

Queen's University Belfast

INVESTING IN OUR FUTURE

Programme for Government Framework Response





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Queen's University is a global economic powerhouse of innovation and talent that is committed to improving Northern Ireland and the lives of our people. We are proud to be in the top 1% of universities worldwide and first in the UK for Knowledge Transfer Partnerships and IP revenues.

Northern Ireland is entering a new era. Stable government, built on the foundation of partnership, allows the Executive to tackle the generational challenges that we must address during this Assembly Mandate. We need to create high value jobs and stop the drain of our young people who are leaving Northern Ireland to not only access higher education but to live and work. The draft Programme for Government (PfG) framework provides a strong platform and catalyst to allow all sections of our society to work together to build a better place for all our people.

Recent political developments, not least the decision by the UK to withdraw from the European Union, highlights the importance of focus and increased investment in Northern Ireland's core resource, our human capital. Queen's University strongly welcomes the draft PfG and the priority to improve wellbeing for all by tackling disadvantage, and driving economic growth. These aspirations align with the mission of Queen's University and, if successfully implemented, will deliver prosperity for all our people. At present, 32% of our young first degree entrants are from lower socio-economic groups which places us first amongst the UK's leading universities for widening access. We are proud of this achievement and remain committed to providing opportunity for all.

Key to future prosperity is stable government, accountable to local people, working in partnership with the public, community and business sectors. As a society, we must also ensure that we take advantage of, and create and support, new opportunities. This will include identifying strategic and targeted investments that can leverage maximum economic, social and cultural benefit. This University is committed to playing a full partnership role in the new PfG process, by harnessing the expertise of our staff and students to work with policy and decision makers.

Government in Northern Ireland has made significant progress over recent years and it is important that this is recognised. The new structure of the Executive and public sector, drawing on the skills and expertise across society, will provide a holistic approach in addressing the global challenges we face and, equally important, in identifying new opportunities in which to invest.

Queen's University is ready to play a leading role in this new era of government. As a global University, we have a wealth of expertise that can be deployed in the development of new policies and strategies, based on world leading research and exemplars of international best practice. We are also at the forefront of developing new technologies and thinking, in key areas such as Health, Information Technology, Food Security, Energy, Reconciliation, Peace and Justice. Most importantly, we are committed to inspiring, supporting and equipping our young people, who are our future leaders, with the skills required to develop their full potential and play their part in building a better society.

Professor Patrick G Johnston President and Vice-Chancellor



Queen's University has a long and proud tradition of contributing to the development of Northern Ireland and our people.

With some 24,000 students, Queen's University is one of the region's largest employers with over 3,700 staff. Additionally, we contribute £1 billion to the local economy and support over 9,250 full time jobs. We are proud of our portfolio of spin-out companies, including Kainos, Andor Technology and PathXL, which provide high value added employment opportunities for our graduates. Within six months of graduating, 94% of our students achieve employment or enter further study. Our graduates now occupy senior leadership positions in 80 of Northern Ireland's top 100 companies and lead nine of the Ministerial portfolios in the current Executive. We are proud of these figures which demonstrate the importance of skills and education in the creation of a successful and sustainable knowledge economy.

Queen's University supports global leading research across a range of disciplines. To enhance this work, we have established a number of interdisciplinary Global Research Institutes and Pioneer Research Programmes which bring researchers together to tackle some of the biggest global challenges of our generation. Through our education and research, Queen's University plays a leading role in preparing tomorrow's leaders, public servants and entrepreneurs. We are central in contributing to Northern Ireland's growing global reputation whilst delivering significant local impact. We aspire to promote global thinking locally in order to make Northern Ireland a powerhouse of skills, innovation and economic prosperity.

Presently, some 35% of our 18-19 year olds leave Northern Ireland to be educated in higher education institutions in England, Scotland, Wales, Ireland and further afield. We are the only region in the UK that exports our young people and we must reverse this "brain drain". Higher education requires urgent investment to ensure that our people have the necessary skills and knowledge to support the growth of the regional economy and to provide an increased supply of skills which will attract new foreign direct investment to Northern Ireland. To underpin the decision to reduce corporation tax in April 2018, we must invest in our young people. Higher education is an investment in the future, not an expenditure line.

Queen's University will work in constructive partnership with the Executive, the Assembly and all the stakeholders to deliver a PfG that will make a real and tangible difference to the lives of everyone in this community.

James O'Kane Registrar and Chief Operating Officer



Students at Queen's University have an immensely positive impact on our society, from advancing knowledge, to tireless advocacy on social justice issues and promoting the rights of learners and young people.

As members of the Students' Union, thousands of our students give their time. effort and expertise in the service of our society through community volunteering, political activism, athletic excellence, entrepreneurial leadership and social transformation.

The Students' Union welcomes the opportunity to help forge a more equal and diverse society, a sustainable environment, a fair and regionally balanced economy, and high quality public services - just some of the priority outcomes identified in the draft PfG. Few are more eager and willing to accomplish these shared aims than our students and young people. However, they must live in a society that invests in their ability and capacity to contribute.

The need to secure sustainable investment in higher education is now more pressing than ever. The considerable economic benefits and social progress our students and graduates achieve for this region cannot be underestimated. Nor can it be taken for granted. If we wish to see our young people realise their life ambitions and potential on these shores, we must offer them a higher education system that is free at the point of access, publicly resourced and fit for purpose. This has long been the position of the student movement and, to maximise the potential of our young people and the contribution they can make to our society, additional investment is urgently required.

Seán Fearon President of the Students' Union

Draft Programme for Government Outcomes:

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- **9** We are a shared society that respects diversity
- **10** We are a confident, welcoming, outward-looking society
- **11** We have high quality public services
- 12 We have created a place where people want to live and work, to visit and invest
- **14** We give our children and young people the best start in life

Draft Programme for Government Overview

Queen's University welcomes the new approach adopted in the development of the PfG and the opportunity to input to the final document and the subsequent action plans.

While the University falls under the direct remit of the Department for the Economy, we believe that we can contribute constructively across all areas of delivery in the PfG. We acknowledge that the draft framework is committed to a partnership model that involves central and local government, the private sector, the voluntary and community sectors working cohesively and collectively to implement the PfG. We are ready to play our part within this partnership model.

