

Annual report

CIRCLE – CENTRE FOR INNOVATION RESEARCH | LUND UNIVERSITY



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Letter from the director

A good year for CIRCLE with hybrid meetings, increased membership and renewed trust and investment by Lund University. Looking ahead at another interesting year with focus on developing PHD and Master education and fresh interdisciplinary research collaborations.

At the beginning of 2021, I was hoping for us to return to the office invigorating collaboration at CIRCLE – and indeed we enjoyed some relaxed months before restrictions tightened again. However, we have learned better how to arrange work and life in a hybrid mode. And indeed, the number of “kanelbullar” (Swedish cinnamon buns) consumed at our weekly research talk-meetings has increased steadily in autumn!

Overall, it was a very good year for CIRCLE. We were able to welcome many new members being now a community of 90 researchers with a variety of backgrounds and expertise related to innovation research. It was also a very productive year where research output in terms of publications increased by 49% to over 140, and a steady increase of research projects involving CIRCLE members. CIRCLE has also been dynamic in outreach with an increasing number of visitors to our website, twitter followers, and tweet impressions, which complemented our direct engagement with policy makers at the regional, national and international levels.

Following a process of diligent internal and external evaluations about CIRCLEs reorganisation, we received the trust and commitment from the leadership of Lund University (LU) and the three faculties involved (LTH – Lund Faculty of Engineering, LUSEM – Lund School of Economics and Management, and Lund Faculty of Social Sciences). Based on the recommendations of the evaluation and discussions with the leadership of Lund University, we received support on a mid-term perspective, which will allow us to continue building an excellent research environment.

The external evaluation painted a positive picture as illustrated in this concluding comment:

“CIRCLE is a strong asset with an international reputation but there is considerable potential for further development. Its work is well aligned with the priorities of the

LU strategy and the university’s expressed desire to build positions of interdisciplinary strength. In particular, CIRCLE addresses some of the societal challenges that are becoming ever more important in national and international research funding and can make an important contribution to the evolution and development of Lund University as it wrestles with the dilemma of how an essentially discipline-based organisation can best tackle the interdisciplinary challenges of society and the economy.”

However, the evaluation made also clear that further organisational development and institutional anchoring is required to ensure sustainability, increase CIRCLEs autonomy, and deliver scientific and societal impact. This will also entail the extension of PhD training activities and engaging more actively in the European Master’s Programme on Society, Science and Technology, and new initiatives that bridge teaching and research across the faculties and disciplines. Organisational development will also involve defining and providing opportunities for engagement, learning, and initiating new research collaborations. Moreover, we will also work on reinforcing and developing the CIRCLE spirit for research excellence: openness to new ideas, constructive critique, research integrity and diversity, as well as a collaborative and supportive attitude.

With that in mind, I can conclude a successful year with a positive outlook for 2022 and onwards.

Markus Grillitsch
Director of CIRCLE



This is CIRCLE

CIRCLE was established in 2004 and has undergone some changes through the years. In 2021, following a process of diligent internal and external evaluations CIRCLE received the trust and commitment as well as further funding from the leadership of Lund University and the three faculties:

- LTH – Lund faculty of science
- LUSEM – Lund school of economics and management
- Lund faculty of social sciences

THREE OBJECTIVES FOR CIRCLE IN OUR NEW ROLE

- Develop as an internationally renowned research centre in innovation studies with the capabilities to attract successful researchers and PhD Candidates.
- Provide excellent opportunities for dynamic and multi-disciplinary research activities.
- Disseminate research results and engage with decision makers and stakeholders.

OUR VISION

We strive to be a world-leading interdisciplinary research environment delivering scientific and societal impact

OUR MISSION

CIRCLE's mission is to understand and explain how innovation can contribute to a good society and tackle societal challenges such as economic crises, climate change or the increased globalization of economic activities. This aim requires advanced insights into:

- how knowledge is created and diffused in organizations, networks, regions, countries, and globally
- how knowledge is turned into innovations
- which conditions promote or hinder the creation and diffusion of innovation
- what intended and unintended societal consequences innovation have.

SOCIETAL CHALLENGES WE AIM TO ADDRESS

CIRCLE is the Centre for Innovation Research at Lund University. Innovation is a key driver of economic and societal change, for the good and for the bad. By developing a better understanding and knowledge co-creation with practitioners about innovation CIRCLE aims to contribute to tackling societal challenges.

Our research aims to bring insights on how to address the sustainable development goals (SDGs) set by the United Nations. A variety of projects address several of the different SDGs and CIRCLE as a whole works in particular with goals 8 – Decent work and economic growth, 9 – Industry, innovation and infrastructure, and 10 – Reduced inequality.

On a European level CIRCLE's research aims to be part of delivering the European green deal.



Organisation

CIRCLE is headed by a board, which makes formal decisions on strategy, plans and budget. The centre is advised by an international advisory board which serves as a speaking partner to the management team which manages the operational activities.

CIRCLE BOARD 2021

Charlotta Johnsson, *Chair person, Faculty of Engineering*
| **Anna-Karin Alm**, *NanoLund Faculty of Engineering*
| **Mats Benner**, *Dean Lund University School of Economics and Management*
| **Markus Grillitsch**, *Director CIRCLE*
| **Richard Gullstrand**, *Deputy Head of Regional Development Region Skåne*
| **Mats Lundquist**, *Vice President of Utilization Chalmers*
| **Stine Madsen**, *Student representative*
| **Anna Meeuwisse**, *Vice Dean Faculty of Social Sciences*
| **Fredrik Nilsson**, *Deputy Dean Design Sciences*
| **Magnus Nilsson**, *Deputy Director CIRCLE*

CIRCLE INTERNATIONAL ADVISORY BOARD 2021

Anna Bergek, *Professor at Environmental Systems Analysis/Technology Management and Economics, Chalmers, Sweden*

Susana Borrás, *Professor at the Department of Organization at Copenhagen Business School (CBS), Denmark.*

Jakob Edler, *Professor and Executive Director of the Fraunhofer Institute for Systems and Innovation Research ISI, Germany, and Professor of Innovation Policy and Strategy at the Manchester Institute of Innovation Research (MIIoR), UK*

Markku Sotarauta, *Professor, Faculty of Management and Business, Tampere University, Finland*

Roger Sørheim, *Professor, Department of Industrial Economics and Technology Management, NTNU, Trondheim, Norway*

CIRCLE MANAGEMENT TEAM 2021

The current management team was appointed in January 2020 for the duration of three years. There is a designated coordinator, for each of the three faculties involved in CIRCLE, which is represented in the CIRCLE management team.

Director: **Markus Grillitsch**, *Associate Professor in Economic Geography, Social Sciences*

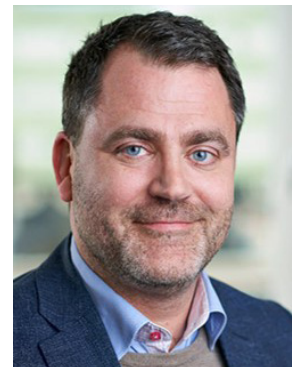
Deputy Director: **Magnus Nilsson**, *Associate Professor in Business Administration, Lund University School of Economics and Management*

Faculty Coordinators:

- Social Sciences: **Josephine Rekers**, *Associate Professor in Human Geography*
- Lund University School of Economics and Management: **Merle Jacob**, *Professor in Research Policy*
- Faculty of Engineering: **Torben Schubert**, *Associate Professor in Innovation Management*



Markus Grillitsch



Magnus Nilsson



Josephine Rekers



Merle Jacobs



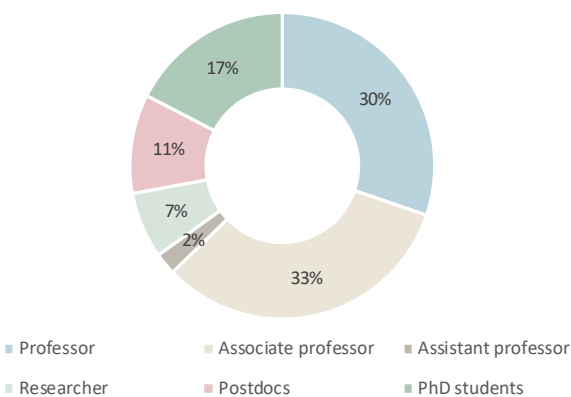
Torben Schubert

Membership in numbers

MEMBERS AND MEMBERSHIP

Membership in CIRCLE is open to academics with an interest in innovation research. CIRCLE aims to be diverse and inclusive and this is reflected in the different research area interests, faculty affiliations and degree of academic experience as well as nationality.

Members by category 2021

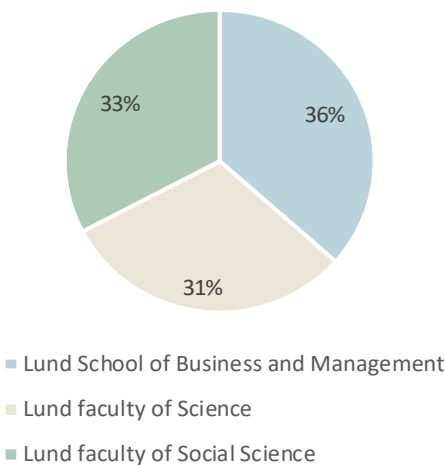


There are two types of membership at CIRCLE, described in detail on the CIRCLE website. Lund University employees can become “full” members whereas researchers with an interest in innovation studies from other universities can apply for an “affiliated” membership.

LUND UNIVERSITY REPRESENTATION AT CIRCLE

Three faculties at Lund University are represented at CIRCLE in fairly equal parts with approximately 30% at each faculty.

