The Pentland Centre for Sustainability in Business

Biennial Report
1 August 2018 – 31 July 2020
Our mission is to deliver world-class transdisciplinary research evidence and engagement to support and advance the mainstreaming of social and environmental sustainability into purposeful business strategy at board level.

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Introduction – review of Pentland Centre’s activities and future direction

I am pleased to present this biennial review of the major activities of Lancaster University’s Pentland Centre for Sustainability in Business for the two years from 1 August 2018 to 31 July 2020, along with an indication of the Centre’s future direction. We are delighted to have appointed Professor Jeffrey Unerman as the Interim Director. He has led the implementation of the Pentland Centre’s distinctive new strategic direction during the recruitment of a new permanent Director.

Professor Angus Laing
October 2020

The end of this period has been a time of transition for the Pentland Centre, but a transition with many continuities. It marked the end of the initial five-year term of funding from the Rubin Foundation Charitable Trust. We are delighted and grateful that they have agreed to renew their very generous funding at a higher level for a second five-year term, which has enabled us to expand our strategic ambitions.

We continue our focus on bringing robust research insights to bear in informing board-level development of business sustainability strategies. We want to build on our successes and expand our remit and influence, and so have broadened the former focus (on helping develop environmental strategies for large companies) to cover social sustainability and organisations of all sizes.

This gives us scope to act on the recognition that, in practice, social and environmental impacts are often closely intertwined. Addressing both together can be more effective than seeking to tackle them separately, a vital strategic consideration as societies and businesses rebuild after the COVID pandemic.

The new latitude for the Pentland Centre also recognises that many sustainability innovations come from small and medium-sized enterprises. Having scope within our strategic ambitions to help these organisations embed robust scientific insights into the development of their purposeful social and environmental sustainability strategies will further enhance the Pentland Centre’s positive impact over the next five years.

The end of the first five-year term also marked a transition for some Pentland Centre members. We are delighted that Professor Jess Davies’ significant successes and contributions as a Pentland Centre member have been recognised by her appointment as Director of Lancaster University’s Centre for Global Eco-innovation. We all wish Jess and her team much success in their new roles. There are many synergies between the Pentland Centre and the Centre for Global Eco-innovation, and we look forward to realising these in the future.

The Pentland Centre’s Director for its first five years, Professor Gail Whiteman, moved to a new post at Exeter University in August 2020. Gail provided strong and distinctive leadership in driving the Pentland Centre’s strategic ambitions, as I know the incoming Director will do.

Professor Jeffrey Unerman
October 2020
The Pentland Centre has now become an integral part of Lancaster University and can look forward to many years of productive research and collaboration helping to solve some of the world’s biggest problems.

Stephen Rubin, Pentland Group plc

Founder’s Statement

Oak trees grow from little acorns, but they do so very slowly. It is with a measure of gratification, during this particularly extraordinary time for us all, that we can look back at the solid way in which the Pentland Centre has planted its roots and begun to flourish.

It is now some five years since its inception and during that time the Centre has grown to embrace fifteen academic staff, alongside six staff providing administrative and project management support to various projects and the Centre itself. It has had six visiting scholars, two teaching fellows and has supported seven PhD Lancaster University students. The Centre has eighty-four publications to its credit and has been awarded £5,506,501 in research grants. Additionally, it has been able to raise contributions from other philanthropic foundations, together with some small personal donations. Thank you all.

The Pentland Centre team has worked with the Dutch Research Institute for Transitions (DRIFT) and the Chinese Academy of Science on a project funded by the UK Research Council on the SIRIUS project (Sustainable, Innovative, Resilient and Interconnected Urban food Systems). The team has completed: a research project with REPIC on Waste Electrical and Electronic Equipment (WEEE) flows; a project, together with Lancaster’s Centre for Global Eco-Innovation, funded by the UK Research Council’s BBSRC, ESRC, NERC and the Scottish Government called the Rurban Revolution to consider how to transform UK food production, particularly by radically upscaling fruit and vegetable growing in our towns and cities; consultancy work for the new Taskforce for Climate-related Climate Disclosures (TCFD) and many other smaller projects in the area of sustainability.

In short, the achievements are starting to be recognised and I would like to thank Professor Gail Whiteman for her leadership and the whole team for forging a path that the expanded Centre can now follow. I also want to express my appreciation to Professor Jeffrey Unerman for the invaluable contribution he has made to the ongoing development of the Centre prior to the arrival of the new Director. We wish Professor Jan Bebbington, the incoming Director, every possible good wish for the Centre’s growth and success in the future.