We strongly welcome the commitment to the new Children's Hospital and look forward to working with the Department of Health in the realisation of this important new project. The commitments to flagship infrastructure projects such as the A5, A6, Belfast Rapid Transport and Belfast Transport Hub are also encouraging. It is vitally important that Northern Ireland has a vibrant transport network which is essential to economic investment and development – opportunities become regional and not local.

The continued implementation of the Fresh Start Agreement, and its commitment to reduce the rate of corporation tax to 12.5% from April 2018, will also act as an incentive to attract foreign direct investment, in addition to stimulating and supporting indigenous businesses. A lower rate of corporation tax will not, however, be sufficient. Strategic investment in higher education, targeted at the creation of the skilled workforce required to build a sustainable knowledge economy, will also be essential.

We are concerned, therefore, that there is no specific indicator related to higher education and skills within the PfG framework; we recognise that Indicator 14 relates to improving the skills profile and that this links to a number of the other outcomes and indicators.





Queen's University firmly believes in the transformational power of education in empowering the individual and in driving economic growth and, in our view, is essential to the success of the PfG. It follows that education and skills should be prioritised and we suggest the following amendment to Outcome 6:

"We invest in world class Higher Education and Further Education systems to provide the capacity to increase skills at all levels to enable more people to work in better jobs"

By amending Outcome 6, the Executive recognises the critical role that education and skills will play in improving our society and in ensuring that all people, regardless of gender, age or background, will have the ability to access improved educational provision and opportunity in Northern Ireland.

Increased skills levels are also critical in fuelling economic growth, particularly in the context of a reduced rate of corporation tax in 2018. To ensure that the return on this intervention is optimised, we need a population with the appropriate skills, across all levels and subject areas, to service the needs of current and future employers, both foreign direct investment and indigenous companies.

This outcome will require a holistic approach across all Executive Departments. A specific outcome, focused on education and skills, provides an unambiguous priority for the Executive in terms of future strategy and investment. In tackling disadvantage and driving economic growth, it also sends a very strong message internationally that, as a region, we value education and skills and prioritise them accordingly.

In recognising the breadth of indicators identified in the PfG framework, we would suggest the addition of two specific indicators, in support of the amended Outcome 6, which are focused on education and skills:

1. Increase the Number of People Accessing Higher Level Skills

Currently, Northern Ireland exports some 35% of our school leavers to universities in England, Scotland and Wales; our local universities have reduced their intake of local school leavers by over 2,000 due to the 2015-16 budget cuts. This is unsustainable if the Executive wishes to transform Northern Ireland into a globally competitive knowledge economy and to attract increased levels of foreign direct investment.

2. Increased Uptake in STEM Subjects

Higher level education and skills bring enormous benefits to the individual, regardless of the subject area; however, it is recognised that STEM subjects are increasingly important to Northern Ireland's economy and are currently in demand in the local labour market. The Executive should work towards incentivising the increased uptake of STEM subjects, starting at primary level, progressing through post-primary, secondary, further and higher education. It is essential, however, that this is not at the expense of subjects in the Arts, Humanities and Social Sciences.

The two proposed indicators above will have the following Lead Measure - Securing a Sustainable Funding Model for Higher Education

As part of the new PfG, and the associated budget, the Executive must urgently address the structural funding deficit which exists in the higher education sector. Northern Ireland is the only region in the UK which has divested from higher education in recent years. Between 2009-10 and 2014-15, annual block grant allocations from the Department for Employment and Learning (DEL) to the Northern Ireland universities reduced from £214m to £185m – this equates to some 24% in real terms. The 2015-16 academic year saw a further 10.8% reduction in the higher education budget, totalling £16.1m. The impact of this funding reduction has required Queen's University to substantially reduce its undergraduate intake; by 2018-19, we will have over 1,000 fewer places for local school leavers.

On 9 March 2016, the then Minister for Employment and Learning released "Securing a Sustainable Solution for Higher Education in Northern Ireland: An Options Paper^{"1}. The paper highlighted that the student place reductions came at a time when skills forecasts indicated a clear under-supply of degree level skills in the Northern Ireland workforce. The report highlighted that, during the course of the previous Assembly term, a structural deficit in local higher education provision has emerged and grown. With tuition fees uplifted only by inflation, and public investment reducing, a funding gap of between £900 and £2,500 per student (depending on the course of study) has emerged between Northern Ireland's universities and their counterparts in England – this amounted to some £39m by 2014-15. In addition, the further cuts of £16.1m in 2015-16 bring the current total structural deficit to some £55m.

The Options Paper clearly highlights the current level of under-funding, and this is summarised in Table 1, together with the funding required to support targeted expansion.

Table 1: The Funding Challenge

Challenge	Annual Financial Requirements			
	2016-17 £m	2017-18 £m	2018-19 £m	2019-20 £m
Funding Gap	39.0	39.0	39.0	39.0
2015-16 Cuts	<u>16.1</u>	<u>16.1</u>	<u>16.1</u>	<u>16.1</u>
Structural Deficit	55.1	55.1	55.1	55.1
Expansion Ambitions	-	<u>13.1</u>	26.2	<u>39.4</u>
Total	55.1	68.2	81.2	94.5

The University strongly welcomes the additional £20m of funding allocated to higher education, further education and skills by the Minister of Finance as part of the June 2016 monitoring round. This investment, if consolidated into recurrent baselines going forward, will allow us to begin the process of addressing the current funding shortfall. However, the higher education sector requires further, sustained investment to support the ambition of the PfG and the growth of a successful knowledge economy.

Such an investment has the potential to deliver an immediate return for the Executive within the current Mandate.

1. Available at https://www.delni.gov.uk/sites/default/files/ consultations/del/HE%20options%20paper.pdf

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We prosper through a strong, competitive, regionally balanced economy

Queen's University makes an immense contribution to the skills resource and economic capability of Northern Ireland. Some 24,000 students are enrolled on a broad range of courses, at both undergraduate and postgraduate level.

The University is ranked in the top 1% of global universities. Its impact on the economy is significant, generating ± 1 billion of output and supporting over 9,250 full time jobs.

Queen's was the No.1 University in the UK for revenue generated from intellectual property in 2014-15. The University's spin-out holding company, QUBIS Ltd and its associated companies, currently have an annual turnover in excess of £190m and sustain 1,700 high value jobs in Northern Ireland.

