Client
DEL and
Invest NI

Project
Evaluation of the Second Round of the Northern Ireland Higher Education Innovation Fund (NI HEIF 2)

Report
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Invest Northern Ireland

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GLOSSARY

Table 0.1
Glossary of Terms

Acronym	Definition
3M	Third Mission Fund (HEFCW, Wales)
A4B	Academia for Business Programme (HEFCW, Wales)
AFBI	Agri-Food and Biosciences Institute
ANIC	Association of Northern Ireland Colleges
ASEP	Analytical Services and Environmental Projects
AURIL	Association for University Research and Industry Links
AY	Academic Year
BERD	Business Enterprise Research and Development
BIS	Department for Business, Innovation and Skills
BMC	Belfast Metropolitan College
BSSP	Business Support Simplification Programme
CAE	Coordinator of Academic Enterprise
CAFRE	College of Agriculture, Food and Rural Enterprise
CAGR	Compound Annual Growth Rate
CAP	Commercial Advisory Panel
CBI	Confederation of British Industry
CDA	Confidential Disclosure Agreement
CEO	Chief Executive Officer
CHRONO	Centre for Climate, the Environment and Chronology (QUB)
CMS	Content Management System
CNP	Collaborative Networks Programme
CoE	Centre of Excellence
Connected	The project funded by the Higher and Further Education Collaboration Fund (DEL)
CPD	Continuing Professional Development
CRM	Client Relationship Management
CSPT	Centre for Software Process Technologies (UU)
CSR	Comprehensive Spending Review
DARD	Department of Agriculture and Rural Development
DECC	Digital Engineering Competence Centre (QUB)
DEL	Department for Employment and Learning
DETI	Department of Enterprise, Trade and Investment
DfES	Department for Education and Skills (UK)

Table 0.1
Glossary of Terms

Acronym	Definition
DFP	Department of Finance and Personnel
DH	Department of Health (UK)
DIUS (now BIS)	Department for Innovation, Universities and Skills
DTI	Department of Trade and Industry
EA	Economic Appraisal
ECIT	Institute of Electronics, Communications and Information Technology
EIRs	Entrepreneurs in Residence
ESRC	Economic and Social Research Council
F/T	Full Time
FE	Further Education
FTE	Full Time Equivalent
GDP	Gross Domestic Product
GPA	Grade-Point Average (RAE)
GVA	Gross Value Added
HE	Higher Education
HE-BCI	Higher Education Business and Community Interaction Survey
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
HEI	Higher Education Institution
HEIF	Higher Education Innovation Fund
HEROBC	Higher Education Reach-Out to Business and the Community
HESA	Higher Education Statistics Agency
HESES	Higher Education Students Early Statistics Survey
HFU	Horizon Fund for Universities (SFC, Scotland)
HMRC	HM Revenue and Customs
HSC	Health and Social Care
ICT	Information and Communication Technologies
IDB	Information, Diagnosis and Brokerage
IICs	Industry-led Innovation Communities
INI	Invest Northern Ireland
IP	Intellectual Property
IREP	Independent Review of Economic Policy
IT	Information Technologies
KE	Knowledge Exchange

Table 0.1
Glossary of Terms

Acronym	Definition
KEIG	Knowledge Exploitation Implementation Group
KEU	Knowledge Exploitation Unit
KM	Knowledge Management
KT	Knowledge Transfer
KTC	Knowledge Transfer Centre
KTG	Knowledge Transfer Grant (SFC, Scotland)
KTN	Knowledge Transfer Network
KTO	Knowledge Transfer Office
KTP	Knowledge Transfer Partnership
KTT	Knowledge and Technology Transfer
LGD	Local Government District
MTA	Material Transfer Agreement
NESTA	National Endowment for Science, Technology and the Arts
NICENT	Northern Ireland Centre for Entrepreneurship
NISP	Northern Ireland Science Park
NITC	Northern Ireland Technology Centre
NRC	Northern Regional College
NWRC	North West Regional College
OSI	Office of Science and Innovation
P/T	Part Time
PACEC	Public and Corporate Economic Consultants
PfG	Programme for Government
PID	Project Initiation Document
PoC	Proof of Concept
PPRC	Polymer Processing Research Centre
PRC	Publicly Funded Research Centre
PSA	Public Service Agreement
QUB	Queen's University Belfast
QUBIS	Queen's University Belfast Incubation Service
QUESTOR ATU	Queen's University Environmental Science and Technology Research – Applied Technology Unit
R&D	Research and Development
RAE	Research Assessment Exercise
RC	Research Council
RDA	Regional Development Agency

Table 0.1
Glossary of Terms

Acronym	Definition
RDI	Research, Development and Innovation
RIS	Regional Innovation Strategy
RTD	Research and Technological Development
SERC	South Eastern Regional College
SET	Science, Engineering and Technology
SFC	Scottish Further and Higher Education Funding Council
sKTP	Shorter Knowledge Transfer Partnership
SLR	Standard Labour Requirement
SME	Small and Medium Enterprise
SRC	Southern Regional College
STEM	Science, Technology, Engineering and Mathematics
SWC	South West College
THE	Times Higher Education
ToR	Terms of Reference
TSB	Technology Strategy Board
UCS	University Consultancy Scheme
UCSD	University of California, San Diego
UKIRC	UK Innovation Research Centre
UoA	Unit of Assessment (RAE)
UU	University of Ulster
UUJ	University of Ulster – Jordanstown
UUK	Universities UK
VFM	Value For Money
WAG	Welsh Assembly Government
Source: FGS McClure Watters (2010)	

1 EXECUTIVE SUMMARY

1.1 Introduction

This report presents an evaluation of the Northern Ireland Higher Education Innovation Fund 2 (NI HEIF 2). The evaluation covers the period August 2007 to July 2009 and also projects forward to the end of Academic Year (AY) 2009/10 (31st July 2010). This report presents the findings of the evaluation in terms of both the actual and likely / potential achievements and impacts.

1.2 Background

1.2.1 Background to NI HEIF

The Higher Education Innovation Fund for Northern Ireland (NI HEIF) is a joint initiative run by DEL's Higher Education Research Policy Branch and Invest NI's Knowledge Transfer Team to encourage the higher education sector to increase its capability to respond to the needs of business (including companies of all sizes) and the wider community, with a clear focus on the promotion of wealth creation. The long term aim of this funding is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth. It is the primary Knowledge Transfer stream in Northern Ireland providing the core funding for the universities' business and community facing activities.

Aim and Objectives of NI HEIF

The overall aim of NI HEIF is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth.

The underlying objective is to encourage Queen's University Belfast and the University of Ulster to increase their capability to respond to the needs of business (including companies of all sizes), and the wider community, with a clear focus on the promotion of wealth creation.

The fund's specific objectives are to:

- Build on what has been achieved in both universities to date;
- Further release the potential social and economic benefits of the work of NI's universities;
- Help the universities to develop their mission in engagement with business and the community;
- Ensure a lasting culture shift in the universities by making Knowledge Transfer an integral part of the universities' portfolio of activities;
- Develop the responsiveness of the universities to the needs of business; and
- Improve the exploitation of the NI science base.

The key benefits to the universities are:

- Creation of a mechanism to successfully transfer knowledge and technology to businesses, to generate new wealth and to progress towards a knowledge-driven economy;
- Recruiting and training of new technology transfer officers and provision of financial assistance to protect intellectual property;
- Support for the creation and continuation of links with the community and voluntary sectors and public bodies; and
- Networking and interaction between the universities and businesses.

1.2.2 NI HEIF 2

Following the evaluation of NI HEIF 1, DEL and Invest NI launched a second round of three year funding at similar levels to before, but with 80% of the funding now allocated on a metrics/formula basis (administered by DEL) and 20% via competitive bids (administered by Invest NI)[1]. This reflects wider UK Government policy which supports the establishment of permanent and predicable funding streams for university-based Knowledge Transfer activities, thus allowing HEIs to plan and retain key staff. The programme remains a single, joint DEL/Invest NI initiative with the formula driven element administered by DEL and the competitive element by Invest NI.

Budget

The (nominal) budget for the programme amounts to £3 million per annum over three years from Academic Year (AY) 2007/08 to AY 2009/10 and is made up 80% DEL and 20% Invest NI. The nominal allocations are £2.4 million per annum from DEL and £600k per annum from Invest NI as recommended by the review of HEIF 1. However, Invest NI allocated an additional amount of approximately £255k per annum to cover all the projects approved by its Evaluation Panel so the actual ratio of funding is 75% DEL and 25% Invest NI. Therefore the current NI HEIF 2 funding mechanism is based on two main elements:

- 75% of the available monies (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and
- 25% (£0.855m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding and administered by Invest NI.

1.3 Strategic Context and Rationale

Our detailed consideration of the strategic context in which NI HEIF 2 operates (including its contribution to local, national and EU policies; and assessment of the extent to which it has contributed, or has the potential to contribute, to achieving the relevant targets included in the

[1] Funding split was 80:20 but with additional funding provided by Invest NI, the totals are DEL £7.2m and Invest NI £2.565m which equates to 75:25 ratio.

Programme for Government) contributes to the understanding of the original rationale for the intervention and allows us to conclude on market failure.

The fundamental importance of HEIs to the UK economy is widely recognised – they have a vital role to play in producing high quality research. By building on this foundation it is possible to realise economic and social benefits through Knowledge Transfer which is a driver of innovation which in turn contributes to competitiveness and economic growth potential.

Within the UK (including NI) over the last decade, there is evidence of culture change, increased activity and increased capacity of the HEIs to engage with industry. It is important that this trend continues with HEIs ensuring that they are responsive to the current needs of the economy.

However, there remains a need for government stimulation of business-university collaboration. A number of documents reviewed highlight the role of government intervention in stimulating collaborative activity between HEIs and businesses. Some provide evidence that the steady increase in collaboration over time is attributable to government support and call for the continuation of this intervention.

The NI strategies and policies are consistent with those in the rest of the UK and call for the promotion of innovation as a driver of economic development. This is consistent with the Programme for Government's PSA 1 and PSA 3 targets (productivity growth, increase in employment aims). Through providing support for innovation, NI HEIF 2 has the potential to contribute to PfG targets both by supporting businesses to innovate (contributing to productivity improvements) and through commercialisation activity (which many aspects of NI HEIF 2 support) there is scope to generate employment opportunities (as well as economic growth, sales, exports, etc.) in spin-out companies.

There is evidence that HEIF 2 funding supports the multi-sectoral multi-disciplinary approach to market espoused by MATRIX and that HEIF 2 supported activities are consistent with MATRIX.

However, NI has the second lowest level of innovation activity in the UK and DETI research has shown that the proportion of NI businesses that were innovation active has remained largely unchanged over the three-year period 2004-06. This strengthens the case for government intervention. This is supported by evidence in a number of papers which show that public intervention has historically increased the level of engagement between HEIs and businesses in NI. There is therefore potential to further improve these relationships through continued funding commitment and support. Further opportunities arise from NI's unique situation as a region within the UK – with a devolved administration, resources are allocated to innovation and there is a more immediate relationship between policy and practitioners. The innovation infrastructure is embedded in two high quality universities.

Promoting economic impact resulting from business-university collaborative activity is also highlighted as a key strategy in emerging from the current recession. Innovative, collaborative working between HEIs and businesses will improve company productivity and competitiveness as well as contribute to the national economy.

Failure to focus on developing a Knowledge Intensive economy would leave Northern Ireland to compete on a cost basis globally. This is not a strategy which will lead to success. It is

therefore imperative that the Knowledge Economy set out in Northern Ireland's economic vision becomes a reality. NI HEIF is key to contributing to that goal if it focuses on those elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D collaborations and supporting spin-outs.

Under the Regional Innovation Strategy (RIS), DETI / Invest NI and DEL have undertaken to establish a permanent Third Stream of funding based on proposals set out in the UK's Ten Year Science & Innovation Framework (2004-2014). Accordingly, this review of NI HEIF 2 will inform the creation of the third round which is due to commence August 2010 (running for three academic years).

Technology / Knowledge Transfer is vital to the growth of the Northern Ireland economy. It is critical that the research and knowhow within the universities is used to develop and build competitive companies. Our evaluation has shown that NI HEIF 2 plays a central role in supporting the universities to deliver on this role and that it is being successful at targeting and involving new SMEs in working with the universities. This work is so crucial to developing a Northern Ireland economy that can withstand the cost competitive pressures from the Far East and Asia, that the universities need to be encouraged and supported to deliver even more technology transfer deals and outcomes.

1.4 NI HEIF 2 Performance

In Section 4, we describe the activities and funding under NI HEIF 2 and performance against these. This demonstrates that QUB and UU have both put in place a range of initiatives which have been effective – in meeting targets and attracting positive feedback from participants.

Effectiveness of NI HEIF 2 in addressing its stated aims and objectives (Aug 2007 to Jul 2009) and projected activity to Jul 2010

Performance under NI HEIF 2 has contributed to the overall aim of HEIF - to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth. Considering the metrics which are monitored as part of NI HEIF 2 funded activities there is evidence of most targets being achieved and in some cases by a significant margin. These are all relevant for improving innovation performance.

- QUB DEL NI HEIF 2 funded activities (Table 4.4): nine of 12 metrics achieved including five relating to income generation as a result of e.g.: licences, contract research, consultancy, facilities and equipment related services, KTP as well as metrics relating to patent applications and patents granted.
- QUB Invest NI HEIF 2 funded activities (Table 4.5): metrics for five funded projects, all contributing to innovation, are virtually all on track to be achieved.
    - Marketing and Sales support for existing spin out companies to increase sales, export sales, and jobs (latter likely to be adversely affected by the economic downturn);
    - Enterprise Fellowships which ultimately aim to establish Global Start businesses;

- promoting innovative digital manufacturing techniques;
- encouraging new product development and support for R&D funding for Polymer Processing companies; and
- encouraging technology transfer through QUESTOR membership.

- UU DEL NI HEIF 2 funded activities (Table 4.9): most (19 out of 24) metrics achieved; others are part achieved. All are relevant to improving innovation performance and include supports for IP, Technology Transfer and KT through materials, workshops, provision of academic enterprise and commercialisation funds, consultancy income, technology disclosure, income from IP and pre-PoC / PoC projects.
- UU DEL NI HEIF 2 funded activities (Table 4.11): nine of eleven metrics achieved including six relating to income generation as a result of e.g.: KTP, IP, contract research, consultancy, equipment related and regeneration; as well as metrics relating to number of business and non-commercial interventions.
- UU Invest NI HEIF 2 funded activities (Table 4.12): five of eight metrics achieved, all contributing to innovation. These are: new technology disclosure, pre-PoC projects, new UK patent filings, investment proposals to UUTech Board and spin outs / licensing deals.

There is also evidence that NI HEIF 2 funding contributes to the underlying objective: to encourage Queen's University Belfast and the University of Ulster to increase their capability to respond to the needs of business (including companies of all sizes), and the wider community, with a clear focus on the promotion of wealth creation. This is evident when we consider performance from AY 05/06 (benchmark year on which NI HEIF 2 funding based), AY06/07 (baseline year immediately prior to NI HEIF 2) and into the period of NI HEIF 2 funding (from AY 07/08 to AY 08/09 and AY 09/10) in Tables 4.4, 4.5, 4.9, 4.11 and 4.12, we see that this has generally increased across a wide range of metrics. This demonstrates an increase in university engagement with business and community groups / social enterprises as well as several income generation (and other) metrics hence demonstrating an increase in the capacity of the universities to cater for the needs of business and the wider community.

An indication of how universities' current capability / response to needs is perceived is evident in satisfaction ratings obtained through surveys. However, in terms of how well QUB and UU respond to the needs of business in particular, feedback from business stakeholders indicated that there was a need for the universities to do more to identify the needs of businesses (this is addressed in Recommendation 12 – Knowledge Transfer Strategy and the need for business-led initiatives).

Considering the other specific objectives for NI HEIF – the performance information in Section 4 indicates that QUB and UU have generally achieved these:

- **build on what has been achieved in both Universities to date** - there is evidence of consolidation of previous activity and further developments from this solid foundation.
- **further release the potential social and economic benefits of the work of NI's universities** – there is evidence of increases in university engagement with business and community groups / social enterprises hence releasing social and economic benefits of

universities. In terms of evidence of benefits, this tends to be qualitative rather than quantitative e.g. impacts reported in surveys.

- **help the universities to develop their mission in engagement with business and the community –** there is evidence of an increase in university engagement with business and community groups / social enterprises hence contributing to the Third Stream aspect of the universities' mission.

- **ensure a lasting culture shift in the Universities by making knowledge transfer an integral part of the Universities' portfolio of activities** – there is evidence of more engagement from academics and feedback from external stakeholders who have observed and welcomed a shift in culture within the universities; however, this is an area in which there is felt to be scope for further development; the development of an overarching KT strategy (Recommendation 12) should help in this regard.

- **develop the responsiveness of the Universities to the needs of business** – partly achieved – e.g. engaging with businesses who have not previously done so (also addressed in Recommendation 4) – but timeliness and communication are areas highlighted for improvement from the surveys. There is a need for the universities to be more proactive and, as noted by external stakeholders, to do more in this area by actively seeking out and understanding business needs. (See Recommendation 12 – Knowledge Transfer Strategy and need for business-led / drive input to provide a robust evidence base drawn from engaging with businesses to identify their needs).

- **improve the exploitation of the NI science base** - this has been achieved – but there is a need for a more explicit link between activities and overall policy / strategy. (See Recommendation 12 - KT strategy per university which includes a clear statement of how NI HEIF supported activities (and other funding streams) contribute to overall policy / strategy).

Performance of NI HEIF 2 to date against targets

Considering the metrics which are monitored as part of NI HEIF 2 funded activities there is evidence of most targets being achieved and in some cases by a significant margin. A minority of metrics are currently Partly Achieved – but with a relatively small shortfall; even allowing for projections in Year 3 these will not be met. Overall, for both QUB and UU, performance is on track with regard to performance against the majority of defined indicators.

Assessment of Target Setting Methodology

The majority of targets are input / output focused, which are appropriate in themselves but the overall view of performance would be enhanced by additional targets which also consider impacts / outcomes. Ideally targets should link to the wider policy framework and impacts associated with that relating to innovation i.e. ultimately economic impacts evidenced in job creation / maintenance; quality of jobs, sales, exports, etc; continued changes in culture / attitude in universities towards working with business and community groups.

A further challenge – relating to both Performance and Targets - exists in isolating the effect of the NI HEIF 2 funding, as there are many other sources of funding contributing to these areas of activity within each university. We feel that that the complexity of the various

schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than one source of funding) gives rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source that specifies all the monies in (e.g. from Connected, HEIF, Innovation Vouchers, PoC, etc.), what this is used for and what overall outcomes are achieved. Therefore, under the current arrangements and based on available information, it is not possible to categorically state that there is no duplication / overlap in funding streams or in outputs/ outcomes attributed. Overall, therefore, the targets set are appropriate but would be enhanced by complementary targets which consider outcomes / impacts and take into account the contribution of other interventions.

Base Case

In the absence of NI HEIF 2 funding which has developed and built on the achievements of the NI HEIF 1 funding stream (2004-2007), the universities' Third Stream missions, underlying KT activities and wider business and community engagement would all have been adversely affected. Whilst some of this activity would have continued in the absence of NI HEIF funding, this would have been in a much more ad hoc and fragmented way.

To further illustrate the base case situation, we can consider (from survey results), the extent of usage of KT interventions prior to supports funded through NI HEIF 2:

Clearly therefore, the vast majority of NI HEIF 2 beneficiaries that we surveyed (56% of SMEs, 90% QUB CPD participants, 85% of voluntary and community groups and 86% of students) had not undertaken KT interventions prior to NI HEIF 2; in the absence of NI HEIF 2, the impacts discussed in Section 4.4 would not have been achieved and the NI HEIF objective (to further release the potential social and economic benefits of the work of NI's universities) would also have been negatively affected.

The survey results also indicate that some respondents would have found some alternative means to achieving their project in the absence of NI HEIF; but relatively few respondents suggested these alternatives.

Additionality

Additionality is generally moderate to high when both partial and full additionality are considered:

- **SMEs –** generally very high when we consider both full and partial additionality;
- **Academics** – generally at a moderate level (at least one third and up to two thirds in some cases) when we consider both full additionality and partial additionality together;
- **CPD** – generally high when considering both full and partial additionality i.e.: 32% full, 47% partial;
- **Voluntary & Community Groups** – generally high: 80% full, 15% partial;
- **Students** – generally high: 76% full, 19% partial.

There is evidence of some deadweight and this links through to the issue of the need for clarity around the use of funding and attributing impacts to funding streams (see Recommendation 12 – KT strategy).

Displacement

Under the discussion regarding Base Case, we consider (from survey results) beneficiaries' responses to the question: *if KT support from the universities had not been available, how would you have gone about undertaking the project that the KT support under HEIF 2 has enabled them to?*. This indicates that there is some deadweight but that this is not high – apart from academics and CPD participants - considering the number of respondents who indicated that they would consider alternative routes to achieving the same result.

- SMEs – across all of the interventions less than a quarter (23%) of respondents suggested alternatives to achieving their project (responses in Table VI.24 in Appendix VI);
- Academics – the majority (78%) provided responses in terms of achieving the same outcome in another way (illustrated in Table IX.11 in Appendix IX);
- CPD participants – 74% of respondents provided responses (illustrated in Table VII.14 in Appendix VII);
- Voluntary and Community Groups – 15% provided responses in terms of achieving the same result in another way (see Table VIII.14 in Appendix VIII);
- Students – 33% provided responses in terms of achieving the same result in another way (illustrated in Table X.12 in Appendix X).

Whilst potential alternatives to achieving the same result are proposed by some respondents, some of these might take longer to achieve or have less of an impact than the NI HEIF 2 supported activity (as indicated in the proportions attributed to partial additionality above).

Considering displacement, of the respondents who suggested alternatives to NI HEIF 2 funded activity, many of these involve the individual or organisation either resourcing the activity themselves or in some cases (mainly for academics and CPD respondents) seeking alternative providers. Such alternative approaches are ad hoc and would detract from the integrated / joined up approaches to knowledge transfer that have been embedded within the HEIs.

Effectiveness of NI HEIF 2 in advancing the Universities' Knowledge Transfer strategies

In Section 5.3.2, we describe the Institutional Plans which each HEI has been required to provide as a condition of its DEL NI HEIF 2 funding. These include the key indicators against which the HEI's performance is tracked; as already noted good progress has been made against most of these. These plans represent an overall view of KT for each institution.

As discussed in Section 5.5 and Section 7.2.3, there is an opportunity to have the universities provide more detail within their Knowledge Transfer strategies – particularly in terms of how

their plans and activities will link to PSA objectives and targets, the exploitation of opportunities described in the MATRIX reports and proactive engagement with other KT stakeholders.

Overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support

Costs

Overall costs associated with NI HEIF 2 (from DEL and Invest NI) amount to around £3.255m per annum over 3 years. QUB has received £1.530m per annum over 3 years from DEL and £0.451m per annum from Invest NI. The corresponding amounts for UU are: £0.870m per annum over 3 years and £0.404m per annum over 3 years.

Overall Impacts / Benefits

As noted above, good progress has been reported against most of the indicators on which QUB and UU are tracking their progress. These tend to focus on inputs / outputs and provided evidence of the impact of HEIF 2 funding in terms of increased university engagement with business and community interests. These cover a range of areas including:

- **Business:** evidence of higher levels of engagement in R&D and innovation supported by the universities through licensing, contract research, consultancy and KTP opportunities, etc. - leading to improved business performance, productivity and ultimately competitiveness;
- **Academics**: enhanced entrepreneurial and commercial culture leading to greater levels of commercialisation and exploitation of the science base;
- **Community**: greater levels of engagement and more effective collaboration between the university and wider community stakeholders leading to greater capacity within the sector.

Feedback from surveys also provides details of the impacts on those who have been directly involved in NI HEIF 2 funded activities. Amongst SMEs surveyed, respondents noted the following impacts:

- the most common areas in which impacts were noted were sales / turnover, staff, efficiency savings as well as softer impacts such as increase in knowledge / understanding / information sharing; and develop new product / service / ways of working.
    - Areas in which up to about one fifth of respondents felt there were ***significant impacts*** included: technology transfer (22%), research collaboration (20%), increase in profit (6%), increase in employment (6%), increase in sales (9%);
    - Areas in which between one fifth and up to one third of respondents felt there was ***some impact*** included: Areas in which there was felt to be some impact included: improvement in existing skills / expertise (mentioned by 34% of respondents); increased investment in product development; (32%); increase in profit (25%), increase in employment (16%), and increase in sales (20%); and

- A significant minority of respondents (18%) felt that it was too early to comment on impacts and a similar number (20%) reported that there had been no impact (to date).

Amongst academics surveyed, at least two thirds of respondents reported high levels of impact (some or significant) in the following areas:

- Greater awareness of benefits of working with business;
- Greater awareness of commercialisation process;
- Actively seeking opportunities to work with business;
- Greater involvement in technology transfer;
- Collaborative research with business;
- Developing new technology;
- Networking / collaboration.

Wider / Regional Impacts

At a wider / regional level, the improved infrastructure for KT in both Universities allows them to offer a more responsive / appropriate service to business, academics and the wider community. The wider and regional benefits that accrue from the programme include:

- Supporting entrepreneurship – including amongst academics;
- Strengthening university linkages with businesses;
- Strengthening university linkages with community;
- Increased business investment in R&D;
- Job creation – particularly higher skills levels; and
- Increasing levels of innovation.

Value for Money

Our analysis suggests that the NI HEIs fare reasonably well in terms of funding received. There is also some evidence of improving efficiency in how this funding is used and that the HEIs are effective in achieving results with the funding made available to them. However, there is scope to examine management costs in some more detail.

Where information is available, the analysis shows that NI HEIs are in a good position (in terms of increasing levels of funding leveraged) relative to counterparts in other parts of the UK in terms of what they are achieving. The relatively small (in HE terms) investment of £3m pa is leveraging up to circa £55m (in AY 2008/09).

NI HEIF funding underpins outreach activities to business and the community in both HEIs and sits amongst a range of other interventions and supports. Given the complexities of the various funding streams currently received by the universities and the difficulty in isolating the

impacts of one particular funding stream (this issue is discussed further in Section 7.4.1), we cannot completely isolate NI HEIF 2 impacts (a common issue for many initiatives). However, evidence from the PACEC report assists in identifying the impacts attributable to NI HEIF 2 funding.

The PACEC report indicates that, for England, between £2.9 billon and £4.2 billion out of the total £10.3 billion generated through knowledge exchange engagements between 2001 and 2007 can be grossly attributed to HEFCE KE funding (i.e. HEIF) either directly or indirectly. However, this almost certainly underestimates the true impact as many of the outputs cannot be easily monetised. Extrapolating from this research, we could estimate that around 35% of the £55m KT income levered by the HEIs in AY 08/09 is likely to be attributable to NI HEIF 2. This gives a return of around £18m against an investment of just over £3m which represents good value for money. It is also worth highlighting that this is likely to be an underestimate of the impact as:

- many of the outputs cannot easily be monetised; and
- this represents the benefit to the HE sector only and does not take into account income that companies have received arising from KT/research activity.

Change in Performance from NI HEIF 1 to NI HEIF 2

In Section 5.3.4 and Table 5.5 and Table 5.6 we discuss the annual out-turn of the metrics used in the allocation of NI HEIF 2 funding since the initial allocation of NI HEIF 2 funding i.e. for 07/08 and 08/09 and projections for 09/10 where information is available. These reflect the impact of moving from a purely competitive system under NI HEIF 1 to a predominantly metrics based allocation model under NI HEIF 2 (particularly the 08/09 and 09/10 data more so than the 07/08 data where the new system had only been in place one year). Historical data for AY 2005/06 and AY 2006/07 is also presented.

The available data clearly shows that there has generally been an upward trend in the metrics from 2005/06 on. There have been some notable increases in income and in particular on the metrics which are part of the HE-BCI survey e.g.: IP income, contract income, consultancy income, equipment income all show significant increases in both QUB and UU. There is also evidence of increasing numbers of interventions with both SMEs and non-commercial organisations in both QUB and UU – these substantial increases have taken place with only relatively small increases in the number of business and community facing staff. This indicates that there has been a change in focus and activity in both QUB and UU with the metrics against which the universities are being measured (and reporting on) clearly influencing the types of activity being undertaken in order to drive up performance in these areas.

Equality (Section 75) and DDA Requirements

Both universities have policies and strategies in place to ensure compliance with Equality and DDA legislation across the board and NI HEIF 2 funded activity is no exception to this.

1.5 Funding Mechanism for NI HEIF 2

The Funding Mechanism for NI HEIF 2 is discussed in Section 5. This demonstrates the focus on metrics based funding allocation has had a strong influence on driving up performance in those areas which feature in the metrics based formula. We have also considered future funding mechanisms for NI HEIF, also taking into account other approaches to funding. (In Section 8 Benchmarking we consider approaches and levels of funding in England, Scotland and Wales. A range of funding models is used in each of these countries including metrics based, core and competitive. We set out the advantages and disadvantages of each approach in Section 8.)

The current NI HEIF 2 funding mechanism is nominally based on two main elements:

- 80% (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and
- 20% (£0.6m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding, and administered by Invest NI (as explained at 1.2 above, the actual Invest NI contribution is approximately £0.855m per annum).

Under current arrangements, the funding streams are administered and managed separately with separate terms and conditions and reporting requirements. As a condition of DEL funding, both HEIs are required to produce 3 year Institutional Plans and, as a condition of both funding streams, each HEI is required to produce a progress report (annually for DEL, quarterly for Invest NI).

In Section 5, we describe four alternative funding options for the future of NI HEIF 3 and discuss the advantages of each of these:

- Option 1: “As-Is” - i.e. nominal 80% metrics allocation and 20% competitive allocation.
- Option 2: a 100% metrics allocation.
- Option 3: Knowledge Transfer Strategy Linked Funding Model, 100% competitive funding with funding allocated on the basis of the quality and content of the strategy.
- Option 4: Hybrid funding model which would provide an element of fixed, non-competitive funding as core or foundation funding to be focused on strategic / longer term planning allocated in equal portions to the two universities (similar to the Scottish and Welsh models); the balance would then be based on a formula (i.e. the metrics-based allocation) to be linked primarily to the HE-BCI survey data per the existing model, thereby facilitating a degree of continuity between NI HEIF 2 and NI HEIF 3. The totality of the core / foundation funding and formula based element would be provided by DEL on the approval of the KT Strategy.

Our analysis shows that Option 4 - Hybrid Funding Model offers the best way forward. It balances the need to link to Government strategic priorities for KT with the need to minimise any significant changes to university funding for HEIF, which in turn will allow a greater degree of strategic planning and the retention of key Knowledge Transfer practitioners. This approach would require the universities to:

- be more strategic than they are required to be at present and, through the development of a KT Strategy, they would set out how they can contribute to KT priorities that derive from DEL / DETI objectives and targets (e.g. demonstrating how each institution will take forward opportunities identified in MATRIX).
- ensure a continued focus on the new HE- BCI measures.

Based on approaches in Scotland and Wales, we are proposing that initially 20% is allocated by core / foundation funding and 80% allocated by formula (metrics based). This should allay any concerns in the universities around security of funding. Many of their economic initiatives take up to 3 years to show success and as they have invested the NI HEIF 2 funding in getting many of their supports well established, insecurity about funding could put future plans at risk.

However, we would see that the opportunity exists, over time, to gradually increase the proportion of funding allocated to core / foundation funding on the basis of an approved KT Strategy, therefore emphasising the importance of directing the NI HEIF resources to where they are most needed and contributing to the Northern Ireland economy, while retaining a key role for metrics allocations which undoubtedly foster improvements in performance.

1.6 Management and Structures

Management and Operating Structures in DEL and Invest NI and Mechanisms and Structures in the Universities are considered in Section 6.

The review of management and operating structures within DEL and Invest NI indicates that there are relatively low resource costs involved in delivering the programme in its current format. DEL, in particular, highlights the advantage of awarding NI HEIF 2 funding as part of the block grant as contributing to the lower resource requirement.

This is not, however, the primary reason for / advantage of adopting a formula based allocation. Rather, it is instead driven by the need for permanent and predictable funding streams to allow the universities to plan effectively and retain key staff on permanent contracts consistent with the wider UK Government policy as set out, in particular, within the Science and Innovation Investment Framework (2004 – 2014) following the recommendations of the earlier Lambert Review. This approach is also strongly welcomed by both QUB and UU.

However, clearly having two separately funded programmes requires two management structures. Further efficiencies could be achieved by having NI HEIF managed by one Government body, as is the case in the three other UK administrations. Given that the bulk of the monies are being delivered by DEL and it has responsibility for the core funding of the HE sector in Northern Ireland, it would be most efficient, and indeed appropriate in policy terms, if all the NI HEIF monies were to be managed by DEL. Feedback from the universities indicates that having two separate funders means that there is a degree of duplication for them in managing, monitoring and reporting on their NI HEIF 2 funding allocations. The universities' expressed preference is that DEL manages all the funds, thereby streamlining this aspect of the process and creating further efficiencies for the universities. It would also place them on the same footing as their GB counterparts which receive their core KT funding

direct from the GB Funding Councils (the role that DEL fulfils in Northern Ireland as well as that of Government Department).

The review of structures and resource costs within the universities indicates that both institutions have established mechanisms and structures to manage the NI HEIF 2 funds. This should ensure that the universities are able to help identify the needs of companies / academics etc. and to ensure they are matched to the best possible support within their institution. However the proportion of management costs in UU are considerably above those costs in QUB as a percentage of the funding allocated.

1.7 Fit of NI HEIF 2 with counterpart initiatives

In Section 7, we consider the wider innovation and KT environment: it is apparent that NI HEIF has a cross-cutting role in supporting KT activities and is integral to the KT environment. Section 4 highlights that NI HEIF plays an enabling and facilitating role, by ensuring that the infrastructure is in place to allow KT to take place. Therefore, it underpins many of the other KT initiatives which tend to have a more specific focus and area of operation.

With the infrastructure established under NI HEIF 1 and NI HEIF 2, the HEIs (and businesses) are well placed to take advantage of the potential of KT going forward. However, a difficulty arises when trying to assess the VFM of NI HEIF separate to the other innovation supports available within the universities. There are linkages and inter-dependencies which make it impossible to isolate the outcomes specific to NI HEIF monies.

As described in Section 7, the complexity of the various schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than 1 source of funding) gives rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source that specifies all the monies in (e.g. from Connected, HEIF, Innovation Vouchers, PoC, etc.), what this is used for and what overall outcomes are achieved.

Therefore, it is essential to have overall plans from both universities demonstrating how **all** the programmes / initiatives link together to deliver the KT outcomes. Through the Regional Office and KEU in QUB and the Office of Innovation (Innovation Services and Business Liaison Office) in UU, there is scope to ensure that the range of KT activities within each university is co-ordinated and interdependencies managed. Ideally, all the KT resources could be considered together alongside all the KT programmes and the outputs / outcomes delivered by these resources examined in total.

This analysis is beyond the scope of a review of NI HEIF, however we recommend that the universities are required to prepare KT strategies. These should set out the needs being serviced (based on robust evidence of the needs of target beneficiaries); the activities being delivered, the outputs / impacts to be delivered and the range of funding (amounts and sources) being used and how they link together. These KT strategies need to demonstrate that there is no duplication of funding.

Given the Knowledge Transfer Framework described in Section 7.2.1, the development of the KT strategy should embrace any programme / initiative which sits within this Framework. All university KT activities need to:

- explicitly demonstrate the contribution that each programme / initiative makes to the KT high level targets;
- take into account the wider policy framework (including e.g. Programme for Government, Regional Innovation Strategy, Matrix, New Industry New Jobs and the Technology Strategy Board) in order to define the expected contribution of the KT strategy to this and to take on board strategic direction such as Matrix messages around business leadership;
- identify where support is needed and will be focused (based on business needs / industry led / industry driven in keeping with MATRIX recommendations rather than academia determining markets) to ensure there is a balance across the types of interventions / activities required;
- take into account other interventions (e.g. Connected, PoC, CNP, TSB, etc.) and linkages / complementarity with these and define any joint approaches (e.g. this might be the university working proactively in partnership with HSC Innovations, etc.).

From our review of the KT environment, we have identified one area in which there is particular scope to improve linkages – i.e. with other KT activities outside the universities e.g. AFBI, Health and Social Care Innovations, etc. Whilst there is some interaction currently, this could be undertaken more effectively in a proactive rather than reactive way. We recommend that universities are required to proactively develop opportunities with AFBI and Health and Social Care Innovations. The universities should also seek to ensure that their KT strategies take account of other work underway for example the work of NISP Connect which is collaboration between NISP, UU, QUB and AFBI.

1.8 Benchmarking

In order to consider NI HEIF 2 in a wider context, in Section 8 we consider approaches to KT funding in England, Scotland and Wales and review data on funding levels and performance measures. From this analysis, we can conclude that:

- There are a variety of approaches to allocating funding (including focus on outcomes) – including core / foundation, metrics based and competitive. Within some of these approaches, there are a variety of components and associated weightings used as a basis of determining levels of funding. Each approach has advantages and disadvantages relating to a range of factors including: ability for government to influence how funding is used, focus on outcomes / impacts or activities and outputs, stability of funding / planning in HEIs, driver of improvement / quality, ease of administration, resources spent in securing funding, etc.
- Measuring outcomes and impacts is a common challenge as is the challenge of attributing outputs to a specific initiative when more than one intervention (outside of e.g. HEIF 2 support) may have been employed. The proposed funding mechanism (Recommendation 9) linked to a Knowledge Transfer Strategy (Recommendation 12) seeks to overcome these challenges by introducing a requirement for universities to produce a KT strategy which would include a greater focus on targets relating to outcomes and impacts and clearer links between achievement of these targets and funding which has enabled this.

- **Levels of funding** – Overall there is a trend towards increasing investment in KT across the UK.

  Considering the **average** level of funding per institution per annum, it is evident that NI HEIF 1 and NI HEIF 2 have provided the highest levels across all years and all funding bodies (within the UK). This is to be expected given that Northern Ireland is unique in the UK context in that 100% of its HE sector (i.e. that which attracts HEIF funding - consisting of only QUB and UU) is both large in scale / capacity and research intensive in nature / character. The next highest levels are in Scotland (08/09 and 09/10) and under HEIF 4 in England (the average includes the recently announced 11.9% uplift for 2010/11); the lowest average levels are in Wales (where a much smaller proportion of HEIs are both large scale and research intensive).

  Recent research considering funding from another perspective (relative to academic staff), showed that NI fared less well than elsewhere in the UK. The NESTA Report - Measuring and Mapping Absorptive Capacity in UK Nations and Regions (2008) – notes that NI has low absorptive capacity (this refers to a firm's ability to identify, assimilate and exploit knowledge from external sources) and that it has a low ranking on a range of measures associated with absorptive capacity. One of the sub-measures shows that NI has the lowest funding (taking into account the total value of business-university collaborative research, research contracts and consultancy contracts) relative to the number of academic staff of all the UK regions.

- **Comparison of similarly ranked universities –** A comparison of similarly ranked HEIs (using the Times Higher Education Table of Excellence) is inconclusive – it shows that there is a wide range of variation in the levels of core KT funding amongst this group of 18 similarly ranked HEIs:
  - QUB receives the fourth highest levels of funding amongst this group of 18 HEIs;
  - UU receives a relatively low level of funding amongst this group of 18 HEIs.
  - there is a wide range of variation in the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding);
  - there does not appear to be a clear correlation between the Times Higher Education ranking and either the level of KT funding or the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding).

1.9 Recommendations

Recommendation 1: Continuation of NI HEIF Funding Stream

Given the importance of KT to building and developing competitive companies in NI, and the important role that NI HEIF plays in enabling HEIs to support companies in this way, together with links to the wider policy context, we recommend that the NI HEIF funding stream is therefore continued as a permanent stream of core HEI activity alongside teaching/learning and research.

Recommendation 2: NI HEIF 3 focus on contributing to PSA 1 and PSA 3 - Business Growth and Employment

NI HEIF 3 has an important role to play in developing a knowledge intensive economy which allows NI to compete on a cost basis globally. We recommend that supports offered through NI HEIF 3 are focused on those elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D and KT collaborations and supporting spin-outs.

Recommendation 3: NI HEIF 3 Targeting Support to ensure Policy Coherence and Greatest Potential Impact

Support offered through NI HEIF 3 should be consistent with current EU / UK and NI strategies, applying university areas of strength to address companies' needs. This is about continuing to support SMEs operating in those areas where additionality is high and which link with the MATRIX and STEM agendas (aligned with Industry-led Innovation Communities - IICs). This should also take into account, in particular, the focus of MATRIX on markets rather than sectors, an approach which seeks to drive collaboration and cross-fertilisation of ideas across sectoral and technological boundaries.

We recommend that KT supports are targeted at those SMEs where the greatest impact / potential exists; this will require some preliminary research by the universities in consultation with Invest NI. This could take the form of profiling current companies supported by each HEI and mapping these against those areas[2] where additionality is high to identify those areas which may be currently in receipt of less support and where more support ought to be focused, and conversely those areas where there is currently more support than is warranted.

Recommendation 4: NI HEIF 3 Targeting Support on Innovation Inactive Companies

Research shows that the level of innovation activity in NI is relatively low and that the proportion of NI businesses that were innovation active remained largely unchanged over the three-year period from 2004-06. Through our survey of SMEs, we note that over half of these had not availed of KT supports through the universities prior to NI HEIF 2 which is very encouraging.

We recommend that supports offered through NI HEIF 3 seek to actively target companies which are not currently actively involved in innovation, in addition to those which are already engaged in innovation activity.

Recommendation 5: Monitoring Impacts of NI HEIF 2 post funding period

The final outcome of several of the targets associated with NI HEIF 2 will not be known until after the funding period has expired. For example – one of the target deliverables under the QUB – Invest NI HEIF 2 funded Environmental Excellence project is: At least 5 SMEs to have Licensing Agreements (enabling them to market innovative products or processes derived from the QUESTOR research programme) in place after 3 years' membership (this will not be

[2] In describing "areas", there is a need to bear in mind the MATRIX approach of a focus on markets rather than sectors and seeking to work across sectors and technologies.

known at the end of the funding period (March 2011)). We therefore recommend that DEL and Invest NI should continue to monitor those targets for which the outcome is not known at the end of the NI HEIF 2 funding period to see if these have been achieved.

Recommendation 6: Collaborative Working Amongst Academics Indicator in NI HEIF 3

Results from the academic survey noted generally high levels of impacts across a range of areas including networking / collaboration (amongst academics). We recommend that this (i.e. evidence of increased collaboration by academics supported through HEIF funding) is adopted as a primary indicator in NI HEIF 3 in line with MATRIX priorities and the IICs (and DEL's own policy on MATRIX).

Consistent with MATRIX priorities, this should be focused on market opportunities and drive collaboration across sectors and technologies. In practical terms, this should mean increased collaboration by academics (supported by HEIF) within and between schools / departments in HEIs as well as collaboration with businesses. This enhanced engagement with businesses should improve exploitation of the NI science base and assist in releasing the economic benefits of the work of NI's universities leading to the creation of new IP.

Recommendation 7: Target Setting in NI HEIF 3

The target setting methodology in NI HEIF 2 is largely focused on inputs and outputs; whilst these are appropriate in themselves, the overall view of performance of NI HEIF would be enhanced by additional targets which also consider impacts / outcomes (e.g. job creation / employment opportunities, sales, etc leading to tangible economic impacts). We recommend that NI HEIF 3 includes targets which embrace both inputs, outputs, outcomes and impacts.

Recommendation 8: Equality / DDA

The current NI HEIF funded programmes in both QUB and UU comply with the relevant policies and strategies with regard to statutory duties including equality and disability.

We recommend that any future programmes introduced under HEIF continue to ensure compliance with university policy and strategies in terms of Equality and DDA and broader strategies such as Widening Participation to avoid any adverse impacts in respect of anti-poverty, social inclusion, equality of opportunity or good relations.

Recommendation 9: NI HEIF 3 Funding Model

Based on analysis of funding models in other regions and the pros and cons of these, as well as taking into account the needs of the universities (in terms of security of funding), we recommend that NI HEIF 3 is allocated using a hybrid funding model which includes:

- 20% allocated as core or foundation funding (similar to the Scottish and Welsh models);
- 80% allocated on the basis of a formula (i.e. the metrics-based allocation) using primarily the HE-BCI metrics as per the current NI model.

The totality of this funding will be dependent upon DEL approval of a KT Strategy prepared by each university.

Recommendation 10: Management Structures - Future Funding

We recommend that, in order to streamline the allocation of funding and reporting back by HEIs (and minimise efforts / resources in managing the funds), all of the NI HEIF 3 funding is managed by one Government Body - DEL. We believe this to be also appropriate in policy terms given DEL's role as the core funder of university teaching / learning, research and Knowledge Transfer and that it reflects the now established practice in the rest of the UK.

Recommendation 11: University Management Costs of NI HEIF

We recommend that given the apparent disparity between UU and QUB in the costs of managing NI HEIF relative to the total amount of funding allocated, this area is further investigated in order to ensure that:

- both universities are measuring management costs in the same way; and
- management costs provide Value for Money across both universities.

Recommendation 12: Development of University Knowledge Transfer Strategy

We recommend that as part of the terms and conditions of the next round of NI HEIF funding, each university is required to produce an institutional KT strategy (against which progress will be measured) that sets out:

- The policy context for KT (and high level government strategies / targets to which KT activity will contribute, for example PfG, RIS and the forthcoming HE Strategy);
- The broader KT environment outside the HEI e.g. KT activity in DHSSPS, AFBI, etc and relevance / complementarity;
- All KT activities within the HEIs and how these are connected internally, also setting out the areas of complementarity between the HEIs;
- Activities to be supported under NI HEIF 3, specifying the link between these and KT / innovation (to ensure that there is a robust link). These are likely to continue some of the current activities supported under NI HEIF 2, but the focus must be on elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D and KT collaborations and supporting spin-outs.
- Funding – sources and amounts including public (e.g. HEIF, Connected, PoC, etc) and private sources (e.g. potential R&D funding in partnership with the private sector), recognising the role that NI business has to play in taking forward a knowledge intensive economy (this links to: IICs & the MATRIX view on market focused business leadership).
- Actions to address learning from NI HEIF 2 and, in particular, stakeholder feedback with regard to:
    - ensuring that the culture shift in the universities continues and develops (through increased engagement with business and the community and by seeking their views / taking these on board);

- ensuring that the universities continue to respond to th**e needs of business** – for example survey feedback highlighted that timeliness and communication are areas highlighted for improvement from the surveys. There is a need for the universities to be more proactive and, as noted by external stakeholders, to do more in this area by actively seeking out and understanding business needs.

Recommendation 13: Management Information

In undertaking the evaluation, the complexity of managing the NI HEIF 2 funding stream in the university environment became evident – given the number of staff and initiatives involved and reinforced by the wide range of other KT interventions which may also be interacting with some of the same target groups. In order to assist with customer service and to ensure that the HEIs maintain robust monitoring systems to facilitate reporting (for internal management information as well as to demonstrate progress to funders), we recommend that, in parallel with the KT Strategy (Recommendation 12), an investigation is undertaken into the costs and benefits of the introduction of a single management information system in each university to track interventions with companies and non-commercial organisations. Its purpose would be to ensure that multiple interventions with a single company could be tracked in order to:

- avoid duplication / overlap of effort;
- ensure that all those who are engaging with the company are aware of previous and / or current complementary interventions;
- ensure that reporting of the impact of interventions to funders is accurate in comparing impacts with inputs.

Recommendation 14: Monitoring NI HEIF 3 / Knowledge Transfer Strategy – Business Investments

Given the ethos of NI HEIF in encouraging innovation and engagement between HEIs and business and the wider community, it is important that this is recognised through tangible measures such as business investment secured. Whilst the major key areas of income are tracked using metrics in the HE-BCI survey (and both UU and QUB have performed well on these), a more explicit measure of business investment would ensure that collaboration is at the heart of the strategy. We recommend that seeking business investment is included as a key aim within the universities' Knowledge Transfer Strategies.

Recommendation 15: Links with KT Activities outside the Universities

KT activities are not restricted to the universities: other agencies also have an interest in this area e.g.: AFBI, Health and Social Care Innovations, etc. Whilst there is some interaction currently, this could be undertaken more effectively in a proactive rather than reactive way. We recommend that universities are required to proactively develop opportunities with AFBI and Health and Social Care Innovations and that this is included in the universities' Knowledge Transfer Strategies.

Recommendation 16: Level of NI HEIF Funding

Going forward, and in order to maintain its current position and also to ensure consistency with the rest of the UK on an institutional basis, DEL should seek to ensure that the future level of funding for NI HEIF 3 should be at least at the levels of NI HEIF 2.

The case for future funding for KT is also supported by:

- recent research (see Section 3.3) which highlights the wider economic imperative in terms of the importance of business / university collaboration particularly in the current economic climate and the need to increase business – university linkages and to exploit the knowledge within universities.
- the need to improve NI performance in terms of absorptive capacity (businesses' ability to identify, assimilate and exploit knowledge from external sources).
- the 2009 PACEC and the Centre for Business Research, University of Cambridge report (see Section 8.2.4 Recorded Outcomes) also supports the case for funding going forward. In particular it highlights the role that funding such as HEIF has to play in changing attitudes and culture within HEIs and helping them develop the necessary capacity and capability to engage with external organisations and the rewards that this brings in terms of income generation.
- Evidence of increasing investment in KT funding in Scotland and England in particular.
- The relatively low levels of funding in NI relative to the number of academic staff.

