

Delivered by



UUK International Report

8952.26

Funded by



UUK International Report

Table of Contents

1. Introduction
2. Engagement plan Australia: Findings
 - A. In-country opportunities
 - B. Pre-planned inbound and outbound engagement activity by Midlands universities
 - C. Information on the universities' top three research partnerships in each country
3. Engagement plan Germany: Findings
 - A. In-country opportunities
 - B. Pre-planned inbound and outbound engagement activity by Midlands universities
 - C. Information on the universities' top three research partnerships in each country
 - D. Existing bilateral framework arrangements and any previous or forthcoming UUK engagement for each of the priority markets
4. Engagement plan Singapore: Findings
 - A. In-country opportunities
 - B. Pre-planned inbound and outbound engagement activity by Midlands universities
 - C. Information on the universities' top three research partnerships in each country
5. Engagement plan South Korea: Findings
 - A. In-country opportunities
 - B. Pre-planned inbound and outbound engagement activity by Midlands universities
 - C. Information on the universities' top three research partnerships in each country

1. Introduction

On 22 February 2023, UUKi Director approached the Vice Chancellors of 17 Midlands universities with a request to provide information about their research and transnational education links with universities and industry in Germany, South Korea, Singapore and Australia.

1. Aston University
2. University of Birmingham
3. Birmingham City University
4. Coventry University
5. Cranfield University
6. De Montfort University
7. University of Derby
8. Harper Adams University
9. Keele University
10. University of Leicester
11. University of Lincoln
12. Loughborough University
13. University of Nottingham
14. Nottingham Trent University
15. University of Staffordshire
16. Warwick University
17. University of Wolverhampton

2. Engagement Australia: Findings

The plan below is focused on engagement with Australia. Australia is the UK's fifth most frequent international co-author of scholarly output (2018-22) and the field-weighted citation impact of UK-Australia co-authored articles is 2.91. Its economy is the 12th largest in the world, and its largest industries are mining, health and education, finance, construction and manufacturing. According to the Fortune Global 500, the largest Australian companies are Wesfarmers (conglomerate), Woolworths (retail), and BHP (mining).

A. In-country opportunities

- U21 conference – University of Birmingham to attend

B. Pre-planned inbound and outbound engagement activity by Midlands universities

- Harper Adams University is planning a visit to Australia in the next 12 months
- Cranfield University, PVC Chris Fogwill will visit in May/June 2023.
- Warwick University plans a VC-led delegation in September 2023
- Vice Chancellor of University of Adelaide to visit University of Nottingham in November 2023
- Deakin University-Aston University
 - Programme managers and lead academics to visit partner institution over the next 18 months.
 - Cohort 1 and 2 students to carry out training at Aston and commence placement at host institution over the next 18 months.

C. Information on the universities' top three research partnerships in each country.

Aston University

- RMIT University
 - Aston Institute of Photonics Technology is one of four research institutes at Aston. It is developing a relationship with the RMIT COMBS ARC centre of excellence in photonics.
 - This is an institute-to-institute relationship, driven by senior researchers. It is at an early stage and would benefit from concerted mechanisms to move on the relationship.

- Deakin University
 - This relationship has developed through the Aston Institute of Health & Neurodevelopment, in the College of Health and Life Science. This is the strongest institutional relationship developed in 2022.
 - **A MOU** is approaching signature stage, covering the following activities.
 - Sharing of information relevant to potential collaborative research and development projects to facilitate an understanding of each party's expertise, capabilities and requirements.
 - Collaborative research and development projects in the areas of:
 - i) Building Safe and Secure Communities,
 - ii) Improving Health and Wellbeing,
 - iii) Creating Smarter Technologies,
 - iv) Advancing Society, culture and the economy,
 - v) enabling a sustainable world, but not limited to these areas only.
 - Joint PhD Supervision or Joint PhD Programs.
 - Collaborative Basic and Applied Research, including Joint Project Development and Grant Applications.
 - Joint Publications.
 - Training in postgraduate research and industrial research. *Other activities that further enhance the mutual interests of the parties.*

Loughborough University

- Australian National University
- University of Technology Sydney
- University of Queensland

University of Birmingham

- The University of Melbourne – research partnership and a joint PhD in Computer Science and Engineering

