POLICY IMPACT UNIT:
OUR FIRST TWO YEARS
FOREWORDS

At UCL, generating positive societal impacts is central to our mission of being a world-leading research university. The value of our academic excellence lies in how we are able to inform and influence the world around us, from academic impact to impact on policy professionals and the global community. In transforming discovery into practice, we are able to fulfill our mission of being a force for good and enabling people to live healthier, more sustainable lives.

Our institutional Public Policy Strategy sets out our vision for embedding public policy engagement across UCL in order to bring cross-disciplinary expertise to bear on public policy challenges. The work of the Policy Impact Unit in the Faculty of Engineering Sciences is helping to build and foster relationships with policy professionals and supporting academic experts to form new partnerships with public policy stakeholders to inform their work, respond to challenges and support the development of evidence-informed policy. In turn, these collaborations enable our researchers to better understand and respond to these challenges, increasing our societal reach and impact.

The last two years have demonstrated both the importance of evidence and expertise in public policy, and the obstacles involved in ensuring that academic insight is accessible and useful to the wider public. Providing expert knowledge brokerage and support for public policy engagement, such as that delivered by the PIU, are increasingly critical activities for UCL in order to help us fulfill our role in supporting the development of evidence-informed policy for many years to come.

The Policy Impact Unit is playing an important role in helping us to achieve this goal.

Prof David Price
UCL Vice-Provost (Research)
PIU IN NUMBERS THE FIRST TWO YEARS (2019-2020)

45+ policy organisations engaged
12 projects across 6 engineering departments
11 policy briefings
13 events
18 consultation and inquiry responses
100+ people trained
24 policy outcomes and impacts

ABOUT THE PIU

Good policy is informed by good evidence; the need to improve engagement between universities and policymakers is well documented. The Policy Impact Unit was established with the goal of increasing the use of the world-class research produced by UCL Engineering researchers in the policymaking process.

Based within UCL’s Department of Science, Technology, Engineering and Public Policy (STeAPP), we are a team of professional intermediaries, who have experience of working in both policy and academic contexts. We provide the knowledge, skills and capacity to deliver high quality policy engagement activities.

We collaborate with researchers across the Faculty of Engineering Sciences (FES). Our aim is to improve both the quality and quantity of FES policy engagement activities in order to achieve robust policies that meet the needs of 21st Century society.
OUR APPROACH

The fields of policy studies and Science and Technology Studies (STS) have increased understanding of how change occurs within the policy system and the characteristics and strategies employed by successful “policy entrepreneurs”.

However, studies have also shown that these insights are rarely drawn upon by funders and researchers seeking to influence change. We believe that there are good reasons for this; policy engagement is a time-consuming activity that requires specialist knowledge and skills. Many academics are unable to take this on, either because they are already severely time-constrained through existing teaching and research commitments, or because they are new to policy engagement and have not yet had time to build up the necessary knowledge, skills and contacts.

Our approach aims to draw on what is known about effective policy engagement and to make this accessible to academics who are seeking to influence policy and/or inform, but who do not have the time or motivation to become fully fledged “policy entrepreneurs” themselves. We do this in the following key areas:

1. **Taking an active and strategic approach.**
   Passive dissemination (such as simply making a summary of findings available online) and “letting the evidence speak for itself” is unlikely to be an effective route to policy impact.1 Instead a much more active and strategic approach is required.2 We use a “theory of change” approach; identifying desired impact goals and developing a strategic package of engagement activities to deliver it.

2. **Building trusted relationships.**
   Trusted, ongoing relationships between researchers and policymakers are a major facilitator of evidence use.3 PIU Policy Analysts proactively build and maintain networks and relationships with policymakers in their policy domain. They can then make these contacts accessible to researchers across multiple projects, meaning that researchers can immediately share research without first having to establish contacts. Policy Analysts also help to widen the pool of stakeholders that researchers engage with, for example bringing a social science lens to hard science projects.

3. **Developing “deep knowledge”.**
   Successful policy entrepreneurs have a deep knowledge of the policy system they are trying to influence, including knowing who the key players are, how decisions are made, how policy problems are understood and framed and how to speak the language of the community.4 PIU Policy Analysts take on the task of acquiring this knowledge for the projects they work on, which can then be utilized directly in preparing project outputs as well as shared with researchers.