Members at Lund University

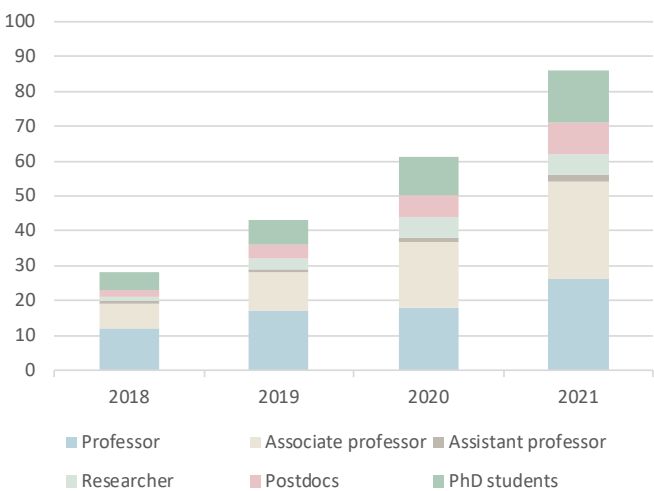


MEMBERSHIP DEVELOPMENT IN NUMBERS

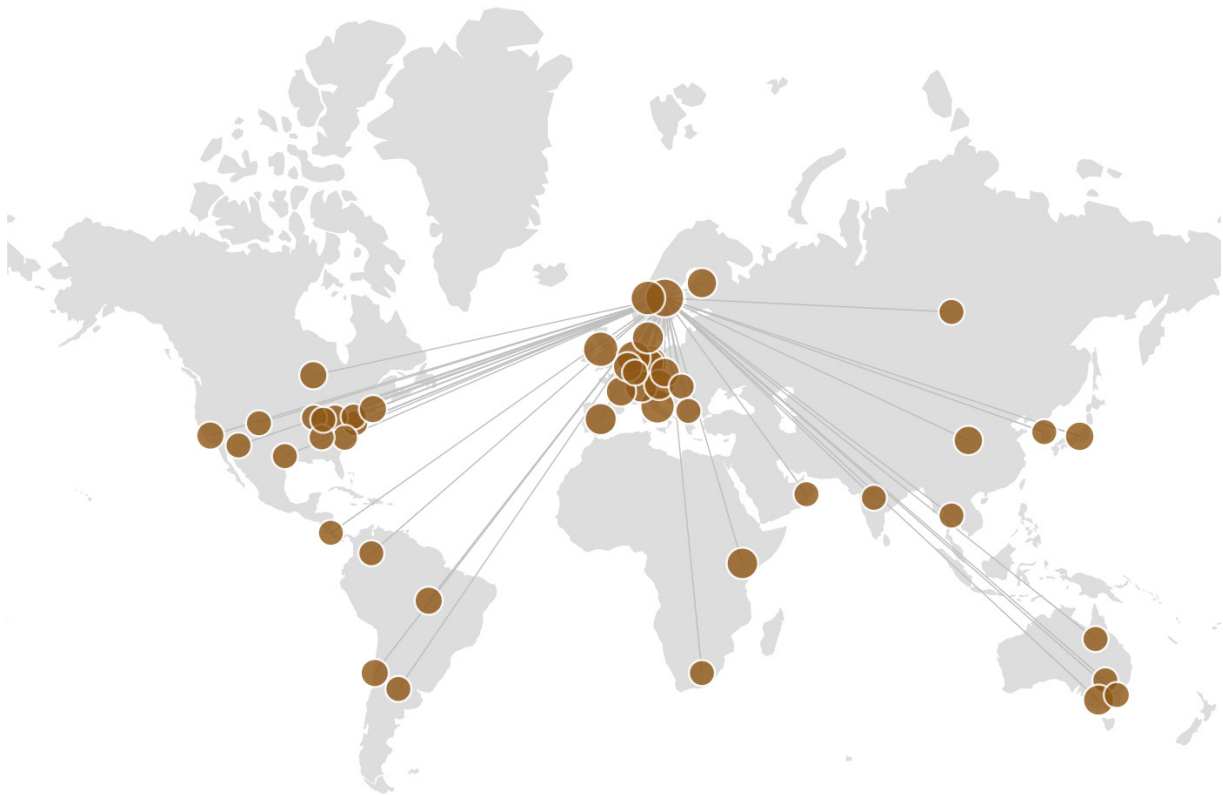
The number of members (full and affiliated) raised by 39% in 2021 compared to the year before. There are CIRCLE researchers of many different nationalities represented in 15 countries.

Approximately 1/3 of the members are professors, 1/3 are associated or assistant professors and 1/3 of the members is made up of postdocs, researchers and PhD students.

Members by category trend



Collaboration



BORDER CROSSING COLLABORATION

Collaboration across borders is important at CIRCLE – cross faculties, universities, countries and also between PhD students, early career researchers and senior researchers.

CIRCLE members are a diverse group of people who are dispersed over 15 different countries around the world – from Sweden to the USA, Chile and Australia.

Collaboration is important to CIRCLE members. Different ways for collaboration are formal set-ups such as research projects and seminars, but also the informal Research Talks where senior and junior researchers meet and discuss ongoing and planned research and act as each other's sounding board. Research Talks were organized weekly and through 2021 they were mostly digital, but a couple of hybrid meetings could be held in the autumn. We were happy about the active participation from the members with approximately 25 participants on average.



Projects and funding

PROJECTS

CIRCLE members were in 2021 involved in 47 different research projects delving into a wide range of topics such as sustainability in the industry, entrepreneurship and society, geographic equality, human health and wellbeing, innovation process and policy making. The complete list of active projects in 2021 is found in Appendix 2.

Projects finalised in 2021

- Ecosystem analysis of specialization areas in Skåne
- Regional Growth against all odds
- Främjar eller avskräcker dagens forskarutbildning vetenskapligt pionjärskap? (Does the research education of today promote or discourage scientific pioneering?)
- ACORE: Agents of Change in Old-industrial Regions in Europe
- GLOCULL: Globally and Locally sustainable food-water-energy innovation in Urban Living Labs
- Mobility and Entrepreneurship: Finding Value in Geographic Diversity
- Knowledge in science and policy: creating an evidence base for converging modes of governance in policy and science (KNOWSCIENCE)
- Universitetet som samhällsbyggare (Universities as community builders)
- An experimentally organised economy: A Proposal for a Strategic Knowledge Platform
- FHR: The Future of Human Rights – Theme, Pufendorf IAS

Projects started in 2021

- SSKe Storskaliga, Samordnade Kundanpassade ehandelsleveranser (Large-scale, Coordinated Customized e-commerce deliveries)

- The Gigification of work – Quo Vadis?
- GreenPole: Green forest policies - a comparative assessment of outcomes and trade-offs across Fenno-Scandinavia
- BECC AG: Social and ecological context of climate change adaptation for biodiversity
- GlyphoSentiment: Glyphosate in social media – a spatio-temporal analysis of twitter controversies among European stakeholders

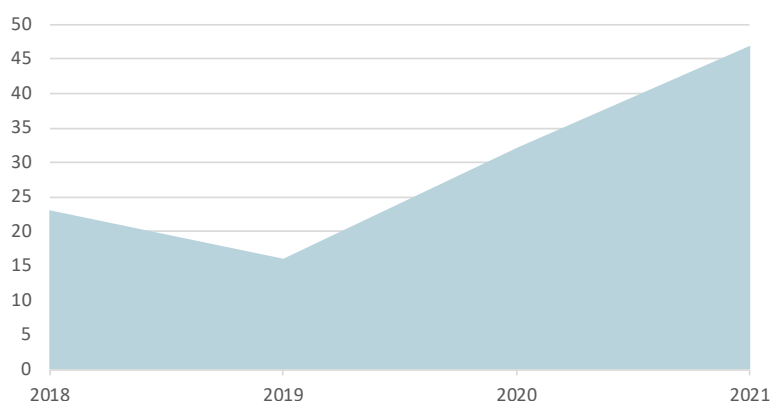
FUNDING

Due to the diversity of CIRCLE's members, funding of our projects come from a wide range of organisations and private actors.

Some of the funders of projects involving CIRCLE members are: Funding programmes within the EU, FORMAS, Forte, Handelsbanken, Jan Wallander and Tom Hedelius foundation, The Kamprad Family Foundation for Entrepreneurship, Kraftringen energi AB, Research & Charity, Länsförsäkringar Alliance Research Foundation, MISTRA, NordForsk, Riksbanken, Swedish Energy Agency, Vetenskapsrådet (Swedish Research Council), Vinnova, V. Kann Rasmussen foundation (VKRF), Volkswagen Foundation The Wallenberg foundations

We would like to thank all of our funders for the fruitful collaboration and generous contribution to our research for a better society.

Number of projects trend

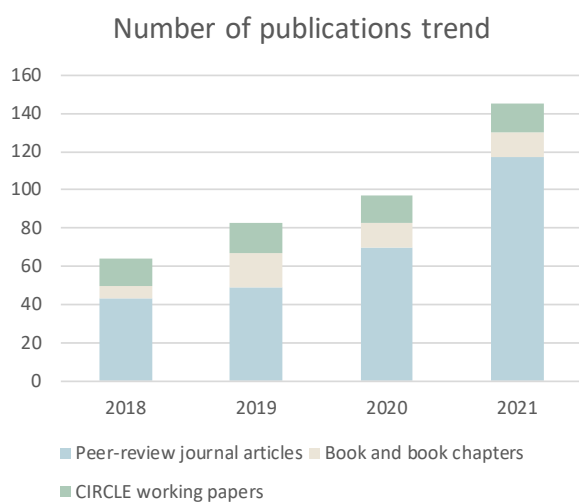


Research output and outreach

PUBLICATIONS

The number of publications by CIRCLE has increased steadily as the membership has grown. However, it is clear that 2021 was a productive year for CIRCLE as the number of members rose by 39% and research output increased by 49%.

Publications by CIRCLE members are listed in Appendix 1.



OUTREACH

CIRCLE research is noticed by an increasing number of people.