I hope that the Pentland Centre has now become an integral part of Lancaster University and can look forward to many years of productive research and collaboration helping to solve some of the world’s biggest problems.

Stephen Rubin
Pentland Group plc
Highlights 2018-20

The Pentland Centre successfully delivered and contributed to a number of major projects during the 2018-20 period under review. This section provides a summary of some of these projects.

Informing sustainability dialogues at the World Economic Forum

The Pentland Centre continued its established Arctic Basecamp at Davos event in both 2019 and 2020. This science communications event, focussed on the global impact of Arctic Change, involves scientists and climate activists camping at a prominent location in Davos, and interacting with delegates at the World Economic Forum (WEF) annual meeting.

Alongside a range of prominent scientists and members of the business community, the 2019 event brought youth climate activist Greta Thunberg to the camp, speaking to a range of WEF delegates and members of the public about the need to take urgent action on climate change. In 2020, building on that connection, Arctic Basecamp at Davos hosted a team of young climate activists from around the globe, participating in conversations with climate scientists, and supporting the #FridaysforFuture protest in Davos on the final day of the WEF meeting.

In 2020 Arctic Basecamp founder Gail Whiteman was invited to speak at the main WEF Congress Centre, presenting What’s at Stake: The Arctic and participating in a panel discussion alongside Sanne Marin, Al Gore, and Scott Minerd (moderated by Elena Cherney). This mainstreaming of Arctic Basecamp at Davos’s work over the preceding three years, plus the opportunity to speak directly to congress delegates was particularly important.

Enhancing strategic understandings of the financial impacts from climate risks

Regulators and major corporations are becoming increasingly aware of the financial risks associated with climate change. Across the two years of this review, the Pentland Centre engaged in novel research, consultancy and policy advice to help corporations better understand the strategic nature and incidence of these risks.

There was a particular focus on helping corporations prepare for reporting in accordance with the game-changing recommendations of the 2017 Taskforce on Climate-related Financial Disclosures (TCFD). These focus on corporate dependencies on a stable climate rather than the more traditional reporting of corporate impacts on climate change.

A successful multidisciplinary Pentland Centre consultancy project helped Nestlé develop their TCFD reporting, providing an understanding of the impact of possible climate futures on their business operations, suppliers and customers. Our work was cited by Nestlé colleagues in helping to convince the company to declare a zero-carbon ambition.

Pentland Centre members Paul Young and Jeffrey Unerman contributed to the World Business Council for Sustainable Development’s Food, Agriculture and Forest TCFD Preparer Forum. This was targeted at helping large multinationals understand the impacts of climate change on their operations, in preparing for TCFD reporting.
Jeffrey Unerman also published an agenda-setting paper in Accounting Auditing and Accountability Journal on research opportunities in relation to TCFD reporting.

Relatedly, Patrick Bigger researched how climate change is changing the ways that financiers think about, and respond to, risk. Three joint papers have been published in the period of this review from this project. These build on research with bankers, regulators, stock exchanges, pension funds, municipalities and multilateral development banks about the burgeoning green bond market. The research found that green bonds are becoming a key source of climate finance globally. They are perceived as relatively safe, well understood funding mechanisms, but there are a host of unanticipated negative outcomes that accompany the reduction of climate action to questions of funding within existing political economic structures.

**Flows and fates of e-waste**

Understanding the flows and fates of discarded products is of paramount importance when trying to set waste policy targets, understanding where materials can be captured as a secondary resource, what impacts these have on local economies and where actions are needed to mitigate leakages.

Pentland Centre members Alison Stowell, Dmitry Yumashev and Lingxuan Liu undertook research on e-waste, funded by REPIC Ltd, which was published in September 2018 in an industry white paper ‘Setting robust and realistic targets for WEEE to support the transition to a Circular Economy’. This documented the findings and put forward a proposal for a new way of modelling electrical and electronic equipment product flows and fates through the economic system.

The paper has triggered a dialogue across the sector and started to mobilise support from market actors, government and not-for-profit actors. It also acted as a springboard to secure further consultancy funding, from UK Material Focus funds, to investigate unreported flows of e-waste and resulted in an industry white paper ‘Electrical Waste – challenges and opportunities’.