4. **Getting the timing right.**
   Research evidence has most impact when it is presented during a “window of opportunity”.5 However, without a deep knowledge of the policy context, such opportunities might be hard to spot.6 They often also require the ability to respond rapidly. PIU Policy Analysts work on projects from beginning to end, are able to identify engagement opportunities and have the flexibility to respond to external opportunities whenever they may arise.

5. **Translation and mobilization.**
   Effective communication is necessary but not sufficient for impactful engagement.7 Effective engagement requires more than simply providing a concise summary of findings in plain English. Evidence needs to be relevant to the policy issues of the day; it needs to be presented (or “framed”) in such a way that it grabs a policymaker’s attention; it should provide a coherent “policy narrative” and it should use language that is familiar to the audience.8 In order to do this effectively, specialist skills – including social acuity, making arguments and negotiation – are required.9 PIU Policy Analysts possess the knowledge and skills to do this effectively. We lead on producing outputs intended for policymakers, whether that is writing policy briefings, drafting consultation responses, or designing and running workshops.

6. **Thinking about risk.**
   Engaging with policy is an inherently political act, even for those seeking to act as “honest brokers” rather than “issue advocates”.10 Engaging naïvely without acknowledging this brings numerous risks for researchers; credibility within policy circles, reputation within the academic community, the potential to be “used” to add legitimacy and the possibility of wasted time, effort and resources are all at stake.11 Not to mention the impact that poor policy recommendations might have on wider society.12 Not our aspiration is to employ Policy Analysts on permanent contracts linked to specific policy domains (rather than individual research projects), allowing them to build specialist knowledge and networks within that domain that can be deployed across multiple projects. It also means that they can continue to deliver engagement activity/identify opportunities even after project funding has ended.

7. **Sustained Prolonged engagement.**
   It is clear that investment for the long-term is necessary to develop the necessary deep-knowledge, to build networks and to take advantage of windows of opportunity when they arise.13 This is a significant commitment to make, especially as there can be no guarantee that policy engagement activity will lead to any impact (since so much depends on external factors beyond the control of any individual).14 Our aspiration is to employ Policy Analysts on permanent contracts linked to specific policy domains (rather than individual research projects), allowing them to build specialist knowledge and networks within that domain that can be deployed across multiple projects. It also means that they can continue to deliver engagement activity/identify opportunities even after project funding has ended.

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We really needed help connecting our great researchers to those in the policy community who would benefit from their work. People in HMG (Her Majesty’s Government) seem to move so often that it’s a full time job keeping on top of newly emerging teams or changes in leadership of those teams. The PIU takes all of that work off our plate. For a very modest investment, we’ve really accelerated the impact of our work. And having someone very experienced and professional take over that additional workload has been liberating.

Prof Madeline Carr, Professor of Global Politics and Cybersecurity and Director of FRES

Undertaking research ‘for’ policy, by working ‘with’ policy partners, can be a lot of work! It needs the same academic standard as any UCL work, but then often involves additional work for engaging partners across all stages of the research process. Within the day-to-day realities of a leading research and education institution, this involves a great deal of energy and commitment! And so, having the PIU part of the research team, with their thoughtful contributions to the structuring, coordination and support of these interactions, makes a world of difference to both the quality and experience of applied research!
WHY ENGINEERS?

Engineering Sciences is UCL’s largest faculty, with 10 departments and 460 academic researchers. Researchers within the faculty are engaged on projects addressing some of the biggest challenges facing society today – including low-carbon energy, transport and buildings, manufacturing medicines and vaccines, cyber security, new medical diagnostics and devices, and reducing plastic waste to name but a few.

A distinction is sometimes made between scientists – who aim to study the world in order to better understand it – and engineers – whose goal is to make the world better. UCL’s Faculty of Engineering Sciences certainly subscribes to this idea:

“Engineers turn discoveries into solutions. Whether they are improving medical treatments, houses or transportation, the products, processes and students we produce change the world.”

Changing the world is also the goal of policymakers, whose work is always focused on improving some aspect of society. This suggests that the two have the potential to be highly complementary. Yet, this distinction is often overlooked. The Engineering community have long called for the establishment of Chief Engineering Adviser roles in Government that would be analogous to the existing Chief Scientific Adviser(s) but this has not yet come to pass. The desire to change the world suggests that engineering researchers are likely to have a great deal to contribute to many contemporary policy issues, but their contributions have perhaps in the past been overlooked in favour of social and physical scientists. At the same time, engineers may themselves not be aware of the valuable contribution they could make to public policy, having perhaps focused more attention on building links with industry. The PIU aims to catalyse better engagement between the two communities in order to achieve robust policies that meet the needs of 21st Century society.