VIDEOS

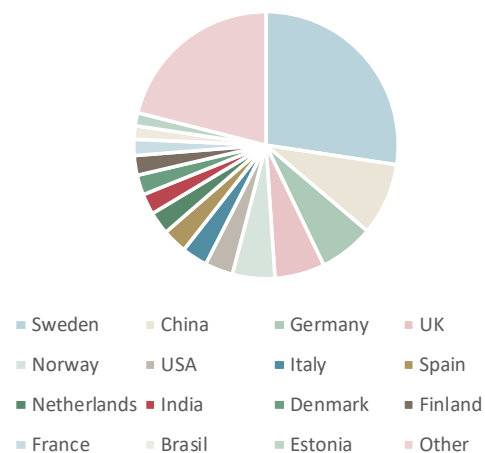
We communicate our research through different channels – mainly the CIRCLE website and Twitter, but in 2021 also through short video interviews: Coffee break with researchers. By linking content created on different channels, we were able to attract an increasing number of visitors to CIRCLE's website and Twitter account.



WEBSITE

Many of the visitors to the CIRCLE website come from Sweden but a vast variety of countries are represented among the website visitors being a strong indicator for the international visibility of CIRCLE.

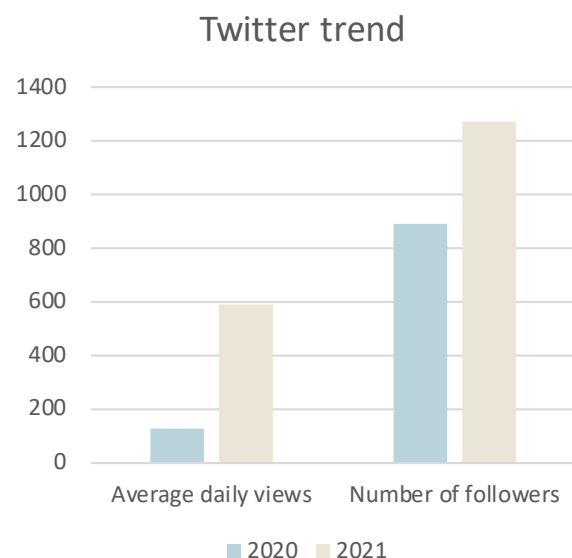
Website visitors per country



TWITTER

Twitter is one of the main sources for traffic to the website and Twitter has become an increasingly important channel for research outreach.

In 2021 the number of followers of the CIRCLE_LU twitter account raised by 43% and the daily views raised by 363% in 2021.



Research

Our aim is to understand and explain how innovation can contribute to a good society and tackle societal challenges like economic crises, climate change or increased globalization of economic activities. CIRCLE is therefore currently organized in eight interconnected thematic areas. Each theme hosts different research projects and most researchers at CIRCLE are involved in several research themes.

RESEARCH THEMES

- Corporate venturing and innovation
- Entrepreneurial experimentation
- Functional public procurement for innovation
- Geography of innovation and societal transformation
- Innovation in the global south
- International businesses, technology and innovation
- New perspectives on innovation policy
- Sustainability transition

Education

CIRCLE has continued providing master and PhD level education in collaboration with other faculties at Lund University as well as other universities. CIRCLE members participated in teaching at three different faculties at Lund University: the School of Engineering, the Social Science Faculty, and the School of Economics and Management. CIRCLE's ambition is to contribute to further strengthening cross-disciplinary teaching at Lund University. This brings both great opportunities and challenges for the future.

CIRCLE is a member of NORSI (Norwegian Research School in Innovation), a joint research school bringing together 28 universities in the Nordics. Through CIRCLE, PhD students at Lund University have had the opportunity to take advantage of the many courses offered by NORSI,

and CIRCLE members also contributed to many of them as speakers. Professor Åsa Lindholm Dahlstrand, is member of the Management Team for NORSI.

CIRCLE is also a member of EU-SPRI (European Forum for Studies of Policies for Research and Innovation) – which aims to strengthen the community of research related to policy and governance in the field of knowledge creation and innovation – comprising 19 European universities. Associated Professor, Torben Schubert, represents CIRCLE at the general assembly of EU-SPRI, and has together with Rhiannon Pugh organised a series of early career seminars.



Photos from a hybrid research talk meeting and a NORSI PhD-course hosted by CIRCLE in December 2021.

Evaluation of CIRCLE

An external evaluation was conducted by Ben Martin (SPRU, University of Sussex) and Erik Arnold (Technopolis) in the first months of 2021. The background for the evaluation was the reorganisation of CIRCLE in 2018 from being an independent unit at the university's Specialised Centres division (USV) to an organisation that spans currently three faculties at Lund University (LU), with the administrative responsibility being with the Faculty of Engineering. The external evaluation (Appendix 3) was considered by the Lund University leadership as thorough and impartial.

Overall, the evaluation provides a testimony of a successful reorganisation:

"CIRCLE is a strong asset with an international reputation but there is considerable potential for further development. Its work is well aligned with the priorities of the LU strategy and the university's expressed desire to build positions of interdisciplinary strength. In particular, CIRCLE addresses some of the societal challenges that are becoming ever more important in national and international research funding and can make an important contribution to the evolution and development of Lund University as it wrestles with the dilemma of how an essentially discipline-based organisation can best tackle the interdisciplinary challenges of society and the economy."

Based on the overall very positive development, the evaluators recommended that Lund University shall *"continue to support CIRCLE over the medium to longer term but at a more generous level. The SEK 3.4m annually transferred to the faculties should at least be maintained in real terms. The SEK 2m currently allocated directly to the CIRCLE cost centre should be increased – we suggest it be doubled – in order to support a stronger strategic role for the CIRCLE leadership and the administrative requirements of taking on postgraduate teaching."*

The Leadership of Lund University and the three faculties followed the recommendation of the evaluators providing an increased support over the medium-term. This support is mirrored in heightened expectations for CIRCLE to develop a globally leading position in innovation studies delivering scientific and societal impact.

However, the evaluation also pointed out that reaching such a position requires further organisational develop-

ment, making CIRCLE more sustainable in the long-run with an adequate institutional embedding. From being an independent centre with full autonomy, the evaluators argue that *"in the new organisation the pendulum has swung too far the other way."* Hence, additional recommendations were that

- LU should significantly increase the autonomy of CIRCLE, in order to make it sustainable in the longer term.
- CIRCLE should have a strong presence and visibility in postgraduate teaching at doctoral level and preferably also at master's level.
- CIRCLE should account for its finances and performance in a consistent and transparent way.
- CIRCLE is very dependent on Vinnova funding. This is a benefit but also poses a risk to CIRCLE, which it should seek to mitigate.
- LU and CIRCLE should review the options for CIRCLE's organisation and decide which offers the best prospects for the sustainability and longer-term success of CIRCLE.

The evaluators pointed out a range of alternatives from full autonomy to single-faculty solutions. Considering the successful path taken, these "endpoints" of possibilities are neither considered realistic nor desirable. More appropriately, the evaluators pointed out the matrix model, as organisational innovation that could overcome the barriers of inter-disciplinary and inter-faculty collaboration at Lund University. *"Leading universities such as MIT, Stanford and UCal at Berkeley successfully combine discipline-based undergraduate teaching with interdisciplinary research and postgraduate teaching using explicitly matrix structures."*

Over the last three years, CIRCLE has developed a couple of elements of such a matrix structure and it appears that going this way further could be a role model for interdisciplinary centres at Lund University.





Appendix 1 – Publications

CONTRIBUTION TO JOURNAL

Governing Through Definitions and Numbers: Analysis of the Nordic Homeless Registrations as Instruments of Governing Homelessness.

Dyb, Evelyn; Lars, Benjaminsen,; Knutagård, Marcus; Lindén, Jarmo.
In: European Journal of Homelessness, Vol. 15, No. 3, 22.12.2021, p. 161-175.

A note on performance indicators for agricultural economic journals.

Finger, Robert; Droste, Nils; Bartkowski, Bartosz; Ang, Frederic.
In: Journal of Agricultural Economics, 20.12.2021.

Different approaches to selection of surgical trainees in the European Union.

Hagelsteen, Kristine; Pedersen, Hanne; Bergenfelz, Anders; Mathieu, Chris.
In: BMC Medical Education, Vol. 21, No. 1, 363, 01.12.2021.

Innovating but still poor: The challenges of regional development in regions with mature industries.

Marques, Pedro; Barberá-Tomás, David.
In: Transactions of the Institute of British Geographers, 20.10.2021.

Social lens or inherently social phenomenon? The study of food in Swedish sociology.

Bååth, Jonas; Neuman, Nicklas.
In: Current Sociology, 08.10.2021.

Energy efficiency and the direct and indirect effects of energy audits and implementation support programmes in Germany.

Schubert, Torben; Breitschopf, Barbara; Plötz, Patrick.
In: Energy Policy, Vol. 157, 112486, 10.2021

Recruiting strategic human capital from MNCs-Does hiring MNC managers enable exporting in domestic firms?

de Faria, Pedro; Schubert, Torben; Sofka, Wolfgang.
In: PLoS ONE, Vol. 16, No. 10 October, e0257922, 10.2021.

Entrepreneurship in Cities.

Tavassoli, Sam; Obschonka, Martin; Audretsch, David B.
In: Research Policy, Vol. 50, No. 7, 104255, 01.09.2021.

Navigating institutional complexity in socio-technical transitions.

Hacker, Miriam E.; Binz, Christian.
In: Environmental Innovation and Societal Transitions, Vol. 40, 01.09.2021, p. 367-381.

The use of rewards in the sharing of research resources.

Shibayama, Sotaro; Lawson, Cornelia.
In: Research Policy, Vol. 50, No. 7, 104260, 01.09.2021.

Is more always better? On the relevance of decreasing returns to scale on innovation.

Barbero, Javier; Zabala-Iturriagoitia, Jon Mikel; Zofío, José L.
In: Technovation, Vol. 107, 102314, 09.2021.

Towards a multi-scalar perspective on transition trajectories.

Miörner, Johan; Binz, Christian.
In: Environmental Innovation and Societal Transitions, Vol. 40, 09.2021, p. 172-188.

Durable Homelessness: From Negotiations to Emulation.

Carlsson Stylianides, Kristina; Denvall, Verner; Knutagård, Marcus.
In: Social Inclusion, Vol. 9, No. 3, 26.08.2021, p. 286.

Missing Hero: Co-Producing Change in Social Housing Programmes.