We have very strong partnerships with employers, which ensure that we provide a curriculum that prepares our graduates to be employment ready; these partnerships also allow employers access to highly trained graduates. Queen's Careers and Employment Service provides a range of support for students and graduates, including internships, career fairs, international exchange programmes, employability skills and work placements. The University has ongoing contact with over 2,000 local, national and international employers, and we advertised some 1,500 graduate opportunities through our online vacancies website, MyFuture.

Queen's University Graduates (2015)







Queen's spin-out company, Kainos Software Ltd, isted on the Main Market of the London Stock Exchange in July 2015 with a market capitalisation of £225m. Kainos, founded in April 1986, is a high-growth UK based provider of IT services, consulting and software solutions.

Headquartered in Belfast, the company employs over 800 staff across its offices in the UK, Ireland, USA and Europe. The majority of these posts are highly skilled IT professionals generating significant direct benefit to the local economy.

Kainos is a global player and its customers include blue chip corporates such as Diageo and Netflix; and UK Government departments and agencies. It is the UK market leader in providing ERDM solutions to the NHS.

Queen's retains a strong partnership with Kainos at a number of levels, and continues to supply high-tech graduates to the company and to work on collaborative research and development projects.

No. 1 University in the UK for intellectual property commercialisation

in 2014-15

Spin-out company Andor Technology was purchased for **£176m** by Oxford Instruments in 2013



Queen's expertise in modelling hybrid vehicle engines helped Wright Group to secure the **£230m** 'New Bus for London' contract

> A collaborative partner of Almac Group, established in 2001, which has grown rapidly into a **\$600m** company

> > Employs **3,700** staff worldwide

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Queen's has a **£10m** investment programme targeted on reducing its carbon emissions by 10,000 tonnes by 2020

Queen's has, to date, made annual energy savings of **£1.5m** and over **6,000** tonnes of carbon emissions and aspires to become one of the top ten environmentally friendly universities in the world

A new £1.5m Combined Heat and Power (CHP) unit has been installed which generates electricity and captures heat which is used by Belfast City Council, through a partnership with Queen's, in the Botanic Gardens Palm House

The Queen's University Ionic Liquid Laboratories (QUILL) Research Centre brings together chemists, chemical engineers, physicists, pharmacists, and biologists to respond to both societal and industrial demands for low environmental impact chemical technologies

QUILL is the first (and only) research centre in the world to focus on ionic liquids

Research from QUILL was named "Most Important British Innovation of the 21st Century" (Science Museum 2013)

We live and work sustainably - protecting the environment

Queen's recognises its responsibility to ensure environmental and socially responsible practice in all its education and research activities.

The University is committed to an ambitious Carbon Management Plan which seeks to reduce our carbon emissions by 21% by 2020.

Following the implementation of a number of technical projects, together with positive behavioural change by staff and students, the University has delivered annual energy savings of £1.5m and reduced its carbon emissions by over 6,000 tonnes.

Our researchers are leading the world in areas of sustainable energy, green chemistry and environmental protection.

The Centre for Advanced Sustainable Energy (CASE) is an industry-led collaborative research centre hosted by Queen's. £5m funding from Invest Northern Ireland (under the Competence Centre programme) was awarded in September 2013. Since then, CASE has supported 13 collaborative research and development projects; £3.5m of the £5m funding has been allocated to projects supporting in excess of 40 local companies, both large and small.

CASE has wide ranging targets to impact positively on the ability of Northern Ireland industry to help meet the 40% renewable energy targets. Through research and collaboration, CASE helps to increase the competitiveness of business through:

- The development of new products and services
- Increasing the capacity for export
- Creating high value jobs • Increasing business innovation and R&D spend

Pioneer Research Programme: Securing sustainable, affordable energy supplies

Pioneer Research Programme: Designing smart manufacturing systems for tomorrow's world

With rapid developments in the Internet of Things and its coming together with manufacturing Cyber Physical Systems, there is increasing awareness of the potential for embedding this technology in factories of the future through cooperative multi-robot and autonomous systems. The challenge being addressed by this research programme is how to design fully integrated autonomous smart manufacturing systems that can

deliver a step change in capability, efficiency, flexibility, sustainability and quality, ultimately delivering more competitive and environmentally

sustainable manufacturing.







Dr Beatrice Smyth, Mechanical and Aerospace Engineering

sources of energy for the future. Her research focuses on the potent of biogas, in particular grass, slurry and household and garden waste.



We have a more equal society

Queen's is one of the most socially inclusive universities in the UK. The University has an extensive range of bursaries, scholarships and programmes which seek to raise educational aspirations among those from lower socioeconomic backgrounds.

Through the University's Widening Participation Unit, a number of programmes are provided to encourage local young people who are 'most able but least likely' to come to university. The Junior Academy and associated student mentors have engaged with over 1,000 pupils from 20 primary and 14 post-primary schools, while 55 pupils have been recruited to the third Senior Academy.

The University has a long and proud tradition of being a leader in terms of equality and diversity. Queen's has been a member of the Athena SWAN Charter, which aims to encourage and recognise commitment to advancing the careers of women in science, technology, engineering, maths and medicine, since its formation in 2005.

Staff from various schools engage in world leading work on an array of issues, including: human rights, poverty, social exclusion, sexism, racism and other forms of social marginalisation and stigma.

Pioneer Research Programme: Better understanding the links between risk and social inequality

Governments, companies, international organisations and public service providers spend huge budgets on the analysis and assessment of known risks, and seek to develop new risk management technologies and techniques in an effort to manage those risks. A cross-disciplinary group of researchers at Queen's is investigating the relationship between risk and social inequality, taking as its starting point that risks of many kinds – financial, environmental, health-related – pose the greatest threat levels to low income and socially disadvantaged groups. This programme seeks to generate findings that will inform real-world risk management, developing new risk management methods and solutions.









Dr Isabel Hollis

Isabel is working with colleagues to provide greater clarity in our understanding of how memory functions within society, particularly in relation to recognition and validation of minority cultures.

contribution of each society that's been nvolved in the conflict here, to make sure hat memories – whoever's memories they are – are shown to be worthwhile."

