT09](https://lu-se.zoom.us/j/62218051557?pwd=RGxVK3A5TG9ESHJWMXFLZkRPTEFaQT09)

3 June

13:00-13:20	Welcome & introduction	LUCSUS Director: Emily Boyd Director of Studies: Maja Essebo
13:20-13:40	LUMES & LUCSUS history	LUCSUS founder: Lennart Olsson
<i>13:40-13:45</i>	<i>Break</i>	
13:45-14:15	LUMES today & tomorrow	LUCSUS Director: Emily Boyd Director of Studies: Maja Essebo
<i>14:15-14:25</i>	<i>Break</i>	
14:25-15:10	Core Courses	Earth System Science: Torsten Krause Governance of Sustainability: Mine Islar Sustainability Science: Barry Ness
<i>15:10-15:20</i>	<i>Break</i>	
15:20-16:00	Students & Alumni	First year student: Reece Jager Second year student: Simona Jastremskaite Alumni: Lauren Tropeano
16:00-16:20	Questions & Discussion	Director of studies: Maja Essebo Core courses: Torsten Krause
<i>16:20-16:30</i>	<i>Break</i>	
16:30-17:00	Evaluator hub	

4 June

13:00-13:15	Recap & questions	Director of Studies: Maja Essebo
13:15-13:45	Teaching administration	Student coordinator: Amanda Elgh Director of Studies: Maja Essebo
<i>13:45-13:50</i>	<i>Break</i>	
13:50-14:20	Electives	Sustainability and Inner Transformation: Christine Wamsler Sustainability and Global Health: Sara Gabrielsson Deciphering landscape: Ann Åkerman
14:20-14:50	Thesis course	Thesis course convener: Anne Jerneck, Supervisor: Kimberly Nicholas Supervisor: Ebba Brink Director of Studies: Maja Essebo
<i>14:50-15:00</i>	<i>Break</i>	
15:00-16:00	Questions, discussion & wrap-up	LUCSUS Director: Emily Boyd Director of Studies: Maja Essebo
16:00-17:00	Evaluator hub	