





INTRODUCTION

Our mission is influenced by our heritage as the world's first Mechanics Institute, established in 1821 to provide inclusive access to the knowledge and skills necessary for emerging industries in a growing economy.

Since then, we have transitioned into a significant international organisation that is well placed to help drive productivity through educating the future international workforce; nurturing specialist talent; advancing R&D in emerging areas of technology; building global collaborative partnerships; commercialising technology and developing new trade and investment opportunities.

Our approach is inclusive, encompassing a vibrant research environment with an entrepreneurial spirit, allowing us to offer a unique ecosystem where people can develop their careers, advance the most promising ideas and deliver outstanding impact for society.

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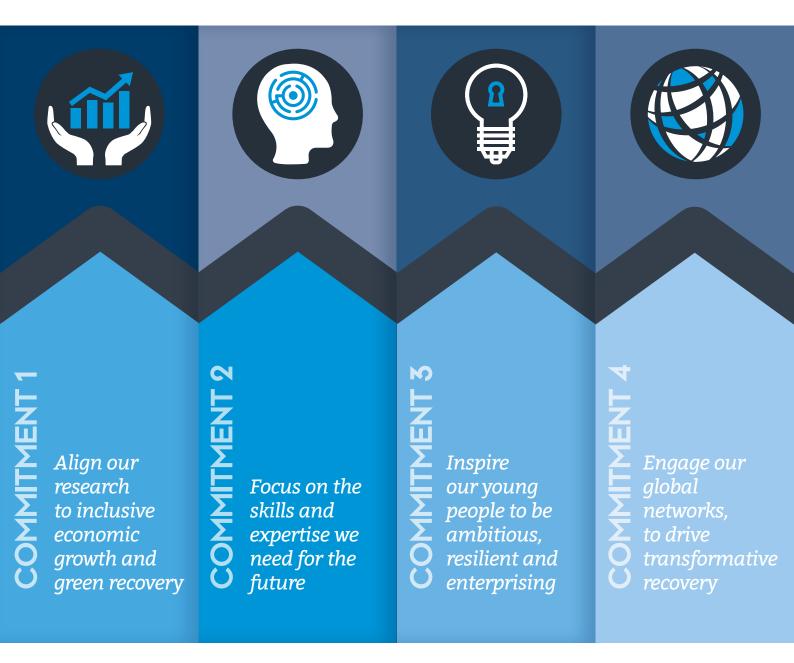
Call to action

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> EXECUTIVE SUMMARY

Our recovery prospectus illustrates Heriot-Watt University's commitment to supporting the global recovery efforts in relation to Covid-19. As we rebuild, Heriot-Watt University aims to maximise opportunities for innovation, solve significant issues and drive impactful socioeconomic benefits through the commitments and actions laid out in this prospectus.

We call on Government, Industry and Communities and invite you to join us in reimagining a new future. One that places a sustainable green economic recovery at its core, and which drives innovation, job creation and talent development. Enabling a positive, lasting contribution to the communities in which we operate.



Reimagining our future





We will build flourishing communities



We will excel in research and enterprise



We will be a globally connected University



We will pioneer in education The COVID-19 pandemic has resulted in an unparalleled global health and economic crisis. The impact of this is ongoing and countries across the globe face the difficult prospect of restarting their economies whilst dealing with a plethora of challenges and disrupters, including:

- ongoing public health concerns such as ageing populations
- the pressing need to address the threat of climate change
- social exclusion, rising unemployment, extreme disadvantage
- realising the benefits of disruptive new technologies such as artificial intelligence and robotics.

Amidst the human tragedy, the COVID-19 pandemic has resulted in the rapid adoption of digital technology, an explosion of scientific data and a rethink on how public and private capital is best deployed. The way in which people work has also changed with the supply and demand curves of many products and services altering radically, almost overnight. Like many organisations, universities have experienced major disruption, affecting students, staff and their collaborators.