Knutagård, Marcus; Heule, Cecilia; Kristiansen, Arne.
In: Social Inclusion, Vol. 9, No. 3, 7, 26.08.2021, p. 234.

Can B Corp certification anchor sustainability in SMEs?

Carvalho, Bruna; Wiek, Arnim; Ness, Barry.
In: Corporate Social Responsibility and Environmental Management, 15.08.2021, p. 1.

Entrepreneurial learning in extra-curricular start-up programs for students.

Poczek, Jasna; Politis, Diamanto; Gabrielsson, Jonas .
In: International Journal of Entrepreneurial Behaviour & Research, 07.2021.

One crisis, one region, two municipalities: The geography of institutions and change agency in regional development paths.

Stihl, Linda; Rekers, Josephine V.
In: Geoforum, Vol. 124, No. August 2021, 16.06.2021, p. 89-98.

Multi-criteria analysis of municipal solid waste treatment technologies to support decision-making in Kisumu, Kenya.

Capuano Mascarenhas, Luciana; Ness, Barry; Oloko, Michael ; Otiende Awuor, Frankline.
In: Environmental Challenges, Vol. 4, 100189, 15.06.2021.

Small firms and patenting revisited.

Athreye, Suma S.; Fassio, Claudio; Roper, Stephen.

In: Small Business Economics, Vol. 57, No. 1, 01.06.2021, p. 513-530.

Taking the systems approaches out of their comfort zones: Perspectives from under explored contexts.

Pugh, Rhiannon; Schmutzler, Jana; Tsvetkova, Alexandra.

In: Growth and Change, Vol. 52, No. 2, 01.06.2021, p. 608-620.

Are migrants in/from emerging economies more entrepreneurial than natives?

Guerrero, Maribel; Mandakovic, Vesna; Apablaza, Mauricio; Arriagada, Veronica.

In: International Entrepreneurship and Management Journal, Vol. 17, No. 2, 06.2021, p. 527-548.

Breaking the patientification process - through co-creation of care, using old arctic survival knowledge.

Sandén, Ulrika; Harrysson, Lars; Thulesius, Hans; Nilsson, Fredrik.

In: International Journal of Qualitative Studies on Health and Well-being, Vol. 16, No. 1, 1926052, 11.05.2021.

Critical factors for the realization of sustainable supply chain innovations : model development based on a systematic literature review.

Nilsson, Fredrik; Göransson, Malin.

In: Journal of Cleaner Production, Vol. 296, 126471, 10.05.2021.

Covid Arts – The State and the Arts in Sweden During the Initial Phase of the Covid-19 Crisis – Less Visible Losses in the Shadow of Lost Lives and Livelihoods.

Mathieu, Christopher.

In: The European Sociologist, Vol. 46, No. 2, 05.2021.

Innovation in Malmö after the Öresund Bridge.

Ejermo, Olof; Hussinger, Katrin; Kalash, Basheer; Schubert, Torben.

In: Journal of Regional Science, 05.2021.

What Do China's Scientific Ambitions Mean for Science – and the World?

Schwaag Serger, Sylvia; Cao, Cong; Wagner, Caroline; Geonaga Beldarrain, Xabier; Jonkers, Koen.

In: Issues in Science and Technology, 05.04.2021.

Emission reduction strategies in the EU steel industry : Implications for business model innovation.

Axelsson, Matilda; Oberthür, Sebastian; Nilsson, Lars J.

In: Journal of Industrial Ecology, Vol. 25, No. 2, 01.04.2021, p. 390-402.

Information, switching costs, and consumer choice: Evidence from two randomised field experiments in Swedish primary health care.

Anell, Anders; Dietrichson, Jens; Ellegård, Lina Maria; Kjellsson, Gustav.

In: Journal of Public Economics, Vol. 196, 104390, 01.04.2021.

The Many Roles of Change Agency in the Game of Green Path Development in the North.

Sotaraute, Markku; Suvinen, Nina; Jolly, Suyash; Hansen, Teis.

In: European Urban and Regional Studies, Vol. 28, No. 2, 01.04.2021, p. 92-110.

Building communities in times of crisis – Impacts of the COVID-19 pandemic on the work of transition intermediaries in the energy sector.

Busch, Henner; Hansen, Teis.

In: Energy Research & Social Science, Vol. 75, 102020, 20.03.2021.

On the essential role of organized skepticism in science's "internal and lawful autonomy" (Eigengesetzlichkeit).

Hallonsten, Olof.

In: Journal of Classical Sociology, 11.03.2021.

The generative relationship between job quality, innovation, and employment.

Mathieu, Christopher; Boethius, Susanne.

In: European Journal of Workplace Innovation, Vol. 6, No. 2, 05.03.2021, p. 163-186.

Blending new and old in sustainability transitions: Technological alignment between fossil fuels and biofuels in Norwegian coastal shipping.

Bach, Hanna; Mäkitie, Tuukka; Hansen, Teis; Steen, Markus.

In: Energy Research & Social Science, Vol. 74, 101957, 02.03.2021.

European approaches to sustainable work : introductory remarks.

Mathieu, Christopher; Albin, Maria; Abrahamsson, Kenneth; Lagerlöf, Elisabeth.

In: European Journal of Workplace Innovation, Vol. 6, No. 1-2, 03.2021, p. 3-7.

Fostering regional innovation, entrepreneurship and growth through public procurement.

Zabala-Iturriagoitia, Jon Mikel.

In: Small Business Economics, 16.02.2021.

Universities and start-up creation by Ph.D. graduates : the role of scientific and social capital of academic laboratories.

Muscio, Alessandro; Shibayama, Sotaro; Ramaciotti, Laura.

In: Journal of Technology Transfer, 04.02.2021.

Coming into fashion: Expanding the entrepreneurial ecosystem concept to the creative industries through a Toronto case study.

Brydges, Taylor; Pugh, Rhiannon.

In: Canadian Geographer / Géographie Canadien, 01.02.2021.

From antagonists to allies? Exploring the critical performativity of alternative organization.

Just, Sine N; De Cock, Christian; Schaefer, Stephan.

In: Culture and Organization, Vol. 27, No. 2, 31.01.2021, p. 89-97.

The black box of regional growth.

Grillitsch, Markus; Martynovich, Mikhail; Fitjar, Rune Dahl; Haus-Reve, Silje.

In: Journal of Geographical Systems, 29.01.2021.

Understanding conditions for path development after path exhaustion.

Klitkou, Antje; Capasso, Marco; Hansen, Teis.

In: European Planning Studies, 20.01.2021.

Industry legitimacy : bright and dark phases in regional industry path development.

Jolly, Suyash; Hansen, Teis.

In: Regional Studies, 11.01.2021.

Philosophical Minds or Brotgelehrte?

Alvesson, Mats; Einola, Katja; Schaefer, Stephan.

In: Organization Studies, 06.01.2021.

Context and agency in urban community energy initiatives: An analysis of six case studies from the Baltic Sea Region.

Ruggiero, Salvatore; Busch, Henner; Hansen, Teis; Isakovic, Aljosa.

In: Energy Policy, Vol. 148, 111956, 01.01.2021.

Analysing the differences in the scientific diffusion and policy impact of analogous theoretical approaches : Evidence for territorial innovation models.

Brixner, Cristian; Romano, Silvina Alejandra; Zabala-Iturriagagoitia, Jon Mikel.

In: Journal of Scientometric Research, Vol. 10, No. 1, 01.2021, p. E46-E58.

Complementor competitive advantage: A framework for strategic decisions.

Cenamor, Javier.

In: Journal of Business Research, Vol. 122, 01.2021, p. 335-343.

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Appendix 3 – Evaluation report

EVALUATION OF CIRCLE BY BEN MARTIN (SPRU, UNIVERSITY OF SUSSEX) AND ERIK ARNOLD (TECHNOPOLIS), 29 MARCH 2021

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1 Introduction

This evaluation of CIRCLE was commissioned by the Engineering Faculty (LTH) of the University of Lund (LU) in December 2020, in order to fulfil a requirement of an inter-faculty agreement to transfer CIRCLE faculty and staff from the university's Specialised Centres division (USV) to the Engineering and Social Science faculties and to LU's Business school (LUSEM), and a decision by the vice chancellor to fund CIRCLE from 1 January 2018 for three years.

The reorganisation had three objectives.¹

- CIRCLE shall continue to develop as an internationally leading and renowned research centre in innovation studies with the capabilities to attract successful researchers and PhD Candidates
- CIRCLE shall continue to provide excellent opportunities for dynamic and multi-disciplinary research activities
- CIRCLE shall continue to disseminate research results and engage with decision makers and stakeholders

Table 1 summarises the terms of reference for the evaluation.

Table 1 Terms of reference for the evaluation

Evaluation mandate	Particular issues to be explored
<ul style="list-style-type: none">• Assess to what extent the new structure and routines of CIRCLE hold promise to achieve these objectives• Provide recommendations for the future development of CIRCLE• Provide information for the central management of Lund University, which is useful for its decision about its long-term commitment and base-funding for CIRCLE	<ul style="list-style-type: none">• The organisational structure and leadership• The financial model (institutional and external financing)• CIRCLE's research strategy, environment, and outputs, with an emphasis on CIRCLE's ability to promote multi-disciplinary research• CIRCLE's ability to attract successful researchers• CIRCLE's visibility (communication plan and activities)

CIRCLE produced a self-evaluation to support this exercise, which we have reviewed together with supporting documentation and the RQ20 Built Environment report², which covers the Department for Design Sciences in LTH, within which CIRCLE's management and administration are located. In addition, we interviewed CIRCLE members and other CIRCLE stakeholders as listed in Appendix A.

¹ Decision 2017/915 and 2017/1294

² Erik Arnold chaired the Built Environment panel in RQ20.

2 CIRCLE's development

In this section, we review CIRCLE's development in two periods, respectively before and after it was moved from USV to the faculties.