WHY STEaPP?

Based within UCL’s Faculty of Engineering Sciences, STEaPP is a natural home for the PIU. The department focuses both on understanding how science, technology and engineering influence public policy as well as applying knowledge to tackling complex challenges like climate change and the impacts that emerging digital technologies have on society.

The PIU is able to benefit from the wealth of knowledge and expertise within the department – to draw on the latest thinking in how research evidence influences policy and best practice for effective engagement. At the same time, the practical activities of the PIU provide first-hand experience and real-world examples that can be shared with researchers and students alike.

WHY STEaPP?

“STEaPP’s mission is to transform the relationship between research based evidence and public policy to change policy for the better. The PIU has helped STEaPP researchers as well as those outside the department to achieve impact with policymakers and those who make decisions and the unit is integral to our mission. We are very proud to host and support the PIU.”

Prof Joanna Chataway, Head of Department, STEaPP

THE WIDER UCL POLICY ENGAGEMENT LANDSCAPE

We work closely with other teams and individuals working as policy intermediaries across UCL. Most importantly, we provide a link for many researchers in the Faculty of Engineering Sciences with UCL Public Policy. UCL’s central policy engagement team, and founder member of the Universities Policy Engagement Network (UPEN).

For example, we have facilitated access to funding opportunities offered by UCL PP: The workshops on neuromorphic computing (page 21), CAR T therapies (page 15) and the BEIS away day (page 19) were funded through UCL PP’s Policy Dialogues funding programme. The Global Policy Fellow pilot described on page 22, was funded through the GCRF UCL Internal Small Grants scheme, managed by OVPR, with input from UCL PP.

We encourage the researchers that we work with to contribute to Policy Postings (UCL’s PP’s blog). We have also collaborated on providing training and helped to disseminate information about Fellowship opportunities across FES.

Making full use of the in-depth understanding and excellent relationships that the PIU has built up, with both members of the Faculty of Engineering Sciences (FES) and the policy community, will be key to the successful delivery of future Public Policy Engagement, an integral part of FES 2030.”

Rear Admiral Neil Morisetti, Vice-Dean (Public Policy), Faculty of Engineering Sciences
THE TEAM

Our team shares a passion for ensuring that policy is informed by evidence. We have experience of working in an academic context but also, importantly, of working in policy institutions. This enables us to act as effective intermediaries at the interface of research and policy.

Dr Chris Tyler, Director of Research and Policy in UCL STEaPP. Chris spent five years as Director of the UK’s Parliamentary Office of Science and Technology (POST) and before that was the first Executive Director of the Centre for Science and Policy (CStP) at the University of Cambridge.

Jenny Bird, Public Policy Manager for UCL STEaPP. Jenny has worked as a Senior Specialist for the House of Commons Energy and Climate Change Committee as well as a Research Fellow for the think tank IPPR.

Dr Penny Carmichael, PIU Policy Analyst. Penny was Secretary to the Home Office-sponsored independent advisory committee the Biometrics and Forensics Ethics Group and was Senior Advisor to the Forensic Science Regulator’s technical committees. She has also worked as a Policy Advisor within the Department of Environment, Food and Rural Affairs.

Florence Greatrix, PIU Policy Analyst. Florence has worked as a Policy Officer at the Institute of Physics and in the public affairs team at the Royal Society of Chemistry.

Ana Rita Pinho, PIU Policy Analyst. Rita has worked at the Scientific Advice Mechanism of the European Commission as a Bluebook Trainee and was a member of the Executive Committee of the Portuguese Association of Researchers and Students in the United Kingdom (PARSUK).

SUMMARY OF ACTIVITY

Since the PIU was established in 2018, we have collaborated on 12 projects with researchers across 6 different Engineering departments.

As described above, our preferred approach is to embed Policy Analysts within research teams for extended periods of time. This allows us to develop policy impact objectives and strategies for achieving them as well as delivering the engagement activities themselves. Where we have been able to work in this way (collaborations marked with an asterisk in the table below) we have more detail about our activities in the following section.