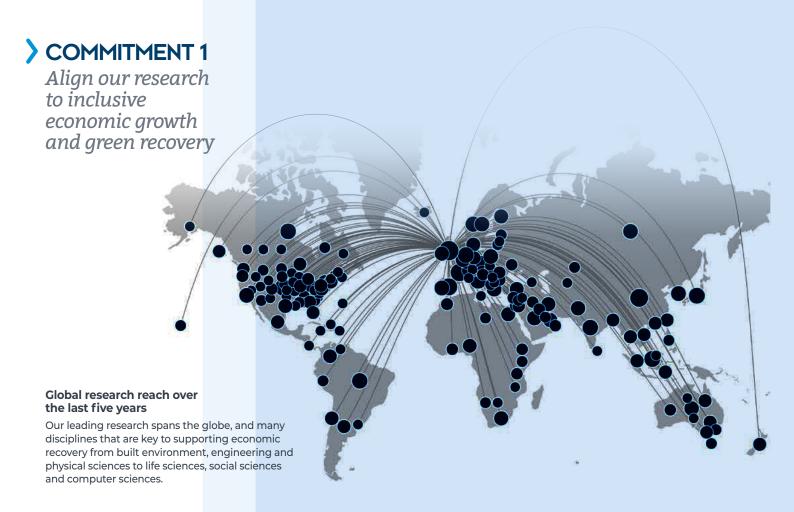
Despite this, universities continue to educate, research and innovate, with the sector providing a critical role in the post COVID-19 recovery. As governments take on a bigger role in markets and economies, businesses and investors are seeking to generate future returns whilst placing greater emphasis on environmental, social and governance aspects. This provides us with an opportunity to recover from the current crisis by reimagining and shaping a better future for all.

As an organisation we aim to be at the forefront of this reimagining and are therefore setting out our intentions in this Recovery Prospectus. The Prospectus builds on our Strategy 2025: Shaping Tomorrow Together in which we place collaboration, partnership and accelerating commercialisation at the heart of our approach, drawing on our research strengths and supporting our students, researchers, businesses and communities to recover and prosper

We all have a pivotal role to play in building a better future. This
Prospectus sets out a number of commitments that relate to that
future and invites you to join us in reinventing how things are done.







Sustainability and economic development are at the foundation of global recovery and future prosperity. Together with many governments, public and private organisations, we are committed to a green recovery through sustainable development.

To achieve this, we will focus our research strengths and commercialisation activities on enabling sustainable economic growth and supporting the green recovery. Our Global Research Institutes and Frontier Research Areas will support the

creation of new high-growth, knowledge-driven economic sectors – creating the products and solutions of the future. These span topics such as Earth and marine sciences, health technologies, robotics and automation, infrastructure, energy transition and decarbonisation.

Maximising the value of our research is at the core of reimagining recovery. Through our research initiatives we will advance global impact, building a strong talent pipeline and accelerating commercialisation to strengthen existing, and create new business sectors.

Build a global net-zero network – connecting assets and investment

Objective

Creation of a Global Research Institute which builds on significant expertise and externally funded work

Status

Active

We will drive a Net-Zero agenda through the creation of a Global Research Institute which builds on significant expertise and externally funded work in:

- Large-scale Smart Energy Systems: supported through work that includes the £28.5 million Responsive Flexibility (ReFLEX) project, to digitally link distributed and intermittent renewable generation to flexible demand and energy storage in Orkney
- Sustainable synthetic fuels: focused on reducing the carbon footprint
 of air travel with £2 million of funding, to produce low carbon
 synthetic aviation jet fuel using renewable energy created from
 agricultural waste, forestry biomass and captured CO₂
- Green Logistics: with the pandemic and political changes disrupting supply chains, resilience is a priority for governments and industry.
 Our Centre for Sustainable Road Freight, a partnership with Cambridge University underpinned by £15 million funding, is focused on achieving greater productivity and performance, sustainably
- Cooling Technologies: global demand for cooling is soaring, resulting in harmful effects on the environment. Supported by £5 million of funding, we are working in partnership with industry to improve the sustainability of datacentres by changing the way they are cooled.

We will catalyse opportunities through our leading role in industrial decarbonisation and support innovation related to Clean Growth. Clean Growth represents a huge opportunity for economic prosperity, combined with the wider co-benefits to our society of cutting CO₂ emissions, through cleaner air and the positive effects on public health and the environment.



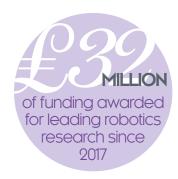
Create National Robotarium

Objective

Development of a world-leading Robotics & AI research and development facility

Status

Launching



The COVID-19 crisis has accelerated digital transformation and Artificial Intelligence (AI) is revolutionising the new world of work. Remote hybrid working and automation have the potential to drive productivity across the economy. There is, however, a need to ensure everyone benefits from the AI revolution and that opportunities are taken now to reskill and upskill workers, ensuring organisations are competitive and resilient.