2.1 CIRCLE 1.0

CIRCLE was established at LU in 2004 by six professors under the leadership of Charles Edquist. It was one of a number of independent centres within the USV, a non-faculty structure that reported directly to the vice chancellor. CIRCLE was quickly recognised as a key player in European innovation research and was able to attract both international PhD students and leading scholars. An indication of its standing was its participation as the Swedish member in the PRIME Network of Excellence on policies for research and innovation in the Sixth Framework Programme. This brought together Europe's leading research groups in the field over the period 2004-10 and has been succeeded by the Eu-SPRI network, where CIRCLE remains the sole Swedish member.

CIRCLE operated as an internal cost centre in LU, with its own management and with the right to hire and fire. It contributed to Master programmes and had responsibility for some Master courses but was not allowed to establish its own PhD program. Vinnova provided six-year centre funding from 2004 and there were contributions from both LU and the Ruben Rausing Foundation to the start-up funding. The Vinnova centre funding was renewed for a further six years in 2010.

In 2006 CIRCLE was awarded a 10-year Linnaeus centre grant by the Swedish Research Council and Formas for a centre called LUCIE (innovation, entrepreneurship and knowledge creation). LU won a further 13 Linnaeus grants in the 2006 and 2008 Calls, after which the Linnaeus scheme was terminated. Linnaeus grants were provided on the understanding that the beneficiary universities would subsequently assume responsibility for funding the centres.

By 2015, CIRCLE comprised some 35 FTEs, including eight professors and ten doctorands, and had a research budget of SEK 38m.³ According to CIRCLE Annual Reports, in 2016 the total research budget was SEK 24m, falling to 15.5m in 2017, and 10m in 2018.

Figure 1 Full-Time Equivalent (FTE) staff members at CIRCLE, 2015-7

	2015	2016	2017
Professor	8.2	3.6	2.2
Associate Professor	3.6	2.4	1.8
Assistant Professor	6.1	3.4	1.2
Researcher	3.3		1.6
PhD Student	10.5	8.5	6.9
Administrative personnel	3.5	3.8	4.0
Total	35.1	21.7	17.7

Source: Kuben administration system

The Linnaeus and Vinnova centre grants came to an end during 2016, leaving CIRCLE with a need to find replacement income and LU with the problem of deciding how to fulfil its obligation to provide funding to replace the Linnaeus grant. This signalled a period during which large numbers of CIRCLE people left or retired, leaving it almost without full-time professors.

³ CIRCLE Annual Report, 2015

That year, CIRCLE researchers published 55 peer-reviewed journal articles, 7 books (including four PhD Dissertations), 15 book chapters and 15 CIRCLE working papers. The extent of the reduction in research capacity as a result of the reorganisation of CIRCLE is clearly illustrated by changes in the annual output of publications in international, peer-reviewed journals (Table 2). The turbulence of this period is also reflected in the rapid turnover of CIRCLE directors (Table 3).

Table 2 CIRCLE publications, 2015-19

	2015	2016	2017	2018	2019
Peer-reviewed journal articles	63	64	55	43	49
Books and book chapters	38	22	22	7	18
CIRCLE working papers	44	30	15	14	16
Total	179	116	92	64	83

Sources: Annual Reports 2015, 2016, and Self-assessment 2020

Table 3 CIRCLE directors, 2004 to date

Director	Period in office
Charles Edquist	2004-2011
Bjørn Asheim	2011-2012
Ron Boschma	2013-2015
Jerker Moodysson	2016
Åsa Lindholm Dahlstrand	2016-2019
Markus Grillitsch	2020-

Source: CIRCLE Web Site, accessed 18 March 2021

2.2 CIRCLE 2.0

Consistent with a wider process of closing down USV, vice-chancellor Torbjörn von Schanz decided in 2016 that CIRCLE should be absorbed into the faculty structure of LU. The year 2017 saw discussions between CIRCLE management, the vice-chancellor, the engineering faculty (LTH), the faculty of Economics and Business (LUSEM) and the faculty of Social Sciences (S-fak). CIRCLE as a cost centre, including its management and administration, was moved into the Department of Design Sciences in LTH. Individual members of staff were absorbed by the three faculties. The institutional funding associated with individual members of staff was reallocated from USV to the faculties they joined. LTH took in the largest number of people. CIRCLE as a whole became a virtual, cross-faculty organisation with no employees, and without the right to teach or to enrol its own PhD students. These functions were henceforth to be undertaken by the faculties.

LU undertook to channel a total of SEK 5.4m per year to CIRCLE from 2018 to 2021.

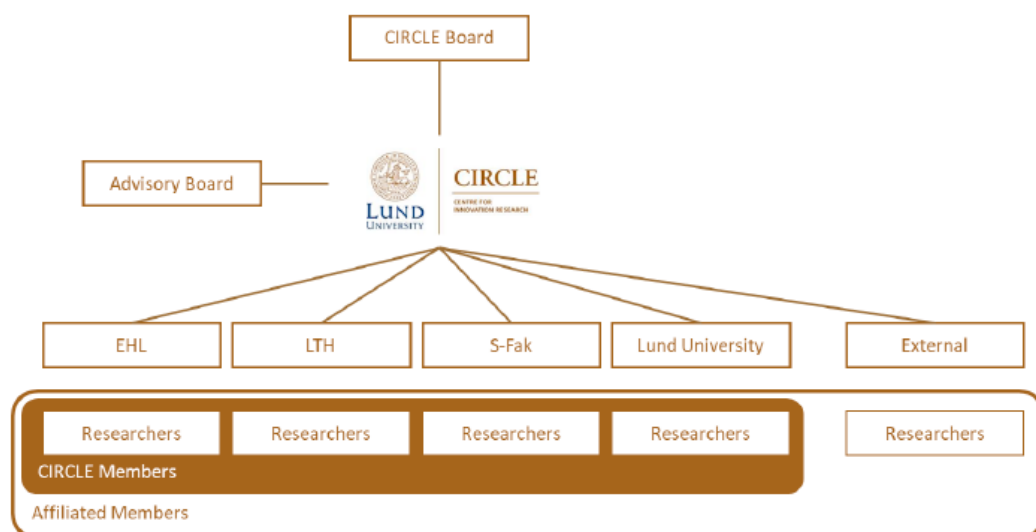
- SEK 2.0m to the CIRCLE cost centre to fund strategic activities as well as operational structures including the director, communication, administration, offices, support to research themes, etc.
- SEK 3.4m to the three faculties to support CIRCLE activities including faculty coordinators, research grants and PhD students – SEK 1.7m to LTH, SEK 1m to LUSEM and SEK 0.7m to S-fak

In its new form, CIRCLE was supported by the deans of the three faculties involved, who formed an oversight and liaison committee for the first three years of CIRCLE's new life. This evaluation was planned to help LU and the three faculties to decide on CIRCLE's future beyond 2021.

Figure 2 shows the current organisation of CIRCLE. The Board comprises a chair appointed by the dean of LTH, the deans or their representatives of the three faculties involved, the head or his/her representative of the Design Sciences department, student representatives and two external members. There is also an annual coordination meeting among the three deans and the heads of the departments

that host CIRCLE members. An international advisory board was appointed in 2020 and this has so far met once, during the process of preparing the self-assessment report for this evaluation.

Figure 2 CIRCLE Organisation, 2020



Source: CIRCLE Self-evaluation, 2020

CIRCLE management comprises a director and deputy. The LTH Design Sciences department, which houses the CIRCLE administration, has also taken over the CIRCLE office space, which is available to CIRCLE members working at LU. While CIRCLE members primarily work in the three faculties, in principle researchers from other faculties can join, too. During 2019, CIRCLE implemented a widened membership model, distinguishing between ‘members’, who work at LU and devote at least 20% of their time to CIRCLE, and ‘affiliates’ who work elsewhere, spend less than 20% of their time on CIRCLE-relevant research and who successfully apply to CIRCLE to join. Their affiliation is reviewed annually, and active participation is a condition for renewal.

Table 4 Numbers of full and affiliated CIRCLE members, 2018-2020

	2018	2019	2020
Full	14	20	25
Professor	4	5	5
Associate Professor	5	6	9
Assistant Professor	1	1	1
Researcher	0	0	2
Post-doc	1	3	4
PhD Student	3	4	4
Affiliated	14	24	37
Professor	8	12	13
Associate Professor	2	5	11
Researcher	1	3	4
Post-doc	1	1	2
PhD Student	2	3	7
Total	28	44	62

In 2020, CIRCLE added a new layer to its activities by inviting members to propose research themes, and to form groups or networks of people to implement those themes. Each theme has one to two leaders and was provided with a SEK 30k start-up grant. CIRCLE management chose which themes to support based on their links to innovation research, potential to reach critical mass, multidisciplinary through the inclusion of researchers from at least two faculties, and potential to attract research funding. The intention is to review the themes' performance after a year and, potentially, to reduce their number to provide greater strategic focus and ensure each has the necessary critical mass. Currently, the themes are

- Corporate Venturing and Innovation
- Entrepreneurial Experimentation
- Functional Public Procurement
- Geography, Innovation, and the long-term Transformation of Society
- Innovation in the Global South
- International Business, Technology and Innovation
- New Perspectives on Innovation Policy
- Sustainability Transitions

The intention is that a thematic strategy for CIRCLE will emerge through a combination of the bottom-up process of theme-group building along with an element of central management decision-making as to which themes to back, which to merge, and which to drop. This was a response to CIRCLE's new organisational structure, following the loss of most of the senior researchers at about the time of the reorganisation, and the voluntaristic nature of faculty members' participation in CIRCLE.

In addition to routine external funding contracts, CIRCLE currently has three Vinnova-funded 'platforms', aiming to produce evidence and policy advice to Vinnova. These provide an important funding cushion for the time being. At the same time, the current heavy reliance on Vinnova funding leaves CIRCLE vulnerable to subsequent changes in Vinnova's research strategy and priorities, a point to which we return later.

3 CIRCLE's performance

In this section, we describe the progress CIRCLE has made in the last few years, then go on to consider what would be necessary to ensure this progress is sustainable.

3.1 Progress to date

It is clear from our interviews that the period of reorganisation was quite traumatic. That is not to say that all the trauma was caused by the reorganisation; 2016 marked the end of a life-cycle stage for CIRCLE and was a natural point for some people to depart, especially as there does not appear to have been much effective succession planning.