We recommend that the NI HEIF funding stream is maintained at current levels (at least) in order to maintain its current position and performance relative to UK comparators, thus ensuring Northern Ireland does not fall behind in terms of global competitiveness.

2 INTRODUCTION AND TERMS OF REFERENCE

2.1 Introduction

FGS McClure Watters has been commissioned by the Department for Employment and Learning (DEL) and Invest Northern Ireland to complete an evaluation of the Northern Ireland Higher Education Innovation Fund 2 (NI HEIF 2). The evaluation covers the period August 2007 to July 2009 and also projects forward to the end of Academic Year (AY) 2009/10 (31st July 2010). This report presents the findings of the evaluation in terms of both the actual and likely / potential achievements and impacts.

In this section we set out the background to the evaluation and the terms of reference for the evaluation.

2.2 Background

2.2.1 Background to NI HEIF

The Higher Education Innovation Fund for Northern Ireland (NI HEIF) is a joint initiative run by DEL's Higher Education Research Policy Branch and Invest NI's Knowledge Transfer Team to encourage the higher education sector to increase its capability to respond to the needs of business (including companies of all sizes) and the wider community, with a clear focus on the promotion of wealth creation. The long term aim of this funding is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth. It is the primary Knowledge Transfer stream in Northern Ireland providing the core funding for the universities' business and community facing activities.

Aim and Objectives of HEIF

As set out above, the overall aim of NI HEIF is to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth.

The underlying objective is to encourage Queen's University Belfast and the University of Ulster to increase their capability to respond to the needs of business (including companies of all sizes), and the wider community, with a clear focus on the promotion of wealth creation.

The fund's specific objectives are to:

- Build on what has been achieved in both universities to date;
- Further release the potential social and economic benefits of the work of NI's universities;
- Help the universities to develop their mission in engagement with business and the community;
- Ensure a lasting culture shift in the universities by making Knowledge Transfer an integral part of the universities' portfolio of activities;
- Develop the responsiveness of the universities to the needs of business; and

- Improve the exploitation of the NI science base.

The key benefits to the universities are:

- Creation of a mechanism to successfully transfer knowledge and technology to businesses, to generate new wealth and to progress towards a knowledge-driven economy;
- Recruiting and training of new technology transfer officers and provision of financial assistance to protect intellectual property;
- Support for the creation and continuation of links with the community and voluntary sectors and public bodies; and
- Networking and interaction between the universities and businesses.

2.2.2 NI HEIF 1

The first round of the programme (NI HEIF 1) broadly covered AY 2004/05 to AY 2006/07 and delivered an investment of around £3 million per annum over 3 years. This was allocated on the basis of competitive bids from Queen's University Belfast and the University of Ulster.

There were two components of NI HEIF 1:

Component 1

The first component was a continuation of the Higher Education Reach-out to Business and the Community (HEROBC) funding from DEL and was directed towards the relationships between the universities and business. It assisted the universities to reach out to businesses and the wider community through Queen's University Belfast's Chief Executive Club and the University of Ulster's Knowledge Club.

It also gave a central point of contact within the universities for businesses and others through the Research and Regional Services Directorate at Queen's University Belfast and the Office of Innovation and Enterprise at the University of Ulster.

Component 2

The second component involved capturing and exploiting intellectual property (IP) and was funded by Invest NI. This was associated primarily with providing the personnel to ensure that the universities' IP was captured and the right resources and training structures were put in place to ensure the best use of this IP, either through spin-out businesses, licensing agreements or assignments.

An Evaluation of NI HEIF 1 was commissioned jointly by Invest NI and DEL in April 2006. The Evaluation Report recommended that the next three-year round of funding (NI HEIF 2) should continue at the previous funding level but with some significant modifications to reflect the approach in the rest of the UK for a more predictable funding stream to allow the retention of highly skilled staff and greater continuity.

The recommendations can be summarised as follows:

(i) There should be a move to a primarily metrics informed funding mechanism for NI HEIF 2 whilst retaining an element of competitive funding.

(ii) The competitive element should be restricted to a level of approximately 20%, with the remaining 80% being metrics driven.

(iii) DEL should deliver the metrics-derived element and Invest NI the competitive element.

(iv) NI HEIF 2 should be delivered as a single, joint Invest NI / DEL initiative consisting of two distinct but complementary streams.

Invest NI and DEL accepted these recommendations as they are a key feature of the *"Lambert Review of Business/University Collaboration"*[3] and in line with the resulting UK Government policy reflected in the March 2006 *"Ten Year Science and Innovation Framework (2004 – 2014) – Next Steps"* document which calls for permanent and predictable funding streams for HEI-based Knowledge Transfer activities thus allowing HEIs to plan and retain key staff. The recommendations are also in line with the *Northern Ireland Regional Innovation Strategy* under which DETI / Invest NI and DEL are committed to establishing a permanent "Third Stream" of funding for the universities to undertake Knowledge Transfer activities for the benefit of industry and the wider community.

With NI HEIF 3 due to commence in Academic Year 2010/11, this report is to be used to assess and understand the delivery mechanisms that have operated under NI HEIF 2 in order to provide a robust evidence base for the approvals required to implement the third round of funding, and to recommend an appropriate funding model and level of funding going forward.

Therefore, this evaluation aims to provide the Department and Invest NI with an objective assessment of the efficiency, effectiveness, value for money and impact of NI HEIF 2 and the extent to which it aligns with the needs of the local economy. It will also provide an assessment as to what extent NI HEIF 2 is meeting its overall aim and objectives, as outlined in section 2.2.1, and whether the funding and delivery mechanisms are the most appropriate for the effective delivery of the programme.

2.2.3 NI HEIF 2

Following the evaluation of NI HEIF 1, DEL and Invest NI launched a second round of 3 year funding at similar levels to before, but with 80% of the funding now allocated on a metrics/formula basis (administered by DEL) and 20% via competitive bids (administered by Invest NI)[4]. This reflects wider UK Government policy which supports the establishment of permanent and predicable funding streams for university-based Knowledge Transfer activities, thus allowing HEIs to plan and retain key staff. The programme remains a single, joint DEL/Invest NI initiative with the formula driven element administered by DEL and the competitive element by Invest NI.

[3] Richard Lambert published and presented his independent review of Business-University Collaboration to the Government on 4 December 2003.
[4] Funding split was 80:20 but with additional funding provided by Invest NI, the totals are DEL £7.2m and Invest NI £2.565m which equates to 75:25 ratio.

Budget

The (nominal) budget for the programme amounts to £3 million per annum over three years from Academic Year (AY) 2007/08 to AY 2009/10 and is made up 80% DEL and 20% Invest NI. The nominal allocations are £2.4 million per annum from DEL and £600k per annum from Invest NI as recommended by the review of NI HEIF 1. However, Invest NI allocated an additional amount of approximately £255k per annum to cover all the projects approved by its Evaluation Panel so the actual ratio of funding is 75% DEL and 25% Invest NI. Therefore the current NI HEIF 2 funding mechanism is based on two main elements:

- 75% of the available monies (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and
- 25% (£0.855m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding and administered by Invest NI.

2.3 Terms of Reference for the Evaluation

DEL and Invest NI require an evaluation of NI HEIF 2 covering the period August 2007 to July 2009 and, as far as possible, project forward to the end of AY 2009/10 (31st July 2010) in terms of the likely/potential achievement and impact.

This evaluation should be undertaken in line with DFP requirements, and must seek to assess economy, efficiency and effectiveness through consideration of the following aspects:

- Review the original rationale for the intervention and conclude on the nature and extent of market failure which NI HEIF 2 seeks to address;
- Consider the effectiveness of the current programme in addressing its stated aims and objectives (presented above) and determine to what extent these aims and objectives have been met;
- Assess the performance of NI HEIF 2 to date against its targets and assess the target setting methodology;
- Establish a base case of what would have happened to the universities' (i) "Third Stream" missions, (ii) underlying Knowledge Transfer activities and (iii) wider business and community engagement in the absence of NI HEIF 2, and conclude on the level of additionality and displacement;
- Provide detailed consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies including:
    - Regional Innovation Strategy (2003) and NI Action Plan (2008)
    - DEL's Skills Strategy "Success through Skills" (2006)
    - DETI's Economic Vision for Northern Ireland (2005)
    - UK Ten Year Science and Innovation Investment Framework (2004 – 2014)
    - Wellings Report on Intellectual Property and Research Benefits (2008)

  - The Economic Crisis Report (UUK/GuildHE/HEFCE 2008)
  - Varney Review of the Competitiveness of Northern Ireland (2008)
  - UK Science and Innovation White Paper (2008)
  - Sainsbury Review of Government's Science and Innovation Policies (2007)
  - Lambert Review of Business-University Collaboration (2003)

- Assess the extent to which the Programme has contributed, or has the potential to contribute, to achieving the relevant targets included in the Programme for Government and securing improvements in manufacturing and private services productivity (PSA 1); and employment (PSA 3);
- Review the logical and operational fit of NI HEIF 2 with counterpart initiatives, particularly DEL's Higher and Further Education Collaboration Fund ("Connected") and Invest NI's Knowledge Transfer Partnerships, Innovation Vouchers, Proof of Concept programme, Competence Centre initiatives and Collaborative Networks;
- Determine the effectiveness of NI HEIF 2 in advancing the universities' Knowledge Transfer strategies;
- Consider the overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support, both quantifiable and unquantifiable, taking into account the evaluation and monitoring frameworks operated by DEL (in respect of the formula allocations) and by Invest NI (in respect of the competitive "proposal-based" allocations);
- Provide an assessment and overall conclusion on the value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes;
- Benchmark the NI HEIF 2 programme against the three core funding streams for Knowledge Transfer operated by the Higher Education Funding Councils for England, Scotland and Wales;
- Assess the management and operating structures currently in place to determine how effective NI HEIF 2 has been managed by DEL and Invest NI;
- Consider the appropriateness of the mechanisms / structures within Queen's University and the University of Ulster to manage the NI HEIF 2 funds;
- Assess the added value and advantages / disadvantages of the programme continuing to operate as a joint initiative between DEL and Invest NI; and
- Make appropriate recommendations, based on the outcome of the evaluation including:-
  - The appropriate level of funding going forward; and
  - Future delivery mechanisms for core Knowledge Transfer funding. This element of the exercise should include an examination of future delivery options in light of best

practice elsewhere, including the split between "metrics / formula" allocations and "competitive bid" allocations and the independent provision of separate, but complementary, funding streams / programmes by Invest NI and DEL.

2.4 Methodology

The methodology used to undertake this Evaluation was agreed with the Project Steering Group at the Project Initiation Meeting on 7th October 2009 and set out in the Project Initiation Document. It involved 6 key work stages, which were as follows:

- **Stage 1 Project Planning:** This stage involved agreeing the detailed work programme, the desk research, selecting appropriate consultees and setting the timescales for completion of the evaluation;
- **Stage 2 Desk Research & Strategic Context**: This stage involved reviewing strategy and policy documents in order to describe the strategic context for the initiative. This contributes to the section on Strategic Context and Rationale (Section 3) which sets out a consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies. We have also accessed a range of project specific information relating to the establishment and ongoing operation of NI HEIF 2 which contribute to sections on Performance and Management Structures (Sections 4, 5 and 6).
- **Stage 3: Mapping of Programmes:** This stage involved reviewing 11 counterpart initiatives to determine how NI HEIF 2 funding fits within this broader landscape of supports for innovation and R&D. The counterpart initiatives that we reviewed are listed in Table 2.1:

Table 2.1:
Counterpart Initiatives

Counterpart initiatives
• DEL's Higher and Further Education Collaboration Fund (Connected); • Invest NI's Knowledge Transfer Partnerships (KTPs) including Short Knowledge Transfer Partnerships; • Invest NI's Innovation Vouchers; • Invest NI's Proof of Concept Programme; • Invest NI's Centres of Excellence and Competence Centres; • Invest NI's Collaborative Networks Programme; • Northern Ireland Science Park (NISP) "Connect" initiative; • UK Technology Strategy Board's "Knowledge Transfer Networks"; • Local Council Programmes operating in this field; and • Any Relevant DARD supports.
Source: FGS McClure Watters (2010).

In Appendix IV, we present available information on each of the programmes in terms of:

- Introduction – overview of the initiative or programme;
- Aims and objectives;
- Supported activities and funding available;
- Eligibility;
- Process;
- Uptake; and
- Impacts and Outputs.

In Section 7, we draw on this information to present a summary of the wider Knowledge Transfer landscape and how these complementary initiatives fit with NI HEIF 2.

- **Stage 4: Consultation and Surveys:** This stage involved meeting with a range of representatives from Government Departments, the two universities and the business sector to examine their views on the benefits of NI HEIF 2 to date and the need for it going forward. We also completed surveys with 117 SMEs, 5 spin outs, 46 academics, 20 voluntary & community organisations who used the Science Shop, 19 CPD participants (companies) and 21 Students (placements + science shop participants). A full list of consultees is included in Appendix II;
- **Stage 5 Benchmarking:** This stage involved reviewing comparable core funding streams for Knowledge Transfer operated by the Higher Education Funding Councils in England, Scotland and Wales – engaging with the respective Funding Councils in these jurisdictions (see Section 8);
- **Stage 6: Review of Structures and Systems:** In Section 6, we set out the present structures and systems within DEL and Invest NI and the two universities, detailing the advantages and disadvantages;
- **Stage 7 Analysis:** This stage involved analysing the data and findings against the Terms of Reference and drawing out conclusions and recommendations, covering the overall performance of the programme against its specific objectives as set out at 2.2.1 above.
- **Stage 8 Reporting:** This stage involved the reporting and presentation of findings. Emerging findings were presented to the Project Steering Group and a draft report prepared for comment before production of the final report.

2.5 Report Outline against the Terms of Reference

Table 2.2 sets out the sections of the report that address each element of the Terms of Reference.

Table 2.2

Report Sections against Terms of Reference

Terms Of Reference	Section
Undertake an evaluation of NI HEIF 2 covering the period August 2007 to July 2009 and, as far as possible, project forward to the end of AY 2009/10 (31st July 2010) in terms of the likely/potential achievement and impact.	Section 4
Review the original rationale for the intervention and conclude on the nature and extent of market failure which NI HEIF 2 seeks to address.	Section 3
Consider the effectiveness of the current programme in addressing its stated aims and objectives (presented above) and determine to what extent these aims and objectives have been met.	Section 4
Assess the performance of NI HEIF 2 to date against its targets and assess the target setting methodology.	Section 4
Establish a base case of what would have happened to the universities' (i) "Third Stream" missions, (ii) underlying Knowledge Transfer activities and (iii) wider business and community engagement in the absence of NI HEIF 2, and conclude on the level of additionality and displacement.	Section 4
Provide detailed consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies including: • Regional Innovation Strategy (2003) and NI Action Plan (2008) • DEL's Skills Strategy "Success through Skills" (2006) • DETI's Economic Vision for Northern Ireland (2005) • UK Ten Year Science and Innovation Investment Framework (2004 – 2014) • Wellings Report on Intellectual Property and Research Benefits (2008) • The Economic Crisis Report (UUK/GuildHE/HEFCE 2008) • Varney Review of the Competitiveness of Northern Ireland (2008) • UK Science and Innovation White Paper (2008) • Sainsbury Review of Government's Science and Innovation Policies (2007) • Lambert Review of Business-University Collaboration (2003)	Section 3
Assess the extent to which the Programme has contributed or has the potential to contribute, to achieving the relevant targets included in the Programme for Government and securing improvements in manufacturing and private services productivity (PSA 1); and employment (PSA 3).	Section 3
Review the logical and operational fit of NI HEIF 2 with counterpart initiatives, particularly DEL's Higher and Further Education Collaboration Fund ("Connected") and Invest NI's Knowledge Transfer Partnerships, Innovation Vouchers, Proof of Concept programme, Competence Centre initiatives and Collaborative Networks.	Section 7
Determine the effectiveness of NI HEIF 2 in advancing the universities' Knowledge Transfer strategies.	Section 4
Consider the overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support, both quantifiable and unquantifiable, taking into account the evaluation and monitoring frameworks operated by DEL (in respect of the formula allocations) and by Invest NI (in respect of the competitive "proposal-based" allocations).	Section 4
Provide an assessment and overall conclusion on the value for money in terms of effectiveness, efficiency and economy, focusing on input and output indicators, as well as outcomes.	Section 4

Table 2.2
Report Sections against Terms of Reference

Terms Of Reference	Section
Benchmark the NI HEIF 2 programme against the three core funding streams for Knowledge Transfer operated by the Higher Education Funding Councils for England, Scotland and Wales.	Section 8
Assess the management and operating structures currently in place to determine how effective NI HEIF 2 has been managed by DEL and Invest NI.	Section 6
Consider the appropriateness of the mechanisms / structures within Queen's University and the University of Ulster to manage the NI HEIF 2 funds.	Section 6
Assess the added value and advantages / disadvantages of the programme continuing to operate as a joint initiative between DEL and Invest NI.	Section 5
Make appropriate recommendations, based on the outcome of the evaluation including: • The appropriate level of funding going forward; and • Future delivery mechanisms for core Knowledge Transfer funding. This element of the exercise should include an examination of future delivery options in light of best practice elsewhere, including the split between "metrics / formula" allocations and "competitive bid" allocations and the independent provision of separate, but complementary, funding streams / programmes by Invest NI and DEL.	Section 9
Section 75 requirements should be taken into account in the evaluation. In respect of any recommendations made, consultants will be required to consider whether there are any likely impacts on anti-poverty, social inclusion, equality of opportunity or good relations. In doing so, consultants may recommend measures to mitigate against any adverse impacts. The evaluation must also consider the accessibility of the programme for all, in line with the Disability Discrimination Act 1995.	Section 4

Source: DEL and Invest NI – NI HEIF 2 Evaluation – Terms of Reference (September 2009).

This report should be read in conjunction with the Appendices which contain detailed supporting information as follows:

- Appendix II – Consultees
- Appendix III – Strategic Context
- Appendix IV – Details Of Counterpart Initiatives
- Appendix V – CAFRE – KT Projects
- Appendix VI - SME – Survey Results
- Appendix VII – CPD Survey Results
- Appendix VIII – Voluntary & Community Organisations – Survey Results
- Appendix IX – Academics – Survey Results
- Appendix X – Students – Survey Results
- Appendix XI – Case Studies

2.6 Acknowledgements

We would like to thank the Project Steering Group members for being available for meetings and providing access to the information that we required for this evaluation.

In addition, we would like to express our gratitude to university staff (including QUB Regional Office, QUB KEU and other QUB project staff, UU Office of Innovation (including Business Liaison Office and Innovation Services) for being readily available for consultation and providing access to information that was required.

We would also like to express our thanks to the companies, voluntary sector organisations, academics, students and other key stakeholders which we interviewed during the course of the study.

3 STRATEGIC CONTEXT AND RATIONALE FOR NI HEIF 2

3.1 Introduction

This section addresses the following elements of the ToR:

- *Review the original rationale for the intervention and conclude on the nature and extent of market failure which NI HEIF 2 seeks to address.*
- *Provide detailed consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies including:*
    - *Regional Innovation Strategy (2003) and NI Action Plan (2008)*
    - *DEL's Skills Strategy "Success through Skills" (2006)*
    - *DETI's Economic Vision for Northern Ireland (2005)*
    - *UK Ten Year Science and Innovation Investment Framework (2004 – 2014)*
    - *Wellings Report on Intellectual Property and Research Benefits (2008)*
    - *The Economic Crisis Report (UUK/GuildHE/HEFCE 2008)*
    - *Varney Review of the Competitiveness of Northern Ireland (2008)*
    - *UK Science and Innovation White Paper (2008)*
    - *Sainsbury Review of Government's Science and Innovation Policies (2007)*
    - *Lambert Review of Business-University Collaboration (2003)*
- *Assess the extent to which the Programme has contributed, or has the potential to contribute, to achieving the relevant targets included in the Programme for Government and securing improvements in manufacturing and private services productivity (PSA 1); and employment (PSA 3);*

More detailed information on the documents considered is included in Appendix III.

3.2 Scope of Strategic Context and Rationale

In this section, we set out the need for NI HEIF 2 funding, providing a detailed consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies. The documents we have considered include the following:

- **UK Strategic and Policy Context**
    - Lambert Review of Business – University Collaboration (2003)
    - UK Ten Year Science and Innovation Investment Framework (2004-14);

- Science and Innovation Investment Framework 2004 – 2014: Next Steps (2006)
- Sainsbury Review of Government's Science and Innovation Policies (2007);
- Department for Innovation, Universities and Skills (DIUS) – Innovation Nation White Paper (2008);
- Higher Ambitions – The Future of Universities in Knowledge Economy (BIS, November 2009);
- Measuring and mapping absorptive capacity in UK nations and regions (NESTA, October 2008);
- Stepping Forwards: NI's Innovation Future (NESTA, June 2009);
- Wellings Report on Intellectual Property and Research Benefits (2008);
- UK Innovation Research Centre (UKIRC) – Knowledge Exchange between Academics and the Business, Public and Third Sectors (2009); and
- The Impact of Universities in the UK Economy (November 2009).

- **NI Strategic and Policy Context**
  - Programme for Government 2008-11;
  - DETI's Economic Vision for Northern Ireland (2005);
  - DETI Regional Innovation Strategy – Think-Create-Innovate (2003);
  - DETI Regional Innovation Strategy for NI – Action Plan (2008-11);
  - DEL's Skills Strategy 'Success through Skills' (2006);
  - First Report of MATRIX: The Northern Ireland Science Industry Panel (2008);
  - InnovationLab (Ireland) Ltd Report for DEL 2006: An Examination of Higher Education Research and Development and Knowledge Transfer in Northern Ireland;
  - DETI – Innovation Survey Results (2007);
  - Varney Review of the Competitiveness of Northern Ireland (2008);
  - Public R&D and Regional Development: Spillovers from University and Company-Based Research Centres Working Paper No. 104 (June 2009); and
  - Barnett / DETI and Invest NI: Independent Review of Economic Policy (September 2009).

- **Managing Economic Downturn**
  - Stronger Together – Business and Universities in Turbulent Times (CBI Higher Education Taskforce, September 2009);

- Building Britain's Future: New Industry, New Jobs (HM Government, 2009);
- Standing Together - Helping Universities through the Downturn (UUK / Guild HE / HEFCE, 2008); and
- The Connected University: Driving Recovery and Growth in the UK Economy – NESTA.

3.3 Summary of Strategic Context

In Section 3.3.1, Section 3.3.2 and Section 3.3.3, we provide a detailed consideration of the strategic context in which NI HEIF 2 operates including its contribution to local, national and EU policies.

Within Section 3.3.2, we assess the extent to which the Programme has contributed, or has the potential to contribute, to achieving the relevant targets included in the Programme for Government and securing improvements in manufacturing and private services productivity (PSA 1); and employment (PSA 3);

In Section 3.4 we review the original rationale for the intervention and conclude on the nature and extent of market failure which NI HEIF 2 seeks to address.

3.3.1 UK Strategic and Policy Context

A number of key UK documents highlight the importance of collaboration between universities and businesses and the role of Government intervention in stimulating this. The Lambert Review (2003) noted the importance of encouraging closer links between industry and the research base. It acknowledged that the Government's funding of Knowledge Transfer has helped to generate culture change and increased the capacity of HEIs to engage with businesses.

Following on from this, and in support of the conclusions and recommendations of the Lambert Review, the Government's Ten Year Science and Innovation Investment Framework (2004-14) set out a long-term vision for UK science and innovation. This put particular emphasis on stimulating business-university collaboration and making the science base more responsive to the needs of the economy. It also established the Government's support for HEIF to further build capacity in the university sector for Knowledge Transfer and confirmed funding until 2007-08. Paragraph 5.28 of the Framework committed the Government to ***"move towards a predictable funding allocation…….on the basis of research, commercialisation and other knowledge transfer metrics".*** These were to be based on *"a robust basket of measures…….building on the Higher Education Business and Community Interaction Survey, that focuses primarily on economic benefit, including metrics of the volume and quality of collaborative research with business, as well as of licensing, spin-outs and business perceptions, but which also reflects the broad range of knowledge transfer activity across the higher education base"*. The Government also undertook to *"continue to work with universities to encourage those institutions without a strong track record of knowledge transfer to develop, with funding support, effective strategies tailored to the research and teaching strengths of the particular institution".*

The Science and Innovation Investment Framework 2004 – 2014: Next Steps document was published in March 2006 as part of the Chancellor's 2006 budget. This underlined the importance of building on the original 2004 strategy in order for the UK to remain attractive as a location for research and innovation.

A review of the UK Government's science and innovation policies was conducted by Lord Sainsbury in 2007. This focused on the role that science and innovation plays in increasing the country's competitiveness in the global economy, in particular against the emerging economies. The review recognised the UK HEIs' consistent performance in producing high quality research and the importance of Knowledge Transfer in translating this research into the market. It noted the significant increase in the translation of university research into commercial goods and services that had taken place in the preceding decade and made a number of recommendations to strengthen UK performance in knowledge transfer going forward. This included a recommendation that HEIF continue to be funded and developed further.

The Government's Innovation Nation White Paper (2008) further supports the rationale for increasing and supporting interactions between HEIs and businesses, this time as a driver of innovation. It provides evidence for the steady growth in the level of HEI-business interactions and Knowledge Transfer activities and states that this trend has largely been supported by the funding streams made available, including HEIF.

Higher Ambitions – The Future of Universities in Knowledge Economy (DIUS, 2009), also provides evidence that Government support has driven a culture change in university-business interactions through developing universities' capacity to undertake knowledge exchange, both in business development and more specialised research commercialisation. This report sees HEIs as the UK's most important mechanism for generating and transforming knowledge into wider social and economic benefits.

The economic impact of HEIs was further established in the fourth edition of the Impact of Universities in the UK Economy (2009). This made clear that higher education is a core part of the national economic infrastructure, generating significant employment and export earnings and making a substantial contribution to GDP.

Knowledge Exchange between Academics and the Business, Public and Third Sectors (UK Innovation Research Centre, 2009) highlights that a spectrum of knowledge transfer interactions take place between universities and external organisations that extend beyond the 'traditional' knowledge transfer activity measures such as patents, licences and spin-outs. These include people-based activities (e.g. training, student placements); Problem-solving activities (e.g. research, advice, publications); and Community-based activities (e.g. public lectures, school projects). The report provides evidence that NI is the part of the UK which consistently has the highest level of academics engaged in these interactions.

The NESTA Report - Measuring and Mapping Absorptive Capacity in UK Nations and Regions (2008) – links the UK's absorptive capacity (this refers to a firm's ability to identify, assimilate and exploit knowledge from external sources) and its economic growth potential. The report notes that NI has low absorptive capacity and that it has a low ranking on a range of measures associated with absorptive capacity. One of the sub-measures shows that NI has the lowest funding (taking into account the total value of business-university collaborative

research, research contracts and consultancy contracts) relative to the number of academic staff of all the UK regions.

However, there are some areas in which NI fares better e.g.:

- the highest proportion of first degrees which are either first or upper second class;
- a high result when considering the level of R&D performed within HE as a percentage of regional GVA 2005.
- ranked 4th out of 12 in the UK regions on the level of knowledge diffusion in firms.

The report recommends specific areas of improvement for NI, including the need for NI businesses to increase linkages with universities and for businesses to exploit the knowledge within universities.

Another NESTA report (Stepping Forwards: NI's Innovation Future, 2009) states that NI faces significant innovation challenges in the current recession. However, it also notes that NI is better placed to meet these challenges than many other regions due to the discretion provided by the devolved administration, the resources committed to supporting innovation, high quality universities and the commitment of a wide range of regional stakeholders to the innovation agenda.

3.3.2 NI Strategic and Policy Context

A number of key NI strategies and policies relate to the promotion of innovation as a driver of economic development. In addition, the link between HEI collaboration with businesses, innovation and the economic impacts that can amass as a result of these relationships is well documented.

Growing the economy is the top priority in the 2008-11 Programme for Government. This is evident in PSA 1: Productivity growth and PSA 3: increasing employment. A number of actions have been set under these that relate productivity to the commercialisation of IP, the relationships between industry & R&D / science base and the resultant increase in employment through promoting business growth.

PSA 1 is concerned with **Productivity Growth** through improving NI's manufacturing and private services productivity. NI HEIF 2 clearly has both contributed to and has the potential to contribute directly to the achievement of this PSA through activities which are closely aligned with Objectives under this PSA:

- Objective 4. Promote higher value-added activity through innovation and the commercial exploitation of R&D.
    - Many activities (described in Section 4.2 and Section 4.3) supported by NI HEIF 2 contribute directly to this objective. For example: in building links between business and universities (particularly where such engagement has not happened before e.g. SMEs) leading to companies engaging in research and development for the first time; and through supporting commercialisation of IP through patent support services offered by UU Innovation Services Team and QUB KEU.

- Objective 5. To develop and sustain a HE research sector that holds a strong position within the UK and beyond and makes a major contribution to economic and social well-being.
    - Many activities (described in Section 4.2 and Section 4.3) supported by NI HEIF 2 contribute directly to this objective by building links between business and universities (particularly where such engagement has not happened before e.g. SMEs). Therefore NI HEIF 2 is helping to establish and build effective relationships between industry and the R&D / science base leading to increased KT, cooperation and collaboration.
    - The success of NI HEIF 2 funding is also apparent in the increases reported in the HE-BCI indicators (see Section 5.4.3) which reflect performance;
    - Evidence of a changing culture in the HEIs has been noted and welcomed by industry stakeholders; this also supports the achievement of this objective.

PSA 3 is concerned with **Increasing Employment** (and in particular increase employment levels and reduce economic inactivity by addressing the barriers to employment and providing effective careers advice at all levels). NI HEIF 2 clearly has both contributed to and has the potential to contribute directly to the achievement of this PSA through activities which are closely aligned with Objectives under this PSA:

- Objective 4. The most significant way in which NI HEIF 2 is able to contribute to PSA 3 is through business growth. Support for commercialisation of IP leading, in some cases, to the development of spin out companies (and ultimately employment) is one way in which the NI HEIF 2 funding contributes to this PSA. There is also scope for employment opportunities to be created as a result of innovation support provided through NI HEIF 2 funding which enables existing businesses to grow (e.g. through product and/or market development).

DEL's 2006 Skills Strategy highlights the importance of innovation to the economy and the growth of local businesses. The strategy includes a vision of how NI can build its productivity and competitiveness in the global marketplace through increasing the skills of its workforce and knowledge transfer from the education sectors to businesses.

DETI has published a number of documents that outline the economic case for promoting and increasing the level of innovation in NI. The Regional Innovation Strategy (DETI, 2003), set out a vision "to create a culture and environment within which NI will prosper by using its knowledge, skills and capacity to innovate". The RIS includes key priorities to assist the development and maintenance of a world-class innovation system for NI. These include creating a coherent R&D and innovation infrastructure and enhancing the use of R&D and innovation by the business sector through closer and more co-ordinated interfacing with universities. The RIS Action Plan 2008-11 set out a four-year plan to develop Northern Ireland's innovation system. This continued to emphasise the importance of collaborative partnerships between businesses and the education sector in creating a culture of innovation.

Another element of the policy framework in NI is the First Report of MATRIX: The Northern Ireland Science Industry Panel (2008) which identifies four imperatives for NI to maximise its potential to compete in the global technology and knowledge economy. The first imperative is:

"To compete more effectively as a modern knowledge and technology based economy Northern Ireland must develop a more innovative culture of collaboration across industry, government and academia."

DETI's Innovation Survey (2007) collected information on the extent of innovation activity, the impact of innovation on businesses and the barriers to innovation over the three-year period from 2004 to 2006. Results showed that NI has the second lowest level of innovation activity in the UK, with the proportion of NI businesses that were innovation active remaining largely unchanged over the period. For NI businesses not engaged in innovation activity, a perceived lack of knowledge and market-related factors are the most commonly cited barrier in engaging in innovation activity.

A number of documents also provide evidence that government intervention leads to higher levels of innovation and encourages knowledge transfer from universities.

Varney's 2008 Review of the Competitiveness of NI identifies the relationship between higher / further education and businesses as an important driver of innovation through the supply of skilled labour and also through collaborative working. The review provides evidence for a high level of engagement between HEIs and businesses in NI and suggests that high levels of economic support have contributed to this, but states that there is potential to further improve these relationships through continued funding commitment and support. The 2009 Barnett Review of Economic Policy also highlighted the importance of supporting innovation and R&D to the NI economy. The review stated that the promotion of innovation and R&D is the most important long term driver of productivity for NI and that resources should be redirected to provide greater levels of support to this.

A 2009 Warwick Business School study[5] provides evidence that government intervention had a positive role in stimulating innovation and Knowledge Transfer. This report found that public investment in R&D centres (which were established as part of the Invest NI Centres of Excellence programme) had a catalytic role in stimulating R&D and innovation activity. University-based R&D centres, in particular, were found to engage in both knowledge sharing and the co-creation of knowledge, as well as Knowledge Transfer activities.

3.3.3 Managing the Economic Downturn

Several recently published documents reflect the current economic environment and advise on how to manage the economic downturn. A key message is an emphasis on the importance of collaboration and university / business links.

Stronger Together – Business and Universities in Turbulent Times (CBI Higher Education Taskforce, 2009) sets out what business wants from Higher Education, and how it can work with Government and universities to improve outcomes. Its overall recommendation was that a stronger relationship between higher education and business is mutually beneficial. Universities are vital to the success and competitiveness of industries and business, through partnerships on research and innovation activity, with businesses being able to support students and graduates. The report proposes that to increase overall research collaboration,

[5] Public R&D And Regional Development: Spillovers From University And Company-Based Research Centres Working Paper No. 104 (June 2009)

businesses should seek to work with universities as a core part of their innovation activity and universities should improve the environment for university-business collaboration on research and innovation.

Building Britain's Future: New Industry, New Jobs (BIS, 2009) sets out the Government's strategic vision for Britain's recovery from the recent economic crisis and aims to place Britain in a competitive position in the recovering global economy. Key areas identified for immediate action and reform to win a bigger share of the opportunities ahead are centred on innovation, skills, finance, infrastructure and trade. To achieve this, the paper highlights the importance of maximising economic opportunities from the work of university researchers and the importance of government intervention in areas where the market acting alone would under-invest, particularly in training or investment in innovation.

Standing Together - Helping Universities through the Downturn (UUK, 2008) is aimed at businesses and details different ways to engage with HEIs that are mutually beneficial to both parties in the current difficult economic climate. It highlights the research expertise that is held within HEIs and the importance of Knowledge Transfer in contributing to the economy and the importance of these relationships in fostering a culture of innovation. The report notes that the economic downturn will be challenging for many companies and their employees, but highlights that universities are better placed than ever to help them cope. It concludes that collaborative working which leads to innovation not only improves the company's productivity and competitiveness but also contributes to the national economy.

A recent NESTA report (The Connected University: Driving Recovery and Growth in the UK Economy, 2009) highlights the importance of universities to economic growth. It presents eight case studies showing how clusters of economic activity have grown up around leading universities. These universities are now thinking more and more about their role in building clusters, connecting to the national and international economies and bringing together thinking, practice and finance. The report states that this model holds the key to further economic growth. It recommends ways in which universities can become more connected: ensuring that technology transfer organisations are performing at the standard set by leading UK institutions; recognising the importance of building networks with local firms, nurturing local clusters, creating national and international connections; recruiting, developing and promoting people with both public and private sector experience providing capacity to build links between them; and measuring the benefits of university/business interaction more effectively and communicating these to the public.

The NESTA report also recommends that the funding system should take into account the importance of university/business interaction; at the heart of this recommendation is the desire to see collaboration that is effectively measured and rewarded. Hence the way in which funding such as HEIF is determined should better reflect the contributions that universities make to local, national and international economies and also sharpen the incentives for cooperation.

The report notes that: "*alongside spin-outs and patents, we need to develop ways to measure and assess university business exchange of staff, joint research, cluster size and stability, and the impact of interdisciplinary work.*"

3.3.4 Summary – Rationale for Continuing HEIF Investment in Northern Ireland

The fundamental importance of HEIs to the UK economy is widely recognised. The HEIs have a vital role to play in producing high quality research; and by building on this foundation it is possible to realise economic and social benefits through Knowledge Transfer. Knowledge Transfer is a driver of innovation which in turn contributes to competitiveness and economic growth potential.

Within the UK (including NI) over the last decade, there is evidence of culture change, increased activity and increased capacity of the HEIs to engage with industry. It is important that this trend continues with HEIs ensuring that they are responsive to the current needs of the economy.

However, there remains a need for Government stimulation of business-university collaboration. A number of documents reviewed highlight the role of Government intervention in stimulating collaborative activity between HEIs and businesses. Some provide evidence that the steady increase in collaboration over time is attributable to Government support and call for the continuation of this intervention.

The NI strategies and policies are consistent with those in the UK and call for the promotion of innovation as a driver of economic development. This is consistent with the Programme for Government's PSA 1 and PSA 3 targets (productivity growth and increase in employment aims respectively). Through providing support for innovation, NI HEIF 2 has the potential to contribute to PfG targets by supporting businesses to innovate (contributing to productivity improvements), and through commercialisation activity (which many aspects of NI HEIF 2 support) there is scope to generate employment opportunities (as well as economic growth (sales, exports, etc.) in spin out companies).

There is evidence that NI HEIF 2 funding supports the multi-sectoral multi-disciplinary approach to market espoused by MATRIX and that NI HEIF 2 supported activities are consistent with MATRIX as follows:

- **QUB:** MATRIX has espoused the need for the public sector R&D base to be closely aligned with business needs in a number of important sectors.

  The Invest NI HEIF 2 funding has resulted in additional economic benefits and this has helped implement the practical realization of MATRIX policy in a number of sectors identified in the report. The funding supported a number of important projects and provided a service for a number of local SMEs. Without this funding the businesses or the University would not be in a position to sustain the activity. Areas funded by Invest NI HEIF 2 are Polymers, Digital Engineering Simulation and Manufacturing, and Environmental Technologies (see Section 4.2 for further information on the businesses engaged in these projects).

  The University's Pro Vice-Chancellor for Research and Postgraduates is a member of the MATRIX Panel. The Director of the KEU participates in the MATRIX Industry-led Communities sub-panel and a number of Queen's Academic staff and Senior Management advised and were involved in shaping the MATRIX policy.

The KEU will work with MATRIX in implementing collaborative R, D&I with companies and Higher Education. A number of company led R&D funding applications have already been prepared and are being assessed for funding. Non Disclosure Agreements and Intellectual Property agreements have also been drafted by the KEU and presented to a number of companies for their consideration and for the consideration of the funders.

- **UU:** The University's Innovation related activities are informed by and consistent with the MATRIX initiative. The University's Pro Vice-Chancellor (Research and Innovation) sits on the MATRIX Panel, and other University staff, including the Director of Innovation, are members of MATRIX sub-panels. A significant number of events and projects taken forward within the University reside within the various sectors supported and promoted by MATRIX. Additionally, a significant proportion of the commercialisation activity within the University would reflect the sectors supported by MATRIX.

However, NI has the second lowest level of innovation activity in the UK and DETI research[6] has shown that the proportion of NI businesses that were innovation active remained largely unchanged over the three-year period 2004-06. This low level of innovation activity strengthens the case for Government intervention particularly under NI HEIF 2. This is supported by evidence in a number of papers which show that public intervention has historically increased the level of engagement between HEIs and businesses in NI. There is therefore potential to further improve these relationships through continued funding commitment and support. Further opportunities arise from NI's unique situation as a region within the UK – with a devolved administration, resources are allocated to innovation and there is a more immediate relationship between policy and practitioners. The innovation infrastructure is embedded in two high quality, research-intensive universities.

Promoting economic impact resulting from business-university collaborative activity is also highlighted as a key strategy in emerging from the current recession. Innovative, collaborative working between HEIs and businesses will improve company productivity and competitiveness as well as contribute to the national economy.

Failure to focus on developing a Knowledge Intensive economy would leave Northern Ireland to compete on a cost basis globally. This is not a strategy which will lead to success. It is therefore imperative that the Knowledge Economy set out in Northern Ireland's economic vision becomes a reality. NI HEIF is key to contributing to that goal if it focuses on those elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D collaborations and supporting spin-outs.

[6] The research referenced here is the UK Innovation Survey 2007: Northern Ireland Results (published by DETI, June 2008). The UK Innovation Survey is part of a wider European Community Innovation Survey (CIS) and this research is the most recent published – it covered the period 2004-06.

4 NI HEIF 2 - ACTIVITIES AND PERFORMANCE

4.1 Introduction

This section contributes to addressing the following elements of the ToR:

- *Consider the effectiveness of the current programme in addressing its stated aims and objectives and determine to what extent these aims and objectives have been met.*
- *Assess the performance of NI HEIF 2 to date against its targets and assess the target setting methodology.*
- *Establish a base case of what would have happened to the universities' (i) "Third Stream" missions, (ii) underlying knowledge transfer activities and (iii) wider business and community engagement in the absence of NI HEIF 2, and conclude on the level of additionality and displacement.*
- *Determine the effectiveness of NI HEIF 2 in advancing the universities' Knowledge Transfer strategies.*
- *Consider the overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support, both quantifiable and unquantifiable, taking into account the evaluation and monitoring frameworks operated by DEL (in respect of the formula allocations) and by Invest NI (in respect of the competitive "proposal-based" allocations).*
- *Provide an assessment and overall conclusion on the value for money in terms of effectiveness, efficiency and economy focusing on input and output indicators, as well as outcomes.*

4.2 Queen's University Belfast – NI HEIF 2 Funded Activities And Performance

4.2.1 NI HEIF 2 – QUB Funding

The funding provided by DEL and Invest NI under NI HEIF 2 to QUB is illustrated in Table 4.1.

Table 4.1
NI HEIF 2 Funding Allocation by DEL and Invest NI to QUB

Univ.	NI HEIF 2 Funding Allocation			
	DEL		Invest NI	
	£ per annum	Period	£ per annum	Period
QUB	£1,530,158	1st August 2007 to 31st July 2010	£451,329	1st April 2008 to 31st March 2011
Source: DEL Letters of Offer (21st May 2007) / Invest NI Letters of Offer (22nd April 2008)				

In addition to the NI HEIF 2 funding that DEL and Invest NI provide to QUB, the university also makes a contribution to NI HEIF 2 activities. However, it is very difficult to quantify the nett university contribution made by QUB Senior Management, Academic and non Academic members of staff in pursuing third stream (HEIF 2 type) activities. This contribution is made by a large number of staff in a diverse range of activities. These activities include:

- supporting multiple FDI visits;
- developing, maintaining relationships with and advising businesses in a number of sectors in product, service and process innovations;
- providing input to innovation policy initiatives such as MATRIX and engaging in the wider Northern Ireland innovation policy network;
- engaging and leading in initiatives such as Connected Health, Environmental Technologies, Renewable Energy, Food, Engineering, Polymers, Manufacturing and ICT;
- promoting and managing the Proof of Concept programme; and
- managing multiple new and ongoing collaborative R,D&I and consultancy relationships between Queen's research base and the major employers in Northern Ireland such as Seagate, Bombardier, Almac Sciences, Warner Chillcott and Andor.

However taking a very limited view and concentrating only on those activities most closely aligned to the activities funded by NI HEIF 2, QUB has estimated that the nett QUB contribution would be at least £2.3 million over the three year period of the funding (based on the activities described above).

Focusing particularly on the DEL HEIF 2 funding, Table 4.2a and Table 4.2b illustrate how this has been allocated by project and by year (for each of the three years over which NI HEIF 2 funding runs). This shows that some of the areas it supports are fully funded by NI HEIF 2; in other areas, NI HEIF 2 provides part of the funding for projects. All of the NI HEIF 2 funding is projected to be spent by the end of Year 3; the tables show that there have been some variances between actual expenditure and budget.

Table 4.2a
NI HEIF 2 Funding Allocation by DEL to QUB – Breakdown of funded activities (August 2007 – July 2010)

Project (contribution from DEL HEIF 2)	Activity funded by NI HEIF 2	Aug 2007 – July 2008		August 2008 – July 2009		August 2009 – July 2010	
		Budget	Actual	Budget	Actual	Budget	Projected
KEU (estimated at 59%)	Salary Costs (total incl. university funded)						
	KEU Director's Office	60,366	46,651	113,076	120,324	136,800	136,800
	Contracts and Licences Office	133,556	77,568	181,990	120,523	165,156	165,156
	Business Development and Commercialisation Office	74,375	17,474	231,600	123,207	200,656	200,656
	Consultancy and Technical Services Office	33,625	4,967	141,535	99,001	127,471	127,471
	Non-Salary Costs (total incl. university funded)						
	Patents	650,000	727,826	573,500	1,094,901	1,067,690	1,067,690
	Other	89,000	29,363	65,380	41,964	69,800	69,800
QUBIS (estimated at 100%)		250,000	250,000	250,000	250,000	250,000	250,000
Regional Office (estimated at 45%)	Salary Costs	182,523	148,927	226,007	261,554	251,888	319,376
	Non-Salary Costs	25,000	26,166	42,890	45,467	44,527	60,000
Science Shop (estimated at 100%)	Salary Costs	93,261	91,813	97,382	98,670	100,728	102,293
	Non-Salary Costs	5,960	6,280	6,141	12,545	6,321	6,000
Continuing Professional Development Unit (estimated at 50%)	Salary Costs	34,787	31,665	0	34,800	0	37,775
	Non-Salary Costs	10,000	0	20,150	28,685	0	0

Source: QUB

Figures in Table 4.2a have been presented to be consistent with the financial data presented to DEL in the University's Annual NI HEIF 2 Progress Reports. In this context, the figures attributed to the KEU include not only the funding allocated by DEL but also funding allocated by the University to NI HEIF 2

activity. To clarify, due to the nature of the activity undertaken and the internal financial budgeting arrangements, KEU budgets are allocated and recorded on a total expenditure figure basis. In the other 'projects', NI HEIF 2 activity is recorded separately. Therefore in Table 4.2a the figures set down for KEU include funding from both DEL HEIF 2 and the University. For QUBIS, the Regional Office, Science Shop and CPD Unit only funding from DEL HEIF 2 is set down.

As the funding figures for KEU from DEL HEIF 2 and the University are available in the table, a DEL HEIF 2 funding percentage over the three years can be calculated (see Table 4.2b below). However for the other 'projects', as the University contribution is not readily available, estimates (over the three year period) are given. For QUBIS the percentage is estimated using the actual staffing and overheads costs in the 2009 QUBIS financial statements, and for the Regional Office, Science Shop and CPD Unit their percentages are estimates based on their projected percentages in 2009-10.

Table 4.2b
Summary of Table 4.2a – NI HEIF 2 Funding Allocation by DEL to QUB – Breakdown of funded activities (August 2007 – July 2011)

Project	Budget in Table 4.2a	Expenditure [A] in Table 4.2a	DEL HEIF 2 funded	University funded	DEL HEIF 2 as % of total
KEU	4,115,576	4,271,342 [B]	2,528,458	1,742,884	59
QUBIS	750,000	750,000 [C]	750,000	Not included in the table	100 [D]
Regional Office	772,835	861,490 [C]	861,490	Not included in the table	45 [E]
Science Shop	309,793	317,601 [C]	317,601	Not included in the table	100 [E]
CPD Unit	64,937	132,925 [C]	132,925	Not included in the table	50 [E]
Total	6,013,141	6,333,358	4,590,474 [F]	1,742,884	

Notes:

[A] Expenditure is cumulative figure for the 'actual' for Aug 2007-July 2008, the 'actual' for Aug 2008-July 2009 and the 'projected' for Aug 2009-July 2010 set out in Table 4.2a

[B] Expenditure for KEU includes funding allocation from DEL HEIF 2 and funding allocation from the University.

[C] Expenditure for the other 'projects' includes funding allocation from DEL HEIF 2 only.

[D] This percentage is based on the actual staffing and overheads costs in the 2009 QUBIS financial statements.

[E] This percentage is an estimate based on the percentage projected for 2009-10 (additional work would be required to collate the exact figure over the three year period).

[F] Total value of HEIF 2 funding from DEL over the three year period.

Source: QUB

Table 4.3 illustrates how the Invest NI HEIF 2 funding is allocated by project and by year (for each of the three years of NI HEIF 2 funding). According to QUB, all of the NI HEIF 2 funding is projected to be spent by the end of Year 3; the table also shows there are some variances between actual expenditure and budget.