Heriot-Watt University and the University of Edinburgh have world leading expertise in robotics, artificial intelligence and autonomous systems. Key areas of research application include: healthcare, space and satellite, energy systems, manufacturing, human-robot interaction, assisted living, agricultural technology and hazardous environments.

Supported by £22.4 million of capital investment, from the Edinburgh and South East Scotland City Region Deal, we will create the National Robotarium. This world-leading research and development facility will translate cutting-edge research into technologies, create disruptive innovation in an expanding global market, and deliver sustainable economic benefit. Its state-of-the-art facilities will add to our leading laboratories in Ocean Systems, Human Robotic Interaction and Assisted Living, to build capacity across existing and complementary areas of embedded intelligence and expert systems. The National Robotarium will act as a beacon to attract further talent, research collaboration and investment.

This will enable us to; leverage a further £40m of research grants and R&D income, expand doctoral training output, funded by the Engineering and Physical Sciences Research Council (EPSRC), with over 75 additional students taking PhDs in Robotics and Autonomous Systems, support over 66 companies, use the living labs to develop new technologies, and create over 16 new spin-out companies.



Build new medical technologies cluster

Objective

Drive the development of next generation medical devices to address unfulfilled clinical and industrial needs

Status

Launching

COVID-19 has demonstrated the reliance of technology in the delivery of healthcare and highlighted the need to reconfigure medical services in order to provide essential services. Digital transformation is already an intrinsic part of the long-term plan for health authorities worldwide. We will develop existing areas of expertise within our health technology research, ranging from super-resolution imaging, medical ultrasound and atomic force microscopy through to devices, diagnostics and applications. By utilising our world-leading expertise in physical science and engineering, we will seek to drive the development of next generation medical devices to address unfulfilled clinical and industrial needs. Novel tools include a precision laser scalpel, a multi-modal sensing pill and an imaging tool for rapid diagnosis of bacterial lung infections.

Applications span the clinical process, through from rapid diagnosis and non-invasive treatment to wireless rehabilitation. Confidence in our leading research is underlined by our recent EPSRC grant of £6m to develop Deep Ultraviolet Light Therapies. In addition, current large-scale projects include:

£3.7 million initial funding for our Medical Device Manufacturing
 Centre to address manufacturing challenges relating to miniature
 systems for micro-endoscopy and micro-surgery. The Centre
 will provide expert advice on manufacturing, engineering,
 regulatory issues and funding routes, coupled with
 technical support that assists small and medium
 sized companies in the translation of medical device
 concepts through to commercial prototypes

■ The Centre for Regulated Bio-Manufacture is a major R&D proposal spearheaded by Heriot-Watt University in collaboration with the Scottish National Blood Transfusion Service, the University of Edinburgh and a cluster of biomedical companies in the Lothians. It has been awarded funds by UK Research and Innovation's Strength in Places Fund to develop plans to secure a further £30 million later this year to build the new multi-million-pound Centre.



COMMITMENT 2

Focus on the skills and expertise we need for the future Universities have a vital role to play in helping people prepare and transition into new ways of working, and in developing skills and leadership. Our research ecosystem drives the industry sectors of the future and creates high-quality employment for the talent we generate. This combination of talent and innovation differentiates Scotland as a location for high-technology inward investment.

The economic fallout from COVID-19 will require both the acceleration of skills of the future, and the reskilling/retraining of our existing workforce to drive an education-led recovery.

The greatest impact will be felt by the young, particularly those that are entering, or are less established, in the job market. Helping people get back into employment will require greater support for widespread education and reskilling, particularly relating to growth areas that support a sustainable future.

We have all the key components to drive value through lifelong learning and our pioneering online and responsive blended learning approaches have demonstrated, throughout the crisis, the agility of Universities. Through our Scholar programme, we support over 150,000 students in school, college and at home, helping them prepare for courses aligned to the SQA curriculum. Our graduate apprenticeship programme is a leader in work-based learning and our undergraduate, postgraduate and MBA programmes provide many ways to engage with industry and contribute to society at large.





Allan Colquhoun

University Liaison & Emerging Technologies Manager, Leonardo

Leonardo has worked with Heriot-Watt on their Software Graduate Apprenticeship programme since its inception in 2017, helping our staff to gain work-based degrees in Software Engineering.