Cranfield University

- RMIT, AECOM and Melbourne Water: collaboration on low carbon wastewater treatment <https://www.melbournewater.com.au/about/what-we-do/research-and-innovation/thinking-globally-reduce-greenhouse-gas-emissions>
- UNSW in water and wastewater treatment (Global Water Institute, Profs. Jefferson/Stuetz) and in air transport management; and latterly on defence engineering (Profs. Richardson/Sparks).
- Deep engagement with RMIT on water and waste water treatment (link above; via PhDs/contracts), on air transport management and sustainable manufacturing and materials.
- Collaborative engagement on resilience through the Torrens Resilience Institute at Flinders University (Prof. Denyer / Arbon) and in shock physics (<https://news.flinders.edu.au/blog/2018/03/04/2-6m-research-3d-energetic-materials/>).

University of Nottingham

- University of Adelaide
 - a £2.8m BBSRC Responsive Mode Link grant led by the University of Nottingham and the recently announced AU\$90 million University of Adelaide-led [Centre for Excellence in Plants for Space](#) in which Nottingham researchers will play a key role. (<https://www.nottingham.ac.uk/news/universities-of-nottingham-and-adelaide-celebrate-major-funding-boost-as-part-of-new-alliance>)
 - The Adelaide-Nottingham Alliance, launched in December 2022, will aim to increase the impact of their research and further opportunities for international collaboration.
 - the Alliance released a joint research fund in March 2023 to support the development of high-quality research collaborations within the alliances' strategic themes: 1. Global Food System 2. Intelligent Health 3. Sustainable Futures. https://exchange.nottingham.ac.uk/blog/adelaide-nottingham-alliance-launches-research-fund/?dm_i=5IL5,QYHT,206VV,3CP6Y,1
- The University of Queensland
 - EPSRC funded The University of Nottingham-University of Queensland doctoral training programme in biomedical imaging. <https://blogs.nottingham.ac.uk/researchexchange/2021/05/24/doctoral-training-at-nottingham-do-you-have-a-passion-for-using-imaging-to-transform-medical-diagnosis-and-personalised-health-treatment/>
 - 284 joint publications between 2019-2022, top 3 areas are 1. Medicine 2. Biochemistry, Genetics and Molecular Biology 3. Engineering
 - Recent funding success on a joint research project by Professor Alan Smyth from Medical School and QC in the area of Cystic Fibrosis.

- There is strong potential for MRI related collaboration around the Imaging for Precision Medicine Beacon, and all things AgriTech around the Future Food Beacon; both institutions have strengths in these areas.
- The University of Sydney
 - Research collaborations between academics of both Universities across all faculties.
 - 280 joint publications between 2019-2022, top 3 areas are 1. Medicine 2. Biochemistry, Genetics and Molecular Biology 3. Chemistry and Nursing.

Nottingham Trent University

- Charles Sturt University
- The Australian National University
- Western Sydney University
 - *Partnerships at nascent stage of development; areas of research partnership not identified yet*

University of Lincoln

- University of Melbourne: Single Project, coordinated by the Department of Geography.
 - Wildfire: the future threat to global freshwater resources; Bid Awaiting Response
- Monash University: Single Project (partner) coordinated by School of Health and Social Care
 - Improving Pain management for children and young people attended by Ambulance (PANDA): A realist informed intervention development and feasibility study. Award Setup
- NHMRC Australian Government National Health and Medical Research Council: Single Project (funder) coordinated by School of Chemistry
 - Understanding How Novel Heterospirocyclic Compounds Target Drug Resistant Malaria; Bid Awaiting Response