Table 4.3
NI HEIF 2 Funding Allocation by Invest NI to QUB – Breakdown of funded activities (April 2008 – Mar 2011)

Project	Activity	Apr 2008 – Mar 2009		Apr 2009 – Mar 2010		Apr 2010 – Mar 2011		Total	
		Budget	Actual	Budget	Projected	Budget	Projected	Budget	Projected
Marketing and Sales Support for existing spinout companies	Salary Programme Manager (0.5 FTE)	23,013	3,009	24,342	3,851	6,145	46,640	53,500	53,500
	Fees for Sales & Marketing Panel	75,000	23,021	100,000	82,227	25,000	94,752	200,000	200,000
	Expenses for Sales & Marketing Panel	11,250	1,200	15,000	5,340	3,750	23,460	30,000	30,000
	TOTAL	**109,263**	**27,230**	**139,342**	**91,418**	**34,895**	**164,852**	**283,500**	**283,500**
Invest NI Enterprise Fellowship Scheme	Salary Programme Manager (0.25 FTE)	13,157	7,085	13,571	15,235	13,957	18,365	40,685	40,685
	Fellowship bursaries - 2 starts Aug 2008	60,000	27,794	60,000	92,206	0	0	120,000	120,000
	Fellowship bursaries – 2 starts Aug 09	0	0	60,000	56,363	60,000	63,637	120,000	120,000
	Training costs	10,000	863	10,000	0	0	19,137	20,000	20,000
	Marketing and Publicity	3,750	92	2,500	0	0	6,158	6,250	6,250
	TOTAL	**86,907**	**35,834**	**146,071**	**163,804**	**73,957**	**107,297**	**306,935**	**308,935**
Digital Engineering Competence Centre	Salary Engineer (1 FTE)	26,231	16,803	43,056	43,780	14,492	23,196	83,779	83,779
	Salary Engineer (1 FTE)	16,995	12,557	31,139	33,169	10,144	12,552	58,278	58,278
	Salary Admin (0.25 FTE)	5,203	6,200	5,276	2,369	0	1,910	10,479	10,479
	Software	30,000	263	0	21,505	0	8,232	30,000	30,000
	Marketing and publicity	1,000	0	1,500	1,500	1,000	2,000	3,500	3,500
	Seminar/workshops/training programme	2,000	0	5,000	2,610	5,000	9,390	12,000	12,000
	Travel / subsistence	500	222	500	961	500	317	1,500	1,500

Table 4.3
NI HEIF 2 Funding Allocation by Invest NI to QUB – Breakdown of funded activities (April 2008 – Mar 2011)

Project	Activity	Apr 2008 – Mar 2009		Apr 2009 – Mar 2010		Apr 2010 – Mar 2011		Total	
		Budget	Actual	Budget	Projected	Budget	Projected	Budget	Projected
	TOTAL	**81,929**	**36,045**	**86,471**	**105,894**	**31,136**	**57,597**	**199,536**	**199,538**
Polymer Processing Competence Centre	Salary Programme Manager (0.5 FTE)	22,828	3,443	24,342	977	25,074	67,824	72,244	72,244
	Salary Engineer (1 FTE)	34,836	0	45,756	28,549	47,208	99,251	127,800	127,800
	Salary Admin (0.25 FTE)	5,203	1,043	5,386	1,169	5,397	13,774	15,986	15,986
	Marketing and publicity	2,250	0	2,000	0	2,000	6,250	6,250	6,250
	Seminar/workshops/training programme	5,000	0	5,000	8,499	5,000	6,501	15,000	15,000
	Travel / subsistence	1,000	0	1,000	635	1,000	2,365	3,000	3,000
	TOTAL	**71,117**	**4,486**	**83,484**	**39,829**	**85,679**	**195,965**	**240,280**	**240,280**
Environmental Excellence	20 company fees	100,000	95,000	100,000	105,000	100,000	100,000	300,000	300,000
	Salary Admin (0.25 FTE)	5,203	5,941	5,386	10,045	5,397	0	15,986	15,986
	Marketing and publicity	2,250	224	2,000	1,319	2,000	4,707	6,250	6,250
	Travel / subsistence	500	26	500	392	500	1,082	1,500	1,500
	TOTAL	**107,953**	**101,191**	**107,886**	**116,756**	**107,897**	**105,789**	**323,736**	**323,736**

Source: QUB

4.2.2 NI HEIF 2 - DEL Funded Activities - QUB

Overview

Within its NI HEIF 2 Institutional Plan (which is required in respect of the DEL component of NI HEIF 2 funding), Queen's University Belfast (QUB) indicated its plans for use of DEL NI HEIF 2 funding (over £1.5m per annum over 3 years). Its aim has been to "*build a comprehensive knowledge transfer infrastructure which has its focus within the Knowledge Exploitation Unit, within QUBIS Ltd, and within a number of industrial support units*". DEL NI HEIF 2 has supported the following:

- Establishment of a dedicated **Knowledge Exploitation Unit** (KEU) which incorporates some of the projects which would also have been supported under the previous round of HEIF funding, NI HEIF 1 (mainly IP and Mentoring) but has been strengthened by the appointment of Business Development Staff, enhanced contracts and licensing expertise and a renewed emphasis on increasing consultancy to local companies, as well as closer articulation and collaboration with QUBIS Ltd.
- Monitoring support for the **continuing development of industry relevant training programmes**;
- Responsiveness to the needs of the community sector via the **Science Shop**;
- High quality **student work placements and experience opportunities**; and
- Monitoring of the University's leadership role in **prioritising innovation and economic development** within Northern Ireland.

Knowledge Exploitation Unit (KEU)

The **KEU** works and engages with academic staff, research staff, technical staff and students to:

- Identify all intellectual property and knowledge with commercial potential, and ensure that the intellectual property is protected;
- Promote and broker intellectual property and knowledge to industry and the wider community leading to successful knowledge exploitation and income generation;
- Promote and broker the expertise and facilities of the university to industry and the wider community leading to successful knowledge exploitation and income generation; and
- Encourage and support academic and research staff to engage in knowledge exploitation activity.

The **KEU** operates through four offices:

- the **Contracts and Licences Office** with a remit to identify and protect the IP of the university and provide expertise in contract preparation, negotiation and execution;

- the **Business Development and Commercialisation Office** with a remit to identify the IP and knowledge generated at the University which has commercial potential, to support the exploitation of that IP and knowledge through spin-out activity (in support of QUBIS Ltd), licensing, contract research and consultancy, to work with industry to identity areas for university research which would have future potential for commercial exploitation. This Office manages and supports Invest NI funded Proof of Concept projects;

- the **Consultancy and Technical Services Office** with a remit to identify opportunities for technical services and business and public sector consultancy and to work with industry to identify areas of university resources which would have potential for commercial exploitation to the mutual benefit of business and the University; and

- the **Knowledge Transfer Centre** responsible for delivery of KT activities to businesses through KTPs.

The KEU, through the Business Development and Commercialisation Office, has a particular responsibility to manage and support Invest NI funded Proof of Concept projects. These projects will ultimately produce the majority of spin-out companies and licensing opportunities in the future, therefore the role of the KEU in nurturing these projects is crucial. However not all spin-out companies and licensing opportunities will result from the Proof of Concept scheme and the KEU has the key role in identifying all intellectual property and "know how" with commercial potential, and with QUBIS Ltd, determining the most appropriate routes for commercial exploitation.

DEL NI HEIF 2 supports some of the costs of the KEU but does not fund it all. It supports the following:

- the KEU Director and administration staff;

- the Contracts and Licences Office;

- the Business Development and Commercialisation Office;

- the Head of Consultancy and Technical Services Office and the Manager of the University Consultancy scheme within that office.

DEL NI HEIF 2 does not fund the NI Technology Centre (which sits within the Consultancy and Technical Services Office in KEU) or the Knowledge Transfer Centre (which is a unit within KEU).

(Note: The NI Technology Centre and the Knowledge Transfer Centre (both within the KEU) are two of five industrial support units[7] in QUB; the remaining three industrial support units

[7] The five industrial support units in QUB are:

- **NI Technology Centre (NITC)** involved in the transfer of best practice in design, construction and manufacturing technologies to help strengthen the competitiveness of all sectors of industry. Services include product and process development, including all aspects of product life cycle management, digital manufacturing, 3D factory simulation and optimisation, design consultancy, materials testing and electromagnetic compatibility (EMC) testing.

are within schools in QUB. All of the industrial support units have a remit to work directly with industry).

QUBIS

DEL NI HEIF 2 makes a contribution to the funding of **QUBIS Ltd**[8] activities. The activities supported are as follows: NI HEIF 2 contributes to the funding of the staffing and overheads in QUBIS, and therefore in that context all activities of the organisation. This has embedded the funding received from Invest NI under NI HEIF 1 for QUBIS staff to deliver mentoring support to spin-out companies to aid company growth and to potential entrepreneurs developing their business propositions.

QUBIS activities are focused on commercialising the University's research and development activities through the formation of spin-out companies. QUBIS Ltd encourages, supports and funds new business start-ups using the Intellectual Property and "know how" generated from the research and development carried out at Queen's. The University, through QUBIS Ltd, takes an equity holding in new spin-out ventures in return for an investment of cash and / or intellectual property with the medium to long term aim to establish an ongoing stream of dividend, or other income, from its investments.

QUBIS Ltd proactively seeks to identify and evaluate commercially exploitable research and resources from within the University. Management and partners, who have the appropriate skills and access to the marketplace, are then sought. All new ventures are market led and only those with strong feedback from the marketplace are supported. QUBIS Ltd was one of

- **Knowledge Transfer Centre (KTC)** manages the KTP scheme for QUB; it is held as an exemplar centre in the UK. KTPs are one of the most successful knowledge transfer mechanisms and involve partnerships between companies and Queen's through which graduates are placed in companies to work on strategic projects for a period of between one and three years. The graduates are fully supported by the University in terms of expertise and facilities whilst working on the projects.
- **Polymer Processing Research Centre (PPRC)** provides expertise and facilities required to undertake fundamental and applied research in polymer processing. Services to industry range from development of new processes and innovative products through processing trials, material development, process optimisation, the analysis and testing of raw materials and finished products to data searches, consultancy, technical advice and training.
- **QUESTOR Centre - Applied Technology Unit (ATU)** provides assistance to industry in relation to environmental issues that can affect business performance. The main activities of the Unit are the provision of an environmental consultancy service, new environmental product and process development, waste and energy minimisation, water efficiency, water and wastewater treatment and clean production and manufacturing. Note: The ATU is a subset of the QUESTOR.
- **Analytical Services and Environmental Projects (ASEP)** offers a wide range of analytical services to industry, with particular expertise in the area of environmental monitoring. Experience and expertise is available in the full range of modern analytical techniques including elemental analysis, spectrometry, chromatography and mass spectrometry.

[8] QUBIS Ltd was established in 1984 to commercialise the University's research and development activities through the formation of spin-out companies. It is 100% owned by the University and operates with an independent board.
QUBIS Ltd manages three funds - the University Challenge Fund (UCF) is a seed fund that is co-owned by Queen's and the University of Ulster; the QUBIS Ltd Normal Fund is for early stage companies; and the QUBIS Ltd Development Fund is for development stage companies with more than £500,000 in sales

the first such units to support company spin-outs from the Higher Education sector, and the first to invest capital into those companies. Since 1984 it has been involved in the creation of over 50 spin-out companies from Queen's research and development activities. In a national survey of UK universities published by HEFCE in October 2008, QUBIS Ltd was ranked first in the UK in terms of the revenues of its spin-out companies and second after Cambridge in the number of employees in its spin-out portfolio.

The success of QUBIS is a key factor in Queen's University receiving the highly prestigious Times Higher Education "Entrepreneurial University of the Year Award" for 2009 (see section 4.2.6 below).

Other Activities Supported through DEL NI HEIF 2

DEL NI HEIF 2 is also used to support KT activities in other units:

- The **Regional Office** – which is involved in enhancing the business / community / university engagement where the University hosts fora, seminars, lectures and other events which bring industry, academia and the public and voluntary sectors together to learn and network for the benefit of the economy and society. One such example is the Chief Executives' Club which has an industry, academia and policy maker membership and meets five-six times per year to network and hear guest speakers.
- The **Science Shop** – a unit within the Regional Office providing opportunities for community and voluntary groups to access the knowledge and information resources of the University through student projects. Typical projects are in subjects dealing with environmental issues, community health issues, social policy and legal issues. (Note: The Science Shop is a collaborative programme with UU).
- The **Continuing Professional Development (CPD) Unit** - a unit within the School of Education which delivers a specialist short course "Training and Development programme" to meet industry's training and CPD needs in the areas of management and leadership, business and organisation, quality management, process and engineering, communication and personal development.

4.2.3 Performance – NI HEIF 2 - DEL funded activities - QUB

Table 4.4 illustrates targets for DEL NI HEIF 2 funded activities as set out in QUB's Institutional Plan - Annex C (Jul 2007) and progress reported against these for Year 1 and Year 2, along with projections for Year 3. The Status column summarises the overall performance (including projections for Year 3) against the overall targets. Targets for nine of the 12 metrics – including five relating to income - will be achieved (and in many cases exceeded by a substantial amount) if Year 3 projections are fulfilled. The shortfall relative to overall target for the remaining three metrics is not substantial - no more than 14% if projections are fulfilled. The three metrics projected to be Part Achieved are: No. of spin-out companies (1 under target of 8), No of Student Work Placements (sandwich courses) (8% under), No. of Student Work Experience Placements (14% under). Notes A, C, D below Table 4.4 explain the shortfall in the latter two of these. Spin outs are discussed below.

Whilst overall QUB has performed well, it is of some concern that the number of spin-out companies is one of the areas in which it will not meet its targets as this is an area which has the potential to have a tangible and direct impact on the economy (in terms of jobs, turnover and exports, for example) which is long-term and sustainable. (The five spin outs which are already established are discussed in Section 4.5.2). The target of 8 spin outs was forecast in July 2007; the actual performance has been affected by various factors including: the economic climate, the number of commercially viable projects coming forward for support, the availability of appropriate funding, and the capability of the potential promoters to 'make it happen'.

Note: with regard to income items shown in Table 4.4 – HE-BCI in its annual survey requests income information in relation to three sources – SMEs, non-SMEs (i.e. large companies) and 'other' sources (for example public sector and non-for-profit organisations). In Queen's University's AY 2008/09 return to HE-BCI, 34% of the total income came from SMEs and non-SMEs and 66% from 'other' sources. A very high percentage (estimate around 90%) of the income from 'other' sources came from the public sector.

Table 4.4

QUB – DEL Targets (Aug 07- Jul 08 to Aug 09 - Jul 10), Performance (Aug 07- Jul 08, Aug 08-Jul 09), Projections (Aug 09-Jul10) [AY 1st August - 31st July]

Activity	Benchmark 2005/06 Year on which NI HEIF2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Target	Projected	Above / below 3-yr target
No. of patent applications	49	64	55	86	57	94[E]	60	27	Achieved Exceeded by 20%
No. of patents granted	8	7	9	7	9	20[F]	9	32	Achieved Exceeded by more than x2
No. of spin-out companies	0	1	2	3	3	2	3	2	Part Achieved Shortfall of 1 (12%)
Income from licences	£100,000	£147,048	£125,000	£221,670	£150,000	£309,247[G]	£175,000	£372,000	Achieved Exceeded by x2
Contract research income	£7,814,000	£8,968,000	£8,210,000	£9,296,000	£8,600,000	£18,002,000[H]	£9,000,000	£18,000,000	Achieved Exceeded by 76%
Consultancy income	£828,000	£738,000	£900,000	£1,129,000	£1,000,000	£2,041,000[J]	£1,200,000	£2,150,000	Achieved Exceeded by 72%
Facilities and equipment related services income	£245,000	£594,000	£280,000	£687,910	£300,000	£4,143,000[K]	£330,000	£4,150,000	Achieved Exceeded by almost x10
Income from KT Programmes	£1,422,000	£1,578,294	£1,600,000	£1,699,467	£1,750,000	£1,782,924[L]	£1,850,000	£1,782,000	Achieved Exceeded by £64k (1%)
No. of CPD participants	428	325	450	463	450	542	450	673	Achieved Exceeded by 24%
No. Student Work Placements (sandwich courses) (FTEs)	192	192	200	187[A]	200	188[C]	200	175	Part Achieved Shortfall of 50 (8%)
No. of Student Work Experience Placements	1,800	1,326	2,000	2,018	2,200	1,883[D]	2,400	1,800	Part Achieved Shortfall of 299 (14%)
No. of Science Shop projects	50	55	60	46[B]	60	70	60	63	Achieved Shortfall of 1 (0.5%)

Table 4.4

QUB – DEL Targets (Aug 07- Jul 08 to Aug 09 - Jul 10), Performance (Aug 07- Jul 08, Aug 08-Jul 09), Projections (Aug 09-Jul10) [AY 1st August - 31st July]

Notes:

1. Key activities and targets were based on metrics determined for the HE-BCI survey.

2. Re: Benchmark 2005/06 and Targets 07/08, 08/09, 09/10 - contract research income noted above is less than 12% of the University's total research income.

A. No. of student work placements is that provided to the HESES return. The HESES return 2005-06, the benchmark year, included a number of language students. In 2007-08 these language students (35 FTEs) were recorded as ERASMUS students and not recorded in the HESES return, hence the reduction from target.

B The Science Shop did not meet its target for projects. One course in Politics was withdrawn in 2007-8 for restructuring – this led to a reduction in projects. It is anticipated that, with the reintroduction of this revised course and the expansion of projects in new discipline areas piloted successfully in 2007-08, the overall 3-year target will be achieved.

C. No. of student work placements excludes 61 (30 FTE's) British Council ERASMUS language placements which would previously have been treated as sandwich placements. For comparison against the target the achieved number would be 218 (188 + 30 FTEs). (Note: In the HESES returns one student (or placement) counts as 0.5 FTE, therefore 61 students count as 30 FTEs.)

D. No. of work experience placements has not achieved its target in the reporting period with students finding it more difficult to find employment experience opportunities. With the downturn in the economy employers have become increasingly reluctant to employ students, even on a temporary basis, at a time when regular workers' jobs are at risk.

E. No. of patent applications reported in 2008/09 HE-BCI Survey return is 109 which includes 15 'QUILL' patent applications, but 'QUILL' patent applications were not included in the original targets in the Institutional Plan. Therefore a figure of 94 patent applications, excluding 'QUIILL' patent applications, is shown above.

F. No. of patents granted reported in the 2008/09 HE-BCI Survey return is 38 which includes 18 patents granted to 'QUILL', but 'QUILL' patents granted were not included in the original targets in the Institutional Plan. Therefore a figure of 20 patents granted, excluding 'QUILL' patents granted, is shown above.

G. "Income from licences" of £309,247 is a net income figure which represents income remaining after disbursements to investors and other interested parties; this was the income status used to determine the Institutional Plan targets. The 2008/09 HE-BCI Survey return, in contrast, reports gross income of £3,191,000, i.e. income before disbursements to investors and other interested parties, as advised in the HESA guidelines. In addition, income from 'QUILL' licences is not included in the table above but is included in the HE-BCI Survey return.

H. "Contract research income" increased from £13,808,250 in the progress report (submitted Sep 2009) to £18,002,000 as reported in 2008/09 HE-BCI Survey return and included above. After review of the guidelines and consultation with HESA, some additional areas of income were identified and included in the HE-BCI Survey return that would not have previously been included in Survey returns; and neither were they included in the Sep. progress report.

J. Additional income was identified for "consultancy income" during the completion of the 2008/09 HE-BCI Survey return and is included in this table.

K.Revised figure of £4,143,000 above (and the figure returned in the 2008/09 HE-BCI Survey return) for "facilities and equipment related services income" is significantly higher than the original figure of £484,594 stated in Sep progress report. As with contract research some additional areas of significant income were identified and included in the HE-BCI Survey return following review of the guidelines and consultation with HESA. (e.g.: during consultation with HESA, it became apparent that income from specialist library facilities and physical education facilities used by external parties could be included in the Survey return.

L. Income from KTPs included at £1,782,924. However please note that KTP income is included in the 2008/09 HE-BCI Survey return under the category "Collaborative Research", and for the first time HESA required additional information on 'in-kind income' to be returned under this category. KTP 'in-kind income' is therefore included in the HE-BCI Survey return giving a total income for KTP of £3,731,000 for 2008/09, but the KTP 'in-kind income' is not included in the table above to be consistent with the original targets set down in the Institutional Plan.

Sources:

Benchmark 2005/06 & Targets for Year 1, 2, 3 from QUB – NI HEIF 2 Institutional Plan – Annex C (Jul 2007); Achieved 2006/07 –patent applications, patent granted, contract research, consultancy, facilities & equipment income from HE-BCI; Achieved for Year 1 and 2 from QUB Progress Reports for DEL 2007/08 & 2008/09 (Revised Jan 2010); Projections Year 3 from QUB

4.2.4 NI HEIF 2 – Invest NI Funded Activities - QUB

The Invest NI HEIF 2 funding (over £451k per annum over 3 years) has been used to support 5 innovative projects under two themes within QUB. These are:

- **Theme: Enterprise and Entrepreneurship**
  - ***A) Marketing and Sales Support for existing spin-out companies***

    This project involves making sales and marketing expertise available to spin-out companies to enable them to accelerate their growth in global markets. An experienced entrepreneur has been appointed to work with three spin-out companies providing key sales and marketing input.

  - ***B) Invest NI Enterprise Fellowship Scheme***

    In this project funding is made available to academic staff to enable them to 'buy out' time from teaching and administration to focus full-time on commercialisation projects leading to the establishment and early growth development of spin-out companies, or to extend the contract of a post doctorate researcher to allow for the research to be taken forward to commercialisation. Each Enterprise Fellow receives mentoring and training support from QUBIS Ltd, the KEU, training providers and business advisors over a two year period. Four Invest NI Enterprise Fellows are currently being supported.

- **Theme: Innovation and Knowledge Transfer**
  - ***A) Digital Engineering Competence Centre***

    This project involves developing and delivering a programme promoting the tools and benefits of Digital Engineering. It involves selecting nine companies with potential to benefit significantly from Digital Engineering techniques, auditing those companies for potential applications and undertaking pilot programmes to demonstrate outputs and benefits. It would be envisaged that a number of applications to R&D programmes (such as KTP, Grant for R&D (which has replaced schemes such as START and COMPETE, for example)) of Invest NI or other funding sources will result. The outputs and benefits from these pilot programmes will then form the basis of a wider promotional campaign to Northern Ireland manufacturing industry on the benefits of Digital Engineering. The project is delivered by the NI Technology Centre (which is a unit within KEU, but not an area that is funded by DEL NI HEIF2).

  - ***B) Polymer Processing Competence Centre***.

    The Polymer Processing Research Centre (PPRC) is one of five industrial units in QUB; it provides the expertise and facilities required to undertake fundamental and applied research in polymer processing. Services to industry range from development of new processes and innovative products through processing trials, material development, process optimisation, the analysis and testing of raw materials and finished products to data searches, consultancy, technical advice and training.

Invest NI HEIF 2 funding does not support the infrastructure costs of this unit, however it has been used to support an innovative project (under the Theme: Innovation and Knowledge Transfer – see Table 4.5). The Invest NI HEIF 2 funded project seeks to provide the plastics industry with a range of activities including new product development support, skills training, topical seminars and workshops, research reports, foresight findings and partnership opportunities. One key aim of the project is to encourage the Northern Ireland plastics sector to innovate in terms of new product development in areas offering major growth potential, such as medical devices, biodegradable plastics and recycling. It aims to work with 10 companies with a new product development interest, audit those companies in terms what additional resources and actions would be necessary for them to introduce their desired new product development, and then assist them to develop relevant R&D applications (START, COMPETE and KTP for example) for submission to Invest NI or other funding sources.

- ***C) Environmental Excellence.***

Invest NI HEIF 2 funding does not support any of the infrastructure costs associated with the QUESTOR Centre; however it has been used to support an innovative project. The Invest NI HEIF 2 funding provides funding for membership fees of the QUESTOR centre for 20 SMEs for a three year period so they can benefit from the QUESTOR Centre's research programme in terms of new product, service or process development.

4.2.5 Performance – NI HEIF 2 – Invest NI funded activities – QUB

Table 4.5 sets out targets for Invest NI HEIF 2 funded activities and progress reported against these up to September 2009 (18 months in) along with projections up to March 2011. (Note: QUB provides detailed quarterly progress reports to Invest NI; we have drawn on these to present cumulative progress in order to assess whether or not the projects are on target). The Status column summarises overall performance (including projections for Year 3) against overall targets. Across the five funded projects, virtually all targets are on track to be achieved (if projections are fulfilled) and in some cases, have already been achieved. The only exceptions are in the Marketing and Sales Support project: sales for one of the three companies supported and overall increased jobs arising from this support – both targets have been adversely affected by the economic downturn.

Table 4.5

QUB – Invest NI Targets (April 2008 – Mar 2011), Performance (April 2008 – September 2009), Projections (to March 2011)

Theme	Project Name / Timescales / Funding	Target Deliverables	Progress (up to September 2009)	Projected to Mar 11	Status (re: 3-yr target)
Enterprise and Entrepreneurship	Marketing and Sales Support for existing spin-out companies 1 April 2008 to 31 July 2010 £283,500	Increase in sales of at least 60% for the three participating companies over the period of the funding.	Against the 06/07 baseline – performance of three companies: • A achieved 27% increase in sales. Sales down owing to adverse effects of recession and heavy workload on existing project. Indications for 09/10 are that A will continue to find sales difficult. The work of the consultant has been extremely valuable in the downturn keeping A focused on new customer development; this is expected to assist A to realise its exciting potential in the future. • B achieved 190% increase in sales • C achieved sales of £113k (from baseline of zero)	Company A performance adversely affected by recession Company B and C already achieved the target	Part Achieved 2 companies already achieved target 1 company sales adversely affected by recession
		Increased awareness by spin-out companies of the importance of sales, marketing and market research.	Marketing and Sales expert appointed following tendering process. Provides mentoring and consultancy services to the participating companies to achieve target deliverables. This has included: • sales and marketing health checks - reviews of existing sales and marketing plans, budgets and resources, sales resource capabilities, market competitive situations, and pricing structures and models; • Identifying sales and marketing and negotiation skills training courses, needs and appropriate candidates across all companies and training scheduled; • Tailored support including market research, support for sales/ marketing materials. resources, etc.	Yes	On track
		Growth targets set to accelerate spin-out company development.		Yes	On track
		Improved market focus of products.		Yes	On track
		Increased export sales.		Yes	On track
		Earlier achievement of critical sales volumes and values leading to increased viability and additional jobs.		Recession has put recruitment plans on hold	May not be fully achieved

Table 4.5

QUB – Invest NI Targets (April 2008 – Mar 2011), Performance (April 2008 – September 2009), Projections (to March 2011)

Theme	Project Name / Timescales / Funding	Target Deliverables	Progress (up to September 2009)	Projected to Mar 11	Status (re: 3-yr target)
	Invest NI Enterprise Fellowship Scheme 1 April 2008 to 31 March 2011 £306,935	4 Invest NI Enterprise Fellowships.	4 fellowships in place at end of Q3 2009: Mr Alan Clarke; Dr Sakir Sezer; Dr Mark Kelly; Dr Andrew Woods	4	Achieved
		4 potential 'Global Start' businesses having been or in the process of being established	2 businesses established: Titan IC System Ltd / LamhRoe Ltd	4	On track
Innovation and Knowledge Transfer	Digital Engineering Competence Centre 1 April 2008 to 31 July 2010 £199,536	9 pilot programmes utilising digital manufacturing techniques.	*4 completed (*AWP Environmental / McCloskey International, Pakflatt / Seven Technologies. *2 ongoing* (Emerson Copeland / Chesapeake)	9	On track
		2 R&D applications to Invest NI or other funding sources	Involved in R&D application with AWP Environmental. Initial discussions with Howden. For these two companies, only Invest NI R&D assistance has been investigated. From experience in QUB, Invest NI assistance is seen as the most appropriate.	2	On track
		1 seminar/workshop per annum.	3DVIA seminar event held on 19/11/08	2	On track
		1 skills training programme per annum.	V5 robotics training on 28 to 30/07/09.	2	On track
		Promotional campaign promoting the benefits of utilising digital manufacturing techniques.	Ongoing presentations to individual companies and industrial groups. Promoting use of Digital Manufacturing technologies to future engineers through School of Mechanical and Aerospace Engineering.	Yes	On track

Table 4.5

QUB – Invest NI Targets (April 2008 – Mar 2011), Performance (April 2008 – September 2009), Projections (to March 2011)

Theme	Project Name / Timescales / Funding	Target Deliverables	Progress (up to September 2009)	Projected to Mar 11	Status (re: 3-yr target)
	Polymer Processing Competence Centre 1 April 2008 to 31 March 2011 £240,280	10 companies audited for new product development requirements over period of the funding.	5 companies audited: Cherry Polymers, Canyon Europe, Valpar Industrial, Perfecseal, Colorite Europe	10	On track
		3 R&D applications to Invest NI or other funding sources.	Target exceeded: • KTPs - Valpar Industrial, Perfecseal, Cherry Polymers, Cherry Pipes • IntertradeIreland INNOVA programme - Colorite Europe • Invest NI R&D programme - Canyon Europe Note: there is overlap between companies audited and those pursuing R&D applications. The project involves auditing companies for new development potential, then assisting those companies identified to undertake those developments assisted by R&D funding i.e. one leads to the other.	8	Achieved (target (3) exceeded (by 3) and projecting total of 8
		2 newsletters per annum.	In preparation.	2	On track
		1 seminar / workshop per annum.	Medical Polymers Conference Sept 2008 Medical Polymers Workshop July 2009	3	On track
		1 skills training programme per annum.	1 injection moulding training course delivered. Training programme on tool design in preparation.	2	On track
		Promotional campaign to environmental sector.	In preparation	Yes	On track

Table 4.5

QUB – Invest NI Targets (April 2008 – Mar 2011), Performance (April 2008 – September 2009), Projections (to March 2011)

Theme	Project Name / Timescales / Funding	Target Deliverables	Progress (up to September 2009)	Projected to Mar 11	Status (re: 3-yr target)
	Environmental Excellence 1 April 2008 to 31 March 2011 £323,736	At least 10 SMEs to be participating in specific projects within the QUESTOR technology transfer programme within 2 years of membership.	3 companies already participating: • Kedco Energy NI Ltd has a KTP project which is progressing well. Also involved in Renewable Energy Competence Centre application to Invest NI. • Williams Industrial Services Ltd involved in the activated dolomite steering group; also leading on an INNOVA application to InterTradeIreland on a phosphate reduction project. • CDE Ireland Ltd has a KTP project which is progressing well; also investigating potential of partnering with German companies on business development activity. These contacts were facilitated by the QUESTOR international network.	10	On track
		At least 5 SMEs to have Licensing Agreements (enabling them to market innovative products or processes derived from the QUESTOR research programme) in place after 3 years' membership.	Information will only be available at end of programme.	5	On track
		At least 10 SMEs to retain membership after initial 3 years' membership.	Awaits completion of programme	10	On track

Source: NI HEIF 2 – Projects funded by Invest NI – Quarterly Progress Reports from April-June 2008 to July-September 2009; Projected information provided by QUB

4.2.6 QUB Performance – External Recognition

Apart from the performance measured on specific metrics, it is also worth noting external recognition of the performance of QUB in the form of a major accolade received by QUB for activities supported by DEL under NI HEIF 2. This is consistent with the recent (2009) ESRC-sponsored report by the UK-Innovation Research Centre 2009 (see Section 5.3.5, also Appendix III – Strategic Context – Section 3.2.10) and recent HE-BCI surveys which demonstrate that the Northern Ireland HE sector leads other UK regions in many aspects of business & community engagement. The award is as follows:

- **QUB named Times Higher Education "Entrepreneurial University of the Year 2009"**

  In their citation, the judges highlighted various aspects of Queen's success in entrepreneurship including the success of its spinout businesses through QUBIS, which commercialises the University's research and development activities. It has helped Queen's become the number one Higher Education Institution in the UK in terms of turnover, generating a combined total of £102 million in 2009. The University's Knowledge Transfer Unit which facilitates partnerships between academic groups and companies who need access to skills and knowledge in order to innovate was also highlighted. It is currently the UK's leading participant in Knowledge Transfer Partnerships.

  The University's commitment to enterprise can also be seen in its pioneering model of entrepreneurship education within the curriculum which is now embedded in 116 pathways, reaching 11,000 students across the University. This has led to over 500 students directly engaging in business activity.

  The University also offers Enterprise SU, a unique centre in UK universities which promotes enterprise opportunities for students in the Students' Union. It has already been recognised both locally and nationally for its excellence.

  Entrepreneurship also underpins Queen's aim to become a global Top 100 University. The University hosted the International Roundtable for Entrepreneurship Education in 2008 and has developed alliances with institutions in India, China and Malaysia, as well as world renowned entrepreneurial institutions such as Stanford University, Massachusetts Institute of Technology (MIT) and Babson College (a private United States business school located in Wellesley, Massachusetts).

4.3 University Of Ulster – NI HEIF 2 Funded Activities and Performance

The funding provided by DEL and Invest NI under NI HEIF 2 to UU is illustrated in Table 4.6.

4.3.1 NI HEIF 2 – UU Funding

Table 4.6
NI HEIF 2 Funding Allocation by DEL and Invest NI to UU

Univ.	NI HEIF 2 Funding Allocation			
	DEL		Invest NI	
	£ per annum	Period	£ per annum	Period
UU	£869,842	1st August 2007 to 31st July 2010	£403,700	1st November 2007 to 31st October 2010
Source: DEL Letters of Offer (21st May 2007) / Invest NI Letters of Offer (31st March 2008)				

In addition to the NI HEIF 2 funding that DEL and Invest NI provide to UU, the University also make a contribution to NI HEIF 2 activities.

UU has indicated that whilst it is difficult to quantify the amount of funding the University contributes towards activities directly supported by NI HEIF 2, it should be noted that the funding and engagements are fully integrated into the wider processes within the University (funded from other sources) to facilitate the commercialisation of research and the engagement with Business and the Community. In addition, NI HEIF 2 is one of a number of sources which funds the Office of Innovation.

Focusing particularly on the DEL HEIF 2 funding, Table 4.7a and Table 4.7b illustrate how this has been allocated by project and by year (for each of the three years over which NI HEIF 2 funding runs). All of the areas shown in these tables are entirely NI HEIF 2 funded.

NI HEIF 2 funding is utilised to support Knowledge and Technology Transfer activities on behalf of the University. While Knowledge Transfer is conducted primarily through Teaching and Consultancy, Technology Transfer happens as a result of the exploitation of the Research undertaken within the University. Therefore the funding received through DEL HEIF 2 (£2,609,526) is used to exploit the knowledge generated through the University's research income. The Research Grants and Contracts Income was approximately £23,358,000 for 07/08 and approximately £20,594,000 in 08/09.

Virtually all of the NI HEIF 2 funding is projected to be spent by the end of the third year; the tables shows that there have been some variances between actual expenditure and budget.

Table 4.7a

NI HEIF 2 Funding Allocation by DEL to UU – Breakdown of funded activities

Project	Activity funded by NI HEIF 2 (100% funded by HEIF 2)	Aug 2007 – July 2008		August 2008 – July 2009		August 2009 – July 2010	
		Budget	Actual	Budget	Actual	Budget	Projected
1. Stimulating Innovation in the Knowledge Base	Production of Guide for Researchers on IP, Tech & KT Workshops for Research Supervisors on IP, Tech & KT	£12,000	£9,612	£7,000	£9,612	£7,000	£7,000
2. Fostering Academic Enterprise	a) Coordinator of Academic Enterprise posts in each faculty (x6). Part funding of each post (£10k per annum). This includes: • £5k on literature, signage/ stands and other expenses incurred in support of the promotion of academic enterprise within respective Faculties; and • up to £5k to backfill these posts through the recruitment of new staff to undertake teaching, administration or research on behalf of the CAE	£10,000	£10,481.99	£25,000	£25,313.69	£45,000	£40,000
	b) £20k per annum per Faculty (£120k in total) - multi-disciplinary Academic Enterprise fund which will sponsor a series of innovation competitions and projects.	£80,000	£92,637.57	£95,000	£109,608.31	£75,000	£77,594
	TOTAL	£90,000	£103,119.56	£120,000	£134,922	£120,000	£117,594
3. Building an Environment for Innovation and Enterprise	Staff engage with the marketplace to identify and develop contemporary infrastructural models: • development of infrastructure to attract industry-academic engagement, such as proposed Academic / Business / Clinical Research (ABC) facility, Centres of Excellence, Enterprise Zones; and • development of appropriate programmes of support (Innovation Promoters Programme, Reinventing the Wheel) The funding has supported promotion and outreach to support the CTRIC project and a number of Innovation Promoters Programme Projects.	£4,000	£1,489.90	£6,000	£6,786.27	£6,000	£6,000
4. Capture & Satisfaction of Industrial Requirements	Cost of CRM System: Introduced in Year 2; Installation and Training in Year 3.	£16,000	£5,056.03	£16,000	£2,747	£16,000	£10,051
6. Transferring of	a) Science Shop (Recurrent) - NOT staff costs	£15,000	£17,335	£15,000	£14,761	£15,000	£16,234

Table 4.7a

NI HEIF 2 Funding Allocation by DEL to UU – Breakdown of funded activities

Project	Activity funded by NI HEIF 2 (100% funded by HEIF 2)	Aug 2007 – July 2008		August 2008 – July 2009		August 2009 – July 2010	
		Budget	Actual	Budget	Actual	Budget	Projected
Knowledge into the Wider Community	b) Promotion of Knowledge Transfer - NOT staff costs (this expenditure has supported Projects 1, 3, 6 and 7)	£20,000	£11,613.85	£30,000	£31,638.85	£40,000	£39,690
	c) Office of Innovation (Recurrent) – NOT staff costs (this expenditure has supported projects 1,3,4,6 and 7)	£65,000	£29,488.97	£55,000	£43,234.93	£45,000	£49,728
	TOTAL	£100,000	£58,437.82	£100,000	£89,634.78	£100,000	£105,652
7. Innovation Stakeholder Development	Funding supported CPD of Office of Innovation Staff and attendance at relevant conferences and Courses. TOTAL	£10,000	£10,099.16	£15,000	£12,339.20	£15,000	£12,000
Total Programme Costs		£232,000	£187,814.47	£264,000	£256,041.25	£264,000	£258,297
Total Salaries		£585,395	£510,424	£619,480	£660,638	£644,651	£703,472
Grand Total (Programme and Salary Costs)		£817,395	£698,238.47	£883,480	£916,679.25	£908,651	£961,769

Source: UU

Table 4.7b

NI HEIF 2 Funding Total Allocation by DEL to UU – Summary of Budget vs Actual (Projected) Spend

Project	Initial Budget	Actual (inc projected)
1. Stimulating Innovation in the Knowledge Base	£26,000	£26,224
2. Fostering Academic Enterprise	£330,000	£355,636
3. Building an Environment for Innovation and Enterprise	£16,000	£14,276
4. Capture & Satisfaction of Industrial Requirements	£48,000	£17,854
6. Transferring of Knowledge into the Wider Community	£300,000	£253,724
7. Innovation Stakeholder Development	£40,000	£34,438
Salaries	£1,849,526	£1,903,758
Total	£2,609,526	£2,605,910

Source: UU

The University of Ulster submitted outline budgets to DEL indicating its proposed areas of spend as part of its Implementation Plan; these figures are included in Table 4.7a and Table 4.7b.

In managing the NI HEIF 2 projects, UU set up a Cost Centre for the overall HEIF Project, further Cost Centres for Science Shop, given the discrete nature of its activity, Faculty related cost centres, and a further cost centre for the Knowledge Club. The spend relating to Science Shop and Knowledge Club cost centres are detailed as Project 6a) and Project 6b) in Table 4.7a under Project 6 – Transferring of Knowledge into the Wider Community. The intention in setting up a reasonably small number of cost centres was to minimise the administration of the overall budget – particularly given that a range of activities funded impacted across a variety of the projects outlined.

Regular meetings were held to ensure that the University's NI HEIF 2 funding was used to ensure that the targets agreed with DEL were met and that spending was kept within the allocation provided by DEL. Spend in Year 1 was slow for a variety of reasons including internal restructuring and the ongoing recruitment of staff, and lower than expected salary and recurrent costs.

Actual spend in some areas does not match with the indicative budgets in the Institutional Plan for a number of reasons:

- Project 2 – figures submitted in the Implementation Plan were based on projections rather than the actual income received through NI HEIF 2, and were therefore incorrect. If the University had received funding as suggested (£10k for each of the six Faculties for a CAE (£60K) and £20k per faculty to fund projects (£120k)) it would have received £180k per annum to fund this type of activity, however as this level of funding was not available to the University, the budget was revised accordingly.

- Spend relating to the Coordinators of Academic Enterprise (CAEs) within Strand 2 of the Activity increased annually as the level of activity of the newly appointed CAEs increased. The budget for the Academic Enterprise Fund was revised, to support an Impact Fund as reported to DEL.

- Activities undertaken in relation to Fostering Academic Enterprise activity included a number which led to the Capturing and Satisfaction of Industrial Requirements (Strand 4) and these were allocated to Strand 2. As a result there is a significant overspend allocated to Strand 2 and an underspend allocated to Strand 4. One reason for this was the launch of the Invest NI

Innovation Vouchers programme in summer 2008 which led to the University focusing its efforts on promoting direct academic engagement with business. To date, UU has completed almost half of the Innovation Vouchers awarded in NI and is the lead provider out of 38 providers, by a large margin. As a result, the cost of these activities has been allocated to Strand 2 rather than Strand 4.

- A wide variety of activities have been undertaken throughout the project period. Some events, publications, trips, competitions and public engagements, for example, impact across a range of the projects outlined in the table, and this has become very apparent during the funding period:
    - For example a Knowledge Club event aimed at business and featuring an external and University speaker will have incurred costs (which might include some or all of the following: travel expenses for speakers, catering costs, venue and AV hire) and its outputs would have had an impact on the following projects:

      2. Fostering Academic Enterprise – Staff attending the event may have engaged with companies and a project may have been developed

      4. Capture and Satisfaction of Industrial Requirements – a range of external organisations may have attended the event and engaged with Office of Innovation Staff

      6. Transferring of Knowledge into the Wider Community – some of the organisations in attendance may have been from the Social Economy Sector

      7. Innovation Stakeholder Development – Attendance at the event may have contributed to the CPD of relevant University staff
    - Another example would be the costs incurred (design and development) in the development of a publication. Impacts could include:

      2. Fostering Academic Enterprise – through raising awareness of the benefits of technology and knowledge transfer amongst academics, leading to an increase in the number of staff engaged

      4. Capture and Satisfaction of Industrial Requirement – information gathering as a result of enquiries generated as a result of the publication

      6. Transferring of Knowledge into the Wider Community – the generation of enquiries leading to the development of projects with the Social Economy Sector

    These examples illustrate that with impacts across a number of projects, it is possible for expenditure on some activities to be allocated against one of several projects. This explains why in some cases actual spend does not match the budgets originally submitted, however at an overall level, the budget and actual expenditure (including salary and non salary) are very close.

All of the funded activity has been undertaken with the aim of meeting the targets identified and agreed with DEL, and in most cases these have either been met or exceeded. This is also reflected in the University's overall performance in the HE-BCI return.

Table 4.8 illustrates how the Invest NI HEIF 2 funding is allocated by project and by year (for each of the three years over which NI HEIF 2 funding runs). All of the NI HEIF 2 funding is projected to be spent by the end of the third year; the table also shows that there have been some variances between actual expenditure and budget, but overall the total spend reflects the total budget.

Table 4.8
NI HEIF 2 Funding Allocation by Invest NI to UU – Breakdown of funded activities

Activity	Nov 2007 – Oct 2008		Nov 2008 – Oct 2009		Nov 2009 – Oct 2010	
	Budget	Actual	Budget	Actual	Budget	Projected
Market Analyst Salary Costs*	41756	0	41756	83512	41756	116488
Travel, conferences and training	26500	40191	26500	46243	26500	12000
Commercial Advisory Panel (CAP) Costs	26667	12437	26667	291	26667	0
Travel Costs relating to CAP	6667	3943	6667	551	6667	0
Technical & market assessment	60320	51549	60320	46500	60320	48000
IP assessment, filing and maintenance	145575	193866	145575	230292	145575	73000
Disclosure generation & promotion	550	229	550	0	550	1500
Professional & legal fees	53000	57646	53000	25490	53000	40000
Proof of Principle support	42667	17778	42667	47421	42667	63000
TOTAL	403700	377640	403700	480299	403700	353988

Note
* In July 2008 INI agreed to UU recruiting two Tech Commercialisation Executives as opposed to 1 Commercialisation Exec and 1 Market Analyst. It had been agreed that these two posts were being funded by HEIF for a two year period (Nov 08 – Oct 10). Two appointments were made – one individual commenced in September 2008 and the other in November 2008 (UU Progress Report to Invest NI for November 2007 – October 2008).
Source: UU

4.3.2 NI HEIF 2 - DEL Funded Activities - UU

Within its NI HEIF 2 Institutional Plan (which is required in respect of the DEL component of NI HEIF 2 funding), the University of Ulster indicated its plans for use of DEL NI HEIF 2 funding (over £869k per annum over 3 years) – including the following main areas:

- **Research: Stimulating Innovation in the Knowledge Base**
    - Production of a reference guide for researchers and the hosting of a series of idea generation workshops and competitions to encourage the development of an awareness of IP and technology commercialisation and Knowledge Transfer within the University. The production of a guide was reviewed and an online resource developed for research staff as reported to DEL in the Office of Innovation report for 1 August 2008 – 31 July 2009.
    - Key success measures will include an increase in technology disclosures to the Office of Innovation, an increase in the number of applications to the University's Pre Proof of Concept Fund (Pre-POC) and an increase in contract research income administered by the Research Office.
- **Staff: Fostering Academic Enterprise within University Faculties**
    - Part-funding of Coordinator of Academic Enterprise (CAE) posts in each of the six Faculties (these were originally appointed under NI HEIF 1).
    - The role of CAEs includes stimulating academic enterprise among their colleagues, identifying university capabilities with industrial and wider social application and coordinating sponsorship for the development of innovative ideas.
    - Support: £10,000 per annum to each Faculty to appoint a CAE, £5,000 of which will be spent on literature, signage / stands and other expenses incurred in support of the promotion of academic enterprise within respective Faculties and up to £5,000 will be made available to backfill these posts through the recruitment of new staff to undertake teaching, administration or research on behalf of the CAE, thus freeing up a percentage of their time to undertake HEIF related activities.
    - An additional £20,000 per annum will be made available to each Faculty (£120k in total) to enable the establishment of a multi-disciplinary Academic Enterprise Fund which will sponsor a series of innovation competitions and projects.
    - The funding is allocated by a Cross-Faculty panel through a series of initiatives on a competitive basis. Given the competitive nature of the process, it is possible that some Faculties will be allocated more funding by the panel than others. Following review of the competitions (as reported to DEL in the Office of Innovation report for 1 August 2008 – 31 July 2009) it was agreed that the University would develop a "Research Impact Fund" in line with the changing research environment and how it supports Knowledge and Technology Exchange. Additional funds are made available for Faculty projects which promote Academic Enterprise on an ad hoc basis.

- **Regeneration: Building an Environment for Innovation and Enterprise** - to enable staff from the Business Liaison Office to support the development of an environment that enhances the ability of individuals and organisations to engage in technology and knowledge exchange activity with the University for mutual benefit. It is proposed that staff engage with the marketplace to identify and develop contemporary infrastructural models, for example:
    - development of infrastructure to attract industry-academic engagement, such as the proposed Academic / Business / Clinical Research (ABC) facility, Centres of Excellence and Enterprise Zones; and
    - development of appropriate programmes of support (Innovation Promoters Programme, Reinventing the Wheel) to enable and encourage business who have not used the University before to interact with it.

  Key measures of success will include an increase in the numbers of SME interventions and an increase in regeneration income.

- **Business Liaison: Capture & Satisfaction of Industrial Requirements** - to support the Office of Innovation Business Liaison Team in engaging with two target markets:
    - the University's academic base which seeks optimum routes to market for its knowledge, technology, IP and capabilities; and
    - industry and the wider community which seeks effective knowledge-based solutions to the challenges of creating shareholder value, increasing productivity, enhancing competitiveness, globalisation and environmental sustainability.

  To engage each of these markets, the Office of Innovation Business Liaison Team employs the successful Information, Diagnosis & Brokerage (IDB) model developed within the financial services sector to capture industrial requirements:
    - **Information** – the Office of Innovation characterises its offerings and adopts a number of routes to market for dissemination. For industry, the offerings include collaborative applied research programmes, consultancy, KTP and FUSION projects, technology licensing opportunities and investment opportunities in spin-out companies; for academia, the offerings include the Pre-POC programme, the Invest NI Proof of Concept (POC) programme, consultancy opportunities, IP opinions, market research, KTP and FUSION projects and financial support for technology development. To engage industry and the wider community, routes to market include targeted direct mailing, promotion through the Knowledge Club, development and circulation of marketing literature that includes the production of the U2B Magazine and sponsorship of innovation conferences and workshops. Academia are also be engaged through staff and student workshops and seminars, the ongoing work of the CAEs and through innovation awards.
    - **Diagnosis** – The Business Liaison team interacts directly with industry to capture their requirements. Market analysis undertaken by the Innovation Services team targets international enterprises with specific technological interests; and building on

the HEIF-funded skills & expertise database, the university is able to capture, characterise and organise the capabilities of its knowledge base.

- **Brokerage –** Once the requirements of customer groups have been established, Office of Innovation staff develop project proposals to satisfy them that they will be progressed by the owners of the respective innovation support programmes.

A business development strategy was also developed by the Office of Innovation to help enhance the University's industrial connectivity through other funded programmes. Additionally, the migration of the Client Relationship Management (CRM) processes to an IT-based system has recently been undertaken.

Key success measures include an increase in the number of industrial attendees at Knowledge Club events, an increase in the number of SME requirements captured, an increase in the number of SME interventions, an increase in consultancy income and increases in the numbers of KTP and FUSION projects.