Table 2 provides a simple illustration of the shock – but also points to the start of a recovery that is fully consistent with what we heard in our interviews. While it was apparently a rather difficult process, CIRCLE was eventually successfully integrated into the three faculties and appears now to an increasing extent to be understood and accepted by them, in part due to the carefully constructed governance of CIRCLE and the active liaison via the faculty coordinators.

Integration into LUSEM and S-fak, appears to have been easier than integration into LTH –despite the fact that CIRCLE's cost centre and administration are in LTH. CIRCLE's research themes and the disciplinary bases of its work fit well, notably with the human geography and regional development interests of S-fak and with the tradition of research and innovation policy within LUSEM. CIRCLE members generally have appropriate teaching opportunities in these faculties, while the research

interests of CIRCLE members in LTH tend not to overlap with the more technical disciplines to be found in the engineering faculty and there are fewer teaching opportunities.

We analysed the research interests of the 25 full CIRCLE members listed on the Web site on 18 March 2021 (Appendix B). At the cost of a little simplification, their main research interests can be clustered by faculty as follows.

- LUSEM members tend to work in innovation policy and studies, economics and labour markets
- LTH members work primarily in innovation systems studies and sustainability transitions
- S-fak members mostly work in human and economic geography and in regional innovation studies

There is at least one prominent ‘gap’ in CIRCLE’s research interests and expertise within the broad area of innovation studies – namely technology and innovation management. CIRCLE members do not tend to work with industrial and business innovation management (in the sense of internal innovation processes in companies and other organisations), though a number of people in LTH who are affiliated to CIRCLE are interested in innovation management and the connection between technical and market innovation. CIRCLE may in future wish to consider plugging this gap, first because it would bring CIRCLE closer to key research and teaching opportunities in both LTH and LUSEM and, second, because it would better inform CIRCLE’s policy-related work. Arguably, good innovation policy must rest on an understanding of innovation processes. As CIRCLE’s research interests stretch further into sociotechnical transitions, researchers will also need to take increasing account of implementation processes in innovation and technology deployment.

The strong CIRCLE ‘brand’ built up before the reorganisation still remains quite powerful – particularly outside Sweden – and is an important asset that merits further development, not least because of the opportunity this brings for casting a positive light on LU more widely.

CIRCLE leadership is both organised and creative. By changing the definition of membership and building a new thematic approach from the bottom up, it is redefining CIRCLE in a way that is consistent with its current organisational structure. Those we interviewed who have a longer history in CIRCLE see this as a positive development; those who have arrived since the reorganisation and who lack experience of the previous situation are, if anything, even more positive. By introducing the new category of affiliate membership, CIRCLE has significantly increased the size of its network within and outside the university. Liaison with the three faculties is paying off in the form of greater interest from people in those faculties in engaging with CIRCLE research and affiliating to CIRCLE. A consistent message from our interviews was that, prior to the reorganisation, CIRCLE was perceived within LU as somewhat aloof, even arrogant, regarding itself as an elite institution (as reflected in its status as a ‘centre of excellence’), while showing relatively little interest in the university and instead focusing more on the international community. This is an unfortunate image anywhere, but especially so in a national culture in which *Jantelagen* is still quite prominent. Dispelling this image is an important achievement, and a precondition for survival within the university culture.

In terms of research funding, CIRCLE and its management since 2018 have been successful in first halting the previous sharp decline, then building up substantially. Unfortunately, since 2018 data about CIRCLE’s research funding are not available on a basis that is consistent with previous annual reporting. CIRCLE’s self-evaluation report states that in the period 2018-2020, CIRCLE had a total of SEK 164m in external projects active, and the long list of substantial externally funded projects shown in the 2019 Annual Report is certainly impressive.

However, at the same time, the heavy reliance on a single funder (Vinnova) leaves CIRCLE vulnerable to shifts in national research policy. A priority for CIRCLE in the next few years needs to be a broadening of the funding portfolio, tapping other potential sources of research funding in Sweden and elsewhere. That, in turn, may depend heavily on CIRCLE’s success in attracting leading researchers with the ability to identify important new research challenges and the entrepreneurial ability to bring in research funds from a wider range of sources not only in Sweden but elsewhere.

Likewise, in terms of research output, CIRCLE appears to be recovering after the sharp fall in earlier years. While the volume of publishing is still much lower than prior to the reorganisation, it remains

solid and has started growing again. CIRCLE addresses several overlapping themes, so it publishes in a range of journals, many of which are among the most widely read in their respective areas. *Research Policy* is generally regarded as the leading innovation studies journal, and it is encouraging to see that in 2019, seven of CIRCLE's 49 peer-reviewed journal articles were published there. The lack of established 'star' researchers is nonetheless visible in the overall quantity and quality of the research output. However, a new generation of researchers is growing up and being promoted, so there appears to be a good foundation on which to build, provided the most promising researchers can be retained and additional ones attracted.

3.2 Is the current organisation sustainable?

The reorganisation means that CIRCLE has changed from being a unitary centre to being more of a network organisation or (at least potentially) a matrix organisation. In its field, this is unusual – for example, it is the only such organisation in the Eu-SPRI consortium that brings together eighteen of the leading public-sector research organisations in its field⁴. On the other hand, leading universities such as MIT, Stanford and UCal at Berkeley successfully combine discipline-based undergraduate teaching with interdisciplinary research and postgraduate teaching using explicitly matrix structures.

The ability to work in a similar way in future is inherent in LU's strategic priority of "Stimulating active collaboration to solve societal challenges", and in particular the principle that "Boundary-crossing and interdisciplinary collaborations within Lund University and with other higher education institutions shall be encouraged and new collaborations developed. Obstacles to collaboration shall be identified and removed."⁵ LU's research strategy emphasises the university's intention to mobilise effective researcher constellations operating across faculty boundaries⁶ and at the time of writing an internal call is open for interdisciplinary projects focusing on Agenda 2030 and sustainable development. CIRCLE clearly contributes to the university's renewed focus on interdisciplinary research and addressing the societal challenges, in line with broader national research and innovation policy.

Matrix organisations can have valuable attributes: interdisciplinarity; problem focus; flexibility to address changing needs; and ability to work in projects with varying configurations. However, they are notoriously more difficult to manage than unitary ones because they involve tensions between the internal needs of the different disciplines and the external need to address problems (invariably of an interdisciplinary nature) and customers.

Irrespective of its organisational form, CIRCLE will need to have at least the following characteristics in order to succeed over the longer term.

- Sufficient core funding to cover not only a significant proportion of its fixed costs but also to generate enough organisational slack to be able to act strategically
- The ability to generate value for LU, in the form of intellectual and teaching contributions of high quality, visibility and reputation
- Strong leadership with enough freedom to enable it design and implement a strategy appropriate to the needs and opportunities in its field, including the freedom to decide what activities are in or out of scope
- Career incentives and opportunities that make it possible and indeed attractive to pursue a career within CIRCLE
- An internal *esprit de corps* that binds it together as an organisation and supports collegiality
- Postgraduate training that generates a supply of research labour and a source of future researchers

⁴ <https://euspri-forum.eu/member-organisations/>

⁵ Lund University, Strategic Plan 2017-2026

⁶ Lund University, Research Strategy 2017-2021

- The ability to generate and maintain a strong brand, attracting money and people and supporting CIRCLE's standing in the international as well as national research community

For the period 2018-2021, the university is providing SEK 5.4m annually in core funding, 2m of which goes directly to CIRCLE to support the core infrastructure (management, administration, offices, etc.) of CIRCLE. The balance goes to the three faculties and is earmarked to support CIRCLE activities (this was also intended to support the positions of CIRCLE staff transferred to the faculties). The continuation of this funding depends, inter alia, on the results of this evaluation.

CIRCLE provides value to the university through teaching capacity, research results, publications and impact, a conspicuous contribution to the quality and quantity of LU research, and an internationally recognised brand that enhances LU's reputation.

In our view, CIRCLE is currently led by people with considerable potential and has made progress in terms of research renewal by adopting bottom-up proposals for themes. The CIRCLE leadership recognises that these will need to be consolidated to avoid the danger of fragmentation and intends to do so. This will need to be done in a way that keeps the themes distinct but also generates complementarities and synergies among them. Themes and research topics respond to the individual ambitions of researchers in the faculties, yet CIRCLE has no power to affect employment, and very little by way of financial or other resources needed to make them sustainable. Currently, the 'themes' amount to very fluid research groups, but without resources, infrastructure or any connection with careers they are unlikely to be sustainable. Consequently, CIRCLE cannot currently claim to have a coherent thematic strategy – just the sum of whatever the members want to do. Since there is no career path within CIRCLE, it is not possible to devise and deploy thematic strategies over the longer term. CIRCLE is in that sense in a much weaker position than its collaborators and competitors in Eu-SPRI.

CIRCLE's inability to appoint people is especially important in relation to developing the centre by hiring established figures with strong research reputations who are able to attract funding. This can only be done in negotiation with a faculty, which does not necessarily have the same priority for such a person in its own strategic plans.

In career terms, CIRCLE members face the traditional dilemma in a matrix organisation of being pulled in two directions. Their faculties pull them towards (largely) discipline-based teaching and careers that involve climbing the ladder within the faculty, while CIRCLE provides a pull towards research opportunities and agendas that are not necessarily aligned with the interests of the faculties and their disciplines. Since CIRCLE members are dispersed across three faculties, they have limited collective power to broaden the agenda of one or more faculties. While CIRCLE members find it relatively easy to get the teaching opportunities, they need in order to be promoted within LUSEM and S-fak, this is much harder in LTH. More junior CIRCLE members in LTH seem more or less reconciled to the need to leave Lund in order to pursue their academic career.