Warwick University

- Monash University
 - The Monash Warwick Alliance, formed in 2012, is a sector-leading university partnership. Our connections are deep and broad: students benefit from a seamless international experience, researchers jointly address global challenges problems, while professional staff engage in a fluid exchange of people and ideas. Some key MWA achievements to date:
 - Over 100 joint research projects involving more than 600 academics
 - Over 1000 high impact co-authored publications focusing on issues from improving women's rights in war zones and making big business more environmentally friendly, to eliminating drug-resistant superbugs and 3D-printing human tissue
 - Jointly appointed Monash Warwick Alliance Professors – uniting shared expertise in wide-ranging fields, including antimicrobial resistance, nanotechnology, energy, and healthcare improvement
 - Joint PhD students working in disciplines such as medicine, arts, engineering, and social sciences; and a Double Masters in Journalism, Politics & International Studies
 - The annual (and award-winning) International Conference of Undergraduate Research (ICUR), led by Warwick and Monash, has enabled over 1,700 undergraduate students to share and discuss their research with peers, in real time via video link, across the globe
 - 'Reinvention', a peer-reviewed journal of undergraduate research, has been established - currently at 29 online issues
 - Recent major investments related to antimicrobial resistance and particle physics.
 - Joint PhD Supervision or Joint PhD Programs.
 - Collaborative Basic and Applied Research, including Joint Project Development and Grant Applications.
 - Joint Publications.
 - Training in postgraduate research and industrial research. *Other activities that further enhance the mutual interests of the parties.*
 - 280 joint publications between 2019-2022, top 3 areas are
 1. Medicine
 2. Biochemistry, Genetics and Molecular Biology
 3. Chemistry and Nursing.

3. Engagement Germany: Findings

The plan below is focused on engagement with Germany. Germany is the UK's third most frequent international co-author of scholarly output (2018-22) and the field-weighted citation impact of UK-Germany co-authored articles is 2.75. Its economy is the largest in Europe and the fourth largest in the world, and is dominated by four main industries: automotive, mechanical engineering, chemical and electric. The largest German corporates are Volkswagen, Daimler, BMW (automotive), BASF (chemical) and Siemens (electrical). The mechanical engineering industry is the largest employer in Germany but is principally made up of small and medium-sized enterprises.

A. In-country opportunities

- Global University Leaders Council Hamburg 2023, 14-16 June 2023, Hamburg, Germany; UUKi to be represented by the Universities UK International Policy Network lead, Professor Gerry McCormack, Vice-Chancellor of Strathclyde University
- Agritechnica, 12 - 18 November 2023 in Hanover: <https://www.agritechnica.com/en>
- International Green Week, 19-28 Jan. 2024 in Berlin: <https://www.gruenewoche.de/en/>
- BIOFACH, 13 - 16 February 2024 in Nuremberg: <https://www.biofach.de/en>
- Frankfurter Buchmesse
- Leipziger Buchmesse
- Festivals creative industries: <https://leanderwattig.com/events/kreativwirtschaft/>

B. Pre-planned inbound and outbound engagement activity by Midlands universities

- Warwick University is planning a VC-led delegation to multilateral 'EUTOPIA week' w/c 4th December 2023
- University of Nottingham will attend a Russell Group/U15 delegation to Hamburg in September 2023
- University of Nottingham DVC will deliver a lecture at University of Tübingen in November 2023
- University of Nottingham VC will visit University of Tübingen in January 2024

C. Information on the universities' top three research partnerships in each country.

Aston University

- Ludwig Maximilian University of Munich

- 27 co-authored publications 2019-2023
- Heidelberg University
 - 20 co-authored publications 2019-2023
- University of Marburg
 - 20 co-authored publications 2019-2023

Loughborough University

- Tu Dresden
- University of Münster
- Adidas
- TU Darmstadt
- University of Freiburg

University of Birmingham

- Federal Institute of Materials Research and Testing in Berlin (BAM) – the agreement spans energy, chemistry, material research and life and environmental sciences, increasing the impact of University of Birmingham research in relation to statutory regulation and standardisation policies.
- I3 partnership between the University of Birmingham, Fraunhofer UMSICHT and Jiangsu Industry Technology Research Institute, Nanjing, which investigates new energy storage and waste management innovations. This three-way, multi-country bridge provides a comprehensive research and innovation pipeline from fundamental research to close-to-market innovation.
- Siemens. The partnership is focussed on collaboration in areas such as smart infrastructure, mobility, energy and healthcare technology, and includes collaborations in a number of Siemens' global centres. UoB is part of the Siemens global Research and Innovation Ecosystem.
- Other key research collaborators include Bayer, Honda Europe, and BASF.