At present, 32% of our young first degree entrants are from lower socio-economic groups which places us first amongst the UK's leading universities for widening access

Athena SWAN

The University holds one of only 9 Silver along with **12 Departmental Awards**

Institutional Awards in the UK, (2 Gold, 8 Silver, and 2 Bronze)

which is the largest number in the UK

We enjoy long, healthy, active lives



One of the main objectives of the Institute for Health Sciences (IHS) is to address global challenges in health care by making scientific breakthroughs in mechanisms of disease, translating these to innovative therapeutics and preventive interventions to improve patient outcomes.

As a key element in the IHS, the Centre for Public Health (CPH) is working to identify the risk factors that are important for the health of the individual and of the population, and to develop screening and interventions to reduce the burden of chronic disease in the future. To achieve this, researchers in the CPH have developed a multi-disciplinary programme involving close collaboration between clinical experts and scientists with skills in biochemistry, epidemiology, genetics and statistics. The CPH develops embedded partnerships with communities, practitioners, policy makers and the public, to ensure knowledge co-creation and dissemination. Central to the work of the CPH is that it is patient centred and designed to cater for the needs of those that are hard to reach.

The Institute for Global Food Security supports international teams of world renowned experts, focusing on major research themes, including Human Nutrition and Health. This theme is multi-disciplinary, with research spanning a range of applied and basic research activities aimed at understanding diet-related health issues by systematically examining the relationship between food, health and chronic disease.

We are incredibly proud of our sporting heritage and the key role that sport plays in contributing to a healthy lifestyle. Queen's Sport has over 11,000 public, staff and student members. We also work proactively with students and staff to equip them to manage their health and wellbeing, through a range of support services and by facilitating student-led approaches, such as peer mentoring and the Mind Your Mood student mental health campaign.



Global Research Institute: The Institute for Global Food Security

The World Food Summit of 1996 defined food security as "when all people at all times have access to sufficient, safe, nutritious food to maintain a healthy and active life". At a time when the world's population is growing at a faster rate than any time in history, food security is a global challenge that pervades human health, sustainable economic development, environment, and trade. The Institute for Global Food Security at Queen's was established to lead the development of solutions to the complex problem of delivering safe, nutritious, sustainable, authentic food supplies to the world's population, and has become internationally recognised for its excellence in research and teaching. The vision for the future is to develop an Institute that is unique in its ability to take a holistic approach to food security challenges. The Institute for Global Food Security will go beyond the 'farm to fork' strategy to span the environment-farmfood-health economics interactome to form a unique brand that redefines global food security research.



In partnership with Belfast HSC Trust, Queen's aims to develop a Biomedical Research Centre (BRC), initially focusing on areas of research excellence in Cancer and Respiratory Disease. The objective of the BRC is to improve the translation of world class fundamental research into clinical care through new drugs, new diagnostics and therapeutics.



Global Research Institute: Institute for Health Sciences

and there are many examples of drugs developed for a defined



Queen's received a **Queen's Anniversary** Prize in 2011 for the **Comprehensive Cancer** Services Programme in Northern Ireland

A discovery by Queen's researchers demonstrates that the drug 'Avastin' can treat wet agerelated macular degeneration and potentially save the NHS £84m per year

Istered Nurse

Physical Activity and the

Rejuvenation of Connswater

Researchers in the Centre for Public Health at Queen's are investigating the **impact** of a new urban greenway on health and wellbeing

As well as informing policy on future greenway developments, this is expected to have direct health benefits on local residents

HSC Health an

Queen's discovery of a new drug, 'Ivacaftor', has been approved for use in Cystic Fibrosis patients and is described by the US FDA as 'a revolution in how we treat patients in the future'

Precision Medicine Catapult

The Centre for Cancer Research and Cell Biology (CCRCB) at Queen's University is one of six regional centres for the UK Precision Medicine Catapult

Each centre will act as a hub for research and development in precision medicine, which uses diagnostic tests and data-based insights to understand a patient's illness more precisely and select treatments with more predictable, safer and cost-effective outcomes

Queen's has 40 active KTP partnerships

> In 2016, the University was awarded **Northern Ireland's first Regius Professorship** by Her Majesty The Queen

In 2015, Queen's work on **Cyber Security** was recognised by Her Majesty The Queen, with the award of the **University's 6th Queen's Anniversary Prize**

Our **Centre for Secure Information Technology (CSIT**) is used as the exemplar in the Cabinet Office, BIS and RCUK as to how UK universities could and should impact on wider society

Queen's is home to Northern Ireland's only art house cinema in the QFT, as well as the awardwinning Naughton Gallery. The Seamus Heaney Centre for Poetry reinforces the University's reputation as a world literary force, while the Brian Friel Centre for Theatre Research provides a world-class studio theatre for performing arts students.

We are an innovative, creative society, where people can fulfil their potential

Northern Ireland's greatest strength is its people. We are committed to helping our people realise their full potential and equip them to play a positive role in Northern Ireland's future. We will do this by building on our established strategy of fostering an entrepreneurial culture and promoting the successful transformation of good research into good business through innovation and commercial development.

To realise the full potential of our human capital, the Government must increase investment in our young people, by providing them with the opportunities to acquire the high level skills and attributes essential to power a successful knowledge economy.

Queen's is ranked number 1 in the UK for Knowledge Transfer Partnerships (KTP); since 1993, Queen's has collaborated on 350 successful KTPs, leading to careers for 400 KTP Associates and generating £350m in increased profits for the local companies involved.

Queen's Institute of Electronics, Communications and Information Technology (ECIT) is the anchor tenant of the Northern Ireland Science Park, recently renamed Catalyst Inc. Catalyst Inc supports the employment of some 2,500 high value jobs which generate over £100m each year for the local economy.

Catalyst Inc is home to 110 high-technology companies including multi-nationals HP, Citi, Autonomy and SAP, and locally grown start-ups, including 'spin-out' and 'spin-in' companies from ECIT.

ECIT now houses 175 people, juxtaposing high tech industry engineers and business development staff with academic researchers, in order to accelerate research impact.



Shannon Jones

nannon successfully crowdfunded a new business enture while completing her Law degree. Her business artup, Knowho, is a web based platform to facilitate search proposals. Knowho has secured a place with ntrepreneurial Spark, a business accelerator programme.

"Queen's University is the perfect place t

start a business."