This will expand to cover Business and Engineering degrees from 2020. Our collaboration with Heriot-Watt has also utilised the 'Upskilling Scotland' micro-masters, which provides valuable upskilling and reskilling to our employees in this time of dramatic change. We look forward to exploring new avenues of collaboration with Heriot-Watt University, as they continue to pioneer learning provisions that directly support our business needs.

Alignment of our portfolio to support economic growth

The Times /
Sunday Times Good
University Guide 2019
ranked Heriot-Watt 1st
in Scotland for graduate
salaries 6 months
after graduation
and top 20

in the UK

Objective

Develop the workforce of the future through reshaping of our portfolio to create a new generation of talent

Status

Ongoing, continually responding to changing demand

Research shows that over the next decade, creative, digital, design, engineering, architectural and green occupations, have bright outlooks. Complemented by digital technology, these are all expected to benefit from greater urbanisation and an increased interest in environmental sustainability.

This aligns strongly with our current STEM-focused portfolio across all Schools, in areas such as Software Engineering, Data Science, Infrastructure and Energy Transition.

Our new suite of programmes, launching in 2020 and 2021, include MSc Digital Leadership, MSc Digital Marketing, MA Digital Design Innovation and Business Analytics and Consulting.

We will help develop the workforce of the future by reshaping our portfolio to create a new generation of leaders with the skills required to transform the economy. Our future portfolio will be aligned to our global research, that provides an engine for a sustainable, inclusive recovery and future economic growth.

CASE STUDY

Launch of Digital Leadership With the explosion in the global digital economy and the impact of the COVID-19 pandemic, digital transformation has rapidly emerged as a strategic imperative for organisations across a range of business sectors. In response, we are developing a new MSc in Digital Leadership, launching in 2021, to addresses a gap in the market for a specialist Masters programme that provides graduates with the technical skills as well as the managerial competencies required to lead digital transformation in business.

This blend of technical and business skills is also considered essential by the World Economic Forum to address the demands of the commonly-named "Jobs of Tomorrow" and harness the benefits of emerging technologies. The development of this MSc has been led by academics based at our Dubai campus and will be delivered flexibly, on campus, blended and fully online. Credit-bearing courses from the programme will be offered globally to support the significant demand for upskilling/reskilling in this field.

Upskilling and flexible lifelong learning

Objective

We aim to support over 10,000 learners globally to upskill and prepare for the future world of work

Status

Scaling



The current situation further accelerates the need for knowledge and diversity. Universities have an important role to play in helping people prepare and transition into a new way of work.

We have the potential to help people get back into work by enabling them to upskill in primary areas that will drive our future economy. We will achieve this by working with government and funding bodies which include the Scottish Funding Council, Malaysia Government and Dubai Leadership, to extend our Upskilling Scotland pilot and focus on specific areas to drive sustainable economic growth. These encompass:

- management and leadership skills to enable companies to pivot and succeed through uncertain times
- systems driven approaches to address the green economic recovery
- smart and low carbon construction
- new skills that drive productivity in areas such as human-robot coworking and data science.

We create significant value through life-long learning, supporting over 100 employers and offering programmes that help widen access and support people throughout their studies and professional career. Our Scholar Programme supports independent study for Scotland's school and college students.

In Dubai and Malaysia, our Foundation College helps prepare learners from around the world to enter undergraduate programmes. Additionally, we offer a UK-based Graduate Apprenticeship Programme which provides valuable work-based learning to circa 500 active students annually. Our online and distance learning programmes provide students with access to MBA level courses anywhere in the world.

CASE STUDY

Upskilling Scotland With support from the Scottish Funding Council, we delivered a new Skills Scotland Scholarship programme to 240 working professionals living in Scotland. We offered fully funded courses specifically developed to help businesses improve their productivity through the upskilling and reskilling of key employees. During lockdown, employees studied online and were provided with full access to our state-of-the-art online learning platform. The scholarship offered masters-level courses from our MBA programme, across a range of key disciplines.

COMMITMENT 3

Inspire our young people to be ambitious, resilient and enterprising

We commit to supporting young people in maximising their potential and elevating their ambitions, to encourage both local and global thinking about the opportunities that lie ahead.

COVID-19 will have a disproportionately negative impact on our youth and our international network comprises a diversity of organisations, from early-stage start-ups to large public organisations and corporations, that provide a wealth of opportunities for young people to support them in their journey.