- **Social Enterprise: Transferring of Knowledge into the Wider Community** - to continue contributing to social development in Northern Ireland by offering services to both Social Enterprises and Community Groups through Business Liaison actions and the Science Shop:
  - The Business Liaison Team provides bespoke services and training for **Social Enterprises**, as well as access to other relevant mainstream university support mechanisms. The focus is on ensuring that Social Enterprises provide a competitive, innovative and client-centric service, which in turn strengthens their social impacts. Activity is also in keeping with UK Government's efforts to challenge universities to consider how they can encourage businesses to work with HEIs for the first time.
  - **The Science Shop** is a collaborative programme with Queen's University Belfast, which establishes links with community and voluntary groups throughout Northern Ireland. Research projects are undertaken by students to provide solutions for community challenges.
  - Key success measures include an increase in the number of community groups supported and an increase in the number of interventions with Social Enterprises.
- **CPD: Development of Capabilities of Stakeholders in the Innovation Process**: To ensure that the University provides a truly world class innovation service to its client groupings, and that the Office of Innovation is regarded as a best in class practitioner across Ireland, this action is to develop the tools and capabilities of stakeholders in the innovation process, as follows:
  - Benchmarking performance and offerings with "best in class" providers;
  - Adoption of a CRM System for management of market engagement activities;
  - Development of a searchable document database for IP Management;

- Training for the University's technology transfer professionals on Intellectual Property management, Knowledge Transfer, technology commercialisation and market research from specialists such as AURIL and Praxis;
- Training for the Innovation Services team on raising venture capital; and
- Training for CAEs on idea formation, development and evaluation.

DEL NI HEIF 2 funds have provided funding towards 17 salaries for staff to a projected value of £1,903,758 (Budgeted £1,849,526) within the Office of Innovation including:

- the Director of Innovation;
- Head of Innovation Services;
- IP Executive;
- Technology Commercialisation Executive; and
- IP Administrator.

It also supports the following:

- part-funded one Coordinator of Academic Enterprise (CAE) in each of the six Faculties
- multi-disciplinary Academic Enterprise Fund to sponsor a series of innovation competitions and projects (per Faculty)
- Science Shop (2 staff)
- CPD for approximately 25 staff including Technology Transfer, Innovation Services and CAE staff
- CRM system
- Knowledge Club activities
- Marketing and Promotion materials and activities

4.3.3 Performance – NI HEIF 2 - DEL funded activities - UU

Table 4.9 illustrates targets for DEL NI HEIF 2 funded activities for UU and progress reported against these for Year 1 and Year 2, along with projections for Year 3. The Status column summarises the overall performance (including projections for Year 3) against the overall targets.

Targets for most (19 out of 24) of the metrics will be achieved (and some cases exceeded) if Year 3 projections are fulfilled.

1. **Stimulation of Innovation in the Research Base** – 1 (of 2) metrics achieved
2. **Fostering Academic Enterprise** – all (7) metrics achieved

3. Building an Environment for Innovation & Enterprise – all (1) metric achieved

4. Market Engagement – all (3) metrics achieved

5. KT between the Universities and Social & Community Enterprises - 1 (of 2) metrics achieved

6. Capture and Satisfaction of Knowledge Based Requirements - 1 (of 2) metrics achieved

7. KT between the University & Industry – 2 (of 3) metrics achieved

8. Commercialisation of Research Outcomes – 3 (of 4) metrics achieved

There are only 5 metrics which are Part Achieved (taking into account Year 3 projections):

1. Stimulation of Innovation in the Research Base

- Workshops for Research Supervisors on IP, Tech & KT – achieved 8 against a target of 17 over 3 years. Considering the shortfall of 9, 6 occurred in Year 1 and 3 in Year 2 – this was attributed to delays in staff recruitment and lack of resources (particularly in Year 1).

5. KT between the Universities and Social & Community Enterprises

- No. of Social Enterprises Supported – achieved 275 against a target of 300 over 3 years with the shortfall attributed mainly to staff illness.

6. Capture and Satisfaction of Knowledge Based Requirements

- No. of SME Requirements Captured – achieved 560 against a target of 620; the shortfall occurred in Year 1.

7. KT between the University & Industry

- No. of New KTP Projects: achieved 40 KTPs and 6 sKTPs against targets of 56 and 12 over 3 years. The shortfall should be considered in the context of:
  - Personnel changes: in Year 1 (2007/08) - the university lost a Consultancy Executive, although the post was subsequently filled;
  - Restructuring / Reviews: In Year 1 (2007/08), restructuring took place in the Office of Innovation and in Year 2 (2008/09), a review of the KTP Office was completed. This led to a change in reporting lines within the Office and recommendations from the review being implemented in the following year

8. Commercialisation of Research Outcomes

- No. of Successful POC Proposals – achieved 7 against a target of 15; the shortfall occurred in Year 1. The shortfall should be considered in the context of:

- Delays in recruitment / personnel changes: As noted in Table 4.8, funding was available for a Commercialisation Executive and a Market Analyst over 3 years; this was renegotiated between UU and Invest NI so that 2 Technology Commercialisation Executives were appointed – but they did not take up their posts until September and November 2008. Overall in 2008/09, five new positions were filled in the Office of Innovation with a new Consultancy Executive commencing employment in October 2008
- In Year 1 (2007/08), restructuring took place in the Office of Innovation;
- In Year 3, 2009/10, there are not expected to be any PoC projects as Invest NI is not expected to issue a call for these until October 2010.

Table 4.9

UU –Key Activities - Targets (2007-08 to 2009-10) and Performance (2007-08 to 2009-10) (AY from 1st August to 31st July)

Activity	Benchmark 2005/06 Year on which NI HEIF2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Target	Achieved	Above / below 3-yr target
1. Stimulation of Innovation in the Research Base									
Production of Guide for Researchers on IP, Tech & KT	n/a	n/a	Document Produced	Not complete due to delays in staff recruitment	Document Produced	Web resource being developed	Online Information Completed	On Line Resource Completed	Achieved
Workshops for Research Supervisors on IP, Tech & KT	n/a	n/a	6	Not complete due to delays in staff recruitment	6	3	5	5	Part Achieved (8 out of 17)
2. Fostering Academic Enterprise									
Recruitment of Coordinators of Academic Enterprise	n/a	n/a	1 per Faculty	6 recruited	n/a	n/a	n/a	n/a	Achieved
% of Staff Engaged in Academic Enterprise Projects	n/a	n/a	33%	34%	33%	34%	35%	35%	Achieved
Cross-Faculty **Academic Enterprise Fund** Established & Promoted	n/a	n/a	Fund Established	Completed	n/a	n/a	n/a	n/a	Achieved
% of Cross-Faculty **Academic Enterprise Fund** Committed	n/a	n/a	100%	Completed	100%	100%	n/a[9]	n/a	Achieved
Cross-Faculty **Academic Competitions** Established & Promoted	n/a	n/a	n/a	n/a	Fund Established	Achieved	n/a	n/a	Achieved
Research Spaces Competitions Established & Promoted[10]	n/a	n/a	n/a	n/a	n/a	n/a	Establish Research Spaces Commercialisation Fund	Established	Achieved

[9] Following review, as reported to DEL in the Office of Innovation report for 1 Aug 2008 – 31 Jul 2009, of the competitions it was agreed that the university would develop a "Research Impact Fund" in line with the changing Research environment and how it supports Knowledge and Technology Exchange. Additional funds are made available for Faculty projects which promote Academic Enterprise on an ad hoc basis.

[10] Research Spaces Commercialisation Fund – this fund is slightly different from previous year: there will be a new call and the criteria will reflect the new Research Strategy and the desire to establish Research Clusters with a view to enhancing the prospects for commercialisation.

Table 4.9

UU –Key Activities - Targets (2007-08 to 2009-10) and Performance (2007-08 to 2009-10) (AY from 1st August to 31st July)

Activity	Benchmark 2005/06 Year on which NI HEIF2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Target	Achieved	Above / below 3-yr target
% Research Spaces Fund Committed	n/a	n/a	n/a	n/a	n/a	n/a	Allocation of 100% of Fund	100% Allocated	Achieved
3. Building an Environment for Innovation & Enterprise									
No. of New Regeneration Projects / Centres of Excellence Funded	n/a	n/a	2	Academic Business Clinical-Research Innovation Facility (ABC-RIF) constructed. Institute for Advanced Medical Imaging – bid under development and consideration	2	£2m Clinical Translational Research & Innovation Centre (C-TRIC), (formerly ABC-RIF) officially opened April 2009. Funding proposal for Cross Border Medical Imaging Institute submitted to SEUPB	2	2	Achieved
4. Market Engagement									
Development of Marketing Strategy	n/a	n/a	Agreed & produced.	Marketing Strategy developed and currently being refined	Research completed, strategy revised & produced	Achieved	Overall Marketing Strategy reviewed & updated. Capability Summaries agreed & produced for each Faculty	Completed	Achieved
No. of Events; No. of Attendees	n/a	n/a	24; 1,000	29;1,412	25; 1,000	25; 1,000	30; 1,200	30; 1,200	Achieved (Exceeded in Year 1)

Table 4.9

UU –Key Activities - Targets (2007-08 to 2009-10) and Performance (2007-08 to 2009-10) (AY from 1st August to 31st July)

Activity	Benchmark 2005/06 Year on which NI HEIF2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Target	Achieved	Above / below 3-yr target
No. of Issues of U2B Produced; No. of Recipients per Edition	n/a	n/a	3; 15,000	3 editions produced – circulation (13,500 external 1,500 internal) per edition	2; 15,000	2; 15,000	Re-design & re-launch U2B 2; 15,000 increasing to 17,500 subject to cost	Redesign and Re-launch completed 1 magazine produced; circulated to 15,000 (1)	Achieved
5. KT between the Universities and Social & Community Enterprises									
No. of Social Enterprises Supported	n/a	n/a	100	100+ engagements	100	100	100	75	Part Achieved 25 under target in Year 3
No. of Community Groups Supported	n/a	n/a	100	100 projects initiated of which 75 completed at end of Year	100	100	100	100	Achieved
6. Capture and Satisfaction of Knowledge Based Requirements									
No. of SME Requirements Captured	n/a	n/a	200	141	200	201	220	220	Part Achieved 60 under target in Year 1
No. of SME Interventions	n/a	n/a	100	98	100	100	110	110	Achieved Shortfall of 2 (out of 310)
7. KT between the University & Industry									
Consultancy Income	n/a	n/a	£1,400k	£1,316k	£1,400k	£1,537k	£1,700k	£1,800k	Achieved
No. of New FUSION Projects	n/a	n/a	15	10	15	27	20	20	Achieved Exceeded target by 7
No. of New KTP Projects	n/a	n/a	20	15 KTPs approved; 13 went ahead, 2 withdrawn by cos involved	18 new KTPs / 6 new mini KTPs	9 new KTP projects / 0 Shorter KTPs*.	KTO office restructuring completed 18 new KTPs / 6 new mini KTPs	Restructuring ongoing, 18 new and 6 short KTPs	Part Achieved 16 KTP below target (56) 6 KTP below target (12)

Table 4.9

UU –Key Activities - Targets (2007-08 to 2009-10) and Performance (2007-08 to 2009-10) (AY from 1st August to 31st July)

Activity	Benchmark 2005/06 Year on which NI HEIF2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Target	Achieved	Above / below 3-yr target
8. Commercialisation of Research Outcomes									
No. of Tech. Disclosures	n/a	n/a	50	53	50	49	55	55	Achieved
Income from IP	n/a	n/a	£100k	£60K Gross / £14K Net / Equity £120K	£75k	£89k	£100k	£120K	Achieved
Value Committed to Pre-POC Projects	n/a	n/a	£75k	£83K	£100k	£117k	£150k	£150k	Achieved Exceeded target by £25k
No. of Successful POC Proposals	n/a	n/a	15	7	No target set for Year 2	n/a	No target set for Year 3	0 - Unlikely to have any as no PoC call expected til Oct 10	Part Achieved 8 successful PoC below target (15)

Notes:

1. Circulation was hindered by a number of factors including cost; however a number of other factors also had a bearing. The redesign and relaunch took longer than expected (the University had to go to tender twice to get a supplier) and a key member of staff went on Maternity leave during the process. A decision was taken to maintain existing numbers for this edition.

Source UU – NI HEIF 2 Progress Report for DEL 2007/08 and 2008/09; and UU

Table 4.10 illustrates targets for DEL NI HEIF 2 funded activities – specifically for the Science Shop. Joint targets for QUB and UU are specified and the table includes progress reported for UU for Year 1 and Year 2, along with projections for Year 3. The Status column summarises the overall performance (including projections for Year 3) against the overall targets – this shows that all targets will be achieved if the projections for Year 3 are fulfilled.

Table 4.10

UU –Science Shop Targets (2007-08 to 2009-10) and Performance (2007-08 to 2009-10) (AY from 1st August to 31st July)

Joint Science Shop Targets	Benchmark 2005/06 Year on which NI HEIF 2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08		NI HEIF 2 Year 2: 2008/09		NI HEIF 2 Year 3: 2009/10		Status
			Target	Achieved	Target	Achieved	Revised Target	Projected	Above / below 3-yr target
Develop new projects - 180	Not available	80	90	100	90	120	90	90	Achieved Exceeded by 15%
Projects completed – 110	Not available	100	55	75	55	78	55	55	Achieved Exceeded by 26%
Provide 200 live project for students	Not available	Not available	100	105	100	125	100	100	Achieved Exceeded by 10%
Engage with 120 students with 5% coming from postgraduate courses	Not available	Not available	60	95	60	102	60	60	Achieved Exceeded by 43%
Attend 4 community and voluntary sector events	Not available	Not available	2	2	2	3	2	2	Achieved Exceeded by 17%
Register 20 new client groups from across Northern Ireland	Not available	Not available	10	20	10	26	10	10	Achieved Exceeded by 87%

Notes

- Targets are agreed between the University of Ulster and QUB. The figures in this table refer to the University of Ulster's performance.

- Targets for the Science Shop were different for HEIF 1 and as a result 2005/06 benchmark information is unavailable.

Source: NI HEIF 2 UU Project Management Reports (1 Nov 2007 to 31 Oct 2008, 1 Nov 2008 to 31 Oct 2009), UU

Table 4.11 shows targets for DEL NI HEIF 2 funded activities in UU; these are most of the metrics used in the allocation of NI HEIF 2 funding. It also includes progress reported for Year 1, Year 2 and projections for Year 3. The Status column summarises overall performance (including projections for Year 3) against overall targets. Targets for nine of the 11 metrics, including six relating to income, will be achieved (and in many cases exceeded by a substantial amount) if Year 3 projections are fulfilled.

Of the two metrics which are part achieved: the shortfall relative to the target for "Income from non-credit bearing courses" is only 13% and for "No. of sandwich students" the shortfall is 15%. Considering income from non-credit bearing courses, there has been a year on year increase though people may now wish to seek credit bearing courses as they provide clear evidence of continuous professional development (which can be built on) in a more competitive recruitment environment. The decline in numbers of sandwich students reflects changing models of HE and an increasing push towards part time education. Given the perceived cost of HE many students wish to opt for a three year rather than 4 year degree (thereby opting out of the sandwich year).

Table 4.11

UU – DEL Targets (Aug 07- Jul 08 to Aug 09 - Jul 10), Performance (Aug 07- Jul 08, Aug 08-Jul 09), Projections (Aug 09-Jul10) [AY 1st August - 31st July]

Targets / Outcomes	Related Key Activity	Benchmark 2005/06 Year on which NI HEIF 2 £ based	Baseline Achieved 2006/07	NI HEIF 2 Year 1: 2007/08 Target July 08	Achieved	NI HEIF 2 Year 2: 2008/09 Target July 09	Achieved	NI HEIF 2 Year 3: 2009/10 Target July 10	Projected	Status Above / below 3-yr target
Income from non-credit bearing courses (1)	2, 5, 6	£1,265k	£944k	£1,300k	£1,028k	£1,400k	£1,144k	£1,500k	£1,500k	Part Achieved Shortfall 13%
Income from KTP	7	£498k	£2,438k	£575k	£2,696k	£650k	£3,213k	£740k	£740k	Achieved Exceeded by x 3.4
Income from IP	1, 8	£15k	£8k	£100k	£282k	£150k	£684k	£250k	£250k	Achieved Exceeded by x 2.4
Income from Contract Research	5, 6	£741k	£1,778k	£800k	£3,474k	£900k	£2,037k	£1,000k	£1,000k	Achieved Exceeded by x 2.4
Income from Consultancy	7	£704k	£1,871k	£1,400k	£1,922k	£1,550k	£2,066k	£1,750k	£1,750k	Achieved Exceeded by 22%
Equipment-related Income	5,6, 7	£313k	£1,436k	£375k	£1,975k	£450k	£3,421k	£525k	£525k	Achieved Exceeded by x 4.4
Regeneration Income	3	£1,280k	£13,116k	£1,500k	£10,832k	£1,750k	£10,437k	£2,000k	£2,000k	Achieved Exceeded by x 4.4
No. Business & Community-facing Staff	3	47	57	50	61	55	68	60	60	Achieved Exceeded by 15%
Achieved Number of SME Interventions	4, 5 ,6, 7	85	352	100	432	125	837k	150	150	Achieved Exceeded by x 3.8
Non-commercial Body Interventions	4, 5	116	423	130	444	145	3250	160	160	Achieved Exceeded by x 8.9
Number of Sandwich Students (2)	5, 6	685	701	720	596	750	521	800	800	Part Achieved Shortfall (15%) 353

Sources:

Benchmark 2005/06 & Targets for Year 1, 2, 3 from UU – NI HEIF 2 Institutional Plan – Annex V (Sep 2007); Achieved 2006/07 & 2007/08 – income from IP, income from contract research, income from consultancy, equipment related income & regeneration income from HE-BCI; - UU; Sandwich student data from HESES / HEFCE via DEL

4.3.4 NI HEIF 2 – Invest NI Funded Activities – UU

Having used NI HEIF 1 funding to establish an effective technology transfer process within the University, the University of Ulster sought to build on this foundation with Invest NI HEIF 2 support to ensure that the knowledge and technology transfer activities continued to grow.

Two projects supported by Invest NI HEIF 2 are delivered by the Innovation Services Team within the University's Office of Innovation. The projects are:

- UUTech 1A – a follow on from UU's HEIF NI 1 project, this supports the core activities/ costs associated with UUTech, i.e. market and technical validation, patent and legal costs, Pre-proof of Principle costs. This complements the DEL NI HEIF 2 metric funding to fund the salary cost associated with UUTech by supporting research projects through augmenting Proof of Concept, providing funds for patent and legal costs, ensuring market and technical validation. Therefore this project is critical to UU/UUTech achieving spin-outs and licensing agreements. The project is to capitalise commercially on the research, technology, knowledge and processes, developed within the university through the actions below:
    - Provision of an advisory service to, and awareness training for, the staff and students of the University that will encourage the timely capture, analysis and appropriate protection of IP;
    - Internal technical, patent and market assessment;
    - Commissioning and undertaking market analysis;
    - Funding the development of technology to a demonstrable, market-ready state;
    - Development of optimum commercialisation strategies for the University's research, technology, knowledge and processes according to evidence collected from market analysis, technology due diligence and patent opinions. Strategies adopted will range from consultancy arrangements for Knowledge Transfer, royalty agreements for IP licensing and the formation of spin out companies based on technology and knowledge developed within the University;
    - Management of the process of commercialisation through investment in technology development, market engagement and patent protection;
    - Commissioning of professional and legal assistance;
    - Management of the licensing of university IP to ensure maximum revenue generation;
    - Provision of a framework of support for new high added value, export and growth-oriented technology-based companies in the start-up and early stages of business life; and

- Provision of practical assistance in accessing financial resources (seed and venture capital) and expertise in the preparation of robust business plans that clearly set out the commercial potential of potential spin out enterprises.

- UUTech1B - costs associated with the new Commercial Advisory Panel and associated travel to mentor project promoters and new spin outs. This project is concerned with the mentoring by the newly formed Commercial Advisory Panel (CAP) of potential spin-outs in the UUTech portfolio, and of existing UUTech companies in order to advise on strategy, marketing etc and thus accelerate sales (the number of projects has to be defined). This project is critical to UUTech achieving spin-outs (with resultant turnover and employment opportunities), exploiting opportunities for licencing deals and accelerating growth within its companies.

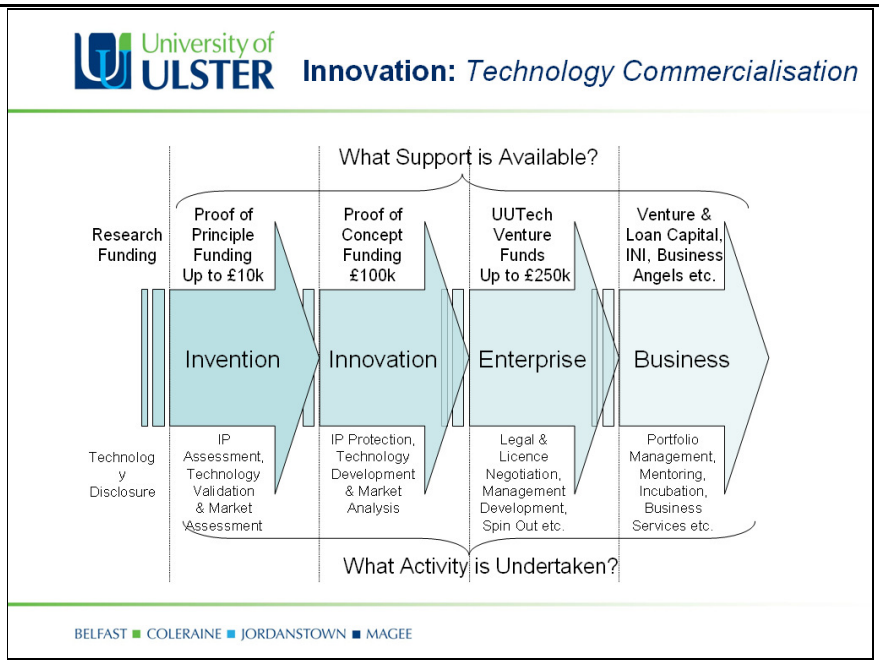
Invest NI HEIF 2 funding (over £403k per annum over 3 years) specifically provides support for the following key components of innovation activities:

- Intellectual property awareness training;
- Technical, patent and market assessment;
- Proof of principle projects;
- Intellectual property management;
- Market analysis;
- Commercial Advisory Panel activities; and
- Professional and legal assistance.

It is anticipated that these activities will generate the following key benefits (in total over 3 years):

- 9 IP workshops;
- 140 technology disclosures (see Figure 4.1 - this is the initial stage of the commercialisation process when an initial idea is submitted by academics to Innovation Services and assessed taking into account market, patent and technical considerations);
- 44 Pre-PoC projects (see Figure 4.1 - this stage involves IP Assessment, Technology Validation & Market Assessment);
- 28 Invest NI supported PoC projects (see Figure 4.1 - this stage involves IP Protection, Technology Development & Market Analysis);
- 21 investment proposals presented to the UUTech Board; generating
- 11 spin-outs or licensing deals.

Figure 4.1
University of Ulster– Technology Commercialisation Process



Source: University of Ulster, 2009

Invest NI HEIF 2 has funded:

- 2 x Technology Commercialisation Executives
- Operating Expenses to support the key components of innovation noted above.

4.3.5 Performance – Invest NI funded activities – UU

Table 4.12 illustrates targets for Invest NI HEIF 2 funded activities and also includes progress reported for UU for Year 1 and Year 2, along with projections for Year 3. The Status column summarises the overall performance (including projections for Year 3) against the overall targets.

Of the eight metrics, five have been achieved and in some cases exceeded (assuming Year 3 projections are fulfilled) – these are: New Technology Disclosures, Pre-PoC Projects, New UK patent filings, investment proposals to UUTech Board and spin outs / licensing deals.

Three other metrics are part achieved (assuming Year 3 projections are fulfilled) – these are:

- IP workshops: shortfall (22%) occurred in Year 1 due to delay in recruitment of IP Executive who was not in place until February 2009 – 16 months after project started

- Patent Opinions: relatively small shortfall (7%) due to delay in recruitment of IP Executive who was not in place until February 2009 – 16 months after project started
- Invest NI PoC Projects: 36% shortfall due to Year 3 target not being met as no call expected from Invest NI until Oct 2010.

Table 4.12

UU – Summary of Targets (2007 – 2010) and Achievements (2007-08 and 2008-09)

Description	Baseline 2006/07	Year 1 Nov 07-Oct 08		Year 2* Nov 08-Oct 09*		Year 3 Nov 09-Oct10		Status
		Target	Achieved	Target	Achieved	Target	Projected	
IP workshops	0	3	1	3	3	3	3	Part Achieved Shortfall 22%
New Technology Disclosures	30	35	49	50	49	55	50	Achieved Exceeded by 6%
Patent Opinions	0	26	26	38	32	41	40	Part Achieved Shortfall 7%
Pre-PoC Projects	0	11	13	16	14	17	17	Achieved
New UK patent filings	3	9	16	13	18	14	14	Achieved Exceeded by 33%
Invest NI PoC Projects	0	7	7	10	11	11	0	Part Achieved Shortfall 36%
Investment proposals to UUTech Board	2	5	6	8	9	8	9	Achieved Exceeded by 14% (including follow on investments)
Spin-outs / licensing deals	1	3	3	4	4	4	4	Achieved (Spin outs already established are discussed in Section 4.5.3)

Notes:

Baseline data provided by UU

Year 2 (spin outs / licensing deals) includes 2 licences and investments in 2 spin outs (Emtell, Tactility Factory Limited)

Source: NI HEIF 2 UU Project Management Reports (1 Nov 2007 to 31 Oct 2008, 1 Nov 2008 to 31 Oct 2009) and UU

4.3.6 UU Performance – External Recognition

Apart from the performance measured on specific metrics, it is also worth noting external recognition of the performance of UU in the form of a major accolade it has received for activities supported by DEL under NI HEIF 2. This award (below) is consistent with the recent (2009) ESRC-sponsored report by the UK-Innovation Research Centre 2009 (see Section 5.3.5, also Appendix III – Strategic Context – Section 3.2.10) and recent HE-BCI surveys both of which demonstrate that the Northern Ireland HE sector leads other UK regions in many aspects of business & community engagement on a per institutional basis. The award is as follows:

- **University of Ulster – Business in the Community (BITC) Awards 2008 - Regional Recognition Award – Supporting Economic Growth**

  The University of Ulster has been highly commended in recognition of its support for Social Enterprise in Northern Ireland. The accolade was presented to the UU team from the Office of Innovation.

  This reflects UU's work to support Social Enterprises over a number of years, offering a range of opportunities to access expertise from within the University, including accredited training, academic expertise through mentoring, student placement activity, research projects and networking events.

  This recognises UU's work with Social Enterprises – seeking to empower the Social Economy sector and not provide quick fixes. UU's focus is on opportunities for long term collaboration, helping Social Enterprises to provide a competitive, innovative and client-focused service, which in turn strengthens their social impacts.

4.4 Feedback from SMEs, CPD Participants, Voluntary and Community Groups, Academics and Students

4.4.1 Introduction

Detailed results from surveys undertaken with a range of beneficiaries of NI HEIF 2 funding are included in Appendix VI (SME Survey results), Appendix VII (CPD Survey Results), Appendix VIII (Voluntary & Community Organisations – Survey Results), Appendix IX (Academics – Survey Results), Appendix X (Students – Survey Results). Generally feedback has been positive – some key findings are presented in this section.

For each of the groups surveyed we present information based on questions from the surveys including – profile of respondents, use of KT services, impacts, satisfaction, use of other supports and additionality. (Note the issue of duplication / overlap of funding is explored in more detail in Section 7.4.1 – this issue was not specifically covered in the surveys). We also consider strengths including future use of KT services, recommending KT services to others or having used the experience as a catalyst to undertake further innovation. Lastly we consider areas for development as perceived by the respondents to the surveys.

4.4.2 SME surveys

Results from the SME survey are detailed in full in Appendix VI; this is based on 117 responses.

- **Considering the profile of respondents to the SME survey:**
  - 75% of respondents to this survey are Invest NI clients;
  - The majority are SMEs: 92% of respondent have < 250 employees (40% < 10 employees);

- A wide range of sectors are represented – at least 1/3 of respondents are in engineering & manufacturing;
- Most Local Government Districts (LGDs) represented by the respondents: 24% Belfast, 8% Lisburn, 7% Derry
- A range of company ages are represented by the respondents: 23% established up to 5 years; 22 % between 6 & 10 years.

- **Use of KT services**
  - 56% had not used university KT services pre-2007 i.e. the implication is that these had not engaged with university KT services through NI HEIF 1 and were new contacts through NI HEIF 2;
  - The most common current KT activities included: 44% research, 26% KTPs, 14% Consulting, 9% Facilities & Equipment.

- **Impacts**
  - Respondents tended to report a mix of both hard and softer impacts. The most common areas in which respondents noted hard impacts were sales / turnover, staff and efficiency savings as well as softer impacts such as increases in knowledge / understanding / information sharing; and the development of new products / services / ways of working.
  - Areas in which there was felt to be **significant impact** included: technology transfer (mentioned by 22% of respondents), research collaboration (20%), increase in sales (9%), increase in profit (6%), increase in employment (6%); and
  - Areas in which there was felt to be **some impact** included: improvement in existing skills / expertise (mentioned by 34% of respondents); increased investment in product development; (32%); increase in profit (25%), increase in employment (16%), and increase in sales (20%).
  - Some respondents were able to quantify the impact on their business as follows:
    - **Sales** / **turnover**: 12 respondents reported actual impacts on Sales / Turnover – the levels of additional sales / turnover reported included the following examples: secured £3m contract deal; lead partners in an €1M EU Framework 7 project; £500,000 turnover generated; up to £50k; 10%increase in sales; 5% increase in sales.
    - **Sales** / **Turnover and Staff:** 6 respondents reported actual impacts – for example: increased turnover by £6m and employment by 40%; Employed 2 members of staff and increased turnover by 10%.

- **Efficiency Savings:** 5 respondents reported impacts in this area – for example: saved up to 2,000 man hours a year; £20,000 in additional annual profit due to efficiency savings;

  - A significant minority of respondents (18%) felt that it was too early to comment on impacts and a similar number (20%) reported that there had been no impact (to date).

- **Satisfaction with KT services:** Overall, the respondents were satisfied with the universities' KT services in terms of "meeting your project objectives", "providing appropriate knowledge and experience" and "timeliness of response" with average satisfaction ratings of 3 or above (where 1 = Very Dissatisfied and 5 = Very Satisfied).

- **Use of Other supports** – the most common other supports cited by respondents were Innovation Vouchers (39%), KTPs (37%).

- **Additionality –** this is generally very high when we consider both full additionality (i.e. if the respondent felt that they would not have been able to proceed with their project in the absence of the KT support) and partial (i.e. if the respondent felt that they would have been able to proceed with their project in the absence of the KT support but that it would have taken longer and / or would have been on a smaller scale). The results – for example - in the following areas[11] are:

  - Research: 72% full, 25% partial;
  - KTPs: 53% full, 41% partial;
  - Consulting: 50% full, 50% partial;
  - Facilities & Equipment: 60% full, 40% partial.

4.4.3 Academics

Results from the academic survey are detailed in full in Appendix IX; this is based on 46 responses. All of the academics were involved in KT.

Amongst responses from academics, 83% think it is very important and 17% quite important that the universities get involved in KT.

Of the academics surveyed, their experience of KT services was as follows: 78% had used patent support services; 56% research; 47% consulting; 42% KTPs; 39% facilities and equipment.

- **Impact –** generally high levels of impacts were reported across a range of areas:

  - Greater awareness of benefits of working with business (42% some impact, 44% significant impact)

[11] The categories: research, consulting, patent support service etc. cover the range of services offered by QUB and UU and supported through HEIF 2.

- Greater awareness of commercialisation process (32% some impact, 59% significant impact)
- Actively seeking opportunities to work with business (50% some impact, 39% significant impact)
- Greater involvement in technology transfer (36% some impact, 60% significant impact)
- Collaborative research with business (58% some impact, 33% significant impact)
- Developed new technology (33% some impact, 30% significant impact)
- Networking / collaboration (32% some impact, 52% significant impact)

- **Satisfaction with University Offices.** Respondents were satisfied with the universities' offices (QUB Regional Office, QUB KEU, UU Business Liaison Office, UU Technology Transfer Office) in terms of "meeting your project objectives", "providing appropriate knowledge and experience" and "timeliness of response". Average satisfaction ratings ranged from 3.9 to 4.2 (where 1 = Very Dissatisfied and 5 = Very Satisfied) for QUB (which has a greater number of responses). There is a wider range of average ratings (2.8 to 4.1) for UU (but a smaller number of responses);
- **Satisfaction with Services / Supports.** Respondents were asked to rank their levels of satisfaction with the University KT Services/Supports in terms of "meeting your project objectives", "providing appropriate knowledge and experience" and "timeliness of response. The average ratings range from 3.3 to 4.9 (where 1 = Very Dissatisfied and 5 = Very Satisfied). (Note one service has an average rating of 2.0 – but this is based on only one respondent and hence cannot be considered as representative).
- **Additionality** – this is generally at a moderate level (at least one third and up to two thirds in some cases) when we consider both full additionality and partial additionality together:
  - patent support service (3% full, 33% partial);
  - Research (38% partial)
  - Consulting (65% partial)
  - KTPs (38% partial)
  - Facilities and equipment (34% partial)

4.4.4 CPD

Results from the CPD survey are detailed in full in Appendix VII; this is based on 19 responses (all are from QUB). *(Note: QUB and UU have used NI HEIF 2 monies to support a variety of different projects and activities in each institution. In QUB, NI HEIF 2 has*

contributed to some CPD training for companies (this is described in Section 4.2.2). UU does not use NI HEIF 2 funding to support CPD for companies and therefore the target group for the CPD surveys were companies which had availed of QUB CPD courses only.)

- **Profile:**
  - 80% < 250 employees
  - Variety sectors & LGDs
  - 63% established more than 20 years
- **Use of QUB CPD services**
  - Most (90%) had not used QUB CPD services pre-2007;
  - Range of courses – 37% Effective Project Management, 26% Finance for Non-Financial Managers, 26% Essential Management Skills
- **Impact**
  - Some / Significant impact was reported in terms of improved skills / expertise, developed new skills / expertise
- **Satisfaction**
  - Levels of satisfaction with the CPD course(s) attended were high among respondents. All were satisfied or very satisfied with each of the metrics with the exception of the 'providing opportunities for networking / collaboration' option, where 2 respondents stated that they were neither satisfied nor dissatisfied.
- **Additionality** – this is reasonably high with 32% full additionality and 47% partial additionality.

4.4.5 Voluntary & Community organisations (Science Shop)

Results from the Voluntary and Community organisations are detailed in full in Appendix VIII this is based on 20 responses (organisations which had used the Science Shop either through QUB or UU).

- **Profile of respondents:**
  - 85% < 100 employees
  - 30% in Belfast, 25% Derry, 10% Down
  - 45% established more than 20 years; 30% 6-10 years
- **Use of university KT services**
  - Most (85%) had not used university KT services pre-2007;

- Organisations were involved in a range of projects – perception research, marketing strategy, business research.

- **Impact**
  - The impacts covered a wide range e.g.: Evidence for funding application; marketing strategy; increased uptake.

- **Satisfaction**
  - Levels of satisfaction were high with at least 73% of respondents reporting being satisfied or very satisfied across a range of aspects.

- **Additionality:** this is generally high: 80% full, 15% partial

4.4.6 Students

Results from the Student survey are detailed in full in Appendix X; this is based on 21 responses (students who had either undertaken a work placement or Science Shop project through QUB or UU).

- **Profile:** 57% QUB / 43% UU; 71% Science Shop / 29% Student work placement
- **Range of projects** - most (52%) undertook a research project
- **Impact on the student** – knowledge, experience, skills
- **Satisfaction** - Levels of satisfaction with various aspects of the experience working with the Science Shop / on a student work placement were high with at least 67% of respondents reporting being satisfied or very satisfied across a range of aspects.
- **Additionality (high):** 76% full, 19% partial

4.4.7 Strengths (Future Use, Recommending KT Services, Catalyst)

In addition to the positive feedback concerning impacts and satisfaction levels, in terms of the future, feedback was generally very positive. This was in terms of either using the same service again or recommending it to others or having used the experience as a catalyst to undertake further innovation.

Using Services Again (at least 82% across each beneficiary group would repeat)

- 95% SMEs would seek KT services again;
- 87% academics would work with university KT services again;
- 89% of CPD participants would attend again;
- 82% students would undertake a Science Shop project or Work Placement again (although it is unlikely that a student would undertake a project or placement again, the

rationale for asking this question was to gauge the students' perceptions of the value of the project / placement);

- 100% voluntary & community organisations (Science Shop) would use again.

Recommending KT Interventions[12] (at least 79% across each beneficiary group would recommend)

- 79% of CPD participants would recommend QUB CPD courses to others;
- 100% voluntary & community organisations (Science Shop) would recommend it;
- 100% students would recommend a Science Shop project or Work Placement.

KT Intervention as a Catalyst for Innovation

- 53% SMEs - experience was catalyst to undertake other innovative activities;
- 83% academics – experience was catalyst to undertake other innovative activities;
- 74% CPD participants - experience was catalyst to undertake other innovative activities;
- 75% voluntary & community organisations (Science Shop) - experience was catalyst to undertake other innovative activities.

4.4.8 Areas for Development

Across the various surveys, several themes emerged in terms of areas for development – these were focused on respondents' perceptions around timescales / timeliness and information / communication. The first of these (for SMEs) was rooted in the different pace at which universities and businesses operate and some frustration with a lack of speed / responsiveness. Timing was also an issue for a small proportion (10%) of academics (in terms of responsiveness with regard to patent searches and decision-making at all levels).

The issue around information and communication cuts across many areas and stems from lack of clarity on a number of areas including who does what, where to go to access supports, understanding what is available. More detail is included as follows:

- **SME – Areas for Development (based on SME perceptions)**
    - **Timing:** The main issues highlighted by SMEs reflected their perceptions and experiences that universities and businesses operate at different paces. Some of the typical comments made by SME respondents highlighted universities not being good at meeting deadlines, taking too long to deliver what was expected of them and a lack of urgency in what they do. This suggests a lack of shared understanding and highlights cultural differences in the two sectors. It indicates the need for improved

[12] Note: this specific question was not asked on the SME surveys or academic surveys

understanding in the universities of the importance of responding in a timely manner to meet business needs.

- **Business – Academic Relationships**: These included the need to find a good match; difficulties with staff turnover and issues arising from different expectations / perspectives.
- **Communication**: the main issue was around raising awareness and promoting KT more widely.
- **Innovation Voucher Scheme**: the focus of feedback from the survey was (not surprisingly) on extending the scheme in terms of number of vouchers, value of vouchers and making them more easily available. Whilst this highlights an appetite for Innovation Vouchers, proposing changes to this specific scheme are not within the remit of this evaluation.
- **Other: agreed expectations** i.e. common understanding of expectations of both SMEs and universities at the outset so there is a precisely defined work package and clear expected outcomes; also **improved follow up** and **increased funding**.

- **Academics – Areas for Development**

The main areas for development relate to: information / awareness; structure / culture within the university; type of support offered; and some recommendations around funding / finance and timing.

- **Voluntary and Community / Students – Areas for Development**

A variety of areas for improvement were mentioned by a few respondents – the issues of timing / timescales and information / communication featured amongst these.

4.5 Spin-Out Activity

4.5.1 Introduction

This section details the spin-out activities of both universities. It also provides background details on each of the spin-outs. This information demonstrates the extent to which a range of providers and supports are used to develop the spin-outs. The outputs are therefore not the sole result of monies invested in NI HEIF and it is difficult to separate out the difference NI HEIF has made to the detailed outcomes (notwithstanding the fact that NI HEIF 2 provides 100% of the funding for QUBIS (from DEL) and also the core costs associated with UUTech (from Invest NI)).

4.5.2 Queen's University Spin-Out Projects

Queen's have had 5 spin outs since 2007 to end of 2009 (as indicated in Section 4.2.3 - Table 4.4 which also includes 2 projected for 2009/10). We have included background details on each of the spin outs below.

- **Sengenia Ltd** - Sengenia are specialists in fibre optic sensors for monitoring of strain, temperature, moisture etc in a wide range of applications, the most common being bridges and significant civil engineering projects. The company was formed in April 2007 to commercialise fibre optic sensor technology developed within both QUB and University College London. QUBIS Ltd invested £15,000 at incorporation by way of a convertible loan and appointed a Director to sit on the Board. QUB has provided a range of support including, participation on the NICENT funded Business Planning Programme prior to incorporation, a £20k Phd Roberts Enterprise Award to support a salary during the pre-revenue phase and HEIF Sales and Marketing Programme support in the form of a 'hands on' consultant for 18 months. The Company currently employs one person.
- **CapnaDSP Ltd** - CapnaDSP produce sophisticated tools which allow rapid implementation of complex DSP algorithms onto programmable SoC platforms without requiring expert knowledge of hardware and software design techniques. The company was formed in October 2008 to commercialise digital signal processing technology developed within ECIT. QUBIS Ltd invested £15,000 by way of equity and has appointed a Director to sit on the Board. QUB has provided a range of support including, participation on the Business Planning Programme prior to incorporation and a £20k Roberts Enterprise Award to support a salary during the start up phase. QUB has also agreed to let two of the academic founders enter a consultancy agreement with the Company. No turnover figures are available yet. The Company has two employees at present and is currently recruiting.
- **Titan IC Systems Ltd** - Titan is a leader in the development of hardware engines for content and network processing. The solutions offered include Regular Expression Processor (RXP) and Parallel String Matcher (PSM) for use in all aspects of network security including: Intrusion Detection/Prevention, application detection, anti-virus, content/URL filtering. The company was formed in September 2007 to commercialise hardware engines for content and network processing technology developed within ECIT. QUBIS Ltd invested £45k by way of equity and has appointed a Director to sit on the Board. In addition, UCF invested £25k pre incorporation which was later converted into an equity holding. QUB has provided a range of support including, an Enterprise Fellowship to enable a founder academic to be seconded to the Company for 12 months and the provision of significant technical staff time and resource for the development of the technology. Turnover for FY08 and for FY09 was nil. The Company has no full time employees.
- **TOM Ltd** - TOM has developed a wireless intrusion detection system for residential and public access WiFi based networks. The company was formed in October 2007 to commercialise intrusion detection technology developed within ECIT. QUBIS Ltd invested £15k by way of equity and provides ongoing advisory support. QUB has agreed to let the academic founder enter a consultancy agreement with the Company. Turnover for FY08 and for FY09 was nil. The Company has no full time employees.
- **Lamhroe Ltd** - LamhRoe Ltd will focus on high frequency MMIC design, microwave and millimetre-wave module development and be used as a vehicle to commercialise

the activities of the High Frequency Electronics Group (HFEG) at Queens University Belfast. The company was formed in April 2009 to commercialise microwave and millimetre-wave module technology developed within ECIT. QUBIS Ltd invested £50,000 by way of equity and has appointed a Director to sit on the Board. QUB has an HEIF Enterprise Fellowship to enable a founder academic to be seconded to the company on a full time basis for 12 months. No Turnover figures are available yet. The Company has two employees at present.

4.5.3 University of Ulster Spin-Out Projects

The University of Ulster has formed over 25 spin outs in the last 12 years, (Section 4.3.5 - Table 4.12 indicates a target of 11 spin outs / licensing deals over the period of NI HEIF 2 funding – reporting does not always separate out spin outs and licensing deals). Those set up in the last 3 years (within period of NI HEIF 2 funding) include the following:

- **Flex Language Services Ltd** was set up in September 2008 to provide Interpreting/Translation Services, to a wide range of clients. FLEX was spun out of the University of Ulster's Foreign Languages for EXport service. The company has twice received the Regional Award from DTI for the provision of specialist language training material. FLEX is currently active in the daily provision of interpreting province wide. It employs 3 staff.
- **SISAF Ltd** was set up in January 2009. The company is further developing proprietary technology - a novel synergistic drug delivery formula that uses nanoparticles to allow active compounds to penetrate deeper into the dermal layer, to target the cell membrane, and to be released in a controlled manner. SiSaf's technology has the potential to considerably enhance the safety and efficacy of proteins and peptides and labile or insoluble molecules. Sisaf currently employs 2 staff and works closely with the University of Ulster's nanotechnology laboratories.
- **SOPHIA Search Ltd** was set up in July 2007 to develop and market the University of Ulster's patented enterprise search technology. It has 4 employees.
- **Tactility Factory Ltd** was set up in January 2009 to commercialise years of research and know-how that provides for the combination of concrete and textiles to produce innovative and attractive wall and floor surfaces. It has 3 employees and it is at the early stages of manufacturing.
- **SPARC** is a composites company and was established in August 2009. UUtech has invested £10k in the company, however UU have not been able to provide employment information at the time of writing.

4.5.4 Spin-outs - Survey Findings

As noted in Section 4.5.2, Queen's have had 5 spin outs since 2007 to end of 2009; we interviewed 2 of these. As noted in Section 4.5.3, UU has a target of 11 spin outs / licensing deals and is projected to achieve this target over the period of NI HEIF 2 funding; we interviewed 3 of these spin outs. In total, therefore, we interviewed 5 spin-out companies (2 from QUB and 3 from UU) in order to understand their assessment of the support provided by the university commercialisation offices and any areas for development. We sought to access

views from more contacts, however due to some of the businesses no longer operating or contacts being unavailable, it has not been possible to achieve more feedback during the course of this research period. The small numbers interviewed do not therefore mean that the views presented here are necessarily representative of all the spin out companies.

The feedback from all the companies was that they found the support to be helpful / very helpful from both universities. The type of support provided clearly varied depending on the needs of the company. One of the QUB spin-outs felt that whilst they got IP support they did not get Commercialisation support. It also highlighted that it was not aware of the full range of support services available. It felt this may have been due to the KEU website taking a while to set up, and that it would still not be confident that it was fully aware of the support available. It also felt that QUB could have provided more support on how to negotiate with commercial companies and that this was an area it was left to get on with itself. It did however rate the support provided by QUBIS highly, but had some concerns that KEU was more focused on protecting Queen's University's IP rather than commercialising the research. The other QUB case was aware of the KEU services and rated the support provided highly across IP, research, commercialisation and funding. It felt very satisfied with the support provided and specifically mentioned the funding assistance provided from QUBIS as very valuable.

The UU cases felt that UUTech had provided a wide range of services from IP, Market Research, Commercialisation and funding (as well as links to other funders). The UU companies (similar to one respondent from QUB) felt that the university funding and links to other funders were a very important aspect of the services provided to them.

4.5.5 Spin-outs - Summary

The analysis of spin-out companies established over the last 3 years highlights that there has been limited success. Only 5 people are currently employed in the QUB spin out companies supported over the last three years and 12 people in the UU spin out companies established in the last 3 years.

Given the numbers of companies involved, the time periods over which they have been supported and the range of advice and support they have received from the university commercialisation offices, venture capital companies and Invest NI, the evidence base in relation to spin outs' additionality is not comprehensive. Given the range of supports in place it is not possible to separate out the specific contributions and impacts derived from NI HEIF 2 on spin out outcomes.

The last few years have seen the economy move into a recession, so it has been a difficult time to establish a new company. Despite this, generating spin-outs is a crucial aspect of HEIF work and this measure could make a significant contribution to economic objectives in Northern Ireland. This is an area where there is a need for the universities to do more, in particular to increase the numbers of companies being supported at this stage. Feedback from a small number of companies suggests that the universities are providing the right range of services. There may be a need to ensure that all those entrepreneurs being supported are aware of the full range of services, and this should be looked into further within QUB in

particular. We feel therefore that any new HEIF monies should ensure that a performance measure is included with the universities to increase the spin out support activities. This is one of the key aspects to any HEIF monies with regard to making a significant contribution to the delivery of economic objectives, namely PSA3.

4.6 Summary of Performance

In this section, we present a summary of NI HEIF 2 performance based on key areas specified in the Terms of Reference.

4.6.1 Effectiveness of NI HEIF 2 in addressing its stated aims and objectives (Aug 2007 to Jul 2009) and projected activity to Jul 2010

Considering the overall aims and objectives of NI HEIF 2, we have found that both QUB and UU have put in place a range of initiatives which have been effective – in meeting targets and attracting positive feedback from participants. In this section, we review the overall aims and objectives in turn, and comment on the effectiveness of NI HEIF 2 in addressing these.

- ***Overall aim of HEIF: to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth***

  Considering the metrics which are monitored as part of NI HEIF 2 funded activities there is evidence of most targets being achieved and in some cases by a significant margin. These are all relevant for improving innovation performance.

  - QUB DEL NI HEIF 2 funded activities (Table 4.4): nine of twelve metrics achieved including five relating to income generation as a result of e.g.: licences, contract research, consultancy, facilities and equipment related services, KTP as well as metrics relating to patent applications and patents granted.
  - QUB Invest NI HEIF 2 funded activities (Table 4.5): metrics for the five funded projects, all contributing to innovation, are virtually all on track to be achieved.
    - Marketing and Sales support for existing spin out companies to increase sales, export sales, and jobs (latter likely to be adversely affected by the economic downturn);
    - Enterprise Fellowships which ultimately aim to establish Global Start businesses;
    - promoting innovative digital manufacturing techniques;
    - encouraging new product development and support for R&D funding for Polymer Processing companies; and

- encouraging technology transfer through QUESTOR membership.

- UU DEL NI HEIF 2 funded activities (Table 4.9): most (19 out of 24) metrics achieved; others are part achieved. All are relevant to improving innovation performance and include supports for IP, Technology Transfer and KT through materials, workshops, provision of academic enterprise and commercialisation funds, consultancy income, technology disclosure, income from IP and pre-PoC / PoC projects.