PIU COLLABORATIONS

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<tr>
<th>Research Centre/project</th>
<th>Research lead</th>
<th>Department</th>
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<td>Gender and the Internet of Things</td>
<td>Dr Leonie Tanczer</td>
<td>STEaPP</td>
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<tr>
<td>Future Targeted Healthcare Manufacturing hub</td>
<td>Prof Nigel Titchener-Hooker</td>
<td>Biochemical Engineering</td>
</tr>
<tr>
<td>The Future Vaccine Manufacturing Research Hub (Vax-Hub)</td>
<td>Prof Martina Micheletti</td>
<td>Biochemical Engineering</td>
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<tr>
<td>Dawes Centre for Future Crime</td>
<td>Prof Shane Johnson</td>
<td>Security and Crime Science</td>
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<tr>
<td>Neuromorphic Computing</td>
<td>Prof Tony Kenyon and Dr Adrian Mehonick</td>
<td>Electronic and Electrical Engineering</td>
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<tr>
<td>Research Institute in Sociotechnical Cyber Security (RISCS)</td>
<td>Prof Madeline Carr</td>
<td>STEaPP</td>
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<tr>
<td>UCL Ventura CPAP initiative</td>
<td>Prof Rebecca Shipley</td>
<td>Institute of Healthcare Engineering (cross-departmental)</td>
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<tr>
<td>Global Disability Innovation Hub</td>
<td>Prof Catherine Holloway</td>
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<td>Plastic Waste Innovation Hub</td>
<td>Prof Mark Miodownik</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Big Picnic</td>
<td>Dr Theano Moussouri</td>
<td>Institute of Archaeology (Faculty of Social and Historical Sciences)</td>
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<tr>
<td>BEIS energy away day</td>
<td>Dr Adam Cooper</td>
<td>STEaPP</td>
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“Perhaps one of the best things about working with the PIU has been seeing how effectively our research can be connected with stakeholders in the policy community. They’ve also been great at connecting us with people in government with whom we can collaboratively design projects. It’s closed the loop. Funding call… successful bid… research carried out… peer reviewed papers with findings published… policy impact. The last bit generally doesn’t happen!”

Prof Madeline Carr, Director of RISCS

“Working with the Policy Impact Unit has massively increased the impact of our research on plastic waste. With the help of the PIU we are credible in the world of policy whereas before we just sent policy makers our research papers and wondered why they didn’t reply.”

Prof Mark Miodownik, PI of the Plastic Waste Innovation Hub
HIGHLIGHTS

Our work has delivered outcomes and policy impacts that would not have occurred without PIU input. Some highlights of our work to date include:

GENDER AND THE INTERNET OF THINGS

Our collaboration with Dr Leonie Tanczer aimed to put the issue of “tech abuse” – domestic abuse facilitated through new internet-connected devices such as smart heating, lighting and security systems – on to the policy agenda in order that new legislation is “future-proofed” against this emerging threat. We have focused in particular on influencing the Domestic Abuse Bill and Online Harms legislation. Our engagement resulted in a number of significant outcomes and impacts, including:

- Citations in policy documents from both Government and Parliament.
- Parliamentary Questions asked by Paul Sweeney MP and Chi Onwurah MP.
- Invitation for Dr Tanczer to join the DCMS “Media Literacy Group”.
- Invitations for Dr Tanczer to provide written briefings to the Domestic Abuse Commissioner (DAC) ahead of the Prime Minister’s “Hidden Harms Summit” and in person to the DAC’s office.

Government announcement accompanying the introduction of the Domestic Abuse Bill stated that “the bill has been designed to be future-proof from any new ways perpetrators try to control their victims. It will encompass worrying new trends such as “tech abuse” – where abusers use personal and home devices and smart gadgets to control their victim”.

“Without the PIU, the Gender-IoT project would have only spoken to an academic audience. It has evolved into something I never thought it could be. Alongside other UCL services, it has bolstered the capacity of the project to reach communities that I wouldn’t have otherwise. Working with the PIU has made a difference simply by the fact that the PIU know how to reach people: they know the people and understand who to contact. Their experience in the field is invaluable.”