Re-Vana

Queen's startup company Re-Vana has developed a drug delivery implant to treat chronic eye diseases that lead to blindness. Currently, a patient suffering age-related macular degeneration needs an injection into their eye once per month. The cost to the NHS is £18,300 per patient for 24 injections over two years, and the patient suffers pain, as well as probable side effects including infection.

Re-Vana's prototype long-lasting delivery vehicle is a biodegradable implant that treats the patient for four to six months. The monthly injections are therefore eliminated for the length of the implant. The cost saving to the NHS could reach millions, as 23,000 elderly patients each year are diagnosed with age-related macular degeneration.

QUBIS

QUBIS is the University's spin-out holding company. QUBIS companies currently have an annual turnover in excess of £190m and sustain 1,700 high value jobs in Northern Ireland. Spin-out companies from Queen's include Andor (recently acquired by Oxford Instruments) and Kainos, both now highly successful global enterprises, making an enormous contribution to the local economy.

We have more people working in better jobs

94% of Queen's University graduates are in employment or further study within six months of graduating; our graduates are in senior leadership positions in 80 of Northern Ireland's top 100 companies.

The University is committed to providing a world class educational experience to students from all backgrounds. Our track record in this area is exceptional – 32% of young, full-time, first degree entrants are from lower socio-economic groups (SEC 4-7), exceeding our benchmark of 26%.

Queen's approach to education and research is not just about unlocking our students' academic potential, it is also about ensuring they are equipped with the employability, innovation and entrepreneurial skills necessary to enable agencies like Invest NI to attract global corporations and high value jobs to the region. The University's success in educating graduates with these global skills has been a key factor in Belfast becoming the number one destination for foreign direct investment in the UK outside of London.

The Executive has the opportunity to address the structural funding deficit which exists in the higher education sector. Northern Ireland is the only region in the UK which has divested from higher education in recent years. We are currently exporting 35% of our talent base; these young people and their skills are urgently required to transform the local economy.





Billie-Jo McDowell

A care leaver, who grew up in the care system in Northern Ireland, Billie-Jo overcame financial issues and homelessness during her studies to graduate with a BSc (Hons) in Geography.

"The help and support offered across the University, from academic staff to wellbeing staff, has helped me through my three years. Education helped me through the rough times."

CV6 Therapeutics Ltd

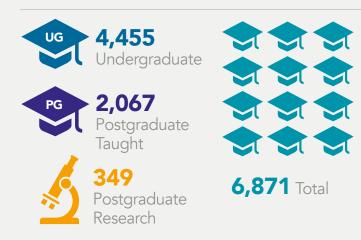
With support from Invest Northern Ireland, California based CV6 Therapeutics Ltd chose to partner with the Centre for Cancer Research and Cell Biology at Queen's on a highly innovative R&D project.

The project, which aims to develop a new drug with the potential to make chemotherapy more effective, represents a total initial investment of £5.5m.



Through the William J Clinton Leadership Institute, we will enable employers to build the capacity to upskill their staff

Queen's University Graduates (2015)



Queen's University is one of the **largest employers** in Northern Ireland with **3,700** staff

Through **ECIT**, we are the anchor research tenant of Catalyst Inc. Our spin-out companies have leveraged some **£75m** of external investment

Graduates earn more than non-graduates with men earning, on average, 28% more and women 53% more

(Earning by Degrees report, 2014. The Sutton Trust) 94% of Queen's University graduates are in **employment or** further study within six months of graduating

Our graduates are in senior leadership positions in **80 of Northern Ireland's top 100 companies** Queen's staff have access to a number of volunteering schemes which **engage with children and young people** and **support the regeneration of deprived communities**

Professor Phil Scraton

In 2013, his research on the Hillsborough disaster was runner-up in the **Times Higher Educational Supplement's Research Project of the year award**. In 2014, an ESPN/BBC documentary, based on his work, was nominated for an **Emmy Award** and, in 2016, he was awarded the **Freedom of Liverpool**.

Queen's project **Prison to Peace** explores how ex-prisoners can engage with young people to **demythologise the prison experience, challenge stereotypes** and promote a **better understanding** of the conflict amongst our young people

> 11,000 of our students are involved in volunteering, clubs or societies, giving their time for others and acting as role models and mentors

We have a safe community where we respect the law, and each other

We are involved in a wide range of programmes in partnership with the local community; we place the utmost importance on working collaboratively with our students in order to keep them safe, whilst at the same time enjoying the benefits of a vibrant, multi-cultural campus.

We encourage students to reflect on their role as citizens and future leaders through our curricular programmes. Our degree pathways all feature elements of citizenship provision and facilitate the development of skills such as communication, leadership, teamwork and creativity.

We also play an active role in our local community, working collaboratively on areas of mutual interest; we are incredibly proud of the work that takes place through the Students' Union. Over 11,000 of our students are involved in volunteering, clubs or societies, giving their time for others and acting as role models and mentors. An excellent example is the homework club initiative, whereby over 200 of our students work in 13 homework clubs across inner-City Belfast - this represents £1.7m worth of volunteering hours on homework clubs alone. Our students also act as excellent role models to the young people they work with on a weekly basis.

The University values its strong partnership with Belfast City Council, in particular the work ongoing through the "Connected Cities" initiative. We are also a key stakeholder in supporting the Council's Employability and Skills Framework.

Global Research Institute: The Senator George J. Mitchell Institute for Global Peace, Security and Justice

Questions about peace, security and justice dominate the discourse of governments, international agencies and civil society today. How can societies emerging from violence resolve lingering grievances? How can they establish peace on a daily basis? How can the competing demands of justice, peace and security be resolved? As a society emerging from conflict, Northern Ireland continues to experience these issues close at hand and can offer insights of significant comparative value. The Institute responds to the unprecedented global challenge of building a peaceful, secure and inclusive world, bringing together the unparalleled expertise at Queen's on these issues. It is distinctive internationally in linking peace-making with social transformation, giving attention to the need for governance reform of state institutions alongside cultural and social processes for healing in society.

The Institute brings together researchers from fields as diverse as Politics, Mental Health, Planning and Computer Engineering, with a cross-national focus, including traditional and modern societies, and historical and contemporary cases. Through research, education and civic engagement, the Institute aims to make a difference to the lives of ordinary people who are struggling with the aftermath of conflict by empowering them to realise fairness, justice and tolerance.