- UU DEL NI HEIF 2 funded activities (Table 4.11): nine of 11 metrics achieved including six relating to income generation as a result of e.g.: KTP, IP, contract research, consultancy, equipment related and regeneration; as well as metrics relating to the number of business and non-commercial interventions.

- UU Invest NI HEIF 2 funded activities (Table 4.12): five of eight metrics achieved, all contributing to innovation. These are: new technology disclosure, pre-PoC projects, new UK patent filings, investment proposals to UUTech Board and spin outs / licensing deals.

- ***Underlying objective: to encourage Queen's University Belfast and the University of Ulster to increase their capability to respond to the needs of business (including companies of all sizes), and the wider community, with a clear focus on the promotion of wealth creation***

  Comparing performance across the years from AY 05/06 (benchmark year on which NI HEIF 2 funding based), AY 06/07 (baseline year immediately prior to NI HEIF 2) and into the period of NI HEIF 2 funding (from AY 07/08 to AY 08/09 and AY 09/10) in Tables 4.4, 4.5, 4.9, 4.11 and 4.12, we see that this has generally increased across a wide range of metrics. This demonstrates an increase in university engagement with business and community groups / Social Enterprises as well as several income generation (and other) metrics, hence demonstrating an increase in the **capacity** of the universities to cater for the needs of business and the wider community.

  An indication of how the universities' current **capability** / **response to needs** are perceived is evident in the satisfaction ratings obtained through the surveys. These show adequate ratings for the SME and academic surveys (typically at least 3 on a 5-point scale where 5 is Very Satisfied) and higher satisfaction ratings (at least 67%) for students and voluntary / community groups. However, in terms of how well QUB and UU respond to the needs of business in particular, feedback from business stakeholders indicated that there was a need for the universities to do more to identify the needs of businesses.

  It is important that the business community recognises that this is a shared responsibility i.e. there is also an onus on businesses to communicate their needs clearly to the universities.

- **Specific objectives - to:**
  - ***build on what has been achieved in both Universities to date***

  As noted above, performance across the years and over a range of metrics of NI HEIF 2 has generally increased. This demonstrates a consolidation of previous activity and further developments from this solid foundation.

  - ***further release the potential social and economic benefits of the work of NI's universities***

  As noted above, performance across the period of NI HEIF 2 and over a range of metrics has generally increased. This demonstrates an increase in university engagement with business and community groups / Social Enterprises hence releasing social and economic benefits of the universities. In terms of evidence of benefits, this tends to be qualitative rather than quantitative as reported in the surveys undertaken e.g. impacts reported in surveys:

    - **SME survey -** includes both hard and softer impacts. The most common areas in which respondents noted hard impacts were sales / turnover, staff and efficiency savings as well as softer impacts such as increases in knowledge / understanding / information sharing; and the development of new products / services / ways of working.
    - **Academic survey:** generally high levels of impacts reported across a range of areas: greater awareness of benefits of working with business and of commercialisation processes; actively seeking opportunities to work with business; greater involvement in technology transfer; collaborative research with business; developed new technology; networking / collaboration.
    - **CPD survey:** improved skills / expertise, developed new skills / expertise.
    - **Voluntary & Community Group survey:** wide range of impacts including e.g.: evidence for funding application; marketing strategy; increased uptake.
    - **Student survey:** knowledge, experience, skills.

  - ***help the universities to develop their mission in engagement with business and the community***

  As noted above, performance across the years and over the range of metrics of NI HEIF 2 has generally increased. This demonstrates an increase in university engagement with business and community groups / Social Enterprises, hence contributing to the Third Stream aspect of the universities' mission.

- ***ensure a lasting culture shift in the Universities by making Knowledge Transfer an integral part of the Universities' portfolio of activities***

As noted above, there is evidence of more engagement from academics and feedback from external stakeholders who have observed and welcomed a shift in culture within the universities; however, this is an area in which there is felt to be scope for further development.

- ***develop the responsiveness of the Universities to the needs of business***

This has been partly achieved – e.g. engaging with businesses that have not previously done so – but timeliness and communication are areas highlighted for improvement from the surveys. There is a need for the universities to be more proactive and, as noted by external stakeholders, to do more in this area by actively seeking out and understanding business needs. This is discussed further in Section 7.4.1 which proposes the introduction of a KT strategy which is founded on a robust evidence base drawn from engaging with businesses to identify their needs.

- ***improve the exploitation of the NI science base***

This has been achieved – but there is a need for a more explicit link between activities and overall policy / strategy. This is discussed further in Section 7.4.1 which proposes the introduction of a KT strategy per university which includes a clear statement of how NI HEIF (and other funding streams) supported activities contribute to overall policy / strategy.

4.6.2 Performance of NI HEIF 2 and Target Setting Methodology

Performance of NI HEIF 2 to date against targets

Considering the metrics which are monitored as part of NI HEIF 2 funded activities, there is evidence of most targets being achieved and in some cases by a significant margin. A minority of metrics are currently Partly Achieved – but with a relatively small shortfall; even allowing for projections in Year 3 these will not be met.

- QUB DEL NI HEIF 2 funded activities (Table 4.4): nine of twelve metrics achieved;
- QUB Invest NI HEIF 2 funded activities (Table 4.5): metrics for the five funded projects, all contributing to innovation, are virtually all on track to be achieved;
- UU DEL NI HEIF 2 funded activities (Table 4.9): most (19 of 24) metrics achieved;
- UU DEL NI HEIF 2 funded activities (Table 4.11): nine of eleven metrics achieved; and
- UU Invest NI HEIF 2 funded activities (Table 4.12): five of eight metrics achieved.

Overall, for both QUB and UU, performance is on track with regard to performance against the majority of defined indicators.

Assessment of Target Setting Methodology

Targets were set based on the Institutional Plans developed by the universities; these reflect some of the HE-BCI metrics used in the DEL funding allocation as well as the activities for which the universities received funding. However, in terms of the target setting methodology, the majority of targets are input / output focused, which are appropriate in themselves but the overall view of performance would be enhanced by additional targets which also consider impacts / outcomes. Ideally targets should link to the wider policy framework and impacts associated with that relating to innovation i.e. ultimately economic impacts evidenced in job creation / maintenance; quality of jobs, sales, exports, etc; continued changes in culture / attitude in universities towards working with businesses and community groups.

A further challenge – relating to both Performance and Targets - exists in isolating the effect of the NI HEIF 2 funding, as there are many other sources of funding contributing to these areas of activity within each university. We feel that that the complexity of the various schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than one source of funding) gives rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source that specifies all the relevant monies (e.g. from Connected, NI HEIF, Innovation Vouchers, PoC, etc.), what these are used for and what overall outcomes are achieved. Therefore, under the current arrangements and based on available information, it is not possible to categorically state that there is no duplication / overlap in funding streams or in outputs / outcomes attributed.

(Note: To illustrate this issue, we can consider Invest NI's contribution to economic development through the universities overall. This is summarised in QUB's Response to IREP (2009) which highlights the significant proportion of the Invest NI R&D budget which is allocated to universities: it notes that "*out of an £80m R&D budget for 2008-2011, £25m was earmarked for university activities".* This document also highlights that over the period 2002-2009, about £63m was offered to QUB and UU for a range of Invest NI funded interventions such as Centres of Excellence, NI HEIF1 and NI HEIF 2 (Invest NI element), PoC1 and PoC2, START (Collaborative projects), KTP and Networking. Clearly with this level of financial support in closely related areas, isolating the effect of one initiative will be difficult and therefore a more strategic approach to planning and monitoring progress may be required – this is discussed in Section 7.4.1).

Overall, therefore, the targets set are appropriate but would be enhanced by complementary targets which consider outcomes / impacts and take into account the contribution of other interventions.

4.6.3 Base Case and Additionality / Displacement

In this section we consider:

- the Base Case of what would have happened in the absence of NI HEIF 2 to the universities' (i)"Third Stream" missions; (ii) underlying Knowledge Transfer activities; and (iii) wider business and community engagement; and
- conclude on the level of additionality and displacement.

Base Case

NI HEIF 2 funding has developed and built on the achievements of the NI HEIF 1 funding stream (2004-2007). The Evaluation of NI HEIF 1[13] recommended that the NI HEIF 2 should continue at the previous funding level but with some significant modifications to reflect the approach in the rest of the UK for a more predictable funding stream to allow the retention of highly skilled staff and greater continuity. This recognises the role that NI HEIF funding has played (and continues to play) in establishing an infrastructure and playing an enabling role in the wider Knowledge Transfer environment (see Section 7).

The need for NI HEIF as a secure funding base was set out in the NI HEIF 1 Evaluation. It noted that university KT requires a critical mass of staff and expertise (people intensive and expensive to maintain); that KT is rarely self-financing through income; that private sector technology transfer organisations were (at the time of writing that evaluation) not proven and that private sector investment was still tight and focused on IP alone. In Section 7.4.1, we discuss in more detail issues around KT funding and the broader funding environment including funding available for other initiatives and in particular issues of funding and accountability and the ability to attribute specific outputs / impacts to specific funding streams. We also discuss the need for KT activities to respond to business needs in a way that is consistent with the MATRIX report (business-led / business-driven needs rather than academia).

Given that the argument in the NI HEIF 1 evaluation for a secure funding base and that this evaluation of NI HEIF 2 has provided evidence of NI HEIF 2 continuing to fulfil this infrastructural role, it is clear that in the absence of NI HEIF 2, progress would have been significantly impaired. The Universities' Third Stream missions, underlying KT activities and wider business and community engagement would all have been adversely affected. Whilst some of this activity would have continued in the absence of NI HEIF funding, this would have been in a much more ad hoc and fragmented way. A lot of what had been developed and achieved under NI HEIF 1 would have fallen away again and the infrastructure that has been developed and enhanced (e.g. parts of the QUB Regional Office, QUB KEU, UU Business Liaison Office, UU Office of Innovation) would not exist in its current form.

To further illustrate the base case situation, we can consider (from survey results), the extent of usage of KT interventions prior to supports funded through NI HEIF 2:

[13] Interim Evaluation of HEIF Programme (BDO, 2007)

- SMEs - 56% had not used university KT services pre-2007 i.e. the implication is that these had not engaged with university KT services through NI HEIF 1 and were new contacts secured through NI HEIF 2;
- CPD participants - Most (90%) had not used QUB CPD services pre-2007;
- Voluntary and Community Groups - The majority (85%) had not used any of the universities' other KT services before their contact with the Science Shop;
- Students - the majority of respondents (86%) had not taken part in any other KT activities prior to their Science Shop project / Work Placement.

Clearly therefore, the vast majority of beneficiaries under NI HEIF 2 were "new" to university / KT interventions and in the absence of NI HEIF 2 would not have achieved the impacts discussed in detail in Section 4.4 and also above in Section 4.6.1 (under the discussion of the objective: *further release the potential social and economic benefits of the work of NI's universities*).

To further illustrate the base case situation, we can consider (from survey results), beneficiaries' responses to the question: *"If KT support from the universities had not been available, how would you have gone about this?"* (i.e. undertaking the project that the KT support under NI HEIF 2 has enabled them to) – note that in the case of SMEs, Voluntary and Community Groups and Students in particular, relatively few responded to this question, reinforcing the view that for only relatively few in these groups, there is an alternative (albeit hypothetical) to HEIF 2 funded activity:

- SMEs – Responses **(provided by less than a quarter, 23% of respondents**) illustrated in Table VI.24 in Appendix VI provide examples of what **some** SMEs might have done including:
    - seeking finance to support the project from elsewhere e.g. bank loan or overdraft, another type of grant, taking money from the business to support the project or considering funding through "Halo" (a business angel network); and/or
    - looking for another way of delivering the project including paying themselves to do it in-house (research) or contracting it out to alternative supplier (research); working with other companies / providers perhaps outside NI or delaying the project.
- Academics – Responses **(provided by 78% of respondents**) illustrated in Table IX.11 in Appendix IX describe what **some** academics would have done to advance their project in the absence of NIHEIF 2 support, including:
    - seeking finance to support the project from elsewhere e.g.
        - seeking funding to support research – externally / through university Research Office (but time consuming, success rate may be lower)

- seeking an alternative provider
    - consulting - through local industry
    - facilities / equipment
    - use external patent office / private provider / IP management agency / commercial agents
    - CPD – but other provider may not be as relevant
    - national / international conferences (as alternative to Knowledge Club)
- using other resources
    - doing it themselves (but would take longer)
    - DEL or DEL CAST PhD student

- CPD participants – Responses **(provided by 74% of respondents)** illustrated in Table VII.14 in Appendix VII provide some examples of what **some** CPD participants might have done in the absence of QUB CPD (supported through NI HEIF 2). The main suggestion was to seek an alternative training provider through internet / networking – e.g.: FE sector; Sureskills; Council (training department); Corporate Services (i.e. in-house);
- Voluntary and Community Groups – the only alternative mentioned to Science Shop was undertaking the project internally (see Table VIII.14 in Appendix VIII); this response was **provided by 15% of respondents**;
- Students – Responses **(provided by one third (33%) of respondents**) in Table X.12 (see Appendix X) indicate what students would have done in the absence of the universities' Science Shop project or student work placement including:
    - Seeking another organisation to host them (independently);
    - Securing experience post – graduation; and
    - Seeking voluntary experience.

Additionality and Displacement

In this section we summarise findings in relation to Additionality and Displacement taking into account:

- **Full Additionality:** where programme's benefits are wholly attributable to the programme, i.e. deadweight and displacement are zero and the respondent would not have been able to proceed without the intervention;
- **Partial additionality:** where the activity would have been carried out earlier, or on a larger scale or to a higher specification or has displaced existing activity;

- **Deadweight:** activity that would have occurred regardless of the policy i.e. without NI HEIF 2 intervention; and
- **Displacement:** activity within a local area (taking market share from other local firms producing the same or similar goods or services).

In Section 4.4 we present detailed survey results in relation to additionality. This is generally moderate to high when both partial and full additionality are considered:

- **SMEs –** generally very high when we consider both full and partial additionality;
- **Academics** – generally at a moderate level (at least one third and up to two thirds in some cases) when we consider both full additionality and partial additionality together;
- **CPD** – generally high when considering both full and partial additionality i.e.: 32% full, 47% partial;
- **Voluntary & Community Groups** – generally high: 80% full, 15% partial;
- **Students** – generally high: 76% full, 19% partial.

There is however some evidence of some deadweight - this links through to the issue of the need for clarity (amongst those within HEIs who are responsible for administering NI HEIF 2 and other related funding streams) around use of funding and attributing specific impacts to specific funding streams. This issue is discussed further in Section 7.4.1 in which we discuss the need for an overall KT Strategy per university. (Note this issue is not about respondents recognising the source of funding for their activity / project. We would not necessarily expect the beneficiaries of NI HEIF 2 supported activities to have a high level of awareness of specific funding streams supporting the universities – so for example SMEs would be aware that the universities provide them with specific supports but not necessarily the detail of funding that enables this support to be provided).

Deadweight and Displacement

Under the discussion regarding Base Case, we consider (from survey results), beneficiaries' responses to the question: *"If KT support from the universities had not been available, how would you have gone about undertaking the project that the KT support under HEIF 2 has enabled you to"*. This indicates that there is some deadweight but that this is not high – apart from academics and CPD participants - considering the number of respondents who indicated what they would consider an alternative route to achieving the same result:

- SMEs – across all of the interventions less than a quarter (23%) of respondents suggested alternatives to achieving their project (responses illustrated in Table VI.24 in Appendix VI);
- Academics – the majority (78%) provided responses in terms of achieving the same outcome in another way (illustrated in Table IX.11 in Appendix IX);
- CPD participants – 74% provided responses (illustrated in Table VII.14 in Appendix VII);

- Voluntary and Community Groups – 15% provided responses in terms of achieving the same result in another way (see Table VIII.14 in Appendix VIII);
- Students – 33% provided responses in terms of achieving the same result in another way (illustrated in Table X.12 in Appendix X).

Whilst potential alternatives to achieving the same result are proposed by some respondents, some of these might take longer to achieve or have less of an impact than the NI HEIF 2 supported activity (as indicated in the proportions attributed to partial additionality above).

Considering displacement, of the respondents who suggested alternatives to NI HEIF 2 funded activity, many of these involve the individual or organisation either resourcing the activity themselves or in some cases (mainly for academics and CPD respondents) seeking alternative providers. Such alternative approaches are ad hoc and would detract from the integrated / joined up approaches to knowledge transfer that have been embedded within the HEIs.

4.6.4 Effectiveness of NI HEIF 2 in advancing the Universities' Knowledge Transfer strategies

In Section 5.3.2, we describe the Institutional Plans which each HEI has been required to provide as a condition of its DEL NI HEIF 2 funding. These plans cover the three Academic Years relating to the formula funding allocation. The plans include the key indicators against which the HEI's performance is tracked. As noted in Section 4.5.1 and 4.5.2, good progress has been made against most of these indicators.

These plans represent an overall view of KT for each institution. As noted in Sections 5.5 and Section 7.2.3, there is an opportunity to have the universities provide more detail within their Knowledge Transfer strategies – particularly in terms of how their plans and activities will link to PSA objectives and targets, the exploitation of opportunities described in the MATRIX reports and proactive engagement with other KT stakeholders.

4.6.5 Overall impact (including wider / regional impacts) of NI HEIF 2 funding and identification of the costs and benefits of this support

In this section we consider the overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support, both quantifiable and unquantifiable, taking into account the evaluation and monitoring frameworks operated by DEL (in respect of the formula allocations) and by Invest NI (in respect of the competitive "proposal-based" allocations).

Costs

Overall costs associated with NI HEIF 2 amount to around £3.255m per annum over 3 years. QUB has received £1.530m per annum over 3 years from DEL and £0.451m per annum from

Invest NI. The corresponding amounts for UU are: £0.870m per annum over 3 years and £0.404m per annum over 3 years.

Overall Impacts / Benefits

In Sections 4.5.1 and 4.5.2, good progress has been noted against most of the indicators on which QUB and UU are tracking their progress. These tend to focus on inputs / outputs and provide evidence of the impact of NI HEIF 2 funding in terms of increased university engagement with business and community interests. These cover a range of areas including:

- **Business:** evidence of higher levels of engagement in R&D and innovation supported by the universities through licensing, contract research, consultancy and KTP opportunities, etc. - leading to improved business performance, productivity and ultimately competitiveness;
- **Academics**: enhanced entrepreneurial and commercial culture leading to greater levels of commercialisation and exploitation of the science base;
- **Community**: greater levels of engagement and more effective collaboration between the university and wider community stakeholders leading to greater capacity within the sector.

Feedback from surveys also provides details of the impacts on those who have been directly involved in NI HEIF 2 funded activities:

- The most common areas in which impacts were noted by **SME respondents** were sales / turnover, staff, efficiency savings as well as softer impacts such as increases in knowledge / understanding / information sharing; and development of new product / service / ways of working. However, a significant minority of respondents (18%) felt that it was too early to comment on impacts and a similar number (20%) reported that there had been no impact (to date).
- Amongst **academics surveyed**, at least two thirds of respondents reported high levels of impact (some or significant) in areas associated with commercialisation and working with business such as:
    - Greater awareness of benefits of working with business
    - Greater awareness of commercialisation process
    - Actively seeking opportunities to work with business
    - Greater involvement in technology transfer
    - Collaborative research with business
    - Developed new technology
    - Networking / collaboration

Wider / Regional Impacts

At a wider / regional level, the improved infrastructure for KT in both universities allows them to offer a more responsive / appropriate service to business, academics and the wider community. The wider and regional benefits that accrue from the programme include:

- Supporting entrepreneurship – including amongst academics;
- Strengthening university linkages with businesses;
- Strengthening university linkages with community;
- Increased business investment in R&D;
- Job creation – particularly higher skills levels; and
- Increasing levels of innovation.

4.7 Value for Money

Economy

- **Programme costs:** The cost to (DEL and Invest NI) of supporting NI HEIF 2 (see Table 4.1 and Table 4.6) amounts to £3,255,029 per annum over three years from Academic Year (AY) 2007/08 to AY 2009/10 i.e. a total of £9,765,087 (QUB - £5,944,461; UU - £3,820,626).

- **Programme costs relative to benchmarks:** In Section 8.5.3, a comparison of KT activity in QUB and UU against other UK countries shows that the NI universities fare reasonably well in terms of the level of (HEIF or equivalent) funding secured relative to other UK HEIs with average levels of £1.63m per annum per institution in NI compared with levels of £1.04m and £1.11-£1.13m per annum per institution in England and Scotland (see Table 8.14) although care should be taken in the interpretation of these averages as they may mask a degree of variation over time and across institutions. Section 8.5.4 and Table 8.15 present information on QUB and UU funding levels relative to comparable institutions (on the basis of RAE 2008 Table of Excellence rankings). This indicates that QUB fares somewhat better than might be expected and that UU fares slightly less well than might be expected in terms of levels of funding received to support KT.

- **Internal Resources and Management Costs:** Within the HEIs, the programme of activities supported by NI HEIF 2 has been delivered using the external resource provided by DEL and Invest NI coupled with internal resources.

    - Considering business and community facing staff levels (see Table 5.5 and Table 5.6), the numbers have increased in QUB from 55 in the final year of HEIF 1 to 68 in Year 3 of HEIF 2 (an increase of 24%) with a similar increase in UU from 57 to 68 (an increase of 19%) over the same period. However, the levels are relatively modest, representing around 6% of the total HEI staff complement in both universities.

    - Management costs are discussed in more detail in Section (see Section 6.4.3 and Section 6.5.3). Based on the HEIs own estimates, these represent around 6.7% of NI

HEIF 2 funding in QUB and around 14% of NI HEIF 2 funding in UU (the norm for programme management fees would be up to 10%). Further investigation is recommended into these costs (see Recommendation 11).

Efficiency

Comparing the costs of NI HEIF 2 per institution against the level of outputs (based on HE-BCI metrics in Tables 5.5 and Table 5.6), we derive the information presented in Tables 4.13 and Table 4.14. These tables show the ratio of the overall annual cost of NI HEIF 2 per output measure (or vice versa in the case of no. of staff, no of students or interventions) and demonstrate in general that over time the ratios are improving (more so for UU than QUB).

Table 4.13
QUB – Ratio of Main Metrics to Annual NI HEIF 2 funding

	AY 2005/06	(NI HEIF 1 - final year) 2006/07 - Baseline	(NI HEIF 2 – Year 1) 2007/08	(NI HEIF 2 – Year 2) 2008/09	(NI HEIF 2 – Year 3) 2009/10 projected
Annual HEIF funding	£990,458	£990,458	£1,981,487	£1,981,487	£1,981,487
Total income	£16,305,000	£17,499,294	£17,884,467	£34,562,924	n/a
Ratio of total income to HEIF funding	16.46	17.67	9.03	17.44	16.25
Staff - HEIF cost per staff member	£873	n/a	n/a	n/a	n/a
Income from non credit bearing courses - ratio of income to HEIF funding	0.21	0.21	0.12	0.12	n/a
Income from KTPs- ratio of income to HEIF funding	1.44	1.59	0.86	0.90	0.90
IP income- ratio of income to HEIF funding	0.10	0.86	0.82	1.69	0.56
Contract research- ratio of income to HEIF funding	7.89	9.05	4.69	9.09	9.08
Consultancy income- ratio of income to HEIF funding	0.84	0.75	0.57	1.03	1.09
Equipment income- ratio of income to HEIF funding	0.25	0.60	0.35	2.09	2.09
Regeneration income- ratio of income to HEIF funding	5.75	4.60	1.63	2.53	2.52
Business & community facing staff - HEIF cost per staff member	£17,077	£18,008	£30,961	£29,140	£29,140
SME interventions - HEIF cost per intervention	£921	£755	£2,663	£1,283	n/a
Interactions with non-commercial organisations - HEIF cost per interaction	£3,357	£3,185	£4,833	£2,733	n/a
Sandwich students - HEIF cost per student	£5,159	£5,159	£10,596	£10,540	£11,323
Source: Adapted from Table 5.5 and HEIF annual funding costs (actual)					

Table 4.14
UU – Ratio of Main Metrics to Annual NI HEIF 2 funding

	2005/06	(HEIF 1 - final year) 2006/07 - Baseline	(HEIF 2 – Year 1) 2007/08	(HEIF 2 – Year 2) 2008/09	(HEIF 2 – Year 3) 2009/10 projected
Annual HEIF funding	£1,437,525	£1,437,525	£1,273,542	£1,273,542	£1,273,542
Total income	£4,816,000	£19,533,000	£19,931,000	£20,302,000	n/a
Ratio of total income to HEIF funding	3.35	13.59	15.65	15.94	n/a
Staff - HEIF cost per staff member	£1,373	n/a	n/a	n/a	n/a
Income from non credit bearing courses - ratio of income to HEIF funding	0.88	0.66	0.81	0.90	0.90
Income from KTPs- ratio of income to HEIF funding	0.35	0.26	0.33	0.40	0.40
IP income- ratio of income to HEIF funding	0.01	0.01	0.22	0.54	n/a
Contract research- ratio of income to HEIF funding	0.52	1.24	2.73	1.60	n/a
Consultancy income- ratio of income to HEIF funding	0.49	1.30	1.51	1.62	1.33
Equipment income- ratio of income to HEIF funding	0.22	1.00	1.55	2.69	n/a
Regeneration income- ratio of income to HEIF funding	0.89	9.12	8.51	8.20	n/a
Business & community facing staff - HEIF cost per staff member	n/a	£25,220	£20,878	£18,729	£18,729
SME interventions - HEIF cost per intervention	£16,912	£4,084	£2,948	£1,522	n/a
Interactions with non-commercial organisations - HEIF cost per interaction	£12,392	£3,398	£2,868	£392	n/a
Sandwich students - HEIF cost per student	£2,099	£2,051	£2,137	£2,444	£1,592
Source: Adapted from Table 5.6 and HEIF annual funding costs					

Table 4.13 and Table 4.14 demonstrate the return on HEIF 2 funding in terms of i**ncome generated relative to funding received:**

- In QUB, the ratio of income to HEIF 2 funding has increased from 9.03 to 16.25 (projected) over the 3 years of HEIF (slightly below the HEIF 1 final year). The ratios of income received from contract research, consultancy, equipment and regeneration to HEIF 2 funding have all increased over the period of HEIF 2 funding;
- In UU, the ratio of income to HEIF 2 funding is around 16 in Year 2 of HEIF 2 funding (an increase on the level in the HEIF 1 final year) (note projection for total income for Year 3 of HEIF 2 not currently available); The ratios of income received from IP and equipment relative to HEIF 2 funding have increased considerably over the period of HEIF 2 funding;

These also demonstrate improving efficiency in terms of HEIF 2 **funding relative to the number of business and community facing staff and the number of interventions:**

- In QUB the ratio of HEIF 2 funding relative to the number of Business & community facing staff, the number of SME interventions and the number of interactions with non-commercial organisations has been decreasing over the period of HEIF 2 funding.

- In UU, the ratio of HEIF 2 funding relative to the number of Business & community facing staff, the number of SME interventions and the number of interactions with non-commercial organisations has been decreasing over the period of HEIF 2 funding.

Effectiveness

- **Performance against objectives**. A detailed discussion of performance against objectives/targets is included in earlier parts of this section of the report. In summary, considering the metrics which are monitored as part of NI HEIF 2 funded activities, there is evidence of most targets being achieved and in some cases by a significant margin. A minority of metrics are currently Partly Achieved – but with a relatively small shortfall; even allowing for projections in Year 3 these will not be met.
    - QUB DEL NI HEIF 2 funded activities (Table 4.4): nine of twelve metrics achieved;
    - QUB Invest NI HEIF 2 funded activities (Table 4.5): metrics for the five funded projects, all contributing to innovation, are virtually all on track to be achieved;
    - UU DEL NI HEIF 2 funded activities (Table 4.9): most (19 of 24) metrics achieved;
    - UU DEL NI HEIF 2 funded activities (Table 4.11): nine of eleven metrics achieved; and
    - UU Invest NI HEIF 2 funded activities (Table 4.12): five of eight metrics achieved.

  Overall, for both QUB and UU, performance is on track with regard to performance against the majority of defined indicators.

- **Leverage:** Table 4.13 and Table 4.14 demonstrate the return on HEIF 2 funding in terms of income generated relative to funding received. The ratio of income to HEIF 2 funding has increased over the HEIF 2 funding period:
    - In QUB from 9.03 to 16.25 (projected) over the 3 years of HEIF (slightly below the HEIF 1 final year); and
    - In UU from around 13.6 to almost 16 in Year 2 of HEIF 2 funding (an increase on the level in the HEIF 1 final year) (note projection for total income for Year 3 of HEIF 2 not currently available).

- **Leverage relative to benchmarks.** In Section 8.5.4 and Table 8.15, a comparison of KT activity in QUB and UU against other UK countries shows that the NI universities perform favourably – in terms of the level of proxy measure of performance achieved – comparing the ratio of impact (investment levered / secured) against the level of funding. There are some caveats associated with the data in that table but the range of ratios varies from 2.6 to 29.54 and UU and QUB are ranked 3rd and 8th respectively out of 18 comparable HEIs suggesting that they are reasonably effective in achieving returns from the funding provided to them.

VFM Summary

From the preceding analysis, we can compare the performance of NI HEIF 2 funding over time and across institutions, This suggests that the NI HEIs fare reasonably well in terms of funding received; there is some evidence of improving efficiency in how this funding is used and that they are effective in achieving results with the funding made available to them. There is scope to examine management costs in some more detail however.

Where information is available, the analysis shows that NI HEIs are in a good position (in terms of increasing levels of funding leveraged) relative to counterparts in other parts of the UK in terms of what they are achieving. The relatively small (in HE terms) investment of £3m pa is leveraging up to circa £55m (in AY 2008/09).

NI HEIF funding underpins outreach activities to business and the community in both HEIs and sits amongst a range of other interventions and supports. Given the complexities of the various funding streams currently received by the universities and the difficulty in isolating the impacts of one particular funding stream (this issue is discussed further in Section 7.4.1), we cannot completely isolate NI HEIF 2 impacts (a common issue for many initiatives). However, evidence from the PACEC report assists in identifying the impacts attributable to NI HEIF 2 funding.

The PACEC report indicates that, for England, between £2.9 billon and £4.2 billion out of the total £10.3 billion generated through knowledge exchange engagements between 2001 and 2007 can be grossly attributed to HEFCE KE funding (i.e. HEIF) either directly or indirectly. However, this almost certainly underestimates the true impact as many of the outputs cannot be easily monetised. Extrapolating from this research, we could estimate that around 35% of the £55m KT income levered by the HEIs in AY 08/09 is likely to be attributable to NI HEIF 2. This gives a return of around £18m against an investment of just over £3m which represents good value for money. It is also worth highlighting that this is likely to be an underestimate of the impact as:

- many of the outputs cannot easily be monetised; and
- this represents the benefit to the HE sector only and does not take into account income that companies have received arising from KT/research activity.

4.8 Change in Performance from NI HEIF 1 to NI HEIF 2

In Section 5.3.4 and Table 5.5 and Table 5.6 we discuss the annual out-turn of the metrics used in the allocation of NI HEIF 2 funding since the initial allocation of NI HEIF 2 funding i.e. for 07/08 and 08/09 and projections for 09/10 where information is available. These reflect the impact of moving from a purely competitive system under NI HEIF 1 to a predominantly metrics based allocation model under NI HEIF 2 (particularly the 08/09 and 09/10 data more so than the 07/08 data where the new system had only been in place one year). Historical data for AY 2005/06 and AY 2006/07 are also presented.

By comparing the performance data for AY 06/07 (i.e. the last year of NI HEIF 1 funded activity) with AY 07/08, 08/09 and (projected) 09/10 (i.e. all 3 years of NI HEIF 2 funded activities) we can get an insight into changes in performance. The available data (in Table 5.5 and Table 5.6) clearly shows that there has generally been an upward trend in the metrics from AY 2005/06 on.

There have been some notable increases in income and in particular in the metrics which are part of the HE-BCI survey e.g.: IP income, contract income, consultancy income, equipment income which all show significant increases in both QUB and UU performance. There is also evidence of increasing numbers of interventions with both SMEs and non-commercial organisations in both QUB and UU – these substantial increases have taken place with only relatively small increases in the number of business and community facing staff.

Overall therefore, there is evidence of continuing improvement in performance metrics (particularly HE-BCI returns) moving from AY 06/07 (i.e. the last year of NI HEIF 1 funded activity) to AY 07/08, 08/09 and (projected) 09/10 (i.e. all 3 years of NI HEIF 2 funded activities). **This indicates that there has been a change in focus and activity in both QUB and UU with the metrics against which the universities are being measured (and reporting on) clearly influencing the types of activity being undertaken in order to drive up performance in these areas.**

Data presented in Section 5.3.5 provides further evidence of this improvement. It shows that the five HE-BCI income metrics which have been used in the allocation of NI HEIF 2 funding have increased:

- from £14,679k QUB and £3,053k UU = £17,732k total (i.e. 83% / 17% QUB / UU) in AY 05/06;
- to £32,551 QUB and £18,645 UU = £51,196k total (i.e. 64% / 36% QUB / UU) in AY 08/09.

This represents a significant overall improvement for NI (the total has increased by a factor of almost three) and a relative improvement for UU (which has increased by a factor of over six) vs QUB (which has increased by a factor of around two)) since 3 years ago.

Table 5.8 presents DEL's key HE-BCI metrics table (summing the five key income metrics) which DEL uses for reporting against PSA 1. The totals for 06/07 and 07/08 were approximately £33 million. The 08/09 figures therefore represent an increase on these of some 33% which is particularly impressive given the prevailing economic situation.

In Section 5.5, we discuss alternative funding models; some of these include a formula (metrics-based) allocation of funding – informed by and building on the evident success that this approach has had in the NI HEIF 2 funding round in driving improvements in performance.

4.9 Equality (Section 75) and DDA Requirements

In this section, we consider statutory requirements in terms of Section 75 and the accessibility of the programme for all, in line with the Disability Discrimination Act 1995. The universities have provided the following information with regard to:

- ensuring compliance with S75 and DDA in respect of NI HEIF 2 supported activities; and
- evidence of impacts (positive or adverse) with regard to: anti-poverty, social inclusion, equality of opportunity or good relations.

4.9.1 QUB - Equality Considerations

Ensuring Compliance

Staff involved in NI HEIF 2 activities must comply with the University's policies on S75 and DDA. (See www.qub.ac.uk/directorates/HumanResources/EqualOpportunitiesUnit/Section75 and www.qub.ac.uk/directorates/HumanResources/EqualOpportunitiesUnit/DisabilityDuty).

Impacts

In relation to evidence of impacts it can be argued that as much of the support is aimed at improving the economic performance of the region, then this activity directly contributes to anti-poverty.

In terms of the social impacts, the Science Shop at Queen's provides a point of contact between Community Groups and the University. Community Groups submit research ideas to the Science Shop and Science Shop staff find students to carry out the research as part of their degree course work. Organisations often use the results of the research either to continue to develop their own services or to lobby for resources and policy change. Some examples illustrate the anti-poverty, social inclusion, equality of opportunity or good relations impacts:

- **1. Women in Business** - as part of an MSc in Management, a student carried out research on behalf of Women in Business, examining factors which might influence or hinder female undergraduate students in taking entrepreneurial career paths. The student concluded that universities should embed entrepreneurship training within undergraduate degree programmes and also suggested that business mentoring programmes could be vital in helping young women to build the confidence to set up their own businesses. Women in Business has used the findings to inform their own work with young women entrepreneurs.
- **2. Cnocnafeola Centre** - as part of the undergraduate Business Analysis module in the Management School, groups of students have undertaken research on behalf of the Cnocnafeola Centre, a community business in the heart of the Mournes. Students have helped to put together a marketing plan for the Centre, and have examined how best to use online payment methods and how to use social networking sites to further enhance

the business. Cnocnafeola have put many of the recommendations into action in order to attract more tourism to the Mournes.

- **3. Forum for Action on Substance Abuse** - as part of the undergraduate Policy Analysis Paper in the School of Sociology, Social Policy and Social Work, a group of students carried out a literature review to establish whether there was a link between substance abuse and suicide, and examine the implications for suicide prevention. FASA used the research to inform their own work with young people affected by drug and alcohol issues, and took the research to the Northern Ireland Assembly's 'Inquiry into the Prevention of Suicide and Self-Harm'.

- **4. Daisies Café Newtownards** - as part of a BA degree in Social Anthropology, a student undertook her research in Daisies Café in Newtownards, a social enterprise which seeks to help people with learning disabilities and mental health issues move into employment. The research helped to show the value of food production as a way of building social capital amongst the participants in the programme.

4.9.2 UU - Equality Considerations

Ensuring Compliance

The Office of Innovation is guided by the University's Equality and Diversity Services Office and the University's overall commitment to all appropriate legislation.

Impacts

Information provided in Table 4.9, Table 4.10 and Table 4.11 highlights the University's significant progress in working with the Social Economy. Many Social Enterprises are based in, and impact on individuals from, areas suffering significant of Social Deprivation.

In addition the University promotes an agenda of widening access to all its resources to all.

4.9.3 Conclusions - Equality Considerations

It is clear that both QUB and UU have policies and strategies in place to ensure compliance with Equality and DDA legislation across the board and NI HEIF 2 funded activity is no exception to this. Both QUB and UU have provided examples of where their NI HEIF funded activity is having a positive social impact in this regard – particularly through work with Social Enterprises and projects undertaken through the Science Shop.

There was no evidence to suggest that any specific groups were not being given the opportunity to be supported.

5 FUNDING MECHANISM FOR NI HEIF 2

5.1 Introduction

This section contributes to addressing the following elements of the ToR:

- *Assess the added value and advantages / disadvantages of the programme continuing to operate as a joint initiative between DEL and Invest NI.*

This section presents an overview of the process of allocation of funding under NI HEIF 2 from DEL and Invest NI to QUB and UU.

Given the policy imperative for a predictable and permanent funding stream as set forth in the UK Ten Year Science & Innovation Framework (2004 – 2014) and the NI Regional Innovation Strategy, taken together with the recommendations of the NI HEIF 1 evaluation, DEL and Invest NI agreed and adopted the following funding model for NI HEIF 2:

- 80% of the available monies (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and
- 20% (£0.6m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding, and administered by Invest NI.

However, as noted in Section 2.2, Invest NI allocated an additional amount of approximately £255k per annum to cover all the projects approved by its Evaluation Panel so the actual ratio of funding turned out to be 75% DEL and 25% Invest NI.

5.2 Funding Levels

Table 5.1 illustrates the total funding allocation by funder to each HEI; timescales are also included.

Table 5.1
NI HEIF 2 Funding Allocation from DEL and Invest NI to QUB and UU

	DEL		Invest NI		Total
	£ per annum	Period	£ per annum	Period	
QUB	£1,530,158	1st August 2007 to 31st July 2010	£451,329	1st April 2008 to 31st March 2011	£1,981,487
UU	£869,842	1st August 2007 to 31st July 2010	£403,700	1st November 2007 to 31st October 2010	£1,273,542
Total	£2,400,000		£855,029		£3,255,029

Source: DEL Letters of Allocation (21st May 2007) / Invest NI Letters of Offer (22nd April 2008 QUB; 31st March 2008 UU).

For comparison, Table 5.2 illustrates the historical total funding allocation levels in NI and methods of funding allocation.

Table 5.2
HEROBC / HEIF Funding in Northern Ireland

HEIF Funding (nominal per annum)	INVEST NI / DETI	DEL	TOTAL
Pre 2004 (HEROBC)	0	£1m (competitive bids)	£1m
AY 2004/5–2006/7 (NI HEIF 1)	£2m (competitive bids)	£1.2m (competitive bids)	£3.2m
AY 2007/8–2009/10 (NI HEIF 2)	£0.6m + (competitive bids)	£2.4m (formula allocation)	£3.0m +
Source: DEL			

5.3 DEL NI HEIF 2 to QUB and UU (Metrics Allocation)

5.3.1 Metrics Allocation of Funding under NI HEIF 2

DEL anticipated that the NI HEIF 2 funding allocated by metrics (also known as the formula allocation) would be used to support the core KT activities of the universities (i.e. the running of the respective Regional Offices) and community focused projects, although it would be up to the universities how to utilise these core Knowledge Transfer funds (in much the same way as is the case with core research funding allocated under the Quality-related Research (QR) funding model).

DEL adopted a model for the metrics allocation of funding based closely on that used in England, but with two significant distinctions:

- The first distinction - a greater emphasis on "activities not measured by income" in order to allow a greater impact on the funding levels due to community focused activities. DEL believed this was justified by the increasing importance to the NI economy of Social Enterprises, the absence of a dedicated Higher Education Active Community Fund (HEACF) in Northern Ireland and also the fact that the NI Science Shop (previously funded under NI HEIF 1) was widely regarded as an EU exemplar of best practice in Higher Education / Community interaction and one which DEL wished to reward and encourage.

- The second distinction – DEL did not adopt the 75% transitional factor which, in England, guaranteed each HEI an allocation of at least 75% of its previous funding. This measure had proved to be controversial in England and was not felt to be appropriate in a region with two universities, where applying the transitional factor to one HEI would have had a direct, equivalent, negative impact on the other HEI's allocation. In developing NI HEIF 2, DEL was endeavouring to move towards an entirely new, fairer and more predictable KT

funding dispensation in Northern Ireland. Applying the transitional factor would compromise this and, at least to an extent, risk replicating past funding decisions.

The metrics used by DEL are presented at Table 5.3; these were sourced from the most up to date HE-BCI[14], HESA[15] and HESES[16] returns (i.e. 2006 covering the period AY 2005/06). Each component is briefly described after the table.

Table 5.3
NI HEIF 2 – Metrics Input Data and Allocation Under NI HEIF 2 for QUB and UU.

INPUT DATA	**QUB**	**UU**	**Source**
Staff	1,134	1,047	HESA 2006
Income from non credit bearing courses	£204K	£1,265K	HESA 2006
Income from KTPs	£1,422K	£498K	QUB / UU KTP Office
IP income	£100K	£15K	HE-BCI 2006 - Part B Table 4c
Contract research	£7,814K	£741K	HE-BCI 2006 - Part B Table 1b
Consultancy income	£828K	£704K	HE-BCI 2006 - Part B Table 2a
Equipment income	£245K	£313K	HE-BCI 2006 - Part B Table 2b
Regeneration income	£5,692K	£1,280K	HE-BCI 2006 - Part B Table 3
Business & community facing staff	58	47	HE-BCI 2006 - Part A Question 9
SME interventions	1,075	85	HE-BCI 2006/Part B Table 1b + 2a +2b
Interactions with non-commercial organisations	295	116	HE-BCI 2006/Part B Table 1b + 2a + 2b
Sandwich students	192	685	HESES 2006
OUTPUTS	**QUB**	**UU**	
Allocation from "Potential & Capacity Building" **£960,000 (40%)**	£499,147 (52%)	£460,853 (48%)	
Allocation from "External Income as a Proxy for Demand" **£960,000 (40%)**	£741,101 (77%)	£218,899 (23%)	
Allocation from "Activities not best measured by Income" **£480,000 (20%)**	£289,910 (60%)	£190,090 (40%)	
Overall Allocation per annum [£2,400,000]	**£1,530,158**	**£869,842**	
% Allocation	**64%**	**36%**	

Source: DEL: NI Universities – Input Metrics (confirmed by QUB and UU) and Output Metrics Table.

The metrics model (illustrated in Table 5.3) for informing NI HEIF 2 funding has three components:

[14] Higher Education – Business and Community Interaction Survey
[15] Higher Education Statistics Agency
[16] Higher Education Students Early Statistics survey

(i) ***potential and capacity building*** (40% weighting) – a forward-looking component to reflect potential and allow for capacity building. This is based on academic staff numbers i.e. the full-time equivalent (FTE) academic staff from the Higher Education Statistics Agency (HESA) staff record (2004-05).

(ii) ***external income as a proxy for demand*** (40% weighting) – a component to reward performance to date using external income as a proxy to reflect the value which demand-side partners place on interaction with an institution. It excludes Quality-related Research (QR) funding, and charity and Research Council funding. This component is based on:

- HE-BCI data for income from contract research, consultancy and equipment services (where the residual ambiguity in the three definitions is mitigated by aggregation)
- HE-BCI data for regeneration and development income
- HESA data for income from non-credit bearing courses
- HE-BCI data for income from intellectual property
- HESA data (data direct from the universities' KTP Offices after 2004-05) for income from Knowledge Transfer Partnerships.

(iii) ***activities not best measured by income*** (20% weighting) – an activity-based component rewarding current and desirable performance on measures other than income. This component is based on:

- the number of dedicated third stream staff – from HE-BCI
- the level of engagement with small and medium-sized enterprises (SMEs) – from HE-BCI
- the level of engagement with non-commercial organisations – from HE-BCI
- the number of sandwich student placements – from HESES.

The number of licences granted is not included.

The calculations for the metrics allocation were performed by HEFCE under DEL's Service Level Agreement. These were issued to the universities who confirmed the validity / accuracy of the input data sourced from the latest HESA[17], HE-BCI[18] and HESES[19] surveys to be used by HEFCE in determining each university's allocation.

[17] Higher Education Statistics Agency
[18] Higher Education – Business and Community Interaction Survey
[19] Higher Education Students Early Statistics survey

5.3.2 Institutional Plan

In a letter to each of the universities (21 May 2007), DEL advised that release of funding from the Department would be subject to the submission of an "Institutional Plan" to cover the three Academic Years relating to the formula funding allocation. This was required to be submitted to the Department by 31st July 2007. Guidance on the drafting of the Institutional Plan and a template were made available (see Table 5.4) and DEL indicated that in the development of the plan, it would encourage and expect the university to consult with key regional stakeholders, especially Invest NI and the Northern Ireland Business Alliance.

Subject to the Institutional Plan being approved by the Department, payments have been made in equal monthly instalments commencing at the end of August 2007 as part of the wider annual Funding Agreement ("Grant Letter"). The Institutional Plans developed by the universities have complied with the guidance. We believe there is an opportunity to have the universities provide more detail on their Knowledge Transfer strategies and how their plans and activities will link to PSA objectives and targets and also to the exploitation of opportunities set under in the MATRIX reports.

Table 5.4 HEI Institutional Plan - Template

A. Mission The plan in the context of the third stream mission of the institution and the sustainable integration of this into the HEI's overall mission.
B. Strategy and benefits Third stream strategy; strategic objectives and related benefits which the activities will address in the context of a coherent institutional third stream strategy.
C. Activities and outcomes Describe how the NI HEIF 2 formula allocation will be spent on eligible, appropriate knowledge transfer and related activities, with an emphasis on (i) how they respond to demand and (ii) the related outcomes they will achieve. There should be a sufficiently broadly-based but sensibly focused range of activities, appropriate to the strengths, size and resources of the HEI.
D. Collaboration *Any* collaborative aspects of the proposal, including the rationale for the decision on whether or not to collaborate and how any collaboration will support sharing ideas, spread of good practice, economies of scale or shared risk.
E. Regional dimension The approach to regional priorities, relevant regional needs and economic strategies – including explanation of any decisions not to respond to them, reflecting discussion of plans between the HEI, Invest NI and others.
F. Planning, project and risk management Effective operational plans, processes and organisational structures; assessment and mitigation of related risk.
G. Cost effectiveness Illustration of value for money related to high level budgets, ensuring actions are cost-effective and aimed at generating identifiable impact.
H. Continuity How the proposal builds on actions leading up to NI HEIF 2 and how it will prepare the ground for 2010 onwards. In the case of continuation of existing activities, how these reflect development in breadth, scale or quality in pursuit of concrete benefit, rather than simple extension.
I. Impact Intended impact of the plan in terms of direct or indirect benefit to the economy and society.
Source: DEL

5.3.3 Monitoring

In order to monitor the implementation of the Institutional Plan, each university is required to submit, annually, a short report outlining progress against the targets for the three year funding period presented in the Institutional Plan. These progress reports should be submitted within two months of the end of the relevant Academic Year (i.e. the first progress report was due by the end of September 2008, with subsequent reports due September 2009 and September 2010).

5.3.4 Tracking of Metrics

Table 5.5 (QUB) and Table 5.6 (UU) illustrate the annual out-turn of the metrics used in the allocation of NI HEIF 2 funding since the initial allocation i.e. for AY 07/08 and AY 08/09 and projections for AY 09/10 where information is available. These reflect the impact of moving to a predominantly metrics based allocation model (particularly the AY 08/09 and AY 09/10 data more so than the AY 07/08 data where the new system had only been in place one year). Historical data for AY 2005/06 and AY 2006/07 is also presented. The purpose of considering these metrics is to examine how the universities' performance has changed since moving from a purely competitive system under NI HEIF 1 to a predominantly metrics-driven formula system under NI HEIF 2.

By comparing the performance data for AY 06/07 (i.e. the last year of NI HEIF 1 funded activity) with AY 07/08, AY 08/09 and (projected) AY 09/10 (i.e. all 3 years of NI HEIF 2 funded activities) we can get an insight into changes in performance.

The available data (in Table 5.5 and Table 5.6) clearly shows that there has generally been an upward trend in the metrics from AY 2005/06 on.