Dr Leonie Tanczer, Lecturer in International Security and Emerging Technologies
GENDER AND THE INTERNET OF THINGS

Goal 1: Raise the profile of the issue of ‘tech abuse’ among the policy community and ensure domestic abuse and online harms legislation is future proofed to take account of this emerging threat.
FUTURE TARGETED HEALTHCARE MANUFACTURING HUB

Our collaboration with the Hub has focused on three key areas to date: research relating to reducing the cost of manufacturing personalised medicine, research on reimbursement models for personalised medicine and research on how personalised medicine is regulated. Unlike the Gender-IoT project above, our impact on reimbursement models for personalised medicine is regulated. Unlike the models for personalised medicine, research on reimbursement models for personalised medicine is regulated.

How are biological medicines made?

Biological medicines are structurally much larger and more complex than traditional pharmaceutical products that are made using chemical synthesis, for example vaccines or immunotherapies for the treatment of cancer. Unlike traditional pharmaceutical products, biological medicines trigger an immune response in the patient’s body, for example insulin for the management of diabetes. Other small molecule biological medicines include interferons, which are used in the treatment of viral infections or autoimmune diseases.

How are biological medicines regulated?

Biological medicines are subject to stringent regulation. In the UK, the Medicines and Healthcare Regulatory Agency (MHRA) is responsible for enforcing Good Manufacturing Practice (GMP). In the UK, the Medicines Healthcare Regulatory Agency (MHRA) is responsible for enforcing Good Manufacturing Practice (GMP). In the UK, the Medicines Healthcare Regulatory Agency (MHRA) is responsible for enforcing Good Manufacturing Practice (GMP).

Before a biological medicine can be sold in the European Union, it must undergo a series of regulatory processes to ensure it is safe and effective. In the UK, this includes submission to the MHRA for approval. The MHRA then conducts a thorough review of the application, including the production process and clinical trial data, to ensure that the medicine meets the regulatory standards for marketing in the UK.

Regulatory Agency (MHRA). The EU post-authorization requirements and sector industry associations have called for regulatory alignment.

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Key outputs and outcomes include:

- Prof Martina Micheletti invited to provide an expert contribution to the Parliamentary Office of Science and Technology for a forthcoming “POSTnote” on vaccines.
- Production of two “explainer” briefings for policymakers looking at some of the challenges of vaccine development and manufacture during a global pandemic.
- A webinar on vaccine manufacturing, attended by over 60 people, including participants from BEIS.
- Written evidence submitted to House of Commons Select Committee inquiries.
- Requests from media outlets for interviews with Hub researchers.

“As primarily a bench researcher the COVID-19 pandemic has presented many challenges to research activities. It has also presented me with several new opportunities to become involved with activities promoting our work within the VaxHub, which I might not have considered before. Penny Carmichael and the PIU has been a major influence in helping me take full advantage of these. From providing input to policy documents, contributions to written submissions to Parliamentary reports to media interactions such as interviews and Podcasts. *

Dr Steven Morris, Research Fellow in Vaccine Process Analytics

**FUTURE VACCINE MANUFACTURING RESEARCH HUB (VAX-HUB)**

Our collaboration with Vax-Hub began in 2019, but the context changed dramatically with the arrival of the COVID-19 pandemic. The Hub has been at the forefront of the UK’s vaccine research efforts, with Co-Director Prof Sarah Gilbert (University of Oxford) leading development of a vaccine for COVID-19 and the team at UCL developing characterisation technologies and formulating the vaccine to improve its stability and shelf-life.

Following the arrival of COVID-19 in the UK, we switched our attention to improving awareness among the policy community of the processes involved in developing new vaccines and the importance of innovation and new technologies in bringing down the cost of manufacturing vaccines and improving access, particularly to people in Low and Middle Income Countries. In the context of the COVID-19 (the disease caused by SARS-CoV-2 virus) has become a global pandemic, affecting over 40 million people worldwide and killing over 1.1 million.2 A vaccine to market is essential to global recovery and to decreasing the vulnerability to recurrent waves of the virus.3

The estimated time from identification of SARS-CoV-2 to vaccine licensure and manufacture is 10–15 years.2 The estimated time from identification of SARS-CoV-1 to vaccine licensure and manufacture is 14–18 months.2 A vaccine to a global population of 7.8 billion, where over 6 billion live in low and middle income countries.

Effective vaccine is essential to global recovery and to decreasing the burden and cost of the pandemic. It is estimated that the COVID-19 vaccine supply with global investment of 2 billion will lead to costs being in the range of 14 billion doses of vaccine with 15.8 trillion globally6 to be manufactured.