Dr Kieran Connell



Kieran has a strong belief in how best to research and teach contemporary history – involve the people who took part in it. He teaches a module which deals with the 1980s in Birmingham. For Kieran, this is a fascinating time to be teaching this subject to Northern Ireland students, especially in Belfast, which is dealing with issues that have been common in other UK cities and where increasing levels of diversity have led to new community problems.

Professor Phil Scraton

Over 30 years, Phil has conducted in



depth research into official inquiries, criminal investigations and coroners' inquests into controversial deaths. Commissioned in 1989 to research all aspects of the Hillsborough disaster, three critical reports were published – in 1990, 1996 and 1997. His Hillsborough work is part of a broader commitment to critical research: 'It's about being a chronicler. It's about bearing witness to the testimonies of others. It's about gathering otherwise hidden information, contextualising it, making it accessible and challenging official discourse. It's about recovering truth.'

We care for others and we help those in need

Research in areas of Sociology, Social Policy and Social Work continues to advance knowledge and social inquiry in a number of areas.

Children and Young People

Multidisciplinary research examines the everyday lives and experiences of children, young people, parents and carers. This work has a particular focus on emotions, conflict, childhood adversity, coping strategies, and experiences of family lives and relationships.

Social Inequality

Additionally, staff work towards understanding patterns, and the processes behind the broad range of inequalities at the heart of social life are examined by work in this area. Research focuses on poverty, social exclusion, sexism, racism and other forms of social marginalisation and stigma.

Disability and Ageing

The role of the state and social policy in shaping experiences of disability and ageing is examined by those working in this area, with the specific aim of improving key institutions and services. Research on health and illness explores the breadth of social forces which influence embodied social life.

Research within the Centre for Public Health focuses on epidemiology and public health; cancer epidemiology and health services; genetic epidemiology; and nutrition. The chronic diseases associated with ageing are a common theme that runs across all four groups.



Professor Mike Tomlinson

As Professor of Social Policy, Mike is acknowledged as an authoritative voice on economic and social marginalisation. He works on unemployment, poverty and inequality and has always been interested in how such problems are quantified and how they impact communities and individuals.

Much of his research and published work has focused on this area and he was a key member of the team which completed the first-ever Poverty and Social Exclusion study n Northern Ireland, funded by the Treasury and the Office of the First Minister and Deputy First Minister.



Professor Carmel Hughes

Research led by Carmel in collaboration with colleagues in the USA found that 20% of elderly people in care homes were given antipsychotic drugs compared to 1% of those living in the community. The research resulted in the development and implementation of the Fleetwood Model, a pharmacy intervention service in which pharmacists work directly with nursing home staff, which has led to a reduction in the inappropriate prescribing of psychoactive medications.







Dr Bronagh Byrne

Bronagh's work focuses on disability rights and children's rights. She has worked with the NI Commissioner for Children and Young People (NICCY) to look at barriers to effective government delivery for children and examined what children's rights legislation would look like if implemented in Northern Ireland.

Her research also focuses on disability research. "We're trying to shape the disability research agenda in Northern Ireland to make sure that disabled people's voices are heard." Every year, 430 nurses, 50 dentists, 130 pharmacists, 250 doctors and 90 social workers graduate from Queen's

Access Research Knowledge (ARK)

Queen's is a central contributor to ARK – which aims to facilitate knowledge-based policy decisions in Northern Ireland. ARK provides research of critical importance, such as the Northern Ireland Life and Times survey. All of ARK's resources are free to anyone to use.



Science Shop

270 students completed **64 research** projects for the community and voluntary sector organisations

11,000 of our students are involved in volunteering, clubs or societies, giving their time for others and acting as role models and mentors.
5,000 children and young people avail of our facilities and services.

Queen's has 1,800 international students from **75** countries

Queen's has 562 international staff from **78** countries

Belfast has been named the second safest city in the world to visit after Tokyo

Queen's Students' Union has appointed **Diversity Ambassadors** who are responsible for influencing diversity integration amongst the student population

We are a shared society that respects diversity

A key mission for the University is the global pursuit of talent; talent that in turn will have significant local impact. Queen's acts as a magnet to attract world leading staff and students to Northern Ireland.

Students at Queen's come from 75 countries – a rich multicultural mix that enriches learning and living and creates an inspiring environment for the growth of global citizenship. The total international student population has doubled over the last five years to some 1,800.

The Centre for Shared Education at Queen's University pioneered world leading work on shared education, driven by a belief that education at every level and for all ages has a role to play in promoting social harmony in divided and multicultural societies. This work has gained international acclaim and support in the USA, Cyprus, the Balkans and the Middle East.

International students are actively involved in university life, participating in a number of student societies, such as the Chinese Student and Scholar Association and Indonesian Student Society. The University offers a range of international student support services and the Students' Union runs an International Buddy Scheme to help international students settle into university life.











Professor Joanne Hughes

We are a confident, welcoming, outward-looking society

Queen's University is the 24th most international University in the world and ranked 9th in the world for international research collaboration. We are in the top 1% of global universities and we have an excellent international reputation for education and research in a number of disciplines.

Queen's researchers partner with organisations, large and small, local and international, and across the public, private and third sectors. Working together, to share knowledge, insight and facilities, enables us to produce world-class research that delivers commercial, economic, societal and cultural benefits for Northern Ireland.

Queen's collaborates across borders and our global lead partnerships include: Dubai Healthcare City in establishing a new University of Medicine and Health Sciences; and China Medical University in the creation of the China Queen's College (CQC). The College based in Shenyang currently offers a range of Pharmaceutical degree programmes.

We are proud of the role that we play globally and the impact we have locally. We will continue to attract leading academics from across the globe and to increase the number of international students enrolling in the University.

range of Pharmaceutical

degree programmes.

NI is secured by Queen's.





The economic **benefit** of our EU and international students to the local economy is some **£27m**

325 students gained overseas study or work experience on the Erasmus programme during 2015-16

its College of Medicine.



Response to Outcome 10

baggage conveyor

Queen's has, to date, been awarded **32 new Horizon** 2020 grants

Every year, 600 Queen's students have the opportunity to travel outside Northern Ireland to study or gain work-related experience

North America

Pan-STARRS **Science Mission**

The Pan-STARRS Science Mission – the world's biggest camera, based in Hawaii, sweeping and surveying the sky - involves a consortium of leading international universities, including Queen's and Harvard.