**Participatory research on sustainable supply chain management**

Taking an action research approach, Lingxuan Liu worked with global companies to understand the effectiveness of their supplier development programmes – in which buyer companies not only set green procurement requirements, but also invest resources in helping suppliers achieve sustainability goals. The research revealed that the effectiveness of supplier development is based on suppliers’ knowledge base and their relationship with buyer companies, and the process can be initiated or facilitated by multiple 3rd party stakeholders. The resulting publication was the most-downloaded paper of 2018 in Business Strategy and the Environment.
Building an international consortium of sustainable and resilient urban food systems
Lingxuan Liu is the project lead of SIRIUS – a JPI/UKRI/NSFC-funded international consortium that explores the sustainability, resilience, innovation and interconnection of the urban food system. From May 2019 to April 2022, the project involves a three-country, four-institute partnership, working with researchers and case cities in the UK, Netherland and China. The Lancaster team also includes Mustafa Ali, Jing Zhang and a visiting scholar/student every year.

The business case for investing in soil health
Soils are a vital asset that are key to producing food, absorbing some carbon emissions from human activities, enhancing biodiversity and regulating floods. However, in most parts of the world soils are under pressure from climate change, demands for agricultural and urban land, and unsustainable management practices.

Led by Jess Davies, with contributions from Dmitry Yumashev and Victoria Janes-Bassett, in collaboration with the Climate Smart Agriculture Team at the World Business Council for Sustainable Development (WBCSD), a research report set out the case for investing in soils. It brought together 20+ authors from five continents working in global corporations in agri-food, forestry, and banking sectors, with International Organisations like the United Nations Convention to Combat Desertification (UNCCD) and International NGOs. The report was launched at the UNCCD COP 13 in 2018 and is available online.

Preliminary results were shared with UK Government Department for the Environment, Farming and Rural Affairs (DEFRA). The work is expected to contribute to ongoing enquiries as part of the new Environmental Land Management scheme. This is set to replace the Common Agricultural Policy and prioritise a wide range of positive environmental outcomes for the UK’s land, while maintaining essential services such as food production.

Linked to the project, Jess Davies was an invited speaker at a Westminster event ‘The Economics of Soil: Private Asset or Public Good?’ in 2019. This event was co-hosted by the Sustainable Soils Alliance and Rebecca Pow MP, with contributions from Liz Truss, Chief Secretary to the Treasury and Greg Clark, Secretary of State for Business, Energy & Industrial Strategy. The talk can be viewed on youtube.

The Price of Vanilla: Collecting Public Experiences of the Vanilla Global Value Chain in Eden-Cornwall
Ben Neimark is leading a Lancaster ESRC Impact Acceleration Account funded project that aims to collect insights into public awareness of global commodity chains and food commodities. Specifically, it addresses the public’s loss of connection between food, biodiversity and global commodity production. It seeks to educate the public on global links connecting the ingredients in some of their favourite foods, namely Malagasy vanilla used in ice cream and Ghanaian cocoa in chocolate. The project is designed around a unique botanical exhibit at the Eden Project in Cornwall. It will focus mainly on vanilla, with follow up demonstrations at the Learning Lab in Eden, centring on both vanilla and cacao production.
Advancing the roles of accounting in achievement of the UN Sustainable Development Goals (SDGs)
A research project by Jeffrey Unerman provided academic insights to help enhance the roles that accounting can play in achievement of the UN SDGs. A 2018 paper co-authored with Professor Jan Bebbington (University of Birmingham) was awarded the Mary Parker Follet Award for the most outstanding paper that year in Accounting, Auditing and Accountability Journal.

World Business Council for Sustainable Development (WBCSD) bootcamp module
Alison Stowell has continued to organise unique sustainability teaching activities. These have enabled a further 30 students to participate in the WBCSD module and attend WBCSD annual meetings. From inception to date, students on this Bootcamp module have written more than 100 blogs that have been viewed almost 5000 times worldwide reaching 83 countries, and have established an alumni network which continues to grow.

Starting a Rurban Revolution
Jess Davies has led the Rurban Revolution project. Funded by the UKRI Global Food Security Programme, this is a two-year interdisciplinary project focused on the transformative potential of urban greening and food growing. The project brings together expertise in ecosystems, psychology, plant sciences and supply chains from Lancaster University, Cranfield University and University of Liverpool. Over the two years, it seeks to build an interdisciplinary evidence base on how urban green spaces and growing potentially influences:

- Healthy and sustainable diets
- Food production
- Ecosystem service delivery

The project engages with a diverse range of community groups, sustainability networks, SMEs, large corporations and local and national policy makers.