Successful vaccine development and production costs can be high. In the case of the COVID-19 vaccine, the cost of vaccine development, (up to billions of dollars), it is unsurprising that 95% of the world’s vaccine supply is marketed in high-income countries2 with the UK, US and China being the largest vaccine manufacturers. This has been a major influence in helping me take full advantage of these. From providing input to policy documents, contributions to written submissions to Parliamentary reports to media interactions such as interviews and Podcasts. *

**Goal 1: To shape the policy agenda by raising awareness of the role that manufacturing processes play in the overall cost and availability of vaccines and the role that innovations in the manufacturing process could play in helping to increase access to vaccines in LMICs.**
DAWES CENTRE FOR FUTURE CRIME

Our work with the Dawes Centre has focused on disseminating the findings of a series of scoping projects that aimed to identify emerging new areas of criminal activity. Our goal was to raise awareness among the policy community of these new threats in order that steps can be taken to mitigate them.

Key outcomes include:

- Working with UCL's central media team, our policy briefing on AI and crime was sent along with a press release to journalists, resulting in significant media coverage of the project findings (including The Telegraph, Daily Mail, The Independent, Daily Star, Daily Mirror and Daily Record).
- Researchers on the AI and crime project have been invited to speak to Home Office staff on their findings.
- The briefing has prompted both POST and a Parliamentary scrutiny committee to consider undertaking work on this topic in future.

"Working with the PIU, we created a plan of how best to approach policy engagement for our specific research topics, involving mapping out stakeholders, and then condensing our research into short, user-friendly policy briefings. We discussed release schedules for these briefings to maximise impact and PIU also advised us on how to tie in with UCL’s press and wider media. The result has been outstanding engagement with those briefings. For instance, our briefing on ‘AI-enabled future crime’ generated widespread media coverage (including national newspapers) and almost 1000 hits in a single initial send. “

Vaseem Khan, Business Development Director, UCL Jill Dando Institute of Security and Crime Science
NEUROMORPHIC COMPUTING

Researchers in the Department of Electronic and Electrical Engineering have been developing a new type of computing hardware ("neuromorphic" computing). We worked with them to help raise awareness among the policy community of this innovative new technology and the potential benefits it could bring to society. Neuromorphic hardware offers the potential to dramatically reduce the energy used in computing (with resulting benefits for the climate). It could also bring increased computing (with resulting benefits for the growing network of autonomous vehicles and robotics). Finally, its ability to handle unstructured data could revolutionise the use of big data and machine learning. Key outcomes to date include:

• We have delivered a programme of engagement activities (including a day-long conference in partnership with the Knowledge Transfer Network, a Policy Dialogue roundtable event and publication of a ‘microbriefing’, as well as arranging meetings with key stakeholders). As a result of these activities, the researchers have been invited to attend meetings with the Clerk of the House of Lords Science and Technology Committee, the Royal Society and Nesta.

“Working with the PIU has been an overwhelmingly positive experience.”
Prof Tony Kenyon, Vice Dean (Research), Faculty of Engineering Sciences

Goal 1: Raise awareness among the policy community of this emerging technology and potential benefits it could offer to society.

NEUROMORPHIC COMPUTING

FEBRUARY 2020
Published blog “Neuromorphic computing: a hardware for a greener computing sector?”

JANUARY 2020
Meeting with Alok Jha (The Economist)

DECEMBER 2019
Policy Dialogue roundtable event (funded by UCL PP)

MARCH 2020
Letter to Commons S&T Committee Chair, suggesting inquiry on future computing hardware

OCTOBER 2020
Meeting with Nesta regarding their ‘Next Generation Internet’ programme with the European Commission

NOVEMBER 2019
UCL/KTN joint event on ‘The Future of Computing’

JANUARY 2019
Pitched neuromorphic computing as a topic of consideration for a POSTnote

MARCH-MAY 2019
Meetings with key stakeholders: • POST • Office for AI • Business Growth Team, BEIS • SD-Science • Knowledge Transfer Network

JUNE 2019
Published and disseminated ‘microbriefing’

JANUARY 2019
UCL/KTN joint event on ‘The Future of Computing’

NOVEMBER 2019
Meeting with Clerk of Lords Digital and Communications Committee

6 JANUARY 2020
Meeting with the Clerk of Lords S&T Committee

FEBRUARY 2020
Meeting with the Royal Society

MAY 2020
Submission to My BEIS inquiry, suggesting neuromorphic computing as a topic

OCTOBER 2020
Shared research briefing with Nesta and Green Alliance

8 JANUARY 2020
Roundtable event on neuromorphic computing, could play in a world of advanced technologies, or barriers that may impede their development. The event began with an ‘evidence safari’ activity designed to encourage attendees to consider the applications of computing technologies, or barriers that may impede their development. It offered attendees an introduction to neuromorphic computing from leading UCL researchers as well as an opportunity to engage with policymakers and industry leaders. The event concluded with a Q&A session with Prof Kenyon, where delegates had the opportunity to discuss the potential implications and opportunities of this emerging technology with him directly.