We believe in instilling key qualities that will help our students stand out: emotional intelligence; developing positive personal qualities such as resilience, happiness, self-awareness and self-motivation; leadership qualities; and understanding purpose.

As the Fourth Industrial Revolution unfolds, automation and technological advancement are changing the skills landscape and transforming the nature of work. This will have far-reaching consequences on human motivation, productivity and the sense of identity. According to McKinsey Global Institute's report, "Jobs Lost, Jobs Gained: Workforce transitions in a time of automation", as many as 375 million people in the global workforce will need to switch occupational categories as the technological advances of artificial intelligence take place. Graduates are expected to deal with the uncertainties of the future, while constantly upskilling themselves, developing resilience, cultivating strong social networks and having a clear sense of purpose to make a difference in the world.



Future made for success

Objective

To future proof our students ensuring resilience and enhancing employability and improved graduate outcomes

Status

Scaling

Whilst the future may be full of uncertainty, it presents many new and exciting opportunities. Our new Future Made for Success programme has been developed to help our students gain valuable entrepreneurial skills, to enhance their employability potential and to become more commercially aware through industry engagement.

Business and industry need future graduates to shape and drive the global economy in a rapidly changing world. The skills that are most in demand to meet the challenges ahead are in fields such as artificial intelligence, data science, construction and business. Through industry projects, virtual work placements, enhanced careers support, mentoring, live industry challenges and regular industry perspectives, our students are prepared and ready to work internationally.

Future proofing careers, improving valuable skills and getting ready to take on global challenges in an uncertain world, are all part of the programme.





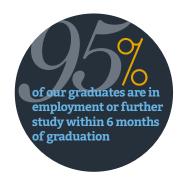
Launch a global Fit-for-Future programme

Objective

Mainstream the holistic and emotional development of our students by rolling out Fit-for-Future Programme across our global locations

Status

Launching



The world's recovery will require first and foremost the vision and leadership of capable leaders. By adopting a Positive Education pedagogy and leveraging emotional intelligence research, our Fit-for-Future programme aims to develop graduates who are self-aware, resilient and happy.

Fit-for-Future delivers student-centred learning experiences as well as interactive group activities and reflective exercises; aimed at uncovering passion, defining purpose, building mindfulness and ultimately assisting participants to navigate change and build resilience. On completion of the programme, students will develop greater self-confidence, an ability to express their emotions in a positive way and to develop a clear sense of purpose. This will enable them to flourish as successful graduates with the ability to lead in their specialised fields, and become values-driven global citizens, better able to cope with the challenges of the modern world.

We will collaborate with global charities and foundations to reach as many students as possible, transforming lives and tracking future outcomes including improved mental health and resilience, greater impact and higher employability.



Kelly Fraser

Engineering: Design and Manufacture Graduate Apprentice, Diageo

Working in a demanding role and undertaking a degree at the same time is challenging. You need to develop resilience, flexibility, and cultivate strong and supportive personal and professional networks, as well as maintaining your mental well-being.

The Fit-For-Future Programme allowed me to recognise the role emotions play in how we, and those around us, behave. I developed self-confidence and an ability to express my emotions in a positive way and found a clear sense of purpose enabling me to focus on both my personal and professional development.



Meghan Friel

Business Management Graduate Apprentice, Heriot-Watt University

The Fit-For-Future Programme allowed me to recognise the role emotions play in how we, and those around us, behave.

COMMITMENT 4

Engage our global networks, to drive transformative recovery Utilise our global networks, as an engine for transformational recovery, to develop cross-cutting solutions for an inclusive, sustainable future.

Global crises like the current pandemic and the pending climate emergency, are so complex they can only be tackled when teams across disciplines, organisations and nations work together.

The most meaningful and transformative solutions come from a diversity of minds and helping all our communities to flourish is core to Heriot-Watt University's mission. Our presence in the Scottish Borders, Edinburgh, Orkney, Dubai and Malaysia allows us to understand challenges from different perspectives and across diverse locations, rural, island or city, and to pilot and scale new approaches across varied environments. There is significant potential to engage and connect people, industry and governments, across our global campuses, to share insights and build international collaboration that drives benefit for all.

We commit to using our global network to support policy makers, by providing valuable independent insights, to help progress policy and legislative change that improves the lives of society's most vulnerable. This will be key to ensuring a sustainable, fair and just recovery.