Queen's University

For QUB, there have been year-on-year increases across most metrics with some decreases in Regeneration income, number of SME interventions and number of sandwich students between AY 2006/07 and AY 2007/08 (which was the period of transition moving from NI HEIF 1 to NI HEIF 2). There have been some notable increases in income and in particular on the metrics which are part of the HE-BCI survey e.g.:

- IP income almost doubled from AY 06/07 to AY 07/08 and again from AY 07/08 to AY 08/09, although it is projected to decline in AY 2009/10;
- Contract income has steadily increased up to AY 07/08 and almost doubled in AY 08/09 and is projected to remain at this higher level;
- Consultancy income increased by around 50% from AY 06/07 to AY 07/08 and more than doubled from AY 07/08 to AY 08/09; it is projected to remain at this higher level in AY 09/10;

- Equipment income had seen small increases prior to NI HEIF 2 funding and then increased by a factor of six from AY 07/08 to AY 08/09 and is projected to remain at this higher level in AY 09/10;
- Regeneration income fell from AY 05/06 to AY 07/08 but has increased again in AY 08/09 to almost the levels reported in to AY 05/06 and is projected to remain at a similar level in AY 09/10.

There is also evidence of increasing numbers of interventions with both SMEs and non-commercial organisations. Of particular note, however, is the fact that these substantial increases have taken place with only relatively small increases in the number of business and community facing staff.

Table 5.5
QUB – Main Metrics (based on information available at time of writing this report)

	2005/06	(NI HEIF 1 - final year) 2006/07 - Baseline	(NI HEIF 2 – Year 1) 2007/08	(NI HEIF 2 – Year 2) 2008/09	(NI HEIF 2 – Year 3) 2009/10 projected	Source
Staff (1)	1,134	unavailable	unavailable	unavailable	unavailable	HESA 2006, 2007, 2008, 2009
Income from non credit bearing courses (2)	£204k	£211k	£232k	£229k	unavailable	HESA 2006, 2007,2008,2009
Income from KTPs	£1,422k	£1,578,294	£1,699,467	£1,782,924	£1,782,000	QUB KTP Office
IP income	£100K	£853k	£1,615k	£3,355k	£1110k	HE-BCI 2006 Part B Table 4c
Contract research	£7,814k	£8,968k	£9,296k	£18,002k	£18,000,000	HE-BCI 2006 Part B Table 1b
Consultancy income	£828k	£738k	£1,129k	£2,041k	£2,150,000	HE-BCI 2006 Part B Table 2a
Equipment income	£245k	£594k	£687k	£4,143k	£4,150,000	HE-BCI 2006 Part B Table 2b
Regeneration income	£5,692k	£4,557k	£3,226k	£5,010k	£5000k	HE-BCI 2006 Part B Table 3
Business & community facing staff	58	55	64	68	68	HE-BCI 2006 Part A Question 9
SME interventions (2)	1,075	1,312	744	1,545	unavailable	HE-BCI 2006 Part B Table 1b+2a+2b
Interactions with non-commercial organisations (3)	295	311	410	725	unavailable	HE-BCI 2006 Part B Table 1b+2a+2b
Sandwich students	192	192	187	188	175	HESES 2006

Notes:
(1). HESA data on staff numbers – as there are a number of different categories of staff / to ensure consistency with 2005/06, information would be required from HESA. However in general staff numbers tend to be fairly stable over time.
(2). No. of 'SME Interventions' and No. of 'Interactions with non-commercial organisations' varies considerably year on year depending on the overall mix of small, medium and large projects. Projections for 2009/10 would be speculative and they have not been included.
Source: QUB, Higher Education Statistics Agency (HESA) 2005/08; Higher Education – Business and Community Interaction Survey (HE-BCI) 2005/08; Higher Education Students Early Statistics Survey (HESES) 2005/08.

University of Ulster

For UU, there have been year-on-year increases across most metrics with some exceptions. There have been some notable increases in income and in particular on the metrics which are part of the HE-BCI survey particularly in the first two years of NI HEIF 2 e.g.:

- IP income increased by a factor of 34 from AY 06/07 to AY 07/08 (although this is also due to under-reporting by UU in AY 06/07) and more than doubled from AY 07/08 to AY 08/09;
- contract research almost doubled from AY 06/07 to AY 07/08 although it has seen a large reduction (about 40%) from AY 07/08 to AY 08/09;
- Consultancy income increased slightly from AY 06/07 to AY 07/08 and has continued this steady increase in AY 08/09; however a small reduction is projected for AY 09/10;
- equipment income has been increasing steadily with a large increase from AY 06/07 to AY 07/08 and an increase of around 75% from AY 07/08 to AY 08/09.
- Regeneration income increased significantly (by a factor of about 10) from AY 05/06 to AY 06/07 but fell by about 20% in AY 07/08 and has remained at a similar level in AY 08/09.

There is also evidence of increasing numbers of interventions with SMEs and non-commercial organisations). Of particular note, however, is the fact that these substantial increases have taken place with modest increases in the number of business and community facing staff.

Table 5.6

UU – Main Metrics (based on information available at time of writing this report)

	2005/06	(NI HEIF 1 - final year) 2006/07 - Baseline	(NI HEIF 2 – Year 1) 2007/08	(NI HEIF 2 – Year 2) 2008/09	(NI HEIF 2 – Year 3) 2009/10 projected	Source
Staff	1,047	n/a	n/a	n/a	n/a	HESA 2006
Income from non credit bearing courses	£1,265K	£944k	£1,028k	£1,144k	£1,144k	HESA 2006-9
Income from KTPs	£498K	£380k	£418k	£513k	£513k	UU KTP Office
IP income	£15k	£8k	£282k	£684k	unavailable	HE-BCI 2006-9 Part B Table 4c
Contract research	£741k	£1,778k	£3,474k	£2037k	unavailable	HE-BCI 2006-9 Part B Table 1b
Consultancy income	£704k	£1,871k	£1,922k	£2066k	£1700k	HE-BCI 2006-9 Part B Table 2a
Equipment income	£313k	£1,436k	£1,975k	£3,421k	unavailable	HE-BCI 2006-9 Part B Table 2b
Regeneration income	£1,280k	£13,116k	£10,832k	£10,437k	unavailable	HE-BCI 2006-9 Part B Table 3
Business & community facing staff	-	57	61	68	68	HE-BCI 2006-9 Part A Question 9
SME interventions	85	352	432	837	unavailable	HE-BCI 2006-9 Part B Table 1b + 2a +2b
Interactions with non-commercial organisations	116	423	444	3250	unavailable	HE-BCI 2006-9 Part B Table 1b + 2a + 2b
Sandwich students	685	701	596	521	800	HESES 2006-9

Source: UU, Higher Education Statistics Agency (HESA) 2005/08; Higher Education – Business and Community Interaction Survey (HE-BCI) 2005/08; Higher Education Students Early Statistics Survey (HESES) 2005/08.

Overall Performance

Overall therefore, there is evidence of continuing improvement in performance metrics (particularly HE-BCI returns) moving from AY 06/07 (i.e. the last year of NI HEIF 1 funded activity) to AY 07/08, AY 08/09 and (projected) AY 09/10 (i.e. all 3 years of NI HEIF 2 funded activities). This indicates that there has been a change in focus and activity in both QUB and UU with the metrics against which the universities are being measured (and reporting on) clearly influencing activity which is driving performance.

The five HE-BCI income metrics for AY 05/06 which were used to inform NI HEIF 2 allocations were £14,679k QUB and £3,053k UU = £17,732k total (i.e. 83% / 17% QUB / UU). The corresponding HE-BCI metrics for AY 08/09 are £32,551 QUB and £18,645 UU = £51,196k total (i.e. 64% / 36% QUB / UU).

This represents a significant overall improvement for NI (the total has increased by a factor of almost three) and a relative improvement for UU (which has increased by a factor of over six) vs QUB (which has increased by a factor of around two) since 3 years ago.

Table 5.7 below presents DEL's key HE-BCI metrics table (summing the five key income metrics) which DEL uses for reporting against PSA 1. The totals for 06/07 and 07/08 were approximately £33 million. The 08/09 figures therefore represent an increase on these of some 33% which is particularly impressive given the prevailing economic situation.

The year-on-year increases in each of consultancy income, contract research income and income from allowing companies etc access to equipment and facilities are particularly encouraging in terms of the universities' Third Stream activities. These figures consolidate further Northern Ireland's position as the leading UK region on a per institution basis (consistently having the highest level of academics engaged in (intensive) interactions as highlighted in the recent ESRC-sponsored report by the UK-Innovation Research Centre (see Appendix III – Strategic Context – Section 3.2.10).

Table 5.7
HE-BCI METRICS FOR PSA1

2006/07 / £k	2007/08 / £k	2008/09 / £k	HE-BCI TABLE	Comment
10,746	12,770	20,039	1b	Contract Research
2,609	3,051	4,107	2a	Consultancy Contracts
2,030	2,662	7,564	2b	Facilities and Equipment
17,673	14,058	15,447	3	Regeneration Income
327	675	4,039	4c	IP Income (Excludes sale of shares)
33,385	33,216	51,196		TOTAL

Source: DEL

5.4 Invest NI HEIF 2 to QUB and UU (Competitive Allocation)

5.4.1 Competitive Allocation of Funding

The competitive element of the NI HEIF 2 funding (initially £600k per annum over 3 years, but increased to £855k per annum over 3 years) is managed by Invest NI. In July 2007, Invest NI issued a Call for Proposals aimed at addressing specific gaps or opportunities for innovative KT activities focused exclusively on the needs of business. In its call for proposals, Invest NI indicated that its principle consideration in allocating funding would be as to whether, and to what extent, NI HEIF 2 resources were to be used for the direct or indirect (but identifiable) benefit of the region's economy. Proposals which addressed the following criteria would be considered:

- Economic Impact: To be successful, projects should demonstrate that they will have a significant impact on the wider economy of Northern Ireland. Good projects will have a long-term impact on the practice of knowledge transfer from the HE sector to the benefit of the Northern Ireland business community.
- Alignment with the regional economic strategies and existing Invest NI initiatives.
- Overall value for money/additionality.
- Demonstrate proven track record in knowledge exploitation or skills and motivation within the institution to undertake the activities.
- Respond to an identified gap in current knowledge transfer provision and enhance the outputs from existing initiatives.

Recognising that a range of integrated initiatives covering research, Knowledge and Technology Transfer and exploitation already exist (e.g. Centres of Excellence, Proof of Concept, etc.), Invest NI also noted that it would prioritise funding for initiatives addressing the following:

- Knowledge / Technology Transfer initiatives which achieve an increase in the effective utilisation of technology, to enhance the productivity of local companies, especially SMEs.
- Schemes which maximise technology transfer and business outreach from existing research or executive excellence and have a positive impact on Northern Ireland businesses or strengthen business links in key sectors.
- Activities which address the strategic exploitation of intellectual property (IP) and maximise the economic return on investment, including initiatives with a clear sectoral emphasis (also reflecting regional priorities) exploiting new and existing IP.
- Activities which increase the number of applied postgraduate students in local companies, especially SMEs (Masters and PhDs).

- Secure the input of experienced entrepreneurs who have established networks enabling reach to external markets and who can provide mentoring and guidance on transforming ideas into successful businesses.

- Competitive schemes which develop skills and give opportunities to undergraduate and postgraduate / researcher / lecturer to commercialise their ideas into a successful start-up company.

- Schemes which would enable emerging companies to attract experienced staff to key management posts.

The call for proposals also noted that: "*The proposals should clearly differentiate from the activities funded under DEL's NI HEIF-2 metrics and other Invest NI and DEL schemes.*"

Following this call, the two NI universities responded with 13 proposals for funding, 3 from UU and 10 from QUB. Invest NI conducted an initial sift of these applications and shortlisted projects to 11, 2 from UU and 9 from QUB. These were subject to full economic appraisal (December 2007) and subsequently letters of offer were issued to the 2 universities for the activities described in Section 4.3.3 and Section 4.4.3.

5.4.2 Monitoring

In order to monitor the Invest NI HEIF 2 funding, each university is required to submit a quarterly report (31 January, 30 April, 31 July and 31 October) setting out progress to date and following the format:

- Introduction;
- Aims and Objectives of the Project;
- Management of the Project;
- Summary of Achievements for the Project over the period and cumulative over the lifetime of the project (also include patents, research papers, training provided, technical presentations, etc.);
- Key Project Indicators;
- Development and exploitation of IP by the Project;
- Risks identified regarding the Project and Risk Mitigation Plan (if appropriate);
- Future Plans for the Project; and
- Conclusions.

5.5 Summary and Future Options

The current NI HEIF 2 funding mechanism is based on two main elements or nominal allocations:

- 80% of the available monies (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and

- 20% (£0.6m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding, and administered by Invest NI.

However, Invest NI allocated an additional amount of approximately £255k per annum to cover all the projects approved by its Evaluation Panel so the actual ratio of funding turned out to be 75% DEL and 25% Invest NI.

As these funding streams are administered and managed separately, there are separate terms and conditions and reporting requirements. As a condition of DEL funding, both HEIs are required to produce 3 year Institutional Plans and, as a condition of both funding streams, each HEI is required to produce progress reports (annually for DEL, quarterly for Invest NI).

Other approaches to funding are discussed in Section 8 (Benchmarking) which considers the approaches and levels of funding in England, Scotland and Wales. A range of funding models is used in each of these countries including metrics based, core and competitive.

Any changes to the funding model will require discussion with the universities and the pros and cons of the various approaches must be explored. Possible options include:

- **Option 1: "As-Is" - 80% metrics allocation and 20% competitive allocation**

  Advantages

  - It focuses the universities on HE-BCI Measures which are universally accepted measures for core Knowledge Transfer (i.e. HEIF type) activities and which contribute to the sustainability of the Higher Education sector through leveraging significant investment from business and elsewhere.
  - It provides the universities with certainty over the measures that will be used to assess their performance, and therefore how their future funding will be calculated.

  Disadvantages

  - Some of the HE-BCI measures focus on measuring inputs (i.e. number of academic staff, number of sandwich student placements) and activities (i.e. levels of engagement with SMEs, levels of engagement with non-commercial organisations) rather than outputs or outcomes.
  - There is no effective strategic link between Government priorities for KT and the work of the universities, therefore the universities could be delivering on HE-BCI measures but focused in sectors which are non Government priorities.
  - Whilst we do not have any evidence of this happening at present, concern was voiced by one of the universities that the data in the HE-BCI survey could be manipulated to deliver strong results, therefore influencing funding.
  - The inclusion of a competitive element introduces a degree of uncertainty which can undermine the HEIs' ability to plan effectively in the longer term.

- Potential for duplication of effort in managing / reporting on 2 separate funding streams.

Option 2: 100% metrics allocation. HEIF 4 in England provides an example of 100% metrics allocation – this is discussed in more detail in Section 8.2.2. Note that moving from HEIF 3 to HEIF 4 in England, HEFCE changed the metrics it used from the HE-BCI survey to allocate funding to Universities. The metrics for "activities not best measured by income" have been dropped, therefore refocusing the Universities on "potential" (with lower weighting than in HEIF 3) and "output" measures which track performance including income (with an increased weighting).

Advantages

- HE-BCI is a recognised UK survey which very effectively captures information on the activities and outputs important to innovation.
- It is a simple and straightforward approach.
- It provides a mechanism for Government to change the emphasis on certain outputs by amending which metrics to include or exclude.

Disadvantages

- It focuses the universities on activities and outputs rather than outcomes.

- **Option 3: Knowledge Transfer Strategy Linked Funding Model**. This option would move away from the HE-BCI metrics and require the universities to produce a **KT Strategy** setting out what outcomes they were targeting to deliver and these would be influenced by Government PSA objectives, targets and strategies. The KT Strategies would be reviewed and approved by DEL / Invest NI in advance of the delivery period. The funding offer would be based on the content of the Strategies and the extent to which they can contribute to the delivery of Government Knowledge Transfer Objectives. The universities' performance would be measured on the basis on the achievement of outcome targets agreed with DEL. Penalties would be applied to either university if they did not deliver as planned, with these penalties reducing the following year's funding allocation. Therefore this option proposes 100% competitive funding.

  Advantages

  - It will ensure that the universities are focused on delivering outcomes rather than activities or outputs.
  - It will ensure that HEIF monies are being used to deliver Government economic objectives and targets.

  Disadvantages

  - It is moving away from the initial rationale for HEIF which was focused on both economic and social objectives (not solely economic).

- It is moving away from the initial rationale for HEIF which was to provide core funding for the universities' Third Stream activities in a transparent, fair, predictable and effective manner to allow long term planning and the embedding of KT within the universities' ethos to ensure a focus on meeting the needs of business and the wider community.
- It would require HE-BCI survey information to be used in the next tranche at least to allocate monies between the two Universities. Further funding, if available, would then need to be allocated based on outcomes achieved and penalty measures would also need to be set and funding reduced in the following period to any university not meeting these agreed targets. In short, this would be an extremely complex and potentially contentious process which would likely place the NI universities at a disadvantage compared to their counterparts in the rest of the UK.
- DEL has an important PfG target related to HE-BCI measures. Any move away from the role of the HE-BCI survey in the HEIF funding model, could mean that the universities do not provide complete information into the National Survey, thereby impacting negatively on Northern Ireland's perceived performance against the rest of the UK on these specific measures (as, arguably, has been the case in Scotland where the Scottish Funding Council uses non-HE-BCI metrics).

- **Option 4**: This option is a **hybrid funding model** (including some elements of Option 2 (metrics-based allocation) and of Option 3 (allocation based on KT strategy)). It would provide a fixed, non-competitive element of funding as core or "Foundation Funding" to be focused on strategic / longer term planning allocated in equal proportions to the two universities as in the Scottish and Welsh models (see Section 8 – Benchmarking); and the balance would then be based on a formula (i.e. the metrics-based allocation) to be linked primarily to the HE-BCI survey data per the existing model, thereby facilitating a degree of continuity between NI HEIF 2 and NI HEIF 3. In Northern Ireland, the totality of the core / Foundation Funding and formula based element would be provided by DEL on the approval of the KT Strategy.

  This option would involve a combination of the advantages and disadvantages listed above.

  Advantages

  - The KT strategy would provide a direct link to Government policy and provide visibility of how the universities' HEIF activities work, and how these sit with other KT supports to deliver on NI's Regional Innovation Strategy
  - It will ensure there is a focus on agreed outcomes whilst also reflecting the important HE-BCI activities and outputs

  Disadvantages

  - In representing a change to the current system, it therefore brings some potential uncertainty into the future splits in funding to each university. However this disadvantage could be minimised if the large majority of the funding was still directly

linked to the formula as used by DEL in the existing Northern Ireland model, which is based primarily on HE-BCI survey metrics;

- It would require assessment criteria to be developed for both reviewing the KT strategies at the outset and for assessing the outcomes delivered.

Based on the analysis above, Option 4, the Hybrid Funding Model offers the best way forward. It balances the need to link to Government strategic priorities for KT with the need to minimise any significant changes to university funding for HEIF. The universities would be required to:

- be more strategic than they are required to be at present and through the development of a KT Strategy they would set out how they can contribute to KT priorities that derive from DEL / DETI objectives and targets. For example it is essential that each KT Strategy demonstrates how each institution will take forward opportunities identified in MATRIX. DEL, in signing off these KT Strategies, will need to ensure through DETI that all the MATRIX opportunities have been covered and that there are no duplications of effort between the two institutions.
- ensure a continued focus on the HE-BCI measures.

In considering the amount of funding to be allocated to the core or foundation element, we have considered the approach taken in Scotland and Wales (where only a small element of the total is allocated in this way, divided equally between the HEIs) and the need to ensure some certainty about future funding to the universities. We are therefore recommending that 20% be allocated to the core / foundation element in the next period, split 50 / 50 between QUB and UU.

Table 5.8

Proposed Hybrid Model for NI HEIF 3

	%
To be allocated as foundation funding (£X per HEI)	20%
To be allocated by formula	80%
Total	**100%**

The need for a sense of security around funding for the universities is key as many of their economic initiatives take up to 3 years to show success. They have invested the last NI HEIF funding in getting many of their supports well established, but insecurity about funding could put future plans at risk.

However, we would see that the opportunity exists over time to gradually increase the proportion of funding allocated to core / foundation funding on the basis of an approved KT strategy, therefore emphasising the importance of directing the HEIF resources to where they are most needed and contributing to the Northern Ireland economy, while retaining a key role for metrics allocations which undoubtedly foster improvements in performance.

6 MANAGEMENT AND STRUCTURES

6.1 Introduction

This section contributes to addressing the following elements of the ToR:

- *Assess the management and operating structures currently in place to determine how effective NI HEIF 2 has been managed by DEL and Invest NI.*
- *Consider the appropriateness of the mechanisms / structures within Queen's University and the University of Ulster to manage the NI HEIF 2 funds.*
- *Assess the added value and advantages / disadvantages of the programme continuing to operate as a joint initiative between DEL and Invest NI.*

In this section we consider the management and operating structures currently in place within DEL and Invest NI to manage NI HEIF 2. We also consider the mechanisms / structures within Queen's University Belfast and the University of Ulster to manage the NI HEIF 2 funds.

6.2 DEL – NI HEIF 2 Management and Operating Structures

6.2.1 DEL Corporate Plan 2008-2011

DEL has responsibility for third level education, training and a range of employment measures, all aimed at promoting learning and skills, preparing people for work and supporting the economy. DEL's Corporate Plan 2008-2011 describes the three pillars of the Department's work: Innovation, Skills and Employment, which also reflect three of the four draft Regional Economic Strategy Priorities.

The Corporate Plan notes that Northern Ireland has low levels of research and development (R&D), creativity and innovation and that DEL is making a significant contribution to address this concern. It also highlights contemporary economic research which shows that a modern, competitive economy is driven less by natural resources, physical capital and low-skill labour, and more by access to, and quality of, knowledge within the economic region. This is the rationale for DEL's support for Knowledge Transfer from the research base leading to increasing collaboration between the universities and local companies.

It is also consistent with the wider UK Government policy, delivered by the Funding Councils in GB, to provide a dedicated, permanent and predictable funding stream for UK universities' core Knowledge Transfer activities, in parallel with the core funding for research and teaching / learning.

6.2.2 DEL Higher Education Research Policy Branch

DEL's Higher Education Research Policy Branch (HERPB) is responsible for the monitoring and evaluation of research and knowledge transfer activities within the Higher Education

sector in Northern Ireland. As well as developing and maintaining a research strategy for Northern Ireland, HERPB directs and administers funding in a way that encourages and supports HE research which is appropriate to the region. In addition, the branch develops the Northern Ireland strategy for university Knowledge Transfer, to ensure that knowledge derived from university research is transferred to industry and the community in a way that benefits the Northern Ireland economy and society, and contributes to the financial sustainability of the university sector.

HERPB core activities are summarised as:

- Research policy development and evaluation;
- Knowledge Transfer policy development and evaluation;
- Financial / activity management of the DEL-funded university research / knowledge transfer activities.

HERPB has a role in managing funding for university research, incorporating Recurrent Research Funding which includes:

- Quality-related Research (QR) Funding (paid as a block grant and used to cover the essential costs necessary to carry out research); and
- the Charities Support Element (part of the block grant to supplement university research income received from charities).

DEL (through HERPB) also provides other significant amounts of recurrent and capital research funding through specific initiatives such as the "Strengthening the all-Island Research Base" programme, the "US-Ireland R&D Partnership" and the "Research Capital Investment Fund" (RCIF).

To complement its recurrent and capital research funding, DEL also provides specific funding streams for Knowledge Transfer (KT). This is the "Third Stream" of university activity (in addition to teaching and research) and involves the translation of research findings and expertise into economic and societal reality. The phrase refers to the processes by which knowledge, expertise and skilled people transfer between the research base and its user communities to contribute to economic competitiveness, effectiveness of public services and policy, and quality of life. The NI universities, as the largest practitioners of research in the province, therefore have an important contribution to make to the local economy.

As well as the NI HEIF 2 core funding for Knowledge Transfer, which is the subject of this evaluation, the Department also provides complementary KT funding through the "Connected" programme (formerly the "Higher and Further Education Collaboration Fund"), a ground-breaking initiative involving the universities and the six Further Education Colleges, which aims to help businesses improve their performance by providing access to a broad portfolio of knowledge and technology support services. A total of £3m is being provided for the programme between 2007/08 and 2009/10. The programme is the first of its kind in the UK.

A full evaluation of the programme has just been completed. The resulting report is very positive regarding the performance of the three year pilot programme. The Minister has given approval for a new four year programme ("Connected 2") to be developed which will commence April 2010. Accordingly, the Department is now working closely with Queen's University Belfast, the University of Ulster and the Association of Northern Ireland Colleges to develop this next phase of the programme, to be implemented by April 2010 as per the Department's Programme for Government commitment.

HERPB's budget for 2009/10 is almost £85m. This includes a budget for Knowledge Transfer of around £3.4m, consisting of the DEL NI HEIF 2 annual budget of £2.4m and the Connected annual budget of £1m. However, given the current economic climate, we cannot make any assumptions that budgets will be maintained at these current levels in future.

6.2.3 DEL Resources Allocated to Managing NI HEIF 2

Table 6.1 illustrates the resources allocated by DEL to managing NI HEIF 2; these are associated with ongoing / regular activities and do not include evaluations and devising new programmes. The relatively low resource requirement to run the programme is a direct consequence of the formula allocation being paid out automatically as part of the "Block Grant". It is considerably lower than for NI HEIF 1, where DEL had quarterly claims and reports etc. to administer.

Table 6.1
DEL Resources Allocated to Managing NI HEIF 2

Activity involved in managing NI HEIF 2 funding	Resource	Resource Time
Reviewing Annual Progress Reports and Meeting with HEIs	Deputy Principal Principal Officer	2% FTE DP 1% FTE PO
Briefings / AQs etc	Deputy Principal	3% FTE DP
Note: These costs do not include costs for developing the new programme/formula, organising evaluations etc. Source: DEL		

6.3 Invest NI – NI HEIF 2 Management and Operating Structures

6.3.1 Invest NI Corporate Plan 2008-2011

Invest NI's Corporate Plan 2008-2011 has the following overall aim: *'to increase business productivity, the means by which wealth can be created for the benefit of the whole community'*. It notes that low innovation and R&D expenditure is one area of weakness within the NI economy. The Plan identifies three priority actions for economic growth which will enhance the capability of existing and new businesses based in Northern Ireland to sell more products and services in export markets. These are:

- **Realising Client Potential** (shorter term focus): This is the pathway for growth which offers the greatest impact over the short-term; it is about helping Invest NI's clients to become better at growing profitably and requires Invest NI clients to innovate at all levels of their businesses. Invest NI will seek to promote and embed an innovation culture in its clients and will rationalise its innovation support programmes under the five themes of capability, product, process, export and investment, with potential actions including:
  - simplifying and increasing the flexibility of research, development and innovation programmes;
  - increasing awareness of the benefits of innovation through role models and case studies;
  - appointing a number of Innovation Advisers;
  - introducing an Innovation Voucher Scheme, jointly managed with Enterprise Ireland;
  - enhancing its design programme and doubling the target for participating companies;
  - offering targeted development programmes aimed at improving productivity and business performance;
  - increasing the relevance and quality of our mentoring and coaching support, particularly in developing leadership skills at the senior level; and
  - increasing the number of strategic collaborative networks involving both business and knowledge institutions.
- **Shifting the Sectoral Focus** (medium-to-longer term focus): This requires a shift in the sectoral mix towards higher value-added activities. Primarily, this will come from foreign direct investment (FDI) in target sectors such as financial services and information and communication technology (ICT), especially software development. Northern Ireland also has niche manufacturing excellence within domestically and overseas-owned companies, whose contribution to the economy we aim to increase. Under this priority, Invest NI will:
  - work proactively with DEL to help tackle specific skills needs and to align qualifications with market demand;
  - enhance the role of technology missions in international markets to attract FDI and seek to secure internationally mobile R&D projects; and
  - underpin the sectoral shift by **supporting the development of an R&D infrastructure and by skewing our support towards those projects which offer the most commercial promise from innovation.**
- **Frontier Technologies** (longer term focus): These are technologies at the leading edge of research and development. Progress depends on relatively intensive support mechanisms to deliver commercial outcomes from the technologies. Activity will occur in both existing companies and high-potential start-ups, sometimes with university or overseas-investor origins. They are both people and knowledge-intensive, requiring high calibre mentoring

and specialist expertise, notably in sales and marketing. Recognising that the Northern Ireland economy is too small to be world-class in many sectors and research areas, Invest NI notes that it has specialist strengths in the private and public research bases which can be built upon to create, attract and sustain high-value companies. Invest NI will commit an increased proportion of its resources to investments which seek to commercialise intellectual property from our public and private research bases. Much of this activity will depend on relatively intensive support mechanisms to deliver commercial outcomes, often from new technology. In determining our research strengths, Invest NI will draw on the work of MATRIX, the Northern Ireland Science and Industry Panel. In realising these objectives the intention is to:

- secure increased commercial outcomes from our research base;
- support industrial research within companies and in collaboration with knowledge institutions;
- introduce new industry-led competence centres; and
- ensure a stream of risk capital for early-stage technology ventures to support indigenous and overseas based entrepreneurs to locate in Northern Ireland.

The NI HEIF 2 funding stream clearly is consistent with and contributes to a number of these priority areas – particularly under Realising Client Potential where the focus is on supporting innovation and under Frontier Technologies which seek to build university-business collaboration and maximise the potential from the research base.

6.3.2 Invest NI Resources Allocated to Managing NI HEIF 2

Table 6.2 illustrates the relatively low level of resource required by Invest NI to manage NI HEIF 2. These are associated with ongoing / regular activities; they do not include evaluations and start up phases.

Table 6.2
Invest NI Resources Allocated to Managing NI HEIF 2 (Monitoring)

Activity involved in managing HEIF 2 funding	Resource	Resource Time
UU	Deputy Principal	3 d / quarter = 12 d p.a. – approx 4.5% FTE
QUB	Deputy Principal	4 d / quarter = 16 d p.a. – approx 6.0% FTE
Overall	Grade 7	1 d / quarter = 4 d p.a. – approx 1.5% FTE

Note: The figures in this table relate to HEIF activity during monitoring periods. During start-up, letter of offer phases etc and evaluations, a considerably larger amount of time was invested in the programme.
Source: Invest NI

6.4 QUB – Mechanisms and Structures to Manage NI HEIF 2

6.4.1 QUB Knowledge Transfer Infrastructure

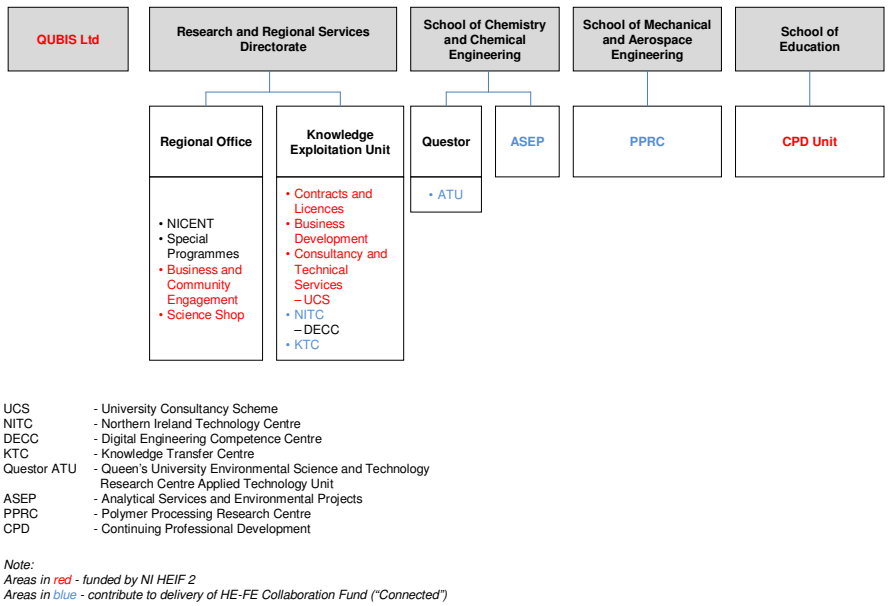
The strategic responsibility for NI HEIF 2 planning sits with the University Operating Board under the chairmanship of the Registrar and Chief Operating Officer. All key activity and budget considerations are approved by this committee, and key strategic risks assessed in accordance with the university's current practice.

Planning responsibility at an operational level sits with the Director of Research and Regional Services. A Steering Committee, chaired by the Pro-Vice-Chancellor of Planning and External Relations incorporating all areas of knowledge exploitation and transfer activity has been established; this addresses programme and project planning and implementation, and the mitigation of related risk. This Steering Committee also has responsibility at operational level for collaborative programmes and projects continued or developed through NI HEIF 2.

The university operates a risk assessment and management system and NI HEIF 2 activity has been integrated into this system.

Queen's has utilised its DEL funding (over £4.5 million for the three year period) to build a comprehensive Knowledge Transfer infrastructure which has its focus within the Knowledge Exploitation Unit, within QUBIS Ltd, and within a number of industrial support units. There are other elements included in the infrastructure and the Figure 6.2 illustrates the wider scenario.

Figure 6.2
Queen's University Belfast – Knowledge Transfer Infrastructure



Source: Queen's University Belfast November 2009

Note: Three units illustrated in this diagram (which are not supported by NI HEIF 2) also receive funding from NI HEIF 2 for specific projects with distinct deliverables as described in Section 4.2.4: NI HEIF 2 funding provided by Invest NI supports the following specific projects:

- A project which aims to promote the tools and benefits of Digital Engineering and is run by the Digital Engineering Competence Centre (part of the NI Technology Centre). Although the NITC is a unit within KEU, the NITC itself is not an area that is funded by NI HEIF 2;
- A project which aims to encourage the plastics industry to innovate through specific support for new product development and is run by the PPRC. Whilst Invest NI HEIF 2 funding has been used to support this project that the unit is delivering, it does not support the overall costs of this unit; and
- A project run by QUESTOR. Whilst Invest NI HEIF 2 funding has been used to support membership fees of the QUESTOR centre for SMEs, it does not support the overall costs of this unit.

Considering the information presented above, together with the full description of NI HEIF 2 funding and range of activities supported in Sections 4.2.1, Section 4.2.2 and Section 4.2.4, it is evident that the activities (inputs) which are supported by NI HEIF 2 funding are clearly identifiable / attributable. There is less clarity in linking / attributing outputs / impacts achieved directly to NI HEIF 2 funding and/or other sources of funding (as discussed in Section 5.5).

6.4.2 KEU Reporting Arrangements

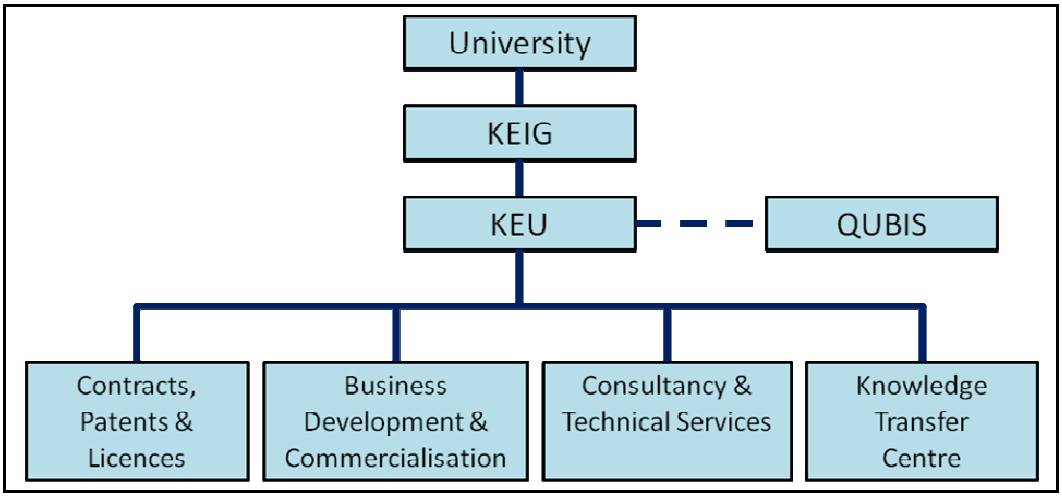
The KEU activities are governed by the Knowledge Exploitation Implementation Group (KEIG) which meets quarterly. The KEIG is chaired by the Registrar and includes:

- Pro-Vice-Chancellor of Planning and External Relations;
- Heads of School: Management; Pharmacy; and Mechanical and Aerospace Engineering (there are 3 Heads of School on the KEIG representing all 20 schools)[20];
- Director of Research and Regional Services;
- Director of Finance; and
- CEO QUBIS.

The KEU Director reports to the Director of Research and Regional Services.

[20] Each of the three Heads of School on the KEIG represents all of the Schools in the particular Faculty in which his School is based, i.e. the Head of the Management School represents all Schools in the Faculty of Arts, Humanities and Social Sciences, the Head of School in Pharmacy represents all Schools in the Faculty of Medicine, Health and Life Sciences, and the Head of School in Mechanical and Aerospace Engineering represents all Schools in the Faculty of Engineering and Physical Sciences. Hence all 20 Schools are represented on the KEIG.

Figure 6.3
Queen's University Belfast - KEU Reporting Arrangements



Source: NI HEIF 2 - Knowledge Exploitation – Overview Presentation (November 2009)

Note: The dotted line between KEU and QUBIS does not indicate a reporting line, rather it indicates close interaction on commercialisation of the IP pipeline

6.4.3 Cost of Managing NI HEIF 2

QUB estimates the cost of managing NI HEIF 2 over the three year period at some £395,000 and that around 62% of this total management cost is funded from DEL and Invest NI HEIF 2. A breakdown of costs is presented in Table 6.3.

This total cost (£395k) is approximately 6.7% of the total monies (£5.85m) paid by DEL / Invest NI over the 3 year period. Our experience of management charges on other programmes, would suggest that below 10% would be the norm, therefore this management charge would suggest good VFM.

Table 6.3
QUB Resources Allocated to Managing NI HEIF 2

Activity involved in managing HEIF 2 funding	Resource	Resource Time (full three year period)	Estimated Cost
Invest NI HEIF - funded	Invest NI HEIF Project Managers	Management costs set out in three Invest NI funded projects which had management costs attached	Project 1 £7,500* Project 2 £40,685 Project 4 £72,244
Invest NI HEIF - unfunded	Directors of the two units carrying out Invest NI HEIF projects 3 and 5	10%	£38,800 in total
DEL HEIF - funded	Director Head of Office	13% 42%	£41,600 £81,600
DEL HEIF - unfunded	Director Members of Knowledge Exploitation Implementation Group – all senior management	20% 2.5%	£64,000 £48,300
Total		**£395k**	

* This resulted from a recent virement approval by Invest NI to reduce the management cost of Project 1 from £53,500 to £7,500
Source: QUB

6.5 UU – Mechanisms and Structures to Manage NI HEIF 2

6.5.1 UU Knowledge Transfer Infrastructure

NI HEIF 2 supported activities are delivered by the Innovation Services Team within the University's Office of Innovation. The Office of Innovation resides within the portfolio of Research and Innovation (see Figure 6.4).

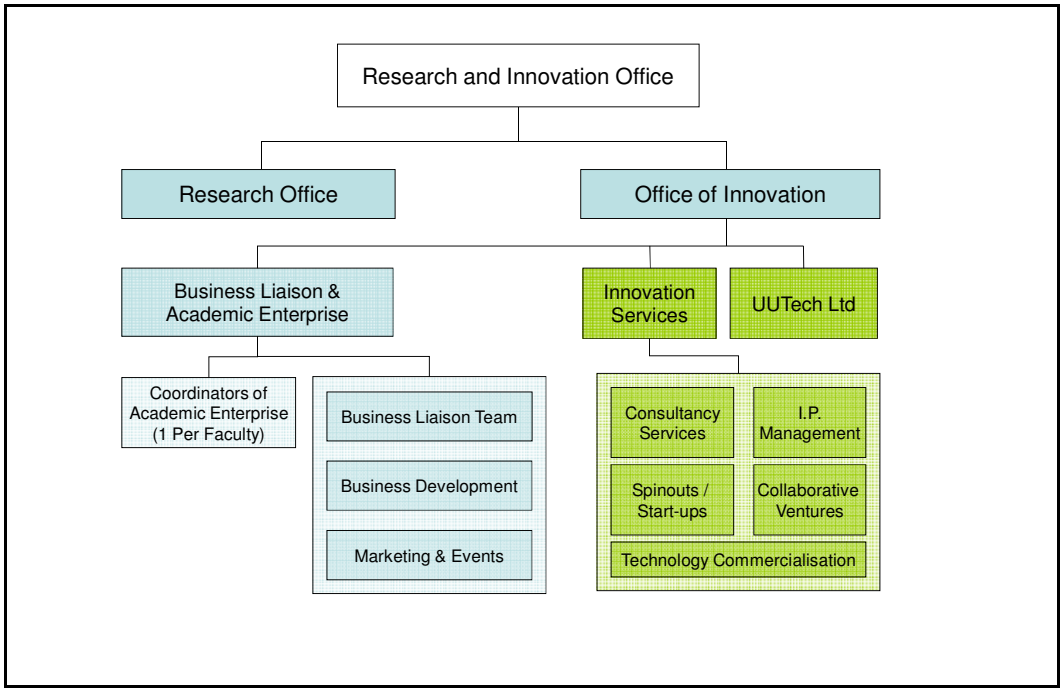
Direct management responsibility for the project resides with the Director of Innovation who reports directly to the Pro-Vice-Chancellor for Research and Innovation.

Both the Pro-Vice-Chancellor for Research & Innovation and the Director of Innovation sit on the board of UUTech Limited, the University's technology transfer company. UUTech Limited has the ability to license UU IP and invest cash in early stage spin-out companies in return for an equity share in the new venture.

The UUTech Board is supported in an advisory capacity by the Commercial Advisory Panel (CAP). This is made up of external members mostly with commercial or investment

backgrounds. Members of the CAP also provide mentoring support for some of the new spin-out companies.

Figure 6.4 University of Ulster – NI HEIF 2 Management



Source: University of Ulster

The Director of Innovation Chairs an Innovation Committee that provides leadership for, and monitoring of, the University's innovation agenda on behalf of the Research and Innovation Committee and Senate. The monitoring function principally concerns the delivery of actions under DEL and Invest NI HEIF 2 funding. Members of the Innovation Committee include the CAEs, the Deans, the Heads of Business Liaison and Innovation Services, the University's Head of Marketing and Promotion, the Directors of the Business Institute, the Research Office and NICENT.

A HEIF Management Group meets monthly to ensure effective delivery of the operational aspects of the projects within defined scope, quality, time and cost.

The University's risk management policy and procedures set out its approach to risk management and control in order to protect the institution and its stakeholders from unforeseen or unacceptable exposure to risks. A number of project-level risks were identified, in the Institutional Plan (Section I). A significant risk relates to the University's dependence on success in the competitive Invest NI HEIF 2 fund. These risks are managed through the HEIF Management Group and have been included in the Departmental risk register, subject to annual review.

The University established the Innovation Committee as outlined above and kept its operation under continual review. The decision has recently been taken to replace the Innovation

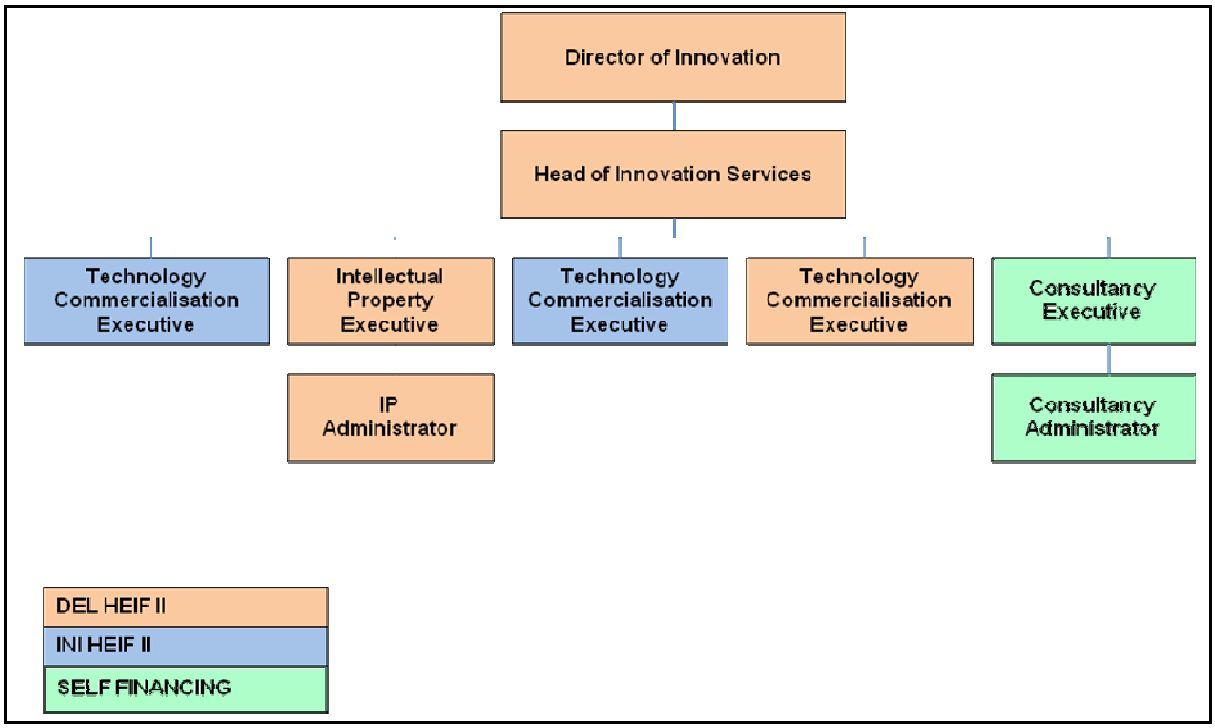
Committee with the Research and Innovation Forum which reflects the changing Knowledge and Technology Transfer operating environment within both the University and wider sector.

The Director of Innovation and the Heads of Innovation Services and Business Liaison met on a regular basis during the reporting period with the CAEs and other relevant staff to monitor and review the activities supported by the DEL NI HEIF 2 funding. The Director meets with the PVC Research and Innovation on a regular basis to report on the activities of the Office of Innovation.

6.5.2 UU Operational Management

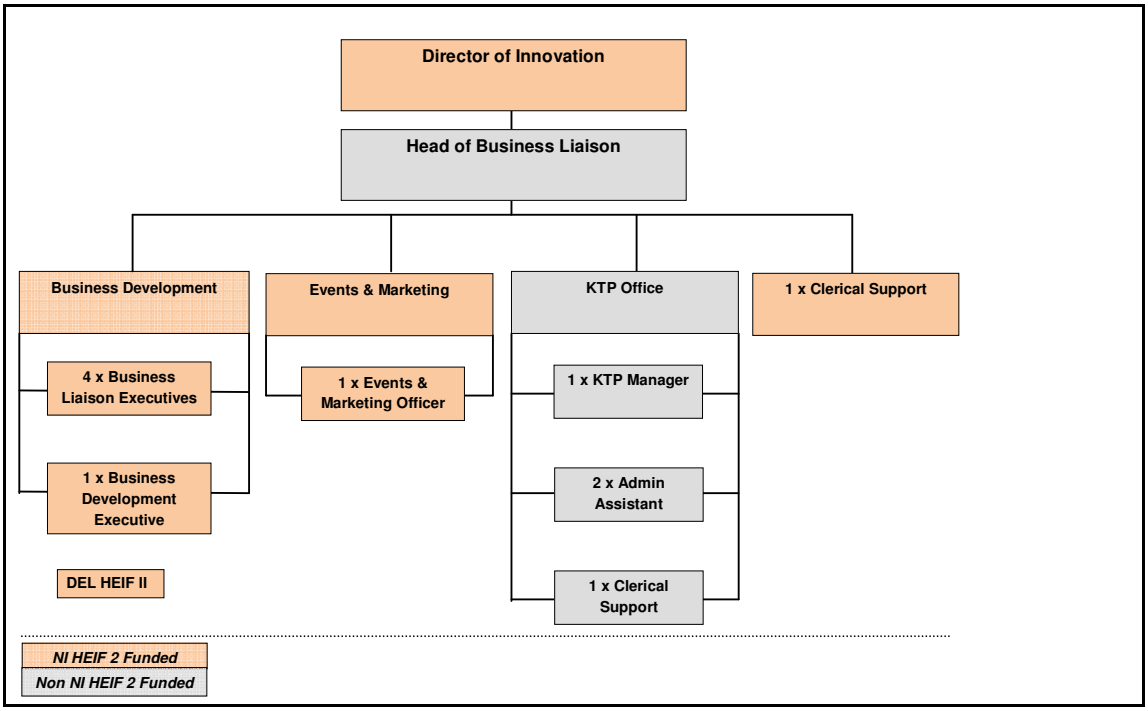
NI HEIF funded activities in UU are the responsibility of the Office of Innovation. Figure 6.5 and Figure 6.6 illustrate the organisational structure in place for Innovation Services and the Business Liaison / KTP Office and the posts within these offices which are supported by NI HEIF 2.

Figure 6.5
University of Ulster – NI HEIF 2 Management Structure – Innovation Services



Source: UU Progress Report to Invest NI (November 2008 to June 2009).

Figure 6.6
University of Ulster – NI HEIF 2 Management Structure – Business Liaison / KTP Office



Source: UU (2 April 2010)

6.5.3 UU - Cost of Managing NI HEIF 2

Table 6.3 illustrates the resources allocated by UU to managing NI HEIF 2. The £540k over 3 years (£180k per annum cost) is approximately 14% of the total programme costs of £3.8m. This management charge is therefore above what we would expect as QUB management charges are presently 6.7% of the total programme costs (up to 10% is the norm for programme management fees). We therefore would wish to see UU review their management costs and seek to ensure that more time and resource can be deployed in client related activities rather than management fees. There is a need for a more detailed analysis of UU and QUB management costs and we have built in a recommendation that this happen.