Evidence safari activity brought together 15 participants from across Government, Parliament and industry, including representatives from UCL, Government, Parliament and Nesta and Green Alliance. The day-long conference in partnership with the Knowledge Transfer Network, a Policy Dialogue roundtable event and publication of a ‘microbriefing’ on neuromorphic computing were all part of the outreach programme.

Reduced power demand. Compared to conventional computers, neuromorphic computers have a lower power demand. For example, autonomous vehicles will operate independently without the need for a constant network connection (decreasing delay while data is sent to and from the cloud). Reduced power demand could also provide significant benefits for the environment as a whole, with the potential for huge reductions in energy used for computing. Reduction in energy use for computing is a challenge for the sector.

Neuromorphic computing systems have been developed to mimic the human brain, which is much more efficient than conventional computers. Neuromorphic computers are inspired by what is known as the brain-inspired computing approach. Instead of processing data in a serial manner, as conventional computers do, neuromorphic computers process data in parallel, which means they can perform complex tasks much more quickly.

Applications might include improved speech recognition, more accurate medical diagnostics. The on-device processing power could be advantageous for the growing network of autonomous vehicles and robotics. Neuromorphic computers could also be used in applications where energy efficiency is critical, such as temperature or position sensors. Increased on-device processing power and reduced power demand could enable applications that were previously not feasible due to energy constraints.

Improved computational capacity. For example, autonomous vehicles could operate independently of the cloud for speed and efficiency. Increased on-device processing power and reduced power demand could enable applications that were previously not feasible due to energy constraints. Neuromorphic computers could be useful in applications where energy efficiency is critical, such as temperature or position sensors. Increased on-device processing power and reduced power demand could enable applications that were previously not feasible due to energy constraints. However, there are also challenges associated with the implementation of neuromorphic computing. One of the main challenges is the lack of suitable hardware. Neuromorphic chips are expensive and currently available only in small quantities.

As a result of these activities, the researchers have been invited to attend meetings with the Clerk of the House of Lords Science and Technology Committee, the Royal Society and Nesta. The researchers have also hosted a day-long conference in partnership with the Knowledge Transfer Network, a Policy Dialogue roundtable event and publication of a ‘microbriefing’ on neuromorphic computing.

Dr Adrian Mehrotra and Prof Tony Kenyon at the Policy Dialogue roundtable.
OTHER ACTIVITIES

TRAINING

In collaboration with Dr Ine Steenmans (STEaPP), we have developed a one-day training module that provides an introduction to policy engagement. It is primarily intended for researchers who have little or no experience in policy engagement and focuses on the importance of relationship building as the foundation of effective policy engagement. We aim to provide insights into the working lives of “policymakers” and consider how engagement can be made more effective, based on research evidence from policy studies.

We have developed both face-to-face and online versions of the course and have run both types. To date, we have run the training with 7 different research groups. We are now in the process of running the training with 7 different research groups. We are now in the process of developing a training offer focusing on writing, disseminating and evaluating policy briefs. We have run 2 pilots of the training and hope to make this more widely available in 2021.

PILOT PROJECTS

The PIU is innovative and draws on the latest thinking to develop novel approaches to delivering policy impact. We have undertaken a number of pilot activities which we hope will lead to new activities in the future.

Global Policy Fellows

The Global Policy Fellows programme was developed to create an international network connecting policy professionals who are making “on-the-ground” decisions with academics whose knowledge is essential to making good decisions. The week-long knowledge exchange programme brings together international policy professionals with UK-based academics and policymakers to explore solutions to “live” policy challenges.