Global impacts of Arctic warming
Carbon released into the atmosphere by the increasing loss of Arctic permafrost, combined with higher solar absorption by the Earth’s surface due to the melting of sea ice and land snow, will accelerate climate change – and have a multi-trillion dollar impact on the world economy.

Dmitry Yumashev’s study on global impacts of Arctic warming employed state of the art models to explore the decline of Arctic land permafrost, snow and sea ice as the climate warms. It estimated the resulting impacts on the global climate and economy under a range of scenarios consistent with the Paris Agreement.

The study was published in Nature Communications and generated extensive global media coverage and publicity. It was also mentioned by Lancaster and Fleetwood MP Cat Smith at a UK Parliamentary hearing on climate change in the House of Commons, which contributed to the adoption of the flagship “net zero in 2050” policy for reducing the UK’s carbon emissions.
Appendix 1: Research Themes in the period 2018-2020

I. Supply Chain Sustainability
Considers the realities of global supply chains, and attempts to identify key success factors and the roots of ongoing systemic problems.

II. Waste and the Circular Economy
Considers the social and business perspectives of waste, particularly the role the circular economy can play in transforming industrial operations by keeping products and materials in circulation for as long as possible, eliminating waste, and using greener energy for production.

III. Food, water, energy & business
Considers how companies drive negative environmental impacts around food, water, energy and climate change, as well as driving potential solutions.

IV. Sustainability accounting and Finance
Sustainability accounting plays a crucial role in embedding understandings of interconnected and complex sustainability impacts and dependencies in organisational strategic decision-making. From a finance perspective, private investment is increasingly considered indispensable for everything from climate change adaption to scaling up renewable energy, and our work helps understand how and where those investments are taking place.

V. Global ecosystem risk
Examines the complex ecological and systemic foundations of sustainability and identifying global risk.

VI. Science-based targets for action
Supports ongoing development and implementation of Action2020, an ambitious collaboration between the WBCSD and a globally prominent network of scientists, which aims to develop targets for how businesses and markets can improve sustainability efforts.

VII. Sustainable soils and land use
Considers the management of land and our soil, and how it is vital to the sustainability of societies, economies and our environment.

VIII. Sustainable cities
Cities are complex systems containing both social and ecological processes. They need to be resilient to shocks, and have the ability to bounce back and thrive even in the face of rapid social and ecological change.
Appendix 2: Teaching and Outreach 2018-20

I. Undergraduate & Postgraduate Teaching

World Business Council for Sustainable Development Student (WBCSD) Bootcamp
This unique undergraduate module has been designed in partnership with the WBCSD and is focused on sustainability and employability. In a competitive process, students apply to visit the two annual meetings held by WBCSD every year. Following a week of intensive teaching and preparation, they work at the events, and get to meet a huge range of C-suite business leaders. In 2019 a further twenty students visited WBCSD events in Singapore and Montreux, whilst in 2020 ten students participated in a virtual WBCSD liaison delegate meeting, due to the COVID-19 pandemic.

These trips are life-changing for students, and impact upon their future career choices. We ask all students to contribute blogs that cover their experiences at the WBCSD meetings and the impact the experience has on them: https://lumsatthewbcsd.wordpress.com/

The course is convened by Alison Stowell, with contributions from Gail Whiteman, Jess Davies and other Pentland Centre members.

In addition to this course Alison Stowell organised and hosted visits from a series of guest speakers from WBCSD to speak with undergraduate Marketing students (Johanna Tahtinen WBCSD Redefining Value Associate), OWT students (Prof Rodney Irwin WBCSD SMT, Managing Director for Education and Redefining Vale) and our Human Resource Management and Human Resources and Consulting postgraduate students (Jean-David Raffenel WBCSD HR Manager)

Along with Pentland Centre Student Champions, Alison Stowell also organised Pentland Centre involvement in the LUMS Marketing Me Careers Challenge.

Pentland Centre Champions
Between 2018-20 the work of the Pentland Centre has been supported by five student and/or alumnus champions.

- 2018-19: Maria Zani and Sharlene Gandhi

Our Champions have co-ordinated social media activity, organised discussions and film showings, contributed blogs and articles to our website, and worked with the LUMS Marketing team on the annual Marketing Me event.

Their contributions have been invaluable, and we are cheering them on as they take their next steps in study and work.