São Paulo Research **Foundation Partnership**

Agreement with São Paulo Research Foundation (FAPESP) that will fund early stage joint research collaborations between Queen's academics and colleagues in the São Paulo region of Brazil.



Professor David Phinnemore European Politics

"We are a university which can contribute to a whole range of different policies and debates because of the expertise we have"

lentur

9 of the 12 Northern Ireland Executive Ministers are graduates of Queen's. 26 MLAs are graduates of the William J Clinton Leadership Institute through its Leadership Programme delivered in partnership with Politics Plus

The Knowledge Exchange Seminar Series (KESS)

at the Northern Ireland Assembly promotes evidence-led policy and law-making within Northern Ireland. The first of its kind in the UK, the seminar series formally partners a legislative arm of government with academia

KESS provides a forum to present and disseminate academic research findings to participants and decision makers in the policy and law-making processes, and to the wider public, and highlights the impact of research on policymaking

QPOL www.qpol.qub.ac.uk is

the portal for public policy engagement at Queen's University, supporting academics and policymakers in sharing evidence-based research and ideas on the major social, cultural and economic challenges facing society regionally, nationally and globally

We have high quality public services

Queen's is committed to promoting global thinking locally and we make a significant contribution to developing high quality public services across the globe.

The University works across government to build capacity and support public servants. This work includes training police officers, elected representatives, policy makers, civil servants, and the provision of post-registration training and continuing professional development to a broad range of disciplines and careers.

The University has a wealth of academic expertise that will work in partnership with government to create new models of delivery of public services, based on world leading research and international best practice.

The William J Clinton Leadership Institute provides a range of learning opportunities suitable for public servants and business leaders. The Institute runs a series of Leadership programmes on behalf of the Department for the Economy to help build leadership capacity amongst decision makers and future leaders in the public sector.

Professor Beverley Milton-Edwards

Beverley has undertaken research on policing in transition in deeply divided societies and also on security sector reform in the Middle East. She was principal investigator to EUPOL COPPS in the Palestinian Territories (2006-10), the group brings together significant existing research expertise in Queen's. Many of the scholars involved have published on topics relevant to policing conflict, policing deeply divided societies and policing transitions in conflict transformation contexts of Northern Ireland, South Africa, the Middle East and former Soviet states/Eastern Europe.

Pioneer Research Programme: Using advanced technologies

Without a holistic "molecule to patient" approach to the development of new healthcare products, medicines can be wasted, patients can suffer avoidable adverse effects, or even go untreated. Researchers at Queen's with disciplinary backgrounds in Pharmacy, Chemistry and Engineering are working together to join up the stages involved in creating and delivering new treatments: identification of therapeutic targets, drug discovery, materials science, pharmaceutical formulation and manufacture. This approach aims to have a major impact in the care of all patients, but especially the very young and old: the populations in which medicines can present the greatest risk, but can have maximum benefit.



to improve healthcare outcomes

Comprehensive Cancer **Services Programme**

Queen with a Queen's Anniversary Prize. The Pioneer Research Programme on optimising

We have created a place where people want to live and work, to visit and invest

Northern Ireland must become a magnet for talent, both in terms of retaining our young people, but also in attracting back those who have left; Queen's University is key to achieving this.

Queen's has 562 international staff (15% of the workforce) from 78 countries; we have some 1,800 international students from 75 countries and aim to more than double this number over the next five years.

We also act as an "anchor institution" for Northern Ireland; our world leading academics, staff and facilities attract international investment. One of our key priorities is retaining and attracting world class students and staff; not only do our students and staff benefit from this, but the impact on our society here in Northern Ireland is immeasurable. Our international students, staff and alumni are global ambassadors for not only Queen's but for Northern Ireland.

Invest Northern Ireland regularly states that one of the USPs for investors considering Northern Ireland as an investment opportunity is the availability of a highly skilled, well-motivated workforce; each year Queen's University produces some 7,000 graduates for the labour market.

At Queen's, we are preparing a new generation of entrepreneurs through our undergraduate programmes, all of which incorporate entrepreneurship modules. The courses offered by the University are continuously reviewed to increasingly meet the needs of employers. All degree courses undergo annual programme reviews, and most Schools in the University have an External Advisory Board, including employers.

Culture, Arts and Heritage

Queen's is proud to be a driving force in Northern Ireland's recent cultural, artistic and economic renaissance, celebrating the innovation and creativity of its people and enhancing its reputation as an international centre of learning. The University is home to Northern Ireland's only art house cinema in the QFT, as well as the award-winning Naughton Gallery. The Seamus Heaney Centre for Poetry reinforces the University's reputation as a world literary force, while the Brian Friel Centre for Theatre Research at Queen's provides a world-class studio theatre for performing arts students.

Dr Anna Krasnodembskaya, Centre for Experimental Medicine





Education Tourism

Queen's works closely with Visit Belfast and Tourism NI through its Ambassador programme to attract major national and international conferences to Northern Ireland. Queen's Ambassadors have helped to secure events to the region worth some £20m in economic impact during the past three years. These events not only provide a welcome boost for the tourism economy - they attract global business, government and academic leaders to Northern Ireland, showcasing the region as an inspiring place to visit, to do business and to invest.

Professor Nathan Congdon -Ulverscroft Chair of Global Eye Health, **Centre for Public Health**

his family from Guangzhou, China, to Belfast, in order to take up post as the Ulverscroft Chair of Global Eye Health and Director of the TREE (Translational Research for Equitable Eyecare) Centre. "We were drawn to Belfast not only by the unique professional opportunity and Northern Ireland's excellent schools and beautiful contrysid but also by a strong sense after three visits that this was the place where the family belonged."