Our sense from the interviews is that CIRCLE has managed to re-establish a certain *esprit de corps*, which is an important social pre-condition in making it attractive to work there. That said, a number of the ways in which such common spirit and collegiality is expressed elsewhere are not available at CIRCLE. These include the use of organisational slack such as a budget to bridge colleagues between external contracts or support teams, as well as the development of a unified human resource strategy (as opposed to the separate HR strategies of the three faculties). CIRCLE has common office space at LTH; this is a potential social asset, though we understand it is little used. Our experience elsewhere in evaluating centres of excellence and competence centres is that shared location is very important both to enable members of the centre to generate social cohesion, work together and develop ideas, as well as to create a sense of identity and reality for the centre among affiliates (and potential affiliates), whether elsewhere in the university or outside.

The lack of a PhD programme is a particularly important barrier to CIRCLE's development. Such programmes attract PhD students with an interest in the organisational agenda, provide research labour and a source of potential recruits, extend international reach and opportunities for collaboration, and contribute to the coherence of a centre. They also help implement research strategy. The need to provide taught courses to PhD programmes creates an incentive to codify what the centre does and to build on

it. A PhD programme would also provide a strong signal both at LU and internationally of the university's commitment to CIRCLE as a cross-faculty centre. There is, of course, no need to register PhD students in CIRCLE and students may benefit more from the scale associated with faculty programmes. The most powerful way to establish a CIRCLE PhD programme in the current organisation of the university would be to cluster the PhD students within a wider programme in one of the faculties.

Finally, CIRCLE is fortunate in having a reasonably strong brand already; the need is to sustain and develop it. The strength of such brands tends to endure for a number of years. Our sense is that members of the international research and innovation studies community are aware that CIRCLE has reorganised and become smaller, but that the brand continues to carry considerable weight. Lund is still inside the time window where it is possible to benefit from the brand and to reinforce it for the future.

4 Conclusions and recommendations

Our conclusion is that CIRCLE has managed to weather a difficult period, is now regaining strength and shows great promise for the future. Some of our discussants felt that CIRCLE 1.0 was too distant from the faculties, failing to make use of the opportunities that cross-faculty cooperation could offer. Our sense is that in the new organisation the pendulum has swung too far the other way. The longer-term sustainability of CIRCLE 2.0 depends on finding the 'sweet spot' of balance between CIRCLE's ability to make and implement strategy and its role in fostering the kind of cross-faculty interdisciplinarity for which LU is aiming.

4.1 Conclusions about the evaluation questions

In our view, the current organisation represents a promising new start for CIRCLE, but it is not sufficient to make it sustainable over the medium to longer term or to reach LU's ambitious objective that CIRCLE should be an internationally leading and renowned research centre in innovation studies with the ability to attract successful researchers and strong PhD candidates. In the next section, we outline some changes that would be needed in order to achieve this objective.

The central problem in the current organisation is the imbalance between the power of the faculties and the restricted autonomy of CIRCLE. The analogy in manufacturing would be a company where the functional managers are so powerful that their interest in efficient and orderly production gets in the way of marketing and product innovation.

CIRCLE's leaders appear to us to be competent and promising, but in the current situation the extent to which they are free to lead is severely limited. A bottom-up, thematic approach to developing strategy is a powerful way to generate ideas, but at present it is not complemented by leadership with the power to focus these, consider their overall fundability or relevance to societal needs, and allocate appropriate human and financial resources.

The financial model is the conventional 'dual support' mechanism, with institutional funding to generate a 'platform', with which CIRCLE then has to attract external funding. Many research funders now expect recipient organisations to provide some degree of 'matching funds'. CIRCLE currently has no such resources and instead has to make a case each time to the relevant faculty for help, which may or may not be forthcoming depending on whether the topic is a strategic priority for that faculty.

With regard to research strategy, CIRCLE's management is considerably under-powered. In effect, CIRCLE's research 'strategy' amounts to little more than the sum of what CIRCLE members and affiliates, based in other departments or organisations, decide they would like to do in CIRCLE – moderated by whatever goodwill and cooperation the individuals involved can summon up from their faculty or elsewhere. Such a situation is in Sweden commonly disparaged as a 'project hotel' and is undoubtedly vulnerable in the longer term.

CIRCLE's working environment is fragmented. It would seem that limited use has been made of the common space under the new organisation. This runs the risk of perpetuating the loss of social cohesion and organisational identity that we are all encountering during this time of COVID-19, not to mention

the loss of opportunities for the cross-fertilisation of ideas during chance encounters over coffee or lunch. While the ‘network model’ of CIRCLE may have worked well in the Zoom era of Covid, it is unlikely to work so well post-Covid as we revert to common offices, face-to-face meetings, physical seminars and so on. A common office area is not only essential to get people to work together on common agendas but it also aids communication with the rest of world.

The quantity and quality of CIRCLE’s research is commendable and solid, particularly given all the difficulties that have had to be overcome during the reorganisation but needs to rise to a higher level if CIRCLE is to justify and maintain a strong position in the international innovation research community. In order to do this, CIRCLE needs stronger authority over its own strategy and over recruitment.

The degree of interdisciplinarity at CIRCLE can be interpreted in different ways. One is to argue that it has been high from the start, because the field of innovation studies is inherently interdisciplinary. The field is now more than 50 years old, and has its own journals, networks and epistemic community. In certain respects, therefore, it has acquired a number of the characteristics of a ‘discipline’. In practice, CIRCLE is increasingly engaging people in different faculties in innovation research, thereby increasing the diversity of social science approaches and enriching the field. As noted earlier, CIRCLE currently does little work in the field of innovation management, where social science and engineering meet. It also does relatively little in the area of linking the social and the ‘hard’ sciences in the context of developing policy for sociotechnical transitions (although that is a challenge to which few in innovation studies have yet been able to rise).

At present, CIRCLE is not in a position to make strong, attractive recruitment offers to leading scholars in its field. Recruitment is done by the faculties. A more effective way of finding ‘win-win’ recruitments that serve the interests both of CIRCLE and a faculty is needed. Faculties will need to take a broad and interdisciplinary perspective on such recruits. Traditional disciplinary recruitment will not achieve this.

As noted above, CIRCLE has a strong brand, especially internationally, largely based on its activities before the reorganisation. The new organisation shows promise that it can build on and hence justify CIRCLE’s reputation, but this needs to be done rather urgently, before the shine goes off the brand label. We have examined CIRCLE’s communications plan, which addresses all the conventional academic channels but does not discuss the resources needed to carry out the proposed activities. In our view, most of the reputation-building and maintenance that is needed will flow from carrying out high-quality work, participating in the key international scientific and policy fora, and taking pains to communicate effectively with policymakers. Refining the communications plan can come later.

4.2 Recommendations

We recommend that LU continue to support CIRCLE over the medium to longer term but at a more generous level. The SEK 3.4m annually transferred to the faculties should at least be maintained in real terms. The SEK 2m currently allocated directly to the CIRCLE cost centre should be increased – we suggest it be doubled – in order to support a stronger strategic role for the CIRCLE leadership and the administrative requirements of taking on postgraduate teaching. CIRCLE is a strong asset with an international reputation but there is considerable potential for further development. Its work is well aligned with the priorities of the LU strategy and the university’s expressed desire to build positions of interdisciplinary strength. In particular, CIRCLE addresses some of the societal challenges that are becoming ever more important in national and international research funding and can make an important contribution to the evolution and development of Lund University as it wrestles with the dilemma of how an essentially discipline-based organisation can best tackle the interdisciplinary challenges of society and the economy.

LU should significantly increase the autonomy of CIRCLE, in order to make it sustainable in the longer term. This should not involve CIRCLE reverting to the old model, which appears to have had distinct disadvantages, notably a degree of isolation from the rest of LU. It would be better to develop a model where CIRCLE has strong interactions with the university faculties and can help achieve the LU vision of strong interdisciplinary centres (for the research and postgraduate training needed to address societal challenges) combined with strong discipline-based faculties for undergraduate teaching. A further reason for not reverting to the old model is that CIRCLE has already invested

considerable effort into becoming a more inclusive organisation, working transversely across different parts of the university and engaging a wider range of people and disciplinary backgrounds. This provides a foundation for developing CIRCLE further, not some inconvenient legacy to be simply jettisoned.

CIRCLE should have a strong presence and visibility in postgraduate teaching at doctoral level and preferably also at master's level. Such programmes provide a way for CIRCLE to contribute substantially to education at LU. PhD education in particular is an important component in any established university research centre, providing labour to the research process and trained people who can be recruited. Masters and PhD programmes also contribute to the sense of identity and the visibility of a centre. There may well be advantages in tying a CIRCLE-branded postgraduate programme to that of one of the three faculties, in order to share taught courses and hence benefit from economies of scale.

CIRCLE should account for its finances and performance in a consistent and transparent way. The integration with the faculties has left unclear how people's time should be accounted for and whether and how project inputs and outputs are credited to CIRCLE or the faculties. That means, for example, that we do not have a consistent and reliable picture of CIRCLE's research funding or the extent to which its core funding 'leverages' income elsewhere. Lack of clarity not only makes it hard to manage but can create perverse incentives, for example creating conflict about what should be credited to CIRCLE and what to the faculties.

CIRCLE is very dependent on Vinnova funding. This is a benefit but also poses a risk to CIRCLE, which it should seek to mitigate. To achieve this, CIRCLE needs the ability to hire leading researchers who can enhance the organisation's capabilities with regard to generating research funds from other national and international sources. It also needs greater financial powers when it comes to dealing with research funders who require that 'matching funds' be part of any research proposal.

LU and CIRCLE should review the options for CIRCLE's organisation and decide which is offers the best prospects for the sustainability and longer-term success of CIRCLE. We see four possibilities, which we assess against a number of criteria in Table 5

- Full autonomy, outside the faculties, as was the case in the CIRCLE 1.0 period
- The current networked model, CIRCLE 2.0
- As is, but with greater strategic autonomy for CIRCLE – this would involve some form of matrix organisation structure so that it continues to be embedded in the faculties but has sufficient power to implement strategy⁷
- A single-faculty solution, in which CIRCLE is a Department or Division

For a number of reasons discussed in this report, it would seem that the first option (full autonomy) has too many disadvantages and can be ruled out. Further, as we have explained, the second option (the current network model) does not appear to be sustainable over the medium to longer term. That leaves the third and fourth options (a matrix model, and the integration of CIRCLE into a single faculty). Given the complexity of Lund University and how it operates (not to mention its unique character and history) and given the limited knowledge that we have built up over the course of this evaluation, we feel it would not be appropriate for us as evaluators to come down on one side or the other with regard to these two remaining options. In particular, we remain unclear as to whether LU would be willing to embrace the challenges of a matrix structure. Far better, therefore, for the university, the faculties and CIRCLE to judge the respective pros and cons of the two options against appropriate criteria, to decide which criteria should be given most weight, and to come to a measured decision. That will also result in a sense of 'ownership' for the eventual choice and hence a high degree of shared commitment to making a success of the chosen path.