Table 6.3
UU Resources Allocated to Managing NI HEIF 2 per annum

Resource	Resource Time (per annum)	Estimated Cost
Director Of Innovation	80%	£65,600
Head of Innovation Services	100%	£64,000
Head of Business Liaison	80%	£51,200
Source: UU		

6.6 Summary

The review of management and operating structures within DEL and Invest NI indicates that there are relatively low resource costs involved in delivering the programme in its current format (see Table 6.1 and Table 6.2 and accompanying text).

Both DEL and Invest NI note that the level of resources and associated costs attributed to management of NI HEIF 2 are considerably less than that under NI HEIF 1. DEL, in particular, highlights the advantage of awarding NI HEIF 2 funding as part of the annual Block Grant as contributing to the lower resource requirement. However, this is not the primary reason for / advantage of adopting a formula based allocation. It is instead driven by the need for permanent and predictable funding streams to allow the universities to plan effectively and retain key staff on permanent contracts as set out in wider UK Government policy, in particular, within the Science and Innovation Investment Framework (2004 – 2014) following the recommendations of the earlier Lambert Review. This approach is also strongly welcomed by both QUB and UU.

However, clearly having two separately funded programmes requires two management structures. Further efficiencies could be achieved by having NI HEIF managed by one Government body, as is the case in the three other UK administrations. Given that the bulk of the monies are being delivered by DEL and it has responsibility for the core funding of the HE sector in Northern Ireland, it would be most efficient, and indeed appropriate in policy terms, if all the NI HEIF monies were to be managed by DEL. This would lead to savings of: Invest NI management costs (10.5% of Deputy Principal (FTE) and 1.5% of Grade 7) equivalent to £5,526 per annum (based on average gross costs for these posts).

To these costs would be added the savings in personnel time within the two universities associated with making funding proposals to Invest NI, agreeing letters of offer and making and managing claims. Note that there would be no increase in DEL management costs arising from this change.

Feedback from the universities indicates that having two separate funders means that there is a degree of duplication for them in managing, monitoring and reporting on their NI HEIF 2 funding allocations. The universities' expressed preference is that DEL manages all the funds, thereby streamlining this aspect of the process and creating further efficiencies for the universities. It would also place them on the same footing as their GB counterparts which receive their core KT funding direct from the GB Funding Councils (the role that DEL fulfils in Northern Ireland as well as that of Government Department).

The review of structures and resource costs within the universities indicates that both institutions have established mechanisms and structures to manage the NI HEIF 2 funds. This should ensure that the universities are able to help identify the needs of companies / academics etc. and to ensure they are matched to the best possible support within their institution. However the management costs in UU are considerably above the costs deployed in QUB as a percentage of the funding allocated. We would recommend that the management costs in both universities are investigated to ensure that like is being compared

with like and benchmarks set as to what constitutes a VFM management charge as a proportion of programme costs (see Recommendation 11 in Section 9).

7 FIT OF NI HEIF 2 WITH COUNTERPART INITIATIVES

7.1 Introduction

This section contributes to addressing the following elements of the ToR:

- *Review the logical and operational fit of NI HEIF 2 with counterpart initiatives, particularly DEL's Higher and Further Education Collaboration Fund ("Connected") and Invest NI's Knowledge Transfer Partnerships, Innovation Vouchers, Proof of Concept programme, Competence Centre initiatives and Collaborative Networks.*

In this section we briefly describe other programmes which are working to increase Knowledge Transfer in Northern Ireland. The programmes considered – as agreed with the Project Steering Group - include:

- DEL's Higher and Further Education Collaboration Fund ("Connected");
- Invest NI's Knowledge Transfer Partnerships and Short Knowledge Transfer Partnerships;
- Invest NI's Innovation Voucher Initiatives;
- Invest NI's Proof of Concept programme;
- Invest NI's Centres of Excellence (and Competence Centres are also included as a follow-on to the Centres of Excellence Programme);
- Invest NI's Collaborative Networks Programme;
- Northern Ireland Science Park's "Connect" Initiative;
- UK Technology Strategy Board's "Knowledge Transfer Networks";
- Local Council Programmes; and
- DARD / CAFRE Programmes.

Each of the programmes is described in more detail in Appendix IV – this includes information – where available – on:

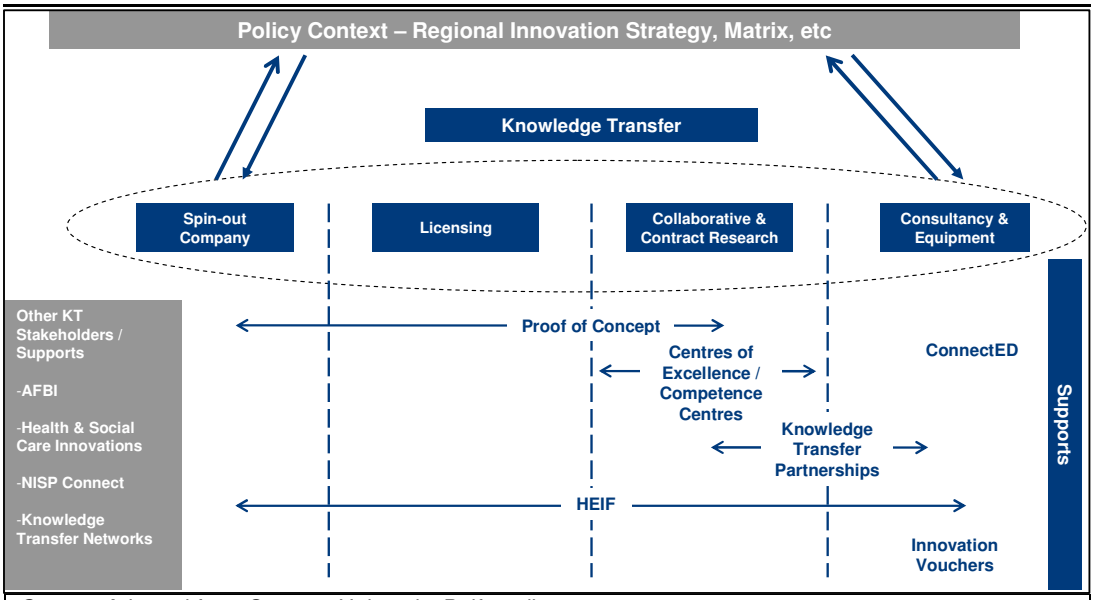
- Aims and objectives;
- Supported activities and funding available;
- Eligibility;
- Process;
- Uptake; and
- Impacts and Outputs.

7.2 Knowledge Transfer Framework

7.2.1 Description of Knowledge Transfer Framework

The programmes listed in Section 7.1 (and described in Appendix IV) are illustrated in Figure 7.1, as part of the wider Knowledge Transfer Framework in NI. Given the wide range of interventions and stakeholders, it is important that there is common understanding and coordination across these – both to define where each fits and to explain interdependencies.

Figure 7.1
The Knowledge Transfer Framework in NI



Source: Adapted from Queen's University Belfast diagram

The Knowledge Transfer Framework shows that NI HEIF and the other innovation supports sit within a wide regional policy context – including key economic policies and strategies such as RIS, MATRIX, etc (discussed in Section 3). This policy context sets the scene in terms of strategic priorities and areas of focus with which the programmes and interventions should be concerned. The policy context, as the driver of KT activity, will provide the direction and focus for this activity.

Underpinning the policy context sits the KT infrastructure. This includes a wide range of KT interventions / supports which cater for different needs and stages of development. These are linked to and should contribute to high level targets and indicators within the policy context. Some of these are provided by DEL and Invest NI through the Universities and FE Colleges; others operate in other organisations e.g. AFBI, Health and Social Care (HSC) Innovations etc. It is clear that each programme / initiative has a particular role to play within the wider Knowledge / Technology Transfer environment. There are also clear links and

complementarity / interdependencies between these interventions; as well as potential for duplication / overlap and this is where the issue of mapping the interventions and considering accountability is important.

Figure 7.1 demonstrates that NI HEIF is key to supporting a number of other Knowledge / Technology Transfer supports which are critical to delivering a vibrant technology and R&D focused economy, therefore providing Northern Ireland the opportunity to develop a competitive advantage in a global economy.

7.3 Counterpart Initiatives

7.3.1 'Connected'

7.3.1.1 Description

The Higher and Further Education Collaboration Fund ("Connected") was set up to run for three years from April 2007 to March 2010 with a budget of £1 million per annum. Queen's University Belfast, University of Ulster and ANIC (on behalf of the 6 regional colleges) deliver Connected via a joint partnership approach. The three main tenets of Connected are:

- Promotion of Knowledge Transfer;
- Delivery of Knowledge Transfer; and
- Training and Internal Knowledge Transfer between HE and FE.

Connected was set up to provide the structure and resources to help link HE and FE with SMEs and in doing so increase the level of Innovation and R&D in SMEs, thereby increasing their competitiveness. There is clear evidence that the structures and resources provided under Connected are needed to help ensure that HE and FE work together to meet the needs of businesses. The situation prior to the establishment of Connected was one where the HE and FE institutions worked generally in isolation from each other with a focus on competition rather than collaboration.

An independent evaluation of Connected in 2009, noted that processes were in place within DEL (via relevant programme managers being involved in the appraisal of projects under Connected and under HEIF) to ensure that projected supported under Connected could not be double funded under other DEL programmes.

The majority of projects funded under Connected are for skills development and curriculum development, and 61% of funding is to ANIC (which is outside the scope of HEIF). The funding supplied to the two universities was for joint university / FE College and SME activities. HEIF enables Connected in that it provides the infrastructure within the two universities to allow Connected to happen, whilst ensuring that Connected funds different activities to those supported under NI HEIF.

7.3.1.2 Fit with NI HEIF 2

The HEIF support provides the organisational structure within the universities to support the delivery of Connected. DEL Managers review the project applications under Connected to ensure that projects are not being funded by more than one source.

7.3.2 KTPs

7.3.2.1 Description

KTP (Knowledge Transfer Partnerships) is a UK-wide graduate placement programme that encourages collaboration between businesses (company partners) and academic institutes (knowledge base partners) including higher education institutes, further education institutes, research and technology organisations and public sector research institutes.

Under a KTP each partnership employs one or more recent graduates, called Associates, for a period of up to three years (therefore also includes the 10-40 weeks of shorter KTPs) on a project that will transfer knowledge from the higher and further education sectors into business.

KTP is funded by some 21 sponsors representing Research Councils, Research Development Agencies and Devolved Administrations led by the Technology Strategy Board (an executive non-departmental public body of BIS). Invest NI commits up to £1m per annum to part fund KTP projects in Northern Ireland. KTPs are part-funded (60% for SMEs) by a Government grant (Invest NI pays up to 50% of this i.e. 30% overall) and another funder pays the remainder. The remaining grant element will come from the Technology Strategy Board (TSB) or a Research Council. The remaining cost (40%) involved is covered by the company partner.

Invest NI is running a three year pilot of shorter KTPs (sKTP) and a UK wide sKTP was launched in July 2009. sKTPs are designed to be more tactical in nature than Classic KTPs, which are strategic) and assist small firms who may not have previously worked with higher or further education institutes.

7.3.2.2 Fit with NI HEIF 2

In both QUB and UU, the NI HEIF 2 support provides the organisational infrastructure to support the delivery of KTP at a senior level. The KTP management and associate resources are funded through KTP activities. Therefore HEIF is essential to the delivery of KTP in an indirect but critical way.

(Further information on QUB KTC which manages KTPs (see Section 4.2.2 and Section 6.4) and on UU (see Figure 6.6) clearly shows that KTP activities are not directly supported by NI HEIF 2).

7.3.3 Innovation Vouchers

7.3.3.1 Description

The Innovation Voucher Initiative is jointly administered by Invest Northern Ireland and Enterprise Ireland. Invest NI launched the Initiative in May 2008 based on the recognition that the level of innovation in small businesses in Northern Ireland was relatively low in comparison with other regions. On this basis, Invest NI decided to test a form of motivation to get small enterprises (i.e. those with less than 50 employees and under £10m on their balance sheet) to engage in innovation and R&D.

The Initiative provides a voucher of up to £4,000 for small enterprises to access expertise from knowledge providers (academic institutes such as universities, FE colleges or publically funded research organisations) in Northern Ireland and the Republic of Ireland.

The initiative is managed by Invest NI in conjunction with Enterprise Ireland allowing access to 38 knowledge providers throughout Ireland. The budget over the period between October 2009 and March 2012 is £2.7 million.

7.3.3.2 Fit with NI HEIF 2

NI HEIF 2 provides part funding to support the Business Development and Commercialisation Office in QUB, (for example £200k approximately in 2009/10). Some of this time, and therefore monies, will be used to part fund the time invested in selling Innovation Vouchers. NI HEIF 2 also supports some of the Business Development staff in UU whose role includes engaging with businesses regarding Innovation Vouchers (see text following Table 4.7a). In 2009/10, consultancy income for QUB is expected to be about £2m and for UU about £1.75m.

7.3.4 Proof of Concept Programme

7.3.4.1 Description

Launched in December 2003, the Proof of Concept (PoC) programme supports the pre-commercialisation of leading-edge technologies emerging from Northern Ireland's Research Organisations. It helps researchers to export their ideas and inventions from the laboratory to the global marketplace.

The programme supports the development of early-stage ideas, which will normally have secured, or be in the process of securing, patent protection or other appropriate forms of protection. It is not simply another source of research funding. Successful bidders must demonstrate that their ideas have originality and true commercial potential. Projects will therefore ideally result in one or more of these possible outcomes:

- Working prototype/demonstrator;
- IP;
- Documented Process/Methodology;

- Collaborative Research;
- Commercial Partners; and
- Additional funding.

The programme focuses on a model where individuals or small groups work on short applied projects to develop an idea through to a stage where a route to commercialisation is clear, either as a spin-out or by licensing to an existing company.

The funding is aimed at supporting and developing new ideas, which would normally have secured, or be in the process of securing, patent protection or other appropriate forms of intellectual rights, but which have not reached full laboratory-scale demonstration, or "proof of concept". Because of the embryonic nature of the ideas to be supported, they are generally not capable of securing funding from commercial sources, such as venture capital funds.

The PoC programme allows the development of intellectual property to take place in a way which:

- extends protection of that property;
- extends applicability of that property;
- improves confidence in its anticipated commercialisation; and
- underpins the validity.

To maximise impact in this important area of economic growth, eligible projects will attract 100% funding. Funding for a PoC project is capped at 100% of eligible costs up to a maximum of **£100,000** of assistance. There are two strands to the funding:

- a ***technology strand*** of 12 months duration with maximum assistance of up to **£80,000** (Includes Staff costs; Overheads @ 40% of staff costs); Consumables; Patent costs; Subcontracting; Equipment; Other (i.e. Trials and testing); and Audit Fees (Mandatory); and
- a ***commercialisation strand*** of 15 months duration with maximum assistance of up to **£20,000,** which overlaps with the technology strand (includes Market Assessment Consultancy; and Travel and Subsistence). No additional forms or proposals need to be submitted to receive the commercialisation funding – it is automatically allocated if a project is approved for funding by the Proof of Concept Assessment Panel.

NI HEIF 2 funding helps support the resources within the two universities needed to support PoC activities. Without this funding, PoC activity would decrease. This project funding allows for an overhead cost to be supported, however this is focused on the academics involved in the project, rather than covering the Commercialisation Office costs.

7.3.4.2 Fit with NI HEIF 2

PoC funding provides a tool for the universities to access funding to get projects commercialised. HEIF provides the funding for the management resources needed to coordinate the PoC programme. Invest NI is currently evaluating PoC and it is important that this evaluation reviews the PoC funding and confirms that there is no duplication of funding re university management / commercialisation office costs. (We do not have access to the PoC costs; this report sets out the costs associated with NI HEIF 2).

7.3.5 Centres of Excellence

7.3.5.1 Description

Invest NI's Centre of Excellence (CoE) Programme has stimulated commercially focused research through the establishment of both university and company based facilities. The Centres have varied sectoral profiles, for example aerospace, pharmaceuticals, engineering, electronics and food. To date Invest NI has invested £50m in the establishment and ongoing work of nine university centres and 13 company centres.

As a follow-on to the CoE Programme, Invest NI has developed proposals to provide support for the establishment of Competence Centres (six Expressions of Interest have been accepted to proceed to full proposal stage; none have been approved yet). Competence Centres are unique amongst Invest NI initiatives in that they are collaborative and industry led and governed, while operating in the area of long-term research. Competence Centres are resourced by the universities and other research bodies, empowered to undertake strategic research on behalf of industry. The research direction can be re-focused to take advantage of market opportunities as they arise.

A total of 18 Centres was established, with only one being in excess of 36 months (being for 5 years). Of the eighteen projects which were funded: eight were university led projects and ten industry led projects. Over the funding period, the projects were to receive £34.5m in total, with £21.46m available from PEACE II and the remaining funds provided by Invest NI. This was matched by additional investment of £79.42m from the Centres' host organisations.

Of the university projects, the spending profile between the two NI universities is greatly skewed by the ECIT eligible project costs. There were 4 QUB projects (73.3% by project value), 3 UU projects (9.5% by project value) and 1 joint project (17.2% by project value). ECIT was by far the largest project, with eligible costs of almost £37.76m and a Grant Offer of £8.28m. When the Nanotec NI project is assessed by individual university, QUB received 77% of total grants awarded to the universities, with UU receiving 23%.

According to an evaluation undertaken in 2007 by Invest NI[21], the majority of expenditure was accounted for by Salaries (46.6%); Capital expenditure (27.9%); and Overheads (23%).

[21] *Invest NI (November 2007): Evaluation of the RTD Centres of Excellence Programme.*

7.3.5.2 Fit with NI HEIF 2

The NI HEIF 2 programme and Centres complement each other, with the Centres of Excellence having provided industry-focused research with the potential to lead to wider Knowledge Transfer opportunities, a role which it is expected that the Centre of Competence will continue to fulfil.

7.3.6 Collaborative Networks Programme

7.3.6.1 Description

The Invest NI Collaborative Networks Programme (CNP) was set up in 2007 to support business-led collaborative networks and stimulate economic development within Northern Ireland. Evidence suggests that working collaboratively may improve the company's efficiency, market position and profitability, often resulting in new products or processes.

Common themes for collaboration include:

- Training;
- Marketing;
- Logistics;
- Sales; and
- Research and development.

The objective of CNP is to develop the capability and capacity of regional clusters / networks by attracting private sector companies, investors, researchers and academia to maximise collaborative opportunities in the development of new products, processes or services.

The initial pilot fund is limited and once funding is fully committed no additional funding for Feasibility Study and / or Network Facilitation is available during the pilot period. Funding is available for the period December 2007 to March 2010. Funds are provided through the European Regional Development Fund, but are partly subject to the De Minimis rule.

7.3.6.2 Fit with NI HEIF 2

The CNP allows companies access to other companies which can be a benefit to NI HEIF related start ups (e.g. QUBIS, UUTech companies) in terms of sharing knowledge and opportunities for partnership working. The programmes therefore complement each other.

7.3.7 NISP ' Connect' Initiative

7.3.7.1 Description

Northern Ireland Science Park (NISP) CONNECT is an independent, non-profit organization fostering entrepreneurship by accelerating the growth of promising technologies and early stage companies.

A collaboration between NISP, the University of Ulster and Queen's University Belfast, NISP CONNECT acts as an 'honest, neutral broker' within the region. The collaboration provides direct delivery programmes, mentorship/coaching services (Springboard), educational seminars and events geared at developing and encouraging entrepreneurial ideas (Frameworks), talent and leadership (Evening Series). It encourages entrepreneurship in academia (£25k Award) and helps companies get early stage funds through 'halo'.

NISP manages 'halo', the local business angel network, for which it provides administration and logistical support. It prepares companies for their investment consideration. In addition, NISP invites entrepreneurs and investors from outside the region to participate in its programmes. This expands the CONNECT network, highlights the region, and creates opportunities for outside investment in Northern Ireland.

NISP CONNECT depends on small Government grants, sponsorship and the good will of the business community.

7.3.7.2 Fit with NI HEIF 2

NI HEIF 2 and NISP CONNECT work together. NI HEIF 2 aims to provide potential start up, high growth companies (e.g. through QUBIS, UUTech) and NISP CONNECT provides access to business angels, VCs and general business contacts who potentially help support those entrepreneurs from the university base to get their businesses developed and funded.

7.3.8 UKTSB 'Knowledge Transfer Networks'

7.3.8.1 Description

KTNs have been established and are funded by Government, industry and academia. They bring together diverse organisations and provide activities and initiatives that promote the exchange of knowledge and the stimulation of innovation in these communities. There are currently 24 KTNs.

Within the overall objective of accelerating the rate of technology transfer into UK business, the specific aims of a Knowledge Transfer Network include the following:

- To deliver improved industrial performance through innovation and new collaborations by driving the flow of people, knowledge and experience between business and the science-base, between businesses and across sectors;

- To drive knowledge transfer between the supply and demand sides of technology-enabled markets through a high quality, easy to use service;
- To facilitate innovation and knowledge transfer by providing UK businesses with the opportunity to meet and network with individuals and organisations, in the UK and internationally; and
- To provide a forum for a coherent business voice to inform government of its technology needs and about issues, such as regulation, which are enhancing or inhibiting innovation in the UK.

KTNs provide many benefits for members including:

- **Networking** – frequent opportunities to network with other businesses and academics through targeted events, meetings and Special Interest Groups organised by the KTN.
- **Information and news** – free access to on-line services such as reports, newsletters, webinars/e-training, events diaries, e-conferencing and collaboration tools and general sector/application specific information.
- **Funding opportunities** – advice on Technology Strategy Board Collaborative R&D calls, Knowledge Transfer Partnerships and other sources of funding for innovation such as Framework Programme 7, Eureka and Venture Capital.
- **Policy and regulation** – a communications route between their community, Government and EU, giving members the opportunity to influence policies and regulation in the UK and abroad.
- **Our strategy** – KTNs are playing an increasingly important role in the development of the Technology Strategy Board's future direction.

During 2008 a review of the Knowledge Transfer Networks was carried out to assess their current effectiveness and scope. The review, which obtained views from 2,100 KTN users and R&D intensive businesses, strongly confirmed the value of the networks. 75% of business respondents rated KTN services as effective or highly effective. Over 50% had developed, or were developing, new R&D or commercial relationships with people met through a KTN and 25% had made changes to their innovation activities as a result of their engagement.

7.3.8.2 Fit with NI HEIF 2

The UK TSB Knowledge Transfer Networks provide both a wealth of knowledge and opportunities for NI HEIs to work at a UK level in partnership with business. These KTNs therefore complement the local outreach activities supported through NI HEIF 2.

7.3.9 Local Council Programmes

7.3.9.1 Description

The Innovation Networks Programme is funded by Lisburn City Council and the EU under the Sustainable Competitiveness Programme 2007-2013. The tender was awarded in June 2009 and it is being delivered by the University of Ulster (managed by the Office of Innovation) in partnership with South Eastern Regional College. It is assisting local businesses to identify and develop new technologies, new processes, new systems or products to add value and improve overall business competitiveness and profitability

The programme aims to:

(1) provide innovation support to 12 businesses in the Lisburn City Council area;

(2) present Ulster research commercialisation opportunities to Lisburn-based businesses; and

(3) develop innovative joint collaborative projects between Lisburn-based businesses.

Support and advice is provided to businesses in order to tap into world class research to boost new business ventures or add new products and services to established businesses. The vision of the programme is to 'work together in strategic partnership as the building block for innovation'.

The Innovation Networks Programme has four key elements:

1. ***Access Innovation Roadshows***

   The range of support offered was showcased through the 'Access Innovation Roadshows' series of seminars, held throughout the greater City of Lisburn area in September 2009 (3 in Lisburn, 1 in Belfast and 1 in Dunmurry). These were aimed at meeting with local companies and undertaking a bespoke business innovation and technology audit to highlight areas for improvement and opportunities for growth within the business.

2. ***Innovate***

   Each participating business recruited to the "innovate" element of the programme benefits from up to 6 days innovation support from experts at the University of Ulster or South Eastern Regional College to explore a business opportunity or solve technological or knowledge based problems, as well as signposting to additional support if appropriate. Types of projects may include product development, design, prototyping or feasibility study.

3. ***Collaborate***

   The programme provides an opportunity for businesses to network with other companies to identify and progress exciting new collaborative projects between businesses. Network events are being scheduled at the moment of undertaking this report.

4. *Commercialise*

Businesses also have access to the world class research and new technologies developed by the University of Ulster staff, which provide opportunities to launch new commercially viable products and enter new markets. Showcase events are being scheduled at the moment of undertaking this report

The programme is in its initial stages, so it is too soon to comment on outputs and impacts.

7.3.9.2 Fit with NI HEIF 2

NI HEIF 2 is a funding resource which may also be involved in managing similar business support to that offered by this council type programme which is limited to Lisburn. There is no system at present of ensuring that Council monies are not being used to support company activities also being part funded under NI HEIF 2, although it is unlikely that the University of Ulster would use NI HEIF monies to cover the very targeted, Lisburn-centric activities for which this particular Innovation Networks Programme is ringfenced. The programme is at an early stage of delivery and so this can be addressed accordingly.

Ideally the universities would have a KT strategy which would set out the total picture regarding the needs of companies, the activities to be provided and the ways in which the various funding programmes provide the support to deliver these.

7.3.10 DARD / CAFRE / AFBI Knowledge and Technology Transfer Activities[22]

7.3.10.1 Introduction

DARD Knowledge Transfer activities are delivered to farmers, growers and the food industry.

Within DARD, the College of Agriculture, Food and Rural Enterprise (CAFRE) has overall responsibility for delivery of Knowledge and Technology Transfer (KTT). This was announced by Minister Pearson in 2003 when he outlined the Government's final decisions on the O'Hare Review of Agri-food Education and Research and Development[23].

The current structures, established post-O'Hare, bring together CAFRE, other branches within DARD's Service Delivery Group, DARD policy leads and the Agri-food and Biosciences Institute (AFBI) with the aim of ensuring cohesive and comprehensive delivery of the KTT programme. At operational level, staff from CAFRE and AFBI co-ordinate work programmes through a series of link groups across all types of enterprise i.e. beef and sheep, dairy, pigs, crops etc.

[22] Information in this section provided by Elaine McCrory, Head of Research Policy, DARD
[23] See http://www.publications.parliament.uk/ for Ian Pearson MP's Written Ministerial Statement on 31 Mar 03

DARD's current model to implement these arrangements has recently been reviewed as part of the ongoing roll-out of its Evidence and Innovation Strategy 24, launched in July 2009. The latter recognizes the important role of innovation in securing a sustainable and competitive rural economy and society and that effective KTT is a key vehicle for promoting innovation. To that end, knowledge transfer arrangements will form an integral part of future DARD-funded research programmes and the link groups referred to in the previous paragraph will, in future, report to one of four high- level research programme management boards, led by policy grade 5s.

In addition, the Strategy outlines DARD's plans for an in-depth review of the department's knowledge transfer arrangements, starting next year.

The remainder of the section describes the existing KTT arrangements.

7.3.10.2 Supported activities and funding available

The demonstration of new technologies and systems to the industry at CAFRE is achieved mainly through technology projects and initiatives. These projects aim to equip those in the industry with the knowledge, skills and experience to adopt the appropriate technologies and systems within their businesses. Depending on the project, economic, environmental, health and safety and animal welfare benefits will accrue to the agri-food industry.

It is difficult to put a specific figure on the level of funding for DARD's Knowledge Transfer activities at CAFRE, as funding for most of the programme is from the College's overall annual budget allocation from DARD.

7.3.10.3 Eligibility / Target audience

The target audience for CAFRE's Knowledge and Technology Transfer programme includes developing farm and commercial horticulture businesses and food processing businesses. (A developing farm business is one generally of > 1 Standard labour requirement (SLR) where the farmer has the potential, attitude and capacity to implement change and improve farm business performance).

7.3.10.4 Impacts and Outputs

The output of CAFRE's Knowledge and Technology Transfer is measured through the number of businesses adopting technology. At the end of the year a Management Report is prepared by CAFRE which details the apportioned cost of each main programme area delivered.

Details of the number of farm, commercial horticulture and food businesses that have adopted technology over the last three years are summarised in the Table IV.18.

[24] http://www.dardni.gov.uk/evidence_and_innovation_strategy_2008-2013_final.pdf.pdf

Table IV.20 Knowledge Transfer Network – Networks

Sector	Number of businesses adopting technology		
	2008/09	2007/08	2006/07
Dairy	340	0	401
Pigs	46	0	65
Beef & Sheep	394	0	524
Crops	124	120	122
Horticulture	71	79	
Food	211	241	270
Total	**1186**	**440**	**1382**

Note: In 2007/08, due to the deployment of Livestock Development Advisers to Farm Nutrient Management Scheme duties, technology adoption on farms could not be progressed and fully implemented. Therefore it was not possible to fully progress the adoption of technology on livestock farms in that year. However, during the year, technologists based at Greenmount continued working on the various Technology projects, with some initial roll out at the start of the year by Development Advisers to the industry which could not be measured.

Source: CAFRE

7.3.10.5 Fit with NI HEIF 2

There are some similarities between NI HEIF 2 and CAFRE's Knowledge and Technology Transfer programme. However, at present CAFRE has no linkages with the NI HEIF 2 to deliver the Knowledge and Technology Transfer programme. DARD has recently been liaising with DEL on the scope for CAFRE – KT programme and the new Connected 2 programme to work together.

7.4 Fit of NI HEIF 2 with counterpart initiatives

7.4.1 Need for KT strategies

From Figure 7.1 and Sections 7.2.1 and 7.2.2, it is clear that NI HEIF 2 has a cross-cutting and underpinning role in supporting KT activities. Section 4 highlights that NI HEIF plays an enabling and facilitating role, by ensuring that the infrastructure is in place to allow KT to take place. Therefore, it underpins many of the other KT initiatives which tend to have a more specific focus and area of operation.

However, as detailed above, we feel that the complexity of the various schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than one source of funding) give rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source that specifies all the monies allocated for KT related activities (e.g. from Connected, HEIF, Innovation Vouchers, PoC, etc.), what these are used for and what overall outcomes are achieved.

Therefore, it is essential to have overall plans from both universities demonstrating how **all** the programmes / initiatives link together to deliver the KT outcomes. Through the Regional Office and KEU in QUB and the Office of Innovation (Innovation Services and Business Liaison Office) in UU, there is scope to ensure that the range of KT activities within each university is co-ordinated and interdependencies managed. Ideally, all the KT resources

could be considered together alongside all the KT programmes and the activities / outputs / outcomes delivered by these resources examined in total.

This analysis is beyond the scope of a review of NI HEIF 2, however we recommend that the universities are required to prepare KT Strategies under the next round of this core funding programme. These KT Strategies should set out the needs being serviced (based on robust evidence of the needs of target beneficiaries), the activities being delivered, the outputs / impacts to be delivered and the range of funding (amounts and sources) being used, and how they link together. These KT Strategies need to demonstrate that there is no duplication of funding. All university KT activities need to:

- explicitly demonstrate the contribution that each programme / initiative makes to the high level KT targets and strategies;
- take into account the wider policy framework (including e.g. Programme for Government, Regional Innovation Strategy, MATRIX, New Industry New Jobs and the Technology Strategy Board) in order to define the expected contribution of the KT Strategy to this and to take on board strategic direction such as MATRIX messages around business leadership;
- identify where support is needed / and will be focused (based on business needs / industry led / industry driven in keeping with MATRIX recommendations rather than academia determining markets), to ensure there is a balance across the types of interventions / activities required;
- take into account other interventions (e.g. Connected, PoC, CNP, TSB, etc.) and linkages / complementarity with these and define any joint approaches (e.g. this might be the university working proactively in partnership with HSC Innovations, etc.).

7.4.2 AFBI and Social Care Innovations

The analysis of other interventions has demonstrated strong linkages between the various university KT interventions. The area where there is scope to improve linkages is with other KT activities outside the universities e.g. AFBI, Health and Social Care Innovations, etc. Whilst there is some interaction currently, this could be undertaken more effectively in a proactive rather than reactive way. We recommend that universities are required to proactively develop opportunities with AFBI and Health and Social Care Innovations as part of the proposed KT Strategies. The universities should also seek to ensure that their KT Strategies take account of other work underway for example the work of NISP Connect which is a collaboration between NISP, UU, QUB and AFBI.

8 BENCHMARKING

8.1 Introduction

This section contributes to addressing the following elements of the ToR:

- *Benchmark the NI HEIF 2 programme against the three core funding streams for Knowledge Transfer operated by the Higher Education Funding Councils for England, Scotland and Wales.*

This section presents information about the three core funding streams for Knowledge Transfer operated by Higher Education Funding Councils for England (HEFCE), Wales (HEFCW) and Scotland (SFC); and compares them against the NI HEIF 2 programme. Although the funding bodies utilise different terminology, the funding streams all support the core Knowledge Transfer / business and community facing / Third Stream activities of universities. The three GB funding programmes are as follows:

- HEFCE – 'Higher Education Innovation Fund' (HEIF) in England;
- HEFCW – 'Third Mission Fund' (3M) in Wales; and
- SFC – 'Knowledge Transfer Grant' in Scotland.

The main areas considered for each Funding Council are as follows:

- Introduction (management responsibility, levels of funding, number of institutions supported etc);
- Method of funding allocation to HEIs (including whether metrics and / or competitive bids, weighting and scoring framework used etc; also current approaches and any plans to change for the future);
- Management and distribution of funding within Institutions (including what the funding is used for);
- Recorded outcomes and impacts;
- Future Plans; and
- Complementary support.

8.2 Higher Education Funding Council for England (HEFCE)

8.2.1 Introduction

In England, HEIF has now entered its fourth round of funding (referred to as HEIF 4). HEIF 4 announced in December 2007 is a joint initiative from the Higher Education Funding Council for England (HEFCE) and the Department for Business, Innovation and Skills (BIS) to provide

financial support for a broad range of knowledge exchange activities resulting in economic and social benefit to the UK[25].

A total of £396 million has been allocated to HEIF 4 over the three Academic Years from 2008/09 to 2010/11 (average of £132 million per annum over the three-year period). Overall 129 HEIs are being supported.

The first funding stream was introduced in 1999 with the Higher Education Reach-Out to Business and Community (HEROBC) initiative. This first round of funding was specifically tasked with encouraging wealth creation by supporting the building up of capability within HEIs to respond to the needs of businesses and the wider community.

HEROBC was succeeded in 2002 by HEIF. Since 2002 HEIF has been funded by HEFCE and from the Science budget provided by the then Office of Science and Innovation (OSI), now BIS. Although both the HEFCE and BIS are responsible for overseeing HEIF, the fund is operated in a seamless manner will all monies distributed via the HEFCE as described in Section 8.2.2.

Table 8.1 provides details of the funding available under each of the funding rounds.

Table 8.1
HEIF Funding in England (per annum)

Core KT Funding Period	DTI / BIS	DfES	Total (per annum)
Pre 2001	£10m (Science Enterprise Challenge (SEC), University Challenge (UC))	£20m (HEROBC)	£30m
AY 2001 – 2004 (HEIF 1)	£20m (01/02 – 02/03) £40m (03/04) DTI/Office of Science and Technology	£20m	£60m (03/04ff)
AY 2004/5 – 2005/6 (HEIF 2)	£62m DTI/Office of Science and Technology	£31m	£93m
AY 2006/7 – 2007/8 (HEIF 3)	£79m DTI/Office of Science and Innovation	£39m	£119m
AY 2008/9 – 2010/11 (HEIF 4)	BIS £120m (08/09)* BIS £134m (09/10) (12.6% increase on total HEIF 3) BIS £150m (10/11) (26% increase on total HEIF 3)	- - -	£120m (08/09 £134m (09/10) £150m (10/11)

Note: * The £120m allocation for 08/09 includes a final tranche of £8m for existing Centres for Knowledge Exchange.
Source: DEL

[25] HEFCE (2008) 'Higher Education Innovation Fund Round 4: innovation and guidance for institutional strategies', HEFCE publication 2008/02

Note: Following its recent Board meeting (28 January 2010), HEFCE announced that funding for English HEIF in AY 10/11 would be £150 million, which compares with £134 million in 2009-10. This represents a further 11.9 per cent increase.

8.2.2 Method of funding allocation

In England the HEIF funding is allocated by formula based mainly on an institution's size and past business income, and released against individual strategies created by each university or college. The rationale for tying the release of the allocated funding to the submission of institutional strategies was to provide HEFCE with a basis for the accountability for the funding allocated and to provide a clear understanding of HEIs' approaches to their Third Stream missions.

It should be noted that under the first two funding rounds, funding was awarded based on a competitive bidding process, with funding going to time limited projects. Under HEIF 3, a formulae based funding allocation was introduced to fund all HEIs, with three-quarters of the funding allocated on this basis. The remaining one quarter was allocated according to a competitive bidding process and was targeted toward a small number of large-scale innovative and collaborative projects.

Approach to funding allocation

HEIF 3: The method of allocating funding (metrics allocation) under the English HEIF 3 was based on the same three components as had been used in NI HEIF 2, although the weightings were different. The English HEIF 3 funding (developed before NI HEIF 2) was allocated as follows:

- 75% of English HEIF 3 was allocated by formula consisting of three components:

1.	A forward-looking component to reflect **potential** and allow for **capacity building**. This would be based on academic staff numbers.	**45 % of funding**
2.	A component to **reward performance to date**, using external income as a proxy to reflect the value which the demand-side places on interaction with an institution (excluding QR, charity and Research Council funding).	**45 % of funding**
3.	An **activity-based component**, rewarding current performance on measures other than income.	**10 % of funding**

- The remaining 25% was administered via competition focused on innovative, cross-cutting, collaborative projects.

HEIF 4: From HEIF 3 to HEIF 4 the weighting placed on income as a proxy for the demand side increased moving from 45% of the funding allocated under HEIF 3 to 60% under HEIF 4.

As noted above, HEIF 4 is allocated entirely by formula. The formula is based on two components; the first focusing on capacity building and the potential for an HEI to engage with business and the wider community (looking at the numbers of academic full-time equivalent staff), while the second accounts for Knowledge Exchange (KE) performance,

based on various measures of income. The method of allocation and other features of the formula are as follows[26]:

1. A forward-looking component to reflect **potential** and allow for **capacity building**. This would be based on (full time equivalent) academic staff numbers. **40 % of funding**

2. A component to **reward performance to date**, using external income as a proxy to reflect the value which the demand-side places on interaction with an institution (excluding QR, charity and Research Council funding). **60 % of funding**

   This uses various measures of income from business and non commercial sources as a proxy for the value placed on a HEI's activities by the users of knowledge in the wider economy and society. SME income is double weighted within this component.

The two broad components ("Capacity" and "External Income") are made up of eight individual components as follows:

Formula components	HEIF 4
1: Capacity	HESA Staff numbers
2: Performance (income)	HE-BCI Contract Research HE-BCI Consultancy HE-BCI Equipment & facilities HE-BCI Regeneration HE-BCI Intellectual property HESA Non-credit bearing courses KTP income being provided by Momenta for TSB

- A minimum allocation of £100,000 per annum is awarded to all HEIs;
- There is a maximum of £1.9 million on an individual formula allocation in 2010/11 with a linear progression between an HEI's 2007/08 HEIF 3 formula allocations and final year HEIF 4 allocations in 2010/11;
- No HEI's allocation is allowed to fall below 80% of its 2007/08 award to prevent an unmanageable drop in funding between HEIF 3 and HEIF 4 (transition funding).

[26] HEFCE, Higher Education Innovation Fund round four institutional strategies, 2008

Approach to strategy assessment

Following the application of this formula based allocation process, to secure match funding HEIs are required to submit a 5,000 word Institutional Strategy outlining three broad issues:

- The planned use of the HEIF 4 funds;
- The overall KE strategy; and
- The key risks facing the strategy.

The strategy was required to show compliance along with published criteria i.e.

- Demonstration of a sound strategic approach;
- Appropriate and robust management systems in place
- Commitment to continued capacity and capability building
- Expenditure in line with HEIF 4 objectives

Strategies were assessed in April 2008 using a systematic 'scorecard' approach.

8.2.3 Management and distribution of funding within Institutions

The objectives of the funding provided to HEIs were designed to[27]:

- Build on what has been achieved through earlier rounds of funding;
- Further develop and release HE knowledge for the economic and social benefit of the UK;
- Support HEIs to build and extend their capability to engage with users of knowledge in business and the public service and third sectors, locally, nationally and internationally, according to their own diverse missions alongside, and integrated with, teaching and research; and
- Be deployed to help HEIs develop and enhance their knowledge exchange performance for the longer run.

The HEFCE has indicated that funding can be used for a range of purpose that support these objectives, including:

- Support the infrastructure for, and capacity building in, enterprise education and projects;
- To fund employer engagement initiatives by helping to support the development of infrastructure within HEIs to enable then to engage with a wide range of business, public sector bodies and third sector partners.

[27] HEFCE, Higher Education Innovation Fund round four institutional strategies, 2008

Funding is not permitted for capital expenditure, basic research or undergraduate teaching. HEIF should also not be used to fund the business support process.

8.2.4 Recorded outcomes

HEFCE has indicated that HEI strategies are strategic in nature and therefore no pre-defined outputs and targets are specified e.g. number of spin-outs, licences produced etc. This approach is adopted to ensure that flexibility is built into the system, enabling HEIs to be responsive to the market place. All HEIs provide an annual update to HEFCE on the implementation of their strategy. HEFCE relies on the results of the HE-BCI survey to monitor the impact of funding.

Evaluation of the Effectiveness and Role of HEFCE/OSI Third Stream Funding

The UK Government, through HEFCE/BIS (and the predecessors to BIS), has invested approximately £700 million (constant 2003 prices) over the period AY 2000/01 - 2007/08 into building the capacity and capability of English HEIs to engage with external organisations. Through HEIF 4, it continues to provide such funding with a further £340 million (constant 2003 prices) being released over the period AY 2008/09 - 2010/11.

In April 2009, Public and Corporate Economic Consultants (PACEC) and the Centre for Business Research, University of Cambridge published the first major evaluation of the effectiveness and role of the HEFCE/DIUS knowledge exchange funding programmes (dominated by HEIF and HEROBC). The report presents evidence on the extent to which this funding has helped secure direct and indirect economic benefits, through changing attitudes and culture within HEIs and helping them develop the necessary capacity and capability to engage with external organisations (also discussed in Section 8.5.5).

Key findings include:

- *A very high proportion of academics engage in knowledge exchange activities with external organisations through a great diversity of mechanisms, well beyond technology transfer and well beyond STEM disciplines;*
- *Government policy, a dedicated funding stream through HEFCE, leadership and financial pressures have all served to increase the importance of knowledge exchange within the overall HE mission;*
- *Initial concerns about whether the emphasis on knowledge exchange would impact the traditional teaching and research roles have proven to be unfounded.*
- *Indeed, many synergies between knowledge exchange, teaching and research are thought to exist. Many academics are motivated not by the personal income they can secure through knowledge exchange, but by the benefits they can realise for their research and teaching activities;*

- *There appears to be a growing culture within HEIs that embraces knowledge exchange as a legitimate activity for academics alongside research and teaching, although it is still not fully embedded across the HE sector;*
- *Significant investments have been made into the capacity and infrastructure within HEIs to facilitate the knowledge exchange process;*
- *Knowledge exchange outputs have increased rapidly over the period 2001-2007, with total income from such activities reaching almost £2 billion in 2007;*
- *Between £2.9 billion and £4.2 billion out of the total £10.3 billion generated through knowledge exchange engagements between 2001 and 2007 can be grossly attributed to HEFCE knowledge exchange funding, either directly or indirectly. However, this almost certainly underestimates the true impact as many of the outputs cannot be easily monetised.*

8.2.5 Complementary support

In England, a range of other funding sources is being marshalled to complement investments through HEIF 4. HEFCE notes that these are typically focused on supporting capacity within HEIs to do KT. The table below sets out the other sources of funding sought by HEIs for their knowledge exchange activities (based on returns provided to the HEFCE from 111 HEIs):

Table 8.2
HEIs in England – Other sources of funding sought for knowledge exchange

Source	Number of HEIs	% of total respondents
RDA or other local funding	79	71
Other	54	49
Internal resources	50	45
EU funding	48	43
Private sector funding	48	43
Total	**111**	**71**
Source: HEFCE, Higher Education Innovation Fund round four Institutional Strategies, 2008		

8.3 Higher Education Funding Council for Wales (HEFCW)

8.3.1 Introduction

HEFCW established its Third Mission (3M) Fund in June 2004 as a dedicated stream of core funding to support institutions' activities in this area. The Council defines 3M activities as those that *"stimulate and direct the application and exploitation of knowledge to the benefit of the social, cultural and economic development of our society"*.

The 3M Fund currently stands at over £6.3 million per annum. It is now in its second three year cycle, which will close at the end of the 2009/10 academic year. All twelve HEIs are

supported under the current Funding cycle, ranging from £1.4 million allocated to Cardiff University and £142,000 to the Royal Welsh College of Music and Drama (refer to Table 8.3 below).

Table 8.3

Third Mission (3M) Indicative Funding Allocation per annum in Wales (2007/08 to 2009/10)

Institution	Foundation funding £	Supplementary funding £	Total funding allocation £	Allocation after mitigation (2007/08 only)
University of Glamorgan	100,000	518,137	618,137	618,137
University of Wales, Aberystwyth	100,000	369,709	469,709	469,709
University of Wales, Bangor	100,000	372,025	472,025	570,160
Cardiff University	100,000	1,135,786	1,235,786	1,483,954
University of Wales, Lampeter	100,000	55,398	155,398	155,398
University of Wales Swansea	100,000	720,977	820,977	820,977
University of Wales Institute, Cardiff	100,000	279,885	379,885	379,885
University of Wales, Newport	100,000	145,976	245,976	259,370
North East Wales Institute of Higher Education	100,000	112,183	212,183	212,183
Swansea Institute of Higher Education	100,000	95,513	195,513	195,513
Trinity College Carmarthen	100,000	51,899	151,899	151,899
Royal Welsh College of Music and Drama	100,000	42,513	142,513	142,513
Total	**1,200,000**	**3,900,000**	**5,100,000**	**5,459,698**

Note: Indicative allocations exclude success in securing a proportion of the monies reserved for competitive bidding (£1 million per year).

Source: Third Mission Funding Arrangements 2007/08 – 2009/10

8.3.2 Method of funding allocation

The £6.1m per annum is distributed in the following manner:

Table 8.4

Third Mission Funding, Approach to the allocation of monies

	£ (million)
To be allocated as foundation funding (£100k per HEI)	1.2
To be reserved for bid-based, collaborative funding	1.0
To be allocated by formula	3.9
Total	**6.1**

Source: HEFCW

All institutions receive a common level of foundation funding, which is currently £100k per annum. Apart from the £1 million reserved each year to support the bid-based collaborative activity described, the remainder of the funding (ca. £3.9m) is allocated on the basis of a formula. HEFCW reports that the formula based allocation is designed to:

1. Provide a measure of Third Mission activity potential and capacity building by using staff full time equivalents (FTEs) as a proxy for institutional size, and
2. Reward performance by utilizing a range of indicators that take account of both income (output) and non-income (outreach) activities.

The £3.9m formula allocation is divided equally across the above two components. However, within the rewarding performance component, a higher weighting is attached to non-income generation (i.e. outreach activities). Table 8.5 presents a detailed breakdown of how the funding is allocated and the associated weightings applied.