Queen's currently has 562 international staff from 78 countries

The **economic benefit** of our EU and international students to the local economy is some £27m

Professor Nathan Congdon -Ulverscroft Chair of Global Eye Health, Centre for Public Health

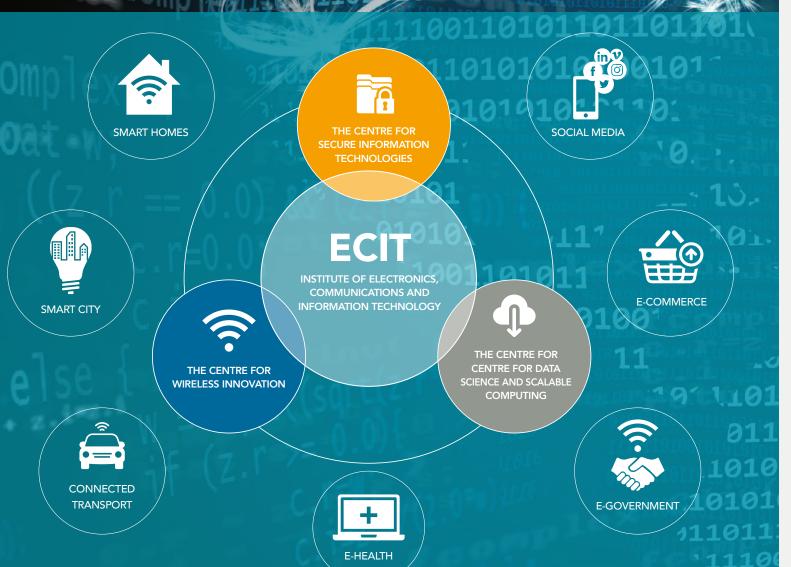
"We were drawn to Belfast not only by the unique professional opportunity and Northern Ireland's excellent schools and beautiful countryside, but also by a strong sense after three visits that this was the **place** where the family belonged"

120,000

of our Alumni live and work in Northern Ireland, deploying their **expertise** and talents to contribute to our society



£350m investment in world-class infrastructure for students and staff, generating **7,000 jobs** in the construction industry



We connect people and opportunities through our infrastructure

The Institute of Electronics, Communications and Information Technology (ECIT) is carrying out pioneering, world leading research in terms of cyber security, driving the future of wireless enabled connectivity, redefining wireless communication and collection, storage, processing, querying, extraction, integration, and analysis of Big Data.

ECIT seeks to transform Belfast into a world leading centre of enterprise and innovation. Host to the award-winning UK national Innovation and Knowledge Centre for Cyber Security, the Centre for Secure Information Technologies (CSIT), the Institute also houses the Centre for Wireless Innovation which is redefining wireless communication and sensing systems, and the Centre for Data Science and Scalable Computing, which is addressing the challenges and opportunities relevant to the big data phenomenon.

At this unique research and innovation campus, recently recognised through a prestigious Queen's Anniversary Prize and the award of a rare Regius Professorship, almost 200 people, including academics, students, engineers and business development staff, work closely with world leading companies and entrepreneurs, taking a business focused and entrepreneurial approach to research.

The School of Natural and Built Environment carries out research across a number of areas that contribute to decision making regarding future infrastructure investments, including Regeneration; Regional Planning; and Healthy Environments.

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Street Society Project

Students from Queen's University are using their expertise in areas such as Architecture, Civil Engineering, Music, Sonic Arts and Anthropology to improve the five Urban Villages in Northern Ireland.

The students work on projects identified by local community organisations and the Strategic Investment Board as areas in need, responding to themes of Health and Wellbeing and Sustainable Economic Development.

Health Sciences Campus

A world leading aspect of the medical research undertaken at Queen's is the integrated approach to patient care. This links leading researchers and heath service professionals, co-located on the City Hospital campus, and enables the translation of excellent research into better outcomes for patients. The Centre for Experimental Medicine (CEM) is based in the new Wellcome-Wolfson Institute for Experimental Medicine which offers access to modern cell biology laboratories as well as cutting edge, state-of-the-art equipment and resources which underpins the high-impact research being performed within the Centre.

We give our children and young people the best start in life

The Queen's Junior and Senior Academies work with post-primary schools across Belfast to raise aspirations and to provide opportunities for pupils who are most able, but least likely, to enter higher education. Pupils gain access to the campus, avail of tutoring and mentoring opportunities and experience a sense of student life. Our students also provide homework clubs to some 250 primary and post-primary pupils in inner-city Belfast on a weekly basis, including in a number of community centres.

Staff in the Maternal and Child Health research group, based in the School of Nursing and Midwifery, have widely recognised expertise in studying high risk groups in pregnancy, childbirth, infancy and childhood. Overall, the programme aims to identify and reduce preventable burden and complexity in women and their families in the perinatal period and in children with long term health conditions or disabilities, recognising that health and wellbeing in the perinatal period and early years of childhood is important for adult health and wellbeing across generations.

The Centre for Effective Education (CEE) is committed to ensuring that educational programmes and interventions are as effective as possible in helping to improve the lives of children and young people, especially those from disadvantaged backgrounds. This commitment to promoting effective education is reflected in an emphasis on being children's rights-based, outcomes focused, and evidence-informed.

Pioneer Research Programme: Understanding what works in tackling social problems through early intervention

Many of the social problems observed in adults – such as unemployment, criminal activity, antisocial behaviour and poor physical and mental health – are inter-related and have their origins in early life.

Acknowledging this, there is an increasing international movement toward early intervention and prevention in public policy. This programme seeks to look at evidence of what works – for families, for schools, for communities, and at the level of government policy – and to use robust evidence to find innovative solutions to pressing social concerns.





Dr Dominic McSherry

A Senior Research Fellow in the Institute of Child Care Research, Dominic carries out research in the area of children in care and adopted in Northern Ireland. He is the Principal Investigator on a number of large-scale research studies, including the Northern Ireland Care Pathways and Outcomes Study which has been following a population of children who were under five years old and in public care in Northern Ireland on 31 March 2000.

This research is making a significant contribution to our understanding of the pathways that young children follow through the care system, and what factors are important for understanding short, medium and longer-term outcomes. Queen's Sport Each week, 4,000 school children benefit from

our facilities

Queen's work on issues of **diversity and inequality in early childhood** has been developed into a programme adopted and embedded in **1,200 pre-school settings**, involving more than **40,000 children**

Queen's highly successful Homework Club enables **200 Queen's students** to provide **very practical support** to primary school children in inner city areas of Belfast

250 pupils have benefited from this intervention

Response to Outcome 14

Some **200** children and young people take part in the Queen's **Junior Academy of Music (JAM)**. There are five programmes within JAM, each tailored to a specific age group. JAM is devised and delivered by internationally recognised musicians and specialised teachers



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