Panmure House – enlightenment series

Objective

Provoke policy change and drive collaboration amongst economists, business leaders and governments

Status

Launching

Addressing future challenges will require thought leadership and a research agenda informed by bold interventions from the world's best scholars. The convening power of Panmure House affords us the opportunity to bring the best of academia, industry and civic society together to ensure that future research and the resulting policy interventions have maximum impact.

At the inaugural New Enlightenment Conference, co-hosted with Haas Business School and University of Berkeley California, we had contributions from world-leading economics, finance and business thought leaders with over 1 million combined citations.

Our Recovery Enlightenment Series in 2020/2021 will focus on bringing together global academics and stakeholders to discuss:

- how to ensure a sustainable recovery
- key enablers in achieving Net-Zero
- the importance of systems thinking in a global context
- harnessing the potential of robotics and artificial intelligence.



Research focus on an inclusive and fairer society

Objective

Driving forward policy and legislative change, to improve the lives of society's most vulnerable

Status

Developing

Driving forward policy and legislative change, to improve the lives of society's most vulnerable.

Emerging evidence suggests the impact of COVID-19 is being felt disproportionally amongst minority groups with in-work poverty also likely to increase under a pandemic-driven recession, exacerbating long-standing issues of social exclusion. Policy-makers, globally, are seeking ways in which economies can be restarted, while addressing these issues.

Heriot-Watt has outstanding and world-leading expertise in research and policy around inequality and sustainability, both integral to any discussions of economic and social recovery. This includes collaborative working with industry partners, government bodies, community groups, trade unions and employers.

We will focus our considerable cross-disciplinary work on homelessness, extreme disadvantage, disability and gender unemployment gaps, the experience of ethnic minorities and other marginalised groups, to improve the lives of society's most vulnerable people.



Our approach





Our approach is distinctively global, building networks to support collaboration and seek out new opportunities. It is the integration of our research, innovation, commercialisation and talent development that will help shape tomorrow's industry and provide the engine for truly transformation activities.

All our locations are united through a common goal to rebuild and reimagine. The diversity of rural, city and island locations provide varied physical test beds to drive rapid experimentation and commercialisation. Our global students provide the energy, diversity of minds and human network needed to challenge convention and drive change.

Our GRID, developed to advance our global research, innovation and discovery, provides the connectivity needed to power our global innovation system though bringing together diverse talent to tackle global challenges, powering rapid commercialisation and helping to build companies of scale that drive our future economies.

Through GRID's unique digital platform, we help people connect into a global innovation network and access creative spaces that inspire and foster collaboration – creating the innovators of the future.

Through this Recovery Prospectus we are committed to sharing global best practice and creating local opportunities for growth from our international footprint. We will expand our GRID infrastructure to all locations in which we operate; supporting flourishing communities through our role as an anchor organisation, catalysing prosperity, employment and cultural engagement.

Growing a globally connected innovation ecosystem

Objective

Drive inclusive growth, focused on the creation of new jobs, nvestment and international partnerships

Status

Developing

Over the next decade, Heriot-Watt University is committed to growing a dynamic and inclusive global ecosystem, focused on advanced R&D, talent development, commercialisation and start-up activity.

Our vision is to transform the way in which people live, work and learn and we will achieve this by:

- integrating activities to drive efficiency
- forging new collaborative partnerships with industry, public sector organisations and other universities
- developing new business models that rapidly grow connected innovation districts, nationally and internationally, through our physical campuses and digital infrastructure.

Success will come from building on our research specialisms, to catalyse new collaborations, investment, jobs and technologically advanced infrastructure.

Our initial focus will be on growing our Edinburgh Research Park through attracting and securing inward investment into the region by leveraging our intellectual assets. Initially creating an Edinburgh West Innovation District from our Edinburgh Campus Research Park. With several key developments, underway including the National Robotarium, the Medical Device Manufacturing Centre, the Centre for Regulated Bio-Manufacture and a future brewing facility, our focus will be on leveraging the strengths of Heriot-Watt University.

We commit to working with government to ensure Scotland remains the leading UK location outside of London for foreign direct investment.

With capital in shorter supply, collaboration and progressive partnerships are vital. We intend to develop new business models – based on an enterprise-led approach – that focus on delivering long term value aligned to university, government and industry strategy.

Our existing research park is home to over 25 organisations employing around 1,000 people.