II. Executive Education

Alison Stowell is a faculty member and academic advisory for the WBCSD Leadership Program, and Lancaster University continues to provide a pathway to an accredited postgraduate qualification for participants.
Appendix 3: People (1 Aug 2018 – 31 Jul 2020)

The Team
Professor Gail Whiteman (to Jul 20)
Dr Paul Young (to Jul 20)
Dr Benjamin Neimark (to Jul 20)
Professor Jeffrey Unerman
Dr Alison Stowell
Professor Jessica Davies (to Jun 2020)
Dr Lingxuan Liu
Dr Patrick Bigger
Dr Di Wang (from Apr 2019)
Dr Victoria Janes Bassett (to Jun 2020)
Dr Dmitry Yumashev (to Jun 2020)
Dr Lael Walsh (Apr 2019-Mar 2020)
Dr Mustafa Ali (from Sep 2019)
Dr Stacia Stetkiewicz (Nov 2019-Jun 2020)
Dr Jonathan Menary (Nov 2019-Jun 2020)
Angela Towers (to Jun 2019)
Helen Clay (from Nov 2019)
Desna Mackenzie
Sharlene Gandhi
Maria Zani
Lisbeth Gärtner
Lottie Gregory
Freya Oxton-Grant
Professor Minna Halme (to Jun 2019)
Dr Nadine Andrews
Dr Junfeng Wang (Sep 2018-Sep 2019)
Elisabeth Rogers (Dec 2018-Dec 2019)
Jimena Alvarez
Katre Leino
Roisin O’Riordan (to Jun 2020)
Marta Ferri

Centre Director & Rubin Chair in Sustainability
Associate Director & Senior Lecturer, LEC
Associate Director of Engagement & Senior Lecturer, LEC
Associate Director, Faculty Engagement, LUMS
Associate Director, Corporate Relations & Lecturer, LUMS
50th Anniversary Lecturer in Sustainability
50th Anniversary Lecturer in Sustainability
Lecturer in Human Geography, LEC
Lecturer in Accounting, LUMS
Senior Research Associate Soil Value Project
Senior Research Associate
Research Associate Rurban Revolution Project
Research Associate, SIRIUS Project
Senior Research Associate, Cropbooster Project
Senior Research Associate, Cropbooster Project
Marketing, Communications and Design Assistant
Marketing, Communications and Design Assistant
Centre Co-ordinator
Pentland Centre Alumnus Champion (2018-20)
Pentland Centre Student Champion (2018-19)
Pentland Centre Student Champion (2019-20)
Pentland Centre Student Champion (2019-20)
Pentland Centre Student Champion (2019-20)
Visiting Professor, Aalto University Business School
Visiting Researcher
Visiting Researcher
Visiting Researcher
PhD Candidate, LUMS
PhD Candidate, LUMS
PhD Candidate, LEC
PhD Candidate, LUMS

Advisory Board Members
Stephen Rubin
Tom Trezise
Peter White

Chairman of the Pentland Group plc.
Chairman, Patient Privacy Rights
Vice-President and Chief Operating Officer, WBCSD

Honorary Teaching Fellows
Professor Rodney Irwin
Andrea Brown

Leuphana University & Managing Director, WBCSD
Impact Management Director, Quadia
Appendix 4: Publications


Appendix 5: Research Grants & Sponsorship 2018-20

During 2018-20 Pentland Centre members submitted high-value funding applications to a number of UK Research Councils, including:

- Natural Environment Research Council (NERC)
- Biotechnology and Biological Sciences Research Council (BBSRC)
- Engineering and Physical Sciences Research Council (EPSRC)
- Economic and Social Research Council (ESRC)

Smaller applications have also been made to other bodies including the Department for Food and Rural Affairs (DEFRA), the European Commission (EC), UKRI and the Royal Society.

The volume of grant applications continued to increase in 2018-19, dipping slightly in 2019-20, with a slightly lower success rate than previously. This reflects the increasingly competitive environment for research grants, plus the impact of the COVID-19 pandemic. The largest grants awarded in this period were £384K funding to Jess Davies, a portion of a wider EU CROPBOOSTER project, and just below £300K to Lingxuan Liu to participate in the SIRIUS project.

In addition to our research grant funding we saw a rise in funding from other external sources, including project funding of £80K from the Fort Foundation, plus a further approx. £25K from individual and corporate donors, specifically to support the costs of the Arctic Basecamp at Davos. Work has begun to secure small amounts of income for the Centre via consultancy arrangements from members, and this will be developed in future years.