⁷ Some of our discussants have described this as a 'hybrid' option.

Table 5 Likely effectiveness of alternative organisational options

Criteria	Full autonomy	As is - the 'networked model'	A 'matrix model'	Single-faculty solution
Strategic autonomy	High, but this option fails to benefit from cross-faculty working	Insufficient to implement a strategy that is sustainable over time	Provides enough power for CIRCLE to develop a sustainable strategy in cooperation with the faculties	Allows CIRCLE to develop a sustainable strategy, provided it is consistent with faculty strategy
Careers and recruitment	Strong control of recruitment eases recruitment problems. Career incentives fully aligned with CIRCLE	No control of recruitment. Career incentives tied to the faculties, therefore acting as a force for disintegration in CIRCLE	CIRCLE has a strong say in recruitment, creating the possibility to recruit external 'stars' and offer careers within CIRCLE	Strong say in recruitment, subordinate only to faculty strategy. Provides career opportunities both within CIRCLE and in related parts of the faculty
Esprit de corps	Likely to be strong, but rather distinct from that of LU as a whole	Currently good, but subject to fragmenting pressures from faculty-based incentives	Likely to be high, while also being inclusive of the faculties	Likely to be high and overlapping with that of the faculty
CIRCLE brand and international visibility	Easy to maintain, as CIRCLE is a simple entity with an identifiable 'address' to which others can easily relate	Remains strong, based on the reputation established during CIRCLE 1.0, but becoming harder to maintain as identity of CIRCLE becomes more amorphous	Clear and sustainable strategy – preferably combined with postgraduate and PhD teaching – reinforces CIRCLE brand and visibility	Brand and visibility remain strong, as long as the faculty grants CIRCLE a high degree of effective autonomy
Administrative and financial simplicity	Simple at the level of CIRCLE. Complex at the LU level, where an autonomous centre is an organisational anomaly	Complex at the level of CIRCLE, because everything has to be negotiated with the faculties. Simple at the LU level, because coordination is done across faculties and does not significantly involve the LU level	The fact that CIRCLE has a degree of strategic autonomy lets it internalise some of the complexity of dealing with multiple faculties and reduces the amount of negotiation CIRCLE and the faculties have to do	Very simple, fitting directly into the existing LU model
Build on recent initiatives	This would be a complete reversal of recent developments, cause further disruption and delay further improvements at CIRCLE	Consistent with recent initiatives but does not provide a basis for the greater strategic autonomy needed for CIRCLE to become sustainable	This model builds on the current situation, providing the greater degree of autonomy CIRCLE needs while maintaining the benefits of working closely with the faculties, including the growing engagement of faculty members in CIRCLE	Provides a platform for further development of CIRCLE, but risks losing the benefits of greater engagement by members of all three faculties that have been achieved

Criteria	Full autonomy	As is - the 'networked model'	A 'matrix model'	Single-faculty solution
Funding prospects	With full autonomy, it is easy for the outside world to understand CIRCLE and make funding decisions	Lack of clarity about what work is inside CIRCLE and what is in the faculties complicates the acquisition of funding, building and maintaining track record and reporting CIRCLE performance	Greater autonomy should make CIRCLE's identity clearer to funders and simplify proposal production and administration	As part of a faculty, CIRCLE would be easy to understand, proposal production and administration would be simple
Ability to contribute to undergraduate education	CIRCLE 1.0 made little contribution. Taking CIRCLE back outside the faculties would remove the incentives for CIRCLE members to teach	As faculty members, CIRCLE members can be allocated the teaching responsibilities they need in order eventually to be promoted, but CIRCLE members' skills do not necessarily match the teaching needs of the faculties	The situation would be somewhat similar to the networked model, but CIRCLE's greater autonomy would enable it to make a more focused 'offer' of teaching to the faculties	This option would tend to align CIRCLE's skills with those of the host faculty, increasing its alignment with faculty teaching needs, but at the possible risk of a narrowing of CIRCLE's skill set
Ability to implement postgraduate teaching & PhD programme	CIRCLE 1.0 demonstrated that this is possible, though at the cost of having to make special arrangements outside the LU norm	The freedom to provide postgraduate and PhD teaching is wholly contingent on case-by-case negotiation with the faculties, involving high transaction costs	The matrix model should include an agreement that CIRCLE will do postgraduate teaching and maintain a virtual PhD programme under the auspices of one of the faculties, with an option to support the other two faculties on a case-by-case basis as needed	This option provides the simplest route to CIRCLE offering postgraduate and PhD teaching
Support LU interdisciplinary priority	This option is consistent with LU's pursuit of interdisciplinarity but not with the aim to pursue that across the faculties	Fully consistent with LU's pursuit of cross-faculty interdisciplinarity	Fully consistent with LU's pursuit of cross-faculty interdisciplinarity	Consistent with LU's pursuit of interdisciplinarity but less strong with respect to doing this across faculties
Integration with rest of LU	Low	High	High	Medium-High

Appendix A List of interviewees

Asheim, Bjørn – former CIRCLE Director – 23 February 2021

Bauer, Fredric – CIRCLE & LTH – 23 February 2021

Benner, Mats – Dean of LUSEM – 26 January 2021

Dahlstrand, Åsa Lindholm – LTH & former CIRCLE Director – 23 February 2021

Edquist, Charles – former CIRCLE Director – 23 February 2021

Fassio, Claudio – CIRCLE & LUSEM – 23 February 2021

Fünfschilling, Lea – CIRCLE & LTH – 23 February 2021

Grillitsch, Markus – Director, CIRCLE – 2, 16 & 23 February 2021

Ignă, Ioana - post-doc, CIRCLE – 16 February 2021

Jacob, Merle – CIRCLE LUSEM Coordinator – 16 February 2021

Johansson, Charlotta – Vice Dean Collaboration and Innovation, LTH – 1 February 2021

Laatsit, Mart - post-doc, CIRCLE – 16 February 2021

Lundquist, Karl-Johan – CIRCLE & S-fak – 23 February 2021

Marklund, Göran – Deputy GD, Vinnova – 18 February 2021

Nilsson, Fredrik – Head of Department, Design Sciences, LTH – 23 February 2021

Nilsson, Magnus – Deputy Director, CIRCLE – 16 February 2021

Öwall, Viktor – formerly Dean of LTH, now Pro Vice-Chancellor for Infrastructure and Digitalisation, LU – 23 February 2021

Paxling, Linda – post-doc, CIRCLE – 16 February 2021

Rekers, Josephine – CIRCLE S-fak Coordinator – 16 February 2021

Schubert, Torben – CIRCLE LTH Coordinator – 16 February 2021

Schwaag-Serger, Sylvia – LUSEM and former Deputy Vice-Chancellor, LU – 28 January 2021

Appendix B Affiliations and research interests of full CIRCLE members

Surname	Given name	Status	Faculty	Interests
Chaminade	Cristina	Prof	EHL	Innovation Studies, sustainable development, transformations towards sustainability, Innovation systems, Innovation policy
Fassio	Claudio	Asst Prof	EHL	Business administration, innovation studies
Igna	Ioana	Postdoc	EHL	Economics of Innovation (R&D, patents), Industry 4.0, Artificial intelligence, labour market
Jakob	Merle	Prof	EHL	Research Policy, Science and Technology Studies, Sociology of Knowledge, Governance
Knutsson	Polina	PhD Student	EHL	Firm and Labour Market Dynamics
Källström	John	PhD student	EHL	Innovation economics, Applied micro-econometrics, Labour economics, Migration
Nilsson	Magnus	Sr Lecturer	EHL	Social sciences, Business Administration, innovation, innovation systems, Strategy, Economic Geography
Alvedalen	Janna	PhD student	LTH	Innovation studies, entrepreneurship
Andersson	Martin	Prof	LTH	Innovation systems and entrepreneurship studies
Bauer	Fredric	Researcher	LTH	Energy systems, environmental management
Edquist	Charles	Sr Prof	LTH	Innovation systems and studies
Funfschilling	Lea	Asst Prof	LTH	Innovation Studies, institutional theory, sustainability transitions
Laatsit	Mart	Postdoc	LTH	System orientated innovation policy
Lihua Liu	Jasmine	Researcher	LTH	Various
Lindholm Dahlstrand	Åsa	Prof	LTH	Research and innovation studies
Paxling	Linda	Postdoc	LTH	Design, innovation studies
Schubert	Torben	Sr Lecturer	LTH	Innovation, Strategic management, Science economics
Vallin	Gustav	PhD student	LTH	Not specified
Wadin	Jessica	Assoc Prof	LTH	Sustainability and transitions
Xiao	Jing	Sr Lecturer	LTH	Innovative entrepreneurship, corporate venturing, regional development and diversification
von Borries	Alvaro	PhD student	S-fak	Human geography
Grillitsch	Markus	Sr Lecturer	S-fak	Economic Geography, Innovation Studies, Regional Development, Knowledge, Institutions, Networks, Policy
Hansen	Teis	Sr Lecturer	S-fak	Economic Geography
Mahmoud	Yahia	Sr Lecturer	S-fak	Development Studies, Human geography, Agricultural Research for Development (AR4D)
Stihl	Linda	Lecturer	S-fak	Economic Geography, Human geography

Source: CIRCLE Web Site, accessed 18 March 2021

CIRCLE is the Centre for Innovation Research at Lund University. It functions as incubator, coordinator, and implementer of innovation research across faculties. CIRCLE strives to provide an attractive research environment with strong national and international networks.



CIRCLE

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