In 2019 we ran a pilot Global Policy Fellows programme, funded through the GCRF UCL Internal Small Grants scheme. The programme was on the theme of ‘Future Cities’ and we hosted 11 Fellows from a variety of countries, including Malaysia, South Africa and Pakistan. We developed a programme of activities based on questions the Fellows themselves had provided. This included one-to-one meetings with selected academics, site visits around London, a half-day hosted by the Greater London Authority (GLA) and Transport for London (TfL), and a day hosted by the Institute of Healthcare Engineering and another with the Research Institute in Sociotechnical Cyber Security (RISCS). Following this, we hope to formalise a carefully selected group of stakeholders (who represent the policy community in its broadest sense, including government, parliament, campaigners, lobbyists, think-tanks and so on), to spend a day with researchers sharing knowledge and working through a series of activities designed to produce one or two ideas that could be taken forward in a research proposal.

We are developing a structured approach to stakeholder engagement based on the methodology and develop a “toolkit” for others who are interested in taking this approach.

Co-development

One of the primary reasons that research evidence is not used by policymakers is because it is not relevant to their work. Findings ways to align research questions with real-world problems is therefore an important step to increasing policy impact. The gold standard in this respect is to co-create research projects: working in collaboration with the research users from the start to finish of a project. However, this is a huge undertaking and may not be possible for every research project. As a result, we have been exploring ideas for the next best thing.

We are developing a structured approach to stakeholder engagement designed to produce one or two ideas that could be taken forward in a research proposal.

We ran our first co-development workshop last year with researchers Dr Jean-Baptiste Pingault and Dr Jessie Baldwin, who are developing the next phase of research looking at how mental health can be improved for victims of bullying. The report from the workshop has been published online.

Working with Centres for Doctoral Training

We are piloting a new initiative with the Cyber Security Centre for Doctoral Training, which is run jointly by UCL’s departments of Security and Crime Science, Computer Science and STEaPP.

The project involves the students conducting evidence synthesis on topics that have been suggested by policymakers and then working with the PIU to produce and disseminate policy briefings to communicate the findings to a policy audience.

Our hope is that the programme will help to increase the skills and understanding of the doctoral students. At the same time, we hope the outputs will be a useful resource for policymakers: according to the UK’s current and former Government Chief Scientific Adviser “an accurate, concise and unbiased synthesis of the available evidence is arguably one of the most valuable contributions a research community can offer to policymakers”. If this project is successful, we will seek to explore opportunities with other CDTs.
LOOKING AHEAD, STRATEGY AND PRIORITIES

We are really proud of what we have achieved in our first two years of operation. Our long-term vision is to grow the team so that we can provide Policy Analysts across all major areas of policy that are relevant to the engineering community (including health, digital, security & defence, environment, climate change & low carbon technologies, transport, cities and manufacturing).

OUR STRATEGIC OBJECTIVES ARE:

1. To increase the quality of academic policy engagement activities and outputs.
2. To increase the quantity of academic policy engagement activities and outputs.
3. To experiment with and assess the effectiveness of novel approaches to policy engagement.
4. To facilitate dialogue between practitioners and scholars on best practice in policy engagement for impact.

OUR PLANS FOR 2021

We will be continuing our current collaborations with the Future Targeted Healthcare Manufacturing Hub, Vax-Hub, RISCS, the Dawes Centre, the Global Disability Innovation Hub and the Institute of Healthcare Engineering.

We are delighted that we will also be starting three new collaborations in 2021:

- the International Public Policy Observatory will bring research and policy together to mitigate the impacts of COVID-19 and accelerate the UK’s recovery.
- Compostable plastics: unlocking existing barriers to systems change will investigate how compostable plastics are currently being used and seek to map out how these plastics can be introduced and integrated into existing waste management infrastructure.
- The Interdisciplinary circular Economy Centre for Mineral-based Construction Materials will develop systems for more efficient use and recovery of mineral resources.

We anticipate that the ongoing COVID-19 crisis and Brexit will both remain high on policymakers’ agendas, and we will therefore prioritise activities that feed in to these two important areas.

We plan to continue to build our training offer and to explore and improve our approaches to policy engagement to maximise the scope for achieving policy impact across FES. We will continue to seek opportunities to expand our collaborations across all departments within the faculty to help to develop enduring partnerships with policy makers across the cycle of knowledge generation and dissemination.

We will continue to collaborate closely with UCL PP and other policy intermediaries across the institution in order to work towards delivering UCL’s vision to embed public policy engagement across UCL.

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- UCL Research Impact Curation and Support
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