We have the potential to significantly expand our offering and develop an innovation district capable of accommodating up to 10,000 new jobs.





We will be distinctive by developing opportunities and partnerships in all of our locations.

Through our new campus location in Dubai we will build on the recently established Centre for Smart Construction to support the many companies operating globally in all of our regions, to transition to smart sustainable construction in support of our green recovery. We will work in partnership with the local innovation ecosystem to rapidly create new business opportunities and connect our global entrepreneurs and business supply chains into new market opportunities.

By harnessing the combined intellectual, physical and financial capital from the University and its partner organisations we believe we can grow an economically vibrant and socially inclusive, global innovation ecosystem and develop a repeatable model that we will embed within all our locations. Collectively, this will offer unique opportunities for global economic growth and international trade.

CASE STUDY

CelestiaUK

Celestia UK, specialists in the advancement of state-of-the-art antenna systems, used for tracking satellites, recently made the Heriot-Watt University University Research Park its permanent base in Scotland after a successful five-month residency at our Global Research Innovation and Discovery (GRID) facility.

Establishing the business at the Research Park, which is the largest science park in Scotland's capital, will enable Celestia to embark on its next development phase, which includes setting up a new lab and assembly facilities, as well as providing a larger base to deliver cutting edge innovation in satellite-on-the-move user terminals and gateway systems.

A £2.5 million R&D award from Scottish Enterprise will enable Celestia, supported by Heriot-Watt University, to develop a new electronic scanning antenna and subsequently, 18 new jobs in Scotland.

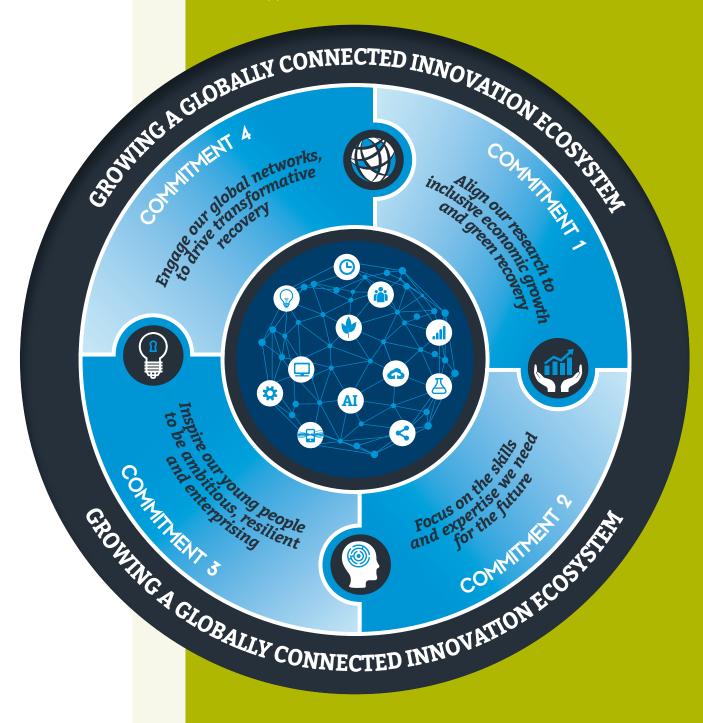
Our Research Park is recognised internationally as a centre for high calibre science and engineering research and in their new facilities, Celestia UK will also design and produce a flat panel satellite antenna for aircraft, pioneering a next generation satellite link for enhanced in-flight connectivity.

Scotland has a strong and growing reputation in the space industry with companies in the sector increasing from 104 to 132 between 2016 and 2019. 18% of jobs in the UK space sector are now based in Scotland, according to the UK Space Agency.



Our recovery prospectus sets out Heriot-Watt University's commitment to support the global efforts to recover from the COVID-19 pandemic. Through the realignment of our activities and utilising our powers as a higher education institution, we aim to secure the public and private investment needed, to solve the significant challenges ahead.

The prospectus is not intended to be exhaustive, it is a statement of intent and a clear signal to our communities of our willingness, and ability, to collaborate. Our four commitments, outlined below are the start of the journey and demonstrate our agile response and approach.



Call to action

We invite you to engage with us in the following ways:



Championing

the commitments and initiatives we have set out



Contributing

to an existing initiative outlined in the Prospectus



Proposing

a bold new idea you think would advance recovery and drive future growth

www.hw.ac.uk/economicrecovery