Cranfield University

- TU Aachen (manufacturing);
- TU Berlin (manufacturing)
- TU Braunschweig (energy; advanced manufacturing)

Harper Adams University

- Global Networks (gUG) (Management Company of Agri Benchmark)
<http://www.agribenchmark.org/home.html>
 - Memorandum of Understanding signed for the period September 2019 - September 2022.
- Key partner: Claas, one of the biggest manufacturers of agricultural machinery in the world. We have a long-standing partnership with them with many of our students undertaking placements at their German HQ before their final year and then going on to become employees.

University of Nottingham

- University of Tübingen
 - A strategic partnership agreement with the University of Tübingen, which builds on several years of mutual investment into research, teaching, learning and innovation, was signed in January 2023.
 - Research priority themes based on existing connections include Molecular Biology, Precision Imaging MRI, Food security & Agriculture, Plant science & Nutrition, Humanities & Social sciences.
 - The mechanisms through which the University of Nottingham has engaged with Tübingen include seed corn fund 2021-22, paired PhD studentships 2022, joint professorship, dual master's programmes offered by the School of Economics, and student exchanges with the School of Cultures, Languages, and Area Studies. Details about this strategic partnership are available [here](#).
- Technical University of Munich (TUM)
 - The University of Nottingham Ningbo China has a memorandum of understanding covering the period between 2022 and 2027. TUM is also one of the Top 10 International Partners by Outputs in top 10% for UoN's Faculty of Engineering.
- Ludwig Maximilian University of Munich

- Top partner in Germany regarding publications and outputs (2017-2022).

Nottingham Trent University

- Aschaffenburg University of Applied Science
 - NTU has collaborated on research, staff and student exchanges.
- University of Leipzig
 - NTU has some alliances in place within areas of health and life science and the zero-carbon agenda that could be fostered.
- University of Jena

University of Lincoln

- ARBEITSGEMEINSCHAFT LUFTKRIEGSGESCHICHTE RHEIN-MOSEL E.V
- Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e. V.,
- Bosch engineering GmbH

Warwick University

- Technische Universität Dresden (TU Dresden)
 - TU Dresden joined the EUTOPIA European University alliance (co-founded by Warwick) in 2021.
 - UoW and TU Dresden are exploring a range of bilateral and multilateral collaborations in a range of disciplines including transport technology, the creative and digital industries, and early modern history
 - The cities of Dresden and Coventry are twinned. Student exchange agreement in place, allowing for an initial 10 full-year student places in either direction.
- University of Konstanz
 - Signed an MOU in 2021 to facilitate the exploration of collaborative education and research projects, including through respective Institute of Advanced Studies

- Research workshops in the field of Decision Making have taken place
- D. Existing bilateral framework arrangements and any previous or forthcoming UUKi engagement for each of the priority markets
- UUKi-HRK research collaboration webinar in March 2023
 - UUKi-HRK leadership meeting in March 2023
 - Roundtable with Jens Brandenburg, Parliamentary State Secretary from the German Federal Ministry of Education and Research (BMBF), hosted by the Russell Group – 3 May 2023
 - Meeting with University of Tübingen representatives, organised by University of Nottingham – 3 August 2023, German House
 - Delegation from the UK to Germany in November 2023 TBC

4. Engagement Singapore: Findings

The plan below is focused on engagement with Singapore. Singapore is the UK's 29th most frequent co-author of scholarly output (2018-22) and the field-weight citation impact of UK-Singapore co-authored articles is 3.26. Its economy is the 35th largest in the world, and the second highest GDP per capita. Its economy is primarily services-driven, but Singapore is also a major manufacturer of electronics and chemicals. The UK holds the third greatest stock of Singaporean direct investment after China and the Netherlands, at S\$77.6 billion (£44.7 billion) in 2021.

A. In-country opportunities

- Clean Tech Asia Forum 6-7 June 2023, a biannual event designed to connect the latest generation of start-ups with investors and corporates looking for new partners.

<https://www.cleantech.com/event/cleantech-forum-asia/>

- Built Environment Expo Asia (BEX Asia) 6-8 September 2023, a show focused on the built environment industry. Held in September it connects local and international brands with key decision makers and potential buyers in the ASEAN region.

<https://www.bex-asia.com>

- ArchiFest 2023 29 September – 28 October 2023, this year will celebrate the 60th Anniversary of the Singapore Institute of Architects

<https://sia60.sg/archifest-2023/>

- GovWare 17-19 Oct 2023, Asia's premier cybersecurity information connectivity platform. GovWare unites policymakers, tech innovators and end-users across Asia and beyond. This event is part of Singapore International Cyber Week.

<https://www.govware.sg/>

- Singapore International Energy Week (SIEW) 23-27 Oct 2023, an annual week-long event in October organised by the EMA bringing together energy professionals, policy makers and commentators.

<https://www.siew.gov.sg/>

- Singapore Week of Innovation & Technology (SWITCH) 31 Oct-2 Nov 2023

<https://www.switchsg.org/>

- Asia Tech x Singapore (ATxSG) 29-31 May 2024, Asia's flagship tech event where technology intersects with society and the digital economy.

<https://asiatechxsg.com/>

- Asia Infrastructure Forum 2024 June/July 2024 (TBC), details from this year are not yet available online.

<https://www.infrastructureasia.org/Asia-Infrastructure-Forum-2022>

B. Pre-planned inbound and outbound engagement activity by Midlands universities

- Cranfield University's Pro-Vice Chancellor Professor Chris Fogwill will visit Singapore in May 2023 to take part in a workshop led by SIN
- Warwick University: VC-led delegation in September 2023
- University of Nottingham will be represented U21 Senior Leaders' Forum at National University of Singapore in October 2023

C. Information on the universities' top three research partnerships in each country.

Aston University

- National University of Singapore
 - 19 co-authored publications in 2019-2023
- Singapore National Eye Centre
- Agency for Science, Technology and Research, Singapore

Loughborough University

- National University of Singapore
- Nanyang Technological University
- Community Foundation of Singapore

University of Birmingham

- National University of Singapore (NUS) – research partner in various disciplines, such as Shakespeare studies
- SMRT – Railway partnership
- Nanyang Technological University (NTU) – research links in Sports Sciences and Energy.

Cranfield University

- Singapore airlines – research collaboration in sustainable aviation
- Rolls Royce UTC and Airbus - air transport systems
- NTU - sustainable manufacturing and environmental sustainability in general
- PUB, Singapore - water and wastewater treatment

Harper Adams University

University of Nottingham

- National University of Singapore

- In Feb 2018, the UK High Commission in Singapore facilitated a two-day meeting between the Singapore Centre for Environmental Life Sciences Engineering (SCElse, made up of Nanyang Technical University and the National University of Singapore), and the UK's recently awarded National Biofilms Innovation Centre (NBIC). This collaboration has expanded with National Research Foundation (Singapore) and BBSRC funding for research projects associated with biofilms. The consortium is now working to develop a collaborative doctoral training programme and mobility links for students between the member institutions. Prof Miguel Camara is the Centre Director at Nottingham, see his article: <https://www.nottingham.ac.uk/vision/vision-biofilms>
- Research collaboration themes based on academic existing connections with NUS include Geosciences, Biotechnology, Pharmaceutical Sciences, History, Business Analytics, Entrepreneurship, Food Science and Biomedicine.
- National University of Singapore will be one of three pilot institutions (Korea University, National University of Singapore, McMaster University) for a new research-driven partnership programme which seeks to develop multilateral (research, student exchange, teaching, and faculty exchange) partnerships aligned to UN Sustainable Development Goals. In the case of NUS, the partnership will be driven by each institution's excellence in research aligned to SDG 13: Climate Action.

Nottingham Trent University

- James Cook University
 - NTU signed a Memorandum of Understanding with James Cook University in February 2023. We are fostering joint research projects.

University of Lincoln

Warwick University

- NTU: Joint PhD framework agreement (initially in Materials Science) (https://warwick.ac.uk/global/partnerships/news/warwick_signs_a)
 - Partner in Warwick's annual International Conference of Undergraduate Research (ICUR) (<https://www.icurportal.com/about/about-icur/>)
 - In addition: Disciplinary-level research collaborations in Complexity Science, Politics and International Studies, Chemistry and Physics.
- A*STAR: Warwick A*STAR Research Attachment Programme (ARAP) - Warwick Medical School

- offer (jointly) fully-funded 4-year PhD studentships in Molecular Cell Biology and Microbiology, with students spending up to two years at Warwick and two years in Singapore at an A*STAR institute
- National University of Singapore (NUS)
 - undergraduate student exchange agreement; research collaboration in several areas including Theatre and Performance

5. Engagement South Korea: Findings

The plan below is focused on engagement with South Korea. South Korea is the UK's 26th most frequent co-author of scholarly output (2018-22) and the field-weighted citation impact of UK-South Korea co-authored articles is 3.85. Its economy is the 12th largest in the world and the fourth in Asia, and it has experienced rapid economic growth in recent decades. Although South Korea is a services-led economy, the country has significant industrial strengths in textiles, steels, automotive, shipbuilding and electronics. It is one of the world's largest producer of semiconductors.

A. In-country opportunities

- Visit to KOREATECH 22-23 June 2023, MoU signing & visit to Birmingham Energy Innovation Centre
- ERA/HyDEX Business Engagement Mission to South Korea, 13-14 July 2023, as part of a visit for UK Government-Funded UK-China International Hydrogen Forum in Beijing
- Chungnam Techno Park Annual Conference and UK-South Korean International Hydrogen Forum 25-26 October 2023
- Diatomic Innovation Project West Midlands Innovation Accelerator has a new programme called diatomic which has a global strand where they are looking at innovation corridors and the pilot one is between Birmingham and Ulsan in South Korea. The universities of Aston, Birmingham and BCU are all part of that project (which is led by Connected Places Catapult).

B. Pre-planned inbound and outbound engagement activity by Midlands universities

- University of Nottingham is planning a VC-led delegation to South Korea autumn 2023/spring 2024

C. Information on the universities' top three research partnerships in each country.

Aston University

- Korea Maritime and Ocean University (KMOU), Busan.
 - Aston has published numerous papers with colleagues from this institution. There is no institutional support, however the relationship is moving beyond an academic-to-academic basis, through a departmental scale relationship. This fits into the context of the Connected Places Catapult project with South Korea.

Loughborough University

- Agency for Defence Development, Republic of Korea
- Yeungnam University
- Korea Institute for Energy Research

University of Birmingham

- Samsung – partnership focused on Robotics, AI and Telecommunications

Cranfield University

- Strong research engagement with University of Seoul (PVC Pollard, Profs. Hallett / Kim) on soil quality and digital soils mapping; and upcoming ECR workshop on electric mobility (<https://www.cranfield.ac.uk/events/events-2022/electric-vehicles>)
- Deep research relationship and numerous sabbaticals with the National Institute of Horticultural and Herbal Science (PVC Terry).
- Research and student exchange with Seoul Women's University and with Kyungpook National University.

Harper Adams University

University of Nottingham

- Korea University
 - Significant collaboration in Magnetic Resonance Imagine via the GAME Network.
 - Korea University will be one of three pilot institutions (Korea University, National University of Singapore, McMaster University) for a new research-driven partnership programme which seeks to develop multilateral (research, student exchange, teaching, and faculty exchange) partnerships aligned to UN Sustainable Development Goals. In the case of Korea University, the partnership will be driven by each institution's excellence in research aligned to SDG 3: Health and Well-being.
- National University, Yonsei University and Sungkyunkwan University are top collaborators based on publications

Nottingham Trent University

- Hanbat University
 - NTU has an agreement with Hanbat University.
- Yonsei University
 - NTU has a Memorandum of Understanding with Yonsei University. This is a potentially strong area for us to expand including creative and digital.
- Kington National University, Kyungpook National University and Kyunghee University are partnerships at a nascent stage of development

University of Lincoln

- Obelab: Single Project coordinated by School of Engineering
 - MRC Global Health; Bid Development
- Ministry of Trade, Industry and Energy: Single Project (funder) coordinated by School of Engineering
 - A Study on the development of intelligent mobility and UAM industries to lead the future mobility market; Project Live

Warwick University

- Kyungpook National University is an international partner of the EUTOPIA Alliance (Warwick was a founding member of this European Universities alliance). Collaboration at an early stage.
<https://eutopia-university.eu/english-version/about-us/about-us/global-partners-1>