Table 8.5
Breakdown of yearly formula funding allocations, HEFCW

Yearly formula funding allocations	Weighting	£
Potential and Capacity Building	50%	£1,950,000
Rewarding Performance (income related)	20%	£780,000
Rewarding Performance (non-income related)	30%	£1,170,000
Total formula funding		£3,900,000
Source: HEFCW		

Details of how the allocations have been calculated within each of these three elements are as follows:

- ***Potential and Capacity Building***

Individual institutional allocations are calculated pro rata to the FTE of professional and academic staff, described below:

Table 8.6
HEFCW – Yearly formula funding allocations – Potential and Capacity Building

Measure	Description	Source
Staff FTE	FTE of managerial, academic, professional, technical and administrative staff with an active contract in the academic year (includes HESA activity codes 1 to 4A). Atypical staff excluded.	HESA new individualised staff record 2005/06
Source: HEFCW		

- ***Rewarding Performance - Income Related***

Individual institutional allocations are calculated pro rata to the sum of four income related measures. The following table sets out each of the income related measures, presents a brief description of each and details the source of the data used, described below:

Table 8.7

HEFCW – Yearly formula funding allocations – Rewarding Performance – Income Related

Measure	Description	Source
Contract research income	Total value of contracts	HE-BCI survey 2005/06, Table 1b
Income from intellectual property rights	Total revenues (including sale of shares in spin-offs)	HE-BCI survey 2005/06, Table 4c
Income for regeneration	Total income for regeneration	HE-BCI survey 2005/06, Table 3
Income from collaborative research activity	Total income from collaborative research activity	HE-BCI survey 2005/06, Table 1a
Source: HEFCW		

- ***Rewarding Performance - Non income related***

The total allocation available for this element of the formula funding is split equally between 11 measures, giving a total allocated for each measure of £106,364. Within each measure, individual institutional allocations are calculated pro rata to the total of the measure. Allocations for each measure are then summed for each institution to get individual institutional allocations. The 11 measures are described below:

Table 8.8

HEFCW – Yearly formula funding allocations – Rewarding Performance – Non-Income Related

Measure	Description	Source
Number of engagements with KEF	Number of current active training consortia and Technology Transfer Networks engaged with as lead or partner plus SME development grants obtained and number of Higher Level Skills projects.	KEF, as at March 2007
Number of graduate start-ups	Total number of active firms	HE-BCI survey 2005/06, Table 4d
Number of licences	Total number of non-software plus software licences	HE-BCI survey 2005/06, Table 4b
Number of active spin-outs (excluding graduate start-ups)	Total number of active firms including spin-outs with some HEI ownership, formal spin-outs not HEI owned and staff start-ups (excludes graduate start-ups)	HE-BCI survey 2005/06, Table 4d
Number of contracts – consultancy	Total number of consultancy contracts	HE-BCI survey 2005/06, Table 2a
Number of contracts - facilities and equipment related services	Total number of facilities and equipment related services contracts	HE-BCI survey 2005/06, Table 2b
Number benefiting from GO Wales Scheme	All GO Wales beneficiaries, including placements, up to December 2006	GO Wales phase 2, as at December 2006
Number of businesses engaged in GO Wales	All businesses, including SMEs and larger companies, engaged with GO Wales, up to December 2006	GO Wales phase 2, as at December 2006
Number of outgoing exchange students	Number of outgoing students on ERASMUS/SOCRATES programmes	HESA student record 2005/06
Number of industrial placements	Number of students out on an industrial placement	HESA student record 2005/06
Total learner days - CPD/CE courses	Total learner days of CPD/CE courses delivered	HEBCIS survey 2005/06, Table 2c
Source: HEFCW		

Allocations are released to HEIs on the basis of a satisfactory Third Mission strategy, which is submitted to HEFCW at the outset of each three year funding cycle. Delivery is monitored via the annual monitoring statements submitted to HEFCW as part of its ongoing strategic planning interactions with the sector.

8.3.3 Management and distribution of funds within institutions

HEFCW has indicated that it is not prescriptive regarding the way in which the HEIs allocate their monies, with each HEI outlining its priorities within its Institutional Plan. Currently the HEFCW has not been prescriptive in regard to clear outcome or target setting within these plans and, as such, the plans tend to operate at a strategic level.

Current funding arrangements are supporting five 3M strategies from individual HEIs, plus three collaborative strategies. One of these collaborations builds upon a recent strategic alliance between the two institutions concerned and another takes forward into a new dimension an existing Research and Enterprise Partnership, including the development of a regionally-focused skills centre. The third collaboration, however, brings together three co-located but very mission-different HEIs in a strategic partnership that is designed better to identify with and serve local communities and businesses, while at the same time targeting new inward investment into their region of Wales.

Current funding arrangements are also supporting three project-based 3M collaborations. These include a Food Industry Skills Project which was developed in direct response to research into food industry high-level skills shortages conducted by Improve, the Sector Skills Council (SSC) for the food industry. This project aims to boost the flagging numbers of qualified food scientists working in Wales' £9 billion food manufacturing industry. The project brings together HE, FE and business sector partners. Another project, the Strategic Insight Programme enables academics to undertake short term placements in the public, private or third sectors in order to improve their understanding of business needs. A recent extension to this project is also funding placements for business people within HEIs.

8.3.4 Recorded outcomes

As noted already, HEFCW has not been prescriptive in terms of target setting, with no defined baseline or performance indicators included within the Institutional Strategies. If 3M funding continues in its current form, it is likely that the HEFCW will require performance indicators to be set on a strategy by strategy basis.

HEFCW commissioned an evaluation of 3M Funding over the period AY 2004-05 to 2006-07. This evaluation was completed by Innovas Salford. As a consequence of the lack of baseline and performance indicators set, the evaluation relied heavily on the findings of the HE-BCI Survey and qualitative feedback to assess impact. The evaluation notes the difficulties in measuring the outcomes of HEIs as they contribute to economic and social well-being in Wales – due to:

- in part, the considerable diversity in strategies, areas of focus and by implication KPIs that could be used in order capture performance;
- the nature of some of the 3M supported activities undertaken by HEIs and the challenges in capturing accurately social and cultural outcomes. For example, a number of 3M activities of HEIs that are aimed towards the student population (for example entrepreneurship education) or the local community are not adequately recorded; and
- Heavy reliance on the HE-BCI data provided by each university. However, the changes recorded may not only be due to changes in activity, but also could have been influenced by improvements in internal data collection processes. Additionally, the HE-BCI survey data focuses on a limited range of quantitative output measures, with 4 of the 5 reporting areas concentrating on economic indicators. The Welsh HEIs chose their own KPIs when

preparing their first 3M strategies, and these did not necessarily relate to HE-BCI categories.

Overall, the evaluation concluded that, during the first cycle, HEIs in Wales were able to:

- Deliver more than 270,000 CPD days;
- Work on more than 3,800 consultancy projects with SMEs;
- Work on 912 consultancy projects with large commercial organisations;
- Assist in starting 532 new enterprises;
- File some 375 disclosures;
- File some 230 patent applications;
- Engage with more than 910,000 attendees in free events; and
- Engage with more than 734,000 attendees in chargeable events.

In Table 8.9, we present some measures of impact – based on a smaller number of indicators in context. The indicators selected here are representative of the large number of measures used in the HE-BCI survey. Each indicator captures outcomes for all three years (2004/5 to 2006/7) included in the first cycle. All of these measures are examined in context – for example the numbers of CPD days are viewed in relation to the economically active population. The indicators used aim to capture the breadth of 3M activities in Wales. These indicators and comparative data for Wales, England and Scotland are included.

Table 8.9

Comparison of the Impact of Third Mission Activities in Wales, England and Scotland during the first cycle: AY 2004/5 to 2006/7

Measure	Wales	England	Scotland	Note
No of CPD days delivered per 1,000 economically active persons	60	140	30	Mid Wales Universities offer more than 170
Percentage of the number of patent applications in their country	10%	10%	13%	
No of business start-ups out of every 1000 in their country	26	8	6	North Wales Universities are responsible for 45
No of consultancies offered per 1000 SMEs in their country	15	10	5	
No of attendees of free events organised by HEIs per 1,000 population in each country	30	25	24	

Source: HE-BCI Survey (from Evaluation of 3M Funding 2004/05 to 2006/7, Innovas Salford)

Table 8.9 shows that comparisons with English HEIs demonstrate significant disparities in performance in two areas – indicative, in part, of differences in the context within which HEIs operate. Welsh HEIs were more active than their English counterparts in the process of

business start-up during the first cycle. This occurred within a context of a lower number of start-ups per 1,000 economically active persons in Wales than in England. English HEIs however, offered twice as many CPD opportunities (per 1,000 economically active persons) than their Welsh counterparts. Overall, however, the impact of 3M activities in Wales was greater than in England in three measures, whilst the reverse is the case in one measure. HEIs of Wales outperformed their Scottish counterparts in four out of the five indicators used here – the difference being particularly profound in the case of business start-ups, where the impact of Welsh HEIs was three times than that of their counterparts in Scotland. Scottish HEIs performed particularly strongly in terms of patent applications.

8.3.5 Future Plans

Consultation with the HEFCW indicates that, to date, it has not set measurable targets and outcomes for universities and they are keen to ensure that in the future performance can be measured on a strategy by strategy basis, via the development of a baseline for each HEI. The HEFCW issued a consultation document in October 2009 (closing in January 2010). The purpose of this document was to examine the future distribution of monies going forward. In essence the HEFCW was keen to establish if the Welsh institutions have reached a point where the ring fencing of monies for Knowledge Transfer activities was no longer required. The consultation posed the following question to HEIs and other key stakeholders:

- How can HEFCW most effectively support HEIs in their intentions to deepen and broaden their efforts to embed an ethos of wider engagement beyond academia across all the activities of the institutions?
- Do you think HEFCW should increase core 3M funding, even at the expense of other funding?
- Have we reached the point where we no longer need to ring-fence core 3M funding? What would be the advantages and/or disadvantages of its removal?
- If we maintain a separate stream of 3M funding should we replace the common level of foundation funding with a guaranteed minimum allocation? If so, is £150k a reasonable level?
- If we maintain a separate 3M funding stream, should we alter – and on what basis – the current balance between formula and bid based allocations?
- Should any bid based monies continue to be restricted to collaborative bids?
- What is your view of the value to HEIs of demonstrating, in a coherent way, within 3M strategies, their overall approach to engagement and exploitation, across at least all public funding sources.

The outcomes of the HEFCW consultation are awaited.

8.3.6 Complementary support

The 3M funding provided by HEFCW operates alongside a parallel, and complementary, income source provided and managed by the Welsh Assembly Government (WAG). In the first cycle this was provided by the Knowledge Exploitation Fund (KEF), which in the current cycle (2007/08 to 2009/10) has been replaced by the WAG's Academia for Business (A4B) Programme.

8.4 Scottish Funding Council (SFC)

8.4.1 Introduction

Within Scotland Knowledge Transfer activities (referred to as knowledge exchange in the Scottish context) are supported in two ways through the SFC's Knowledge Transfer Grant:

- Via the general fund which provides approximately £1.4m of core funding to universities under the Knowledge Transfer Grant; and
- Via the Horizons Fund for Universities (HFU) under which £25m was allocated in AY 2009/10 under the Knowledge Transfer Grant.

Under the HFU, nineteen institutions are funded ranging from over £4m allocated to the University of Glasgow to £6,000 allocated to the Royal Scottish Academy of Music and Drama.

Table 8.10
SFC – HFU by Institution

Institution (1)	Amount of Knowledge Transfer Generated by: Outreach £ (2)	Enterprise Schemes £ (3)	Consultancy £ (4)	Continuing Professional Development £ (5)	External Research Grants & Contracts £ (6)	Licencing £ (7)	Venturing £ (8)	Horizon Funding Knowledge Transfer Grant for 2009-10 £ (9)	%
Aberdeen, University of	66,720	84,668	648,229	136,915	1,361,756	61,737	63,975	2,424,000	11.6%
Abertay Dundee, University of	127,379	43	26,265	67,939	63,359	14	-	285,000	1.4%
Dundee, University of	244,331	46,273	434,824	175,453	755,812	41,584	5,723	1,704,000	8.1%
Edinburgh College of	1,713	2,716	-	3,489	21,083	-	-	29,000	0.1%
Edinburgh Napier University	251,312	25,698	143,895	131,603	105,650	670	3,171	662,000	3.2%
Edinburgh, University of	86,730	106,167	1,326,678	483,114	1,812,571	246,418	22,321	4,084,000	19.5%
Glasgow Caledonian University	157,471	14,181	173,411	246,298	116,246	393	-	708,000	3.4%
Glasgow School of Art	4,735		11,083	-	34,182	-	-	50,000	0.2%
Glasgow, University of	164,442	24,828	1,202,355	362,412	2,378,922	33,088	20,954	4,187,000	20.0%
Heriot-Watt University	40,909	38,814	248,812	458,513	445,399	1,552	-	1,234,000	5.9%
Open University in Scotland	-		-	1,000	-	-	-	1,000	0.0%
Queen Margaret University, Edinburgh	7,346		42,407	99,233	82,720	294	-	232,000	1.1%
Robert Gordon University	77,920	13,258	29,163	268,661	134,673	6,325	-	530,000	2.5%
Royal Scottish Academy of Music and Drama			2,898	-	3,102	-	-	6,000	0.0%
St Andrews, University of	-	17,104	176,332	95,354	503,056	16,153	1	808,000	3.9%
Stirling, University of	32,412	3,418	132,604	200,093	204,465	8	-	573,000	2.7%
Strathclyde, University of	188,223	176,186	307,828	773,862	724,074	38,302	34,525	2,243,000	10.7%
UHI Millennium Institute	309,652		147,780	98,567	329,246	3754	-	889,000	4.2%
West of Scotland, University of the	83,510		108,699	79,106	63,671	14	-	335,000	1.6%
TOTAL	**1,844,805**	**553,354**	**5,163,263**	**3,681,612**	**9,139,987**	**450,306**	**150,670**	**20,984,000**	**100.0%**

Source: SFC

8.4.2 Method of funding allocation

The Knowledge Transfer Grant within the General Fund for Universities provides a baseline allocation (similar to Foundation Funding in Wales) of £70,000 to each university (totalling circa £1.4m). This money is provided in recognition of the need for all institutions to have dedicated knowledge exchange staff capability to allow for planning of projects and includes an element for cultural engagement.

£21.0 million of funding available under the HFU is allocated using metrics based on income data for AY 2006/07 and 2007/08, which range from outreach activities to income activities, with the remaining £3.8 million ring fenced for strategic projects. The activities and weighting applied to the allocation of the £21 million are as follows:

Table 8.11

Funding formula for SFC Horizons Fund

Activity	Weighting
Outreach	5
Enterprise Schemes	4
Consultancy	3.5
Continuing Professional Development	2.5
Industry and UK central government bodies, local authorities, health and hospital authorities external research	2.25
Licensing	1.5
Venturing	1
Source: SFC	

The metrics are weighted towards activities for the public good. That is, the weightings allow appropriate focus on activities where public subsidy is vital because there are no other financial incentives to institutions. Lesser weightings are applied to activities that generate income for institutions.

Funding for strategic projects

The ring fencing of funding for strategic priorities has been in place for the last two years. In its first year, funding was provided for projects recommended by the Knowledge Exchange Action Groups and the HFU Committee.

In the second year competition was introduced and those projects that aligned with the priority sector of the economy were selected.

8.4.3 Management and distribution of funds within institutions

The SFC has no control over how the funding provided is spent by each university, with funding provided being based on past performance.

8.4.4 Recorded outcomes

Currently the SFC is unable to measure and place a value on outcome and impact of the funding provided. Consultation with the SFC has indicated that the monies provided to date have been useful in raising the profile of Knowledge Transfer activity throughout the sector and to increase the number of academics involved in Knowledge Transfer activities. The main outcome has been this cultural change, rather than the measurement of 'hard' outcomes. However, weaknesses in the current system are:

- the formulaic allocations have not resulted in strong, strategic focus on Scotland's biggest challenges or opportunities;
- the income performance measure rewards "activity", not improvements in economic development or outcomes;
- it makes no distinction between engagement with businesses in Scotland and those active elsewhere;
- the income performance measure gives no encouragement for universities to engage with small and medium-sized enterprises (SMEs); and
- the current system does not require universities to demonstrate that they have contributed to improved productivity or innovation in Scotland in return for this funding.

8.4.5 Future plans

On 7 May 2010, the SFC published a consultation paper setting out its proposals for the allocation of knowledge exchange funding from 2010/11. In future, it is proposed that funding will be allocated in two streams:

- for strategic knowledge exchange projects developed in partnership between HEIs, the enterprise agencies, businesses, the SFC and other partners. These projects would be designed to significantly gear up Scotland's performance against its biggest economic and social challenges and would be focussed on the key industry sectors; and
- a formulaic allocation to support universities' innovation activities focussed on delivering outcomes for the Scottish Government's Purpose.

In future, it is proposed that completion of the HE-BCI survey by Scottish HEIs will become a condition of grant.

8.4.6 Complementary support

The SFC supports a number of complementary activities:

- Research Pooling: involves the 'pooling' of research across key academic areas e.g. Physics, Chemistry, Life Sciences etc
- Knowledge Transfer Partnerships

- A number of ad hoc activities including:
    - The Interface Project: £300k is provided to this project p.a. to support SMEs, particularly those who have not done so in the past, engaging with the HE sector
    - Research into how universities impact on the economy

In the past Scottish Enterprise had a range of funding that complemented the funding provided by the SFC. However funding from Scottish Enterprise is becoming much more demand led and, as a consequence, its focus is much more on investing within companies. The SFC sees a close engagement with Scottish Enterprise going forward.

8.5 Summary Of Benchmarking: Comparison of England, Scotland, Wales and Northern Ireland

8.5.1 Approach to allocating funding

Across the four UK countries, the approaches to allocating funding include some of the following: core funding, metrics / formula based and competitive (see Table 8.11). Wales is the only country to use a combination of all three funding methods.

All four countries have some element of metrics based funding – only in England is 100% of the funding allocated in this way. Scotland and Wales both have a "core funding" or "foundation funding" element (relatively small amounts) as well as the metrics based allocation. Wales and Northern Ireland both have a competitive element.

Within the metrics based allocation, the components used in England, Wales and NI are broadly similar – capacity building and potential, performance (measures of income) and performance (non-income / outreach). In England, the latter measure has been dropped (from HEIF 3 to HEIF 4). It is also worth noting that the weightings allocated to each component vary across the funding bodies. The components used in Scotland are different from those used in the other three countries and the weightings in Scotland are higher for those components associated with "public good" and lower for those associated with income generation.

Table 8.12

Current Approach to Allocating Funding - (England, Scotland, Wales and Northern Ireland)

Funding Stream	Funding Allocation			
	Type of Allocation	Core	Metrics	Competitive
HEIF4, England	100% Metrics Based	n/a	2 broad components (consisting of 8 individual components in total): • 40% capacity building & potential (staff) • 60% performance (measures of income)	n/a
Knowledge Transfer Grant, Scotland	5% Core Funding + 95% Metrics Based	General Fund – approx £70k per inst. core funding	Horizons Fund – formula driven - 7 individual components / weighted (higher for "public good"; lower for income generation) • Outreach (5) • Enterprise Schemes (4), • Consultancy (3.5), • Continuing Professional Development (2.5), • Industry and UK central Government bodies, local authorities, health and hospital authorities external research (2.25), • Licensing (1.5), • Venturing (1)	*Recent proposals to move to competitive funding shelved*
Third Mission Fund, Wales	20% Core Funding + 64% Metrics + 16% Competitive	20% Foundation funding (£100k per inst.)	64% Formula driven - 3 broad components (consisting of 16 individual components in total): • 50% capacity building & potential • 20% performance (income) • 30% performance (non-income / outreach)	16% Bid-based collaborative funding
NI HEIF 2, Northern Ireland	80% Metrics Based + 20% Competitive (nominal)	n/a	**Metrics allocation (DEL)** 3 broad components (consisting of 12 individual components in total): • 40% capacity building & potential (staff) • 40% performance (measures of income) • 20% activities not best measured by income	**Invest NI** Competitive Allocation

Source: Invest NI – HEIF 1 Evaluation (2007) Updated FGS McClure Watters (2010) from HEFCE, SFC, HEFCW and DEL/Invest NI.

Considering the various approaches to allocating funding, the following advantages and disadvantages are apparent – see Table 8.13:

Table 8.13
Advantages and Disadvantages of Alternative Funding Mechanisms

Funding Stream	Funding Allocation		
	Core or Foundation	Metrics	Competitive
Advantages			
Provides stability for universities allowing them to build capacity and plan ahead	✓		
Straightforward to administer	✓	✓	
Ensures that HEIF monies are being used to deliver Government economic objectives and targets		✓	✓
Provides a mechanism for Government to change the emphasis on certain outputs by amending which metrics to include or exclude		✓	
Ensures that the Universities are focused on delivering outcomes rather than activities or outputs (1)		✓	✓
Drives improvement / increase in quality		✓(2)	✓
Disadvantages			
Does not give funder much scope to influence how the funding is used	✘		
Focuses the Universities on activities and outputs rather than outcomes		✘	
Insecure / unstable environment for HEIs – does not allow them to build capacity and plan ahead			✘
Preparing bids can be disproportionately time consuming / resource intensive			✘
Does not encourage collaboration – may have a divisive effect on HEIs			✘

Notes:

(1). Care needs to be taken in getting the right balance in terms of metrics e.g. an output could include leveraging funding for delivering KT & research projects for industry etc and this in turn could lead to an outcome of contributing to ensuring the sustainability of the HE sector in NI.

(2). Drives improvement in areas which are measured by the metrics - leading to further investment in these areas

Source: FGS McClure Watters.

8.5.2 Outcomes

Across the four UK countries, the issue of measuring outcomes and impacts is a common challenge. There is also the added challenge of attributing outputs to a specific initiative when more than one intervention (outside of e.g. NI HEIF 2 support) may have been employed.

In NI, the HEIs develop Institutional Plans which include indicators; these are reported on annually (to DEL) but tend to focus on inputs and outputs. In England, under the HEIF 4 funding round, institutions develop their own strategies and provide annual reports to HEFCE. However, HEFCE tends to rely on the HE-BCI survey to monitor impacts.

A similar experience is evident in Scotland – within the Knowledge Transfer Grant, there are no "hard" measures / impacts; progress tends to take into account softer outcomes and there is a sense that one key impact can represent a real change in culture in HEIs.

In Wales, under the Third Mission Fund, an external evaluation (2004-07) highlighted that outputs included: level of engagement, projects, technology disclosures, patents, etc. There are no common performance indicators, however, it is likely that these will be introduced on a strategy by strategy basis should the current 3M fund continue.

As already discussed in Section 5.5, (which considers future funding mechanisms), we are proposing a move to a new funding model. Amongst other things, this new funding model would seek to overcome these challenges by introducing a requirement for universities to produce a KT Strategy (see Section 7.4.1) which would include a greater focus on targets relating to outcomes and impacts and clearer links between achievement of these targets and the funding which has enabled this.

8.5.3 Level of funding

Table 8.14 includes an historical view of core Knowledge Transfer / Third Stream funding allocations in England, Scotland, Wales and Northern Ireland over the last decade or so. Whilst this provides a high level means of comparing funding levels across the countries, the figures considered here are **averages** and there is likely to be wide variation in funding levels per institution masked within this. In this respect, Northern Ireland is unique in that all its universities (which attract HEIF funding) are large in scale / capacity and research intensive in nature / character which explains why the average institutional allocation per annum in Northern Ireland is higher than the rest of the UK.

Table 8.14

Third Stream Allocation by Funding Council and Round (England, Scotland, Wales and Northern Ireland)

Funding	Round / Period	No. of Years	Award Value	Total Awards	Average per Institution p.a.(£m)
HEIF, England	HEIF 1 (2001-2004)	3	£78m	89	£0.29
	HEIF 2 (2004-2006)	2	£187m	124	£0.75
	HEIF 3 (2006-2008)	2	£238m	144	£0.83
	HEIF 4 (2008-2011)*	3	£404m	130	£1.04
	Total HEIF England	**10**	**£907m**	**487**	**-**
Knowledge Transfer Grant, Scotland	2005-2008	3	£37m	20	£0.62
	2008-2009	1	£21.5m	19	£1.13
	2009-2010	1	£21m	19	£1.11
	Total KTG Scotland	**5**	**£79.5m**	**58**	**-**
Third Mission Fund, Wales	2006-2008	2	£15.2m	13	£0.58
	2008-2009	1	£6.1m	13	£0.47
	Total 3M Wales	**6**	**£21.3m**	**26**	**-**
NI HEIF, Northern Ireland	NI HEIF 1 2004-2007	3	£9.5m	2	£1.58
	NI HEIF 2 2007-2010	3	£9.75m	2	£1.63
	Total NI HEIF 2004/07	**6**	**£19.25m**	**4**	**-**

Note:

*HEIF 4 figure for England is based on £120m for (AY 08/09), £134m (for AY 09/10) plus £150m (for AY 10/11). This corresponds with data in Table 8.1 (slight differences due to rounding).

Source: Invest NI – HEIF 1 Evaluation (2007) Updated FGS McClure Watters (2010) from HEFCE, SFC, HEFCW and DEL/Invest NI.

Considering the **average** level of funding per institution per annum, it is evident that NI HEIF 1 and NI HEIF 2 have provided the highest levels across all years and all funding bodies. As mentioned above, this is to be entirely expected given that 100% of the HE sector in Northern Ireland which attracts HEIF funding (consisting of only QUB and UU) is both large in scale and research intensive in character. The next highest levels are in Scotland (08/09 and 09/10) and under HEIF 4 in England; the lowest average levels are in Wales (where only around one third of the institutions could be described as both large and research intensive).

Overall, across the UK, there is a trend towards increasing investment in KT; this is apparent in:

- The large increase from HEIF 3 to HEIF 4 in England (the average per institution per year has increased by 25% from £0.83m to £1.04m across the full three year period of HEIF 4);
- The recent HEFCE announcement indicating a further increase for AY 2010/11 (the third year of HEIF 4) of around 11.9% on 2009/10 levels, giving an average funding per institution per annum of £1.15m which in turn represents an increase of 40% on the HEIF 3 figure for average funding per institution per annum;

- The large increase from AY 2005-08 to 2008-09 in Scotland (the average per institution per year has almost doubled from £0.62m to £1.13m).

8.5.4 Comparison of similarly ranked universities

Funding per Institution

Table 8.15 provides another means of comparing KT funding across the UK. For selected universities having a similar position to QUB and UU in the Times Higher Education Table of Excellence (which is based on RAE 2008 research rankings)[28], we have compared KT funding levels and HE-BCI income data. Based on 132 UK institutions, QUB is ranked 39 and UU 45; 18 institutions which have ranks between 33 and 50 are therefore included for comparison.

Comparing the HEIs, it is apparent that there is a wide range of variation in the levels of core KT funding: some of the highest levels of annual funding per institution have been awarded to individual Scottish institutions. (From Table 8.10, we note that in contrast, some of the other Scottish institutions have relatively low levels of annual funding; therefore as noted in Section 8.5.3, the **average** annual funding per institution in Scotland is lower that the **average** annual funding per institution per annum in NI). There does not appear to be a clear correlation between the Times Higher Education ranking and the level of funding.

QUB has the fourth highest average level of funding p.a. amongst these 18 institutions; 3 Scottish Institutions (Aberdeen, Glasgow and Strathclyde) have higher levels. On the basis of the Times Higher Education ranking, we would not expect it to be placed quite as high in relative terms. The UU average level of funding p.a. sits within the bottom 5 of these 18 institutions. This placing is slightly lower than might be expected based on its Times Higher Education ranking.

Ratio of Income Generation to Funding per Institution

A proxy for effectiveness for the funding (ratio of Income Generation to Funding) has also been calculated and this is discussed in the following paragraphs. However, there are some caveats associated with this measure; these are as follows.

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[28] As the findings of the 2008 Research Assessment Exercise (RAE) were released, Times Higher Education devised tables of excellence to rank institutions according to their subject successes and their overall quality. The Times Higher Education (THE) excellence table presents a quality profile for each institution showing the percentage of staff submitted to the RAE who fall within each of the four RAE research grades (4* for "world leading" down to 1* for "nationally recognised"). Institutions are ranked on a "grade-point average" (a weighted average) of their quality profile using a scale from 0 to 4.

RAE 2008 differs from previous exercises in that single, summative ratings for each university in each discipline have been replaced by "quality profiles" of research activity. These show, in finer detail, the quality of the research activity within departments, revealing pockets of excellence wherever they may be, as well as reducing the problem of departments falling on the cusp of a grade boundary, which could have a significant impact on funding. Times Higher Education's Table of Excellence is derived from the quality profiles.

Caveats re: Ratio of Income Generation to KT Funding in Table 8.15

This is a relatively crude comparison of income against investment; there are a number of caveats to be aware of including:

- ***the different funding regimes in each of the four UK countries;***
- ***the variation in periods for which KT funding data is available e.g. 2007/10, 2008/11, 2009/10 etc;***
- ***the time period for which income data is available (2007/08) does not correspond with the time period for which KT funding data is available;***
- ***the expected lag between making an investment and seeing evidence of its impact i.e. ideally the income for some years hence should be considered against the KT funding levels now.***

Considering the proxy for effectiveness of the funding (ratio of Income Generation to Funding), there does not appear to be a clear correlation between the Times Higher Education ranking and this ratio. The ratio varies from 2.6 (University of East Anglia) to 29.54 (University of Surrey). Only 3 institutions have ratios in excess of 20 (Aberystwyth and Liverpool, as well as Surrey) and UU has the 4th highest ratio after these 3; its value is 14.51. The ratio for QUB (8.05) is 8th highest out of these 18 institutions. The implication is that UU and QUB are getting a reasonably good return (in terms of income) from the KT funding provided to them.

Table 8.15

RAE 2008 – Table of Excellence – QUB and UU: Comparison with similar universities (132 institutions ranked in total) & HE-BCI 2007/08 Income Indicators

University (2008 Rank Order)	Funding Body	Rank Order		Knowledge Transfer Funding		HEBCI - Income 2007/08 (£000) (Includes IP, Contract Research, Consultancy, Equipment , Regeneration)	Ratio of HEBCI income to Knowledge Transfer Funding
		2001	2008	Period	Annual Funding		
University of Glasgow	SFC	29	=33	2009/10	£4,187,000*	£52,653	12.58
Birkbeck College	HEFCE	27	=33	2008/11	£1,080,701**	£3,196	2.96
Goldsmiths College, University of London	HEFCE	42	=35	2008/11	£315,259**	£2,359	7.48
University of East Anglia	HEFCE	35	=35	2008/11	£1,303,766**	£3,396	2.60
University of Surrey	HEFCE	25	=35	2008/11	£1,754,032**	£51,818	29.54
University of Aberdeen	SFC	49	38	2009/10	£2,424,000*	£13,590	5.61
Queen's University Belfast	DEL/Invest NI	45	39	2007/10	£1,981,487	£15,953	8.05
University of Liverpool	HEFCE	41	=40	2008/11	£1,650,017**	£38,962	23.61
University of Dundee	SFC	33	=40	2009/10	£1,704,000*	£23,622	13.86
University of Reading	HEFCE	38	42	2008/11	£1,633,688**	£9,137	5.59
Open University	HEFCE	66	43	2008/11	£1,694,289**	£6,026	3.56
University of the Arts London	HEFCE	n/a	44	2008/11	£1,725,756**	£4,733	2.74
University of Ulster	DEL/Invest NI	63	45	2007/10	£1,273,542	£18,485	14.51
Aberystwyth University	HEFCW	60	=45	2008/09	£482,818***	£12,067	24.99
City University, London	HEFCE	59	=45	2008/11	£1,669,175**	£6,303	3.78
Heriot-Watt University	SFC	=54	=45	2009/10	£1,234,000*	£5,911	4.79
Cranfield University	HEFCE	=63	49	2008/11	£1,793,794**	£20,857	11.63
University of Strathclyde	SFC	44	50	2009/10	£2,243,000*	£15,658	6.98

** Horizon Funding Knowledge Transfer Grant for 2009/10.*

*** Average funding per annum for the period 2008/11 (4th round of HEIF) – includes 11.9% uplift in 2010/11*

**** Third Mission Fund – Allocation 2008/09*

Source: Times Higher Education – Table of Excellence (RAE 2008) / HEFCE / SFC / HEFCW / HEBCI 2007/08 – Annex H.

8.5.5 Conclusion

From this consideration of approaches to KT funding in England, Scotland and Wales and the review of a variety of data on funding levels and performance measures, we can conclude that:

- **Approaches to allocating funding (including focus on outcomes)** – there are a variety of approaches employed across the UK to allocating funding including core / foundation, metrics based and competitive. Within some of these approaches, there are a variety of components and associated weightings used as a basis of determining levels of funding.

  Each approach has advantages and disadvantages relating to a range of factors including: ability for Government to influence how funding is used, focus on outcomes / impacts or activities and outputs, stability of funding / planning in HEIs, driver of improvement / quality, ease of administration, resources spent in securing funding, etc.

- **Outcomes -** Across the four UK countries, the issue of measuring outcomes and impacts is a common challenge. There is also the added challenge of attributing outputs to a specific initiative when more than one intervention (outside of e.g. NI HEIF 2 support) may have been employed.

  As discussed in Section 5.5, (which considers future funding mechanisms), we are proposing a move to a new funding model. Amongst other things, this new funding model would seek to overcome these challenges by introducing a requirement for universities to produce a KT strategy which would include a greater focus on targets relating to outcomes and impacts and clearer links between the achievement of these targets and the funding which has enabled this.

- **Levels of funding** – Overall there is a trend towards increasing investment in KT across the UK.

  Considering the **average** level of funding per institution per annum, it is evident that NI HEIF 1 and NI HEIF 2 have provided the highest levels across all years and all funding bodies (within the UK). As mentioned above, this is to be entirely expected given that Northern Ireland is unique in the UK context in that 100% of its HE sector (i.e. that which attracts HEIF funding - consisting of only QUB and UU) is both large in scale / capacity and research intensive in nature / character. The next highest levels are in Scotland (08/09 and 09/10) and under HEIF 4 in England (the average includes the recently announced 11.9% uplift for 2010/11); the lowest average levels are in Wales (where a much smaller proportion of HEIs are both large scale and research intensive).

  Recent research considering funding from another perspective (relative to academic staff), showed that NI fared less well than elsewhere in the UK. The NESTA Report - Measuring and Mapping Absorptive Capacity in UK Nations and Regions (2008) – notes that NI has low absorptive capacity (this refers to a firm's ability to identify, assimilate and exploit knowledge from external sources) and that it has a low ranking on a range of measures associated with absorptive capacity. One of the sub-measures shows that NI has the

lowest funding (for business-university collaborative research, and research and consultancy contracts) relative to the number of academic staff of all the UK regions.

Going forward therefore, and in order to maintain its current position and also to ensure consistency with the rest of the UK on an institutional basis, the future level of funding for NI HEIF 3 should be at least at the levels of NI HEIF 2.

The case for future funding for KT is also supported by:

- recent research (see Section 3.3) which highlights the wider economic imperative in terms of the importance of business / university collaboration particularly in the current economic climate and the need to increase business – university linkages and to exploit the knowledge within universities.
- the need to improve NI performance in terms of absorptive capacity (businesses' ability to identify, assimilate and exploit knowledge from external sources);
- the 2009 PACEC and the Centre for Business Research, University of Cambridge report (see Section 8.2.4 Recorded Outcomes) also supports the case for funding going forward. In particular it highlights the role that funding such as HEIF has to play in changing attitudes and culture within HEIs and helping them develop the necessary capacity and capability to engage with external organisations and the rewards that this brings in terms of income generation.
- Evidence of increasing investment in KT funding in Scotland and England in particular.
- The relatively low levels of funding in NI relative to the number of academic staff.

- **Comparison of similarly ranked universities –** A comparison of similarly ranked HEIs (using the Times Higher Education Table of Excellence) is inconclusive – it shows that:
  - there is a wide range of variation in the levels of core KT funding amongst this group of 18 similarly ranked HEIs:
    - QUB receives the fourth highest levels of funding amongst this group of 18 HEIs;
    - UU receives a relatively low level of funding amongst this group of 18 HEIs.
  - there is a wide range of variation in the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding);
  - there does not appear to be a clear correlation between the Times Higher Education ranking and either the level of KT funding or the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding).

9 CONCLUSIONS AND RECOMMENDATIONS

9.1 Introduction

This section provides overall conclusions on the evaluation; it also addresses the following from the ToR:

- *Make appropriate recommendations, based on the outcome of the evaluation including:-*
  - *the appropriate level of funding going forward; and*
  - *future delivery mechanisms for core Knowledge Transfer funding. This element of the exercise should include an examination of future delivery options in light of best practice elsewhere, including the split between "metrics / formula" allocations and "competitive bid" allocations and the independent provision of separate, but complementary, funding streams / programmes by Invest NI and DEL.*

In each sub-section we present overall conclusions drawn from each of the main sections of the report – each of which addresses specific elements within the Terms of Reference. We also set out our recommendations arising from conclusions on each area considered.

9.2 Strategic Context and Rationale

9.2.1 Conclusions

Our detailed consideration of the strategic context in which NI HEIF 2 operates (including its contribution to local, national and EU policies; and assessment of the extent to which it has contributed, or has the potential to contribute, to achieving the relevant targets included in the Programme for Government) contributes to the understanding of the original rationale for the intervention and allows us to conclude on market failure.

The fundamental importance of HEIs to the UK economy is widely recognised – they have a vital role to play in producing high quality research. By building on this foundation it is possible to realise economic and social benefits through Knowledge Transfer which is a driver of innovation which in turn contributes to competitiveness and economic growth potential.

Within the UK (including NI) over the last decade, there is evidence of culture change, increased activity and increased capacity of the HEIs to engage with industry. It is important that this trend continues with HEIs ensuring that they are responsive to the current needs of the economy.

However, there remains a need for Government stimulation of business-university collaboration. A number of documents reviewed highlight the role of Government intervention in stimulating collaborative activity between HEIs and businesses. Some provide evidence that the steady increase in collaboration over time is attributable to Government support and call for the continuation of this intervention.

The NI strategies and policies are consistent with those in the UK and call for the promotion of innovation as a driver of economic development. This is consistent with the Programme for Government's PSA 1 and PSA 3 targets (productivity growth, increase in employment aims). Through providing support for innovation, NI HEIF 2 has the potential to contribute to PfG targets both by supporting businesses to innovate (contributing to productivity improvements) and through commercialisation activity (which many aspects of NI HEIF 2 support) there is scope to generate employment opportunities (as well as economic growth, sales, exports, etc.) in spin-out companies.

There is evidence that NI HEIF 2 funding supports the multi-sectoral multi-disciplinary approach to market espoused by MATRIX and that NI HEIF 2 supported activities are consistent with MATRIX.

However, NI has the second lowest level of innovation activity in the UK and DETI research has shown that the proportion of NI businesses that were innovation active has remained largely unchanged over the three-year period from 2004-06. This strengthens the case for Government intervention. This is supported by evidence in a number of papers which show that public intervention has historically increased the level of engagement between HEIs and businesses in NI. There is therefore potential to further improve these relationships through continued funding commitment and support. Further opportunities arise from NI's unique situation as a region within the UK – with a devolved administration, resources are allocated to innovation and there is a more immediate relationship between policy and practitioners. The innovation infrastructure is embedded in two high quality, research-intensive universities.

Promoting economic impact resulting from business-university collaborative activity is also highlighted as a key strategy in emerging from the current recession. Innovative, collaborative working between HEIs and businesses will improve company productivity and competitiveness as well as contribute to the national economy.

Failure to focus on developing a Knowledge Intensive economy would leave Northern Ireland to compete on a cost basis globally. This is not a strategy which will lead to success. It is therefore imperative that the Knowledge Economy set out in Northern Ireland's economic vision becomes a reality. NI HEIF is key to contributing to that goal if it focuses on those elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D and KT collaborations and supporting spin-outs.

Under the Regional Innovation Strategy (RIS), DEL and DETI/Invest NI have undertaken to establish a permanent Third Stream of funding based on proposals set out in the UK's Ten Year Science & Innovation Framework (2004-2014). Accordingly, this review of NI HEIF 2 will inform the creation of the third round which is due to commence August 2010 (running for three academic years).

Technology / Knowledge Transfer is vital to the growth of the Northern Ireland economy. It is critical that the research and knowhow within the universities is used to develop and build competitive companies. Our evaluation has shown that NI HEIF 2 is central in supporting the universities to deliver on this role and that it is being successful at targeting and involving new SMEs in working with the universities. This work is so crucial to developing a Northern

Ireland economy that can withstand the cost competitive pressures from the Far East and Asia, that the universities need to be encouraged and supported to deliver even more technology transfer deals and outcomes.

9.2.2 Recommendations

Recommendation 1: Continuation of NI HEIF Funding Stream

Given the importance of KT to building and developing competitive companies in NI, and the important role that NI HEIF plays in enabling HEIs to support companies in this way, together with links to the wider policy context, we recommend that the NI HEIF funding stream is therefore continued as a permanent stream of core HEI activity alongside teaching/learning and research.

Recommendation 2: NI HEIF 3 focus on contributing to PSA 1 and PSA 3 - Business Growth and Employment

NI HEIF 3 has an important role to play in developing a knowledge intensive economy which allows NI to compete on a cost basis globally. We recommend that supports offered through NI HEIF 3 are focused on those elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D and KT collaborations and supporting spin-outs.

Recommendation 3: NI HEIF 3 Targeting Support to ensure Policy Coherence and Greatest Potential Impact

Support offered through NI HEIF 3 should be consistent with current EU / UK and NI strategies, applying university areas of strength to address companies' needs. This is about continuing to support SMEs where additionality is high and a focus on those sectors which link with the MATRIX and STEM agendas (aligned with Industry-led Innovation Communities - IICs). This should also take into account, in particular, the focus of MATRIX on markets rather than sectors, an approach which seeks to drive collaboration and cross-fertilisation of ideas across sectoral and technological boundaries.

We recommend that KT supports are targeted at those SMEs where the greatest impact / potential exists; this will require some preliminary research by the universities in consultation with Invest NI. This could take the form of profiling current companies supported by each HEI and mapping these against those areas[29] where additionality is high to identify those areas which may be currently in receipt of less support and where more support ought to be focused, and conversely those areas where there is currently more support than is warranted.

[29] In describing "areas", there is a need to bear in mind the MATRIX approach of a focus on markets rather than sectors and seeking to work across sectors and technologies.

Recommendation 4: NI HEIF 3 Targeting Support on Innovation Inactive Companies

Research shows that the level of innovation activity in NI is relatively low and that the proportion of NI businesses that were innovation active remained largely unchanged over the three-year period from 2004-06. Through our survey of SMEs, we note that over half of these had not availed of KT supports through the universities prior to NI HEIF 2 which is very encouraging.

We recommend that supports offered through NI HEIF 3 seek to actively target companies which are not currently actively involved in innovation, in addition to those which are already engaged in innovation activity.

9.3 NI HEIF 2 Performance

9.3.1 Conclusions

In Section 4, we describe the activities and funding under NI HEIF 2 and performance against these. This demonstrates that QUB and UU have both put in place a range of initiatives which have been effective – in meeting targets and attracting positive feedback from participants.

Effectiveness of NI HEIF 2 in addressing its stated aims and objectives (Aug 2007 to Jul 2009) and projected activity to Jul 2010

Performance under NI HEIF 2 has contributed to the overall aim of NI HEIF - to improve Northern Ireland's innovation performance as a key element in raising productivity and delivering economic growth. Considering the metrics which are monitored as part of NI HEIF 2 funded activities, there is evidence of most targets being achieved and in some cases by a significant margin. These are all relevant for improving innovation performance.

- QUB DEL HEIF 2 funded activities (Table 4.4): nine of 12 metrics achieved including five relating to income generation as a result of e.g.: licences, contract research, consultancy, facilities and equipment related services, KTP as well as metrics relating to patent applications and patents granted.
- QUB Invest NI HEIF 2 funded activities (Table 4.5): metrics for five funded projects, all contributing to innovation, are virtually all on track to be achieved.
    - Marketing and Sales support for existing spin-out companies to increase sales, export sales, and jobs (latter likely to be adversely affected by the economic downturn);
    - Enterprise Fellowships which ultimately aim to establish Global Start businesses;
    - promoting innovative digital manufacturing techniques;
    - encouraging new product development and support for R&D funding for Polymer Processing companies; and
    - encouraging technology transfer through QUESTOR membership.

- UU DEL HEIF 2 funded activities (Table 4.9): most (19 out of 24) metrics achieved; others are part achieved. All are relevant to improving innovation performance and include supports for IP, Technology Transfer and KT through materials, workshops, provision of academic enterprise and commercialisation funds, consultancy income, technology disclosure, income from IP and pre-PoC / PoC projects.

- UU DEL HEIF 2 funded activities (Table 4.11): nine of 11 metrics achieved including six relating to income generation as a result of e.g.: KTP, IP, contract research, consultancy, equipment related and regeneration; as well as metrics relating to number of business and non-commercial interventions.

- UU Invest NI HEIF 2 funded activities (Table 4.12): five of eight metrics achieved, all contributing to innovation. These are: new technology disclosure, pre-PoC projects, new UK patent filings, investment proposals to UUTech Board and spin outs / licensing deals.

There is also evidence that NI HEIF 2 funding contributes to the underlying objective: to encourage Queen's University Belfast and the University of Ulster to increase their capability to respond to the needs of business (including companies of all sizes), and the wider community, with a clear focus on the promotion of wealth creation. This is evident when we consider performance from AY 05/06 (benchmark year on which HEIF 2 funding based), AY06/07 (baseline year immediately prior to HEIF 2) and into the period of HEIF 2 funding (from AY 07/08 to AY 08/09 and AY 09/10) in Tables 4.4, 4.5, 4.9, 4.11 and 4.12, we see that this has generally increased across a wide range of metrics. This demonstrates an increase in university engagement with business and community groups / social enterprises, as well as several income generation (and other) metrics, hence demonstrating an increase in the capacity of the universities to cater for the needs of business and the wider community.

An indication of how universities' current capability / response to needs is perceived is evident in satisfaction ratings obtained through surveys. However, in terms of how well QUB and UU respond to the needs of business in particular, feedback from business stakeholders indicated that there was a need for the universities to do more to identify the needs of businesses (this is addressed in Recommendation 12 – Knowledge Transfer Strategy and the need for business-led initiatives).

Considering the other specific objectives for NI HEIF – the performance information in Section 4 indicates that QUB and UU have generally achieved these:

- **build on what has been achieved in both universities to date** - there is evidence of consolidation of previous activity and further developments from this solid foundation.

- **further release the potential social and economic benefits of the work of NI's universities** – there is evidence of increases in university engagement with business and community groups / social enterprises, hence releasing the social and economic benefits of the universities. In terms of evidence of benefits, this tends to be qualitative rather than quantitative e.g. impacts reported in surveys.

- **help the universities to develop their mission in engagement with business and the community –** there is evidence of an increase in university engagement with business

and community groups / social enterprises hence contributing to the Third Stream aspect of the universities' mission.

- **ensure a lasting culture shift in the universities by making Knowledge Transfer an integral part of the universities' portfolio of activities** – there is evidence of more engagement from academics and feedback from external stakeholders who have observed and welcomed a shift in culture within the universities; however, this is an area in which it is felt that there is scope for further development; the development of an overarching KT strategy (Recommendation 12) should help in this regard.

- **develop the responsiveness of the universities to the needs of business** – partly achieved – e.g. engaging with businesses who have not previously done so (also addressed in Recommendation 4) – but timeliness and communication are areas highlighted for improvement from the surveys. There is a need for the universities to be more proactive and, as noted by external stakeholders, to do more in this area by actively seeking out and understanding business needs. (See Recommendation 12 – Knowledge Transfer Strategy and need for business-led / driven input to provide a robust evidence base drawn from engaging with businesses to identify their needs.)

- **improve the exploitation of the NI science base** - this has been achieved – but there is a need for a more explicit link between activities and overall policy / strategy. (See Recommendation 12 - KT strategy per university which includes a clear statement of how NI HEIF (and other funding streams) supported activities contribute to overall policy / strategy.)

Performance of NI HEIF 2 to date against targets

Considering the metrics which are monitored as part of NI HEIF 2 funded activities, there is evidence of most targets being achieved and, in some cases, by a significant margin. A minority of metrics are currently 'partly achieved' – but with a relatively small shortfall; even allowing for projections in Year 3 these will not be met. Overall, for both QUB and UU, performance is on track with regard to performance against the majority of defined indicators.

Assessment of Target Setting Methodology

The majority of targets are input / output focused, which are appropriate in themselves but the overall view of performance would be enhanced by additional targets which also consider impacts / outcomes. Ideally targets should link to the wider policy framework and impacts associated with that relating to innovation i.e. ultimately economic impacts evidenced in job creation / maintenance; quality of jobs, sales, exports, etc; continued changes in culture / attitude in universities towards working with business and community groups.

A further challenge – relating to both Performance and Targets - exists in isolating the effect of the NI HEIF 2 funding, as there are many other sources of funding contributing to these areas of activity within each university. We feel that that the complexity of the various schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than 1 source of funding) gives rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source

that specifies all the monies in (e.g. from Connected, HEIF, Innovation Vouchers, PoC, etc.), what this is used for and what overall outcomes are achieved. Therefore, under the current arrangements and based on available information, it is not possible to categorically state that there is no duplication / overlap in funding streams or in outputs/ outcomes attributed. Overall, therefore, the targets set are appropriate but would be enhanced by complementary targets which consider outcomes / impacts and take into account the contribution of other interventions.

Base Case

In the absence of NI HEIF 2 funding which has developed and built on the achievements of the NI HEIF 1 funding stream (2004-2007), the universities' Third Stream missions, underlying KT activities and wider business and community engagement would all have been adversely affected. Whilst some of this activity would have continued in the absence of NI HEIF funding, this would have been in a much more ad hoc and fragmented way.

To further illustrate the base case situation, we can consider (from survey results), the extent of usage of KT interventions prior to supports funded through NI HEIF 2:

Clearly therefore, the vast majority of NI HEIF 2 beneficiaries that we surveyed (56% of SMEs, 90% QUB CPD participants, 85% of voluntary and community groups and 86% of students) had not undertaken KT interventions prior to NI HEIF 2; in the absence of NI HEIF 2, the impacts discussed in Section 4.4 would not have been achieved and the NI HEIF objective (to further release the potential social and economic benefits of the work of NI's universities) would also have been negatively affected.

The survey results also indicate that some respondents would have found some alternative means to achieving their project in the absence of NI HEIF; but relatively few respondents suggested these alternatives.

Additionality

Additionality is generally moderate to high when both partial and full additionality are considered:

- **SMEs –** generally very high when we consider both full and partial additionality;
- **Academics** – generally at a moderate level (at least one third and up to two thirds in some cases) when we consider both full additionality and partial additionality together;
- **CPD** – generally high when considering both full and partial additionality i.e.: 32% full, 47% partial;
- **Voluntary & Community Groups** – generally high: 80% full, 15% partial;
- **Students** – generally high: 76% full, 19% partial.

There is evidence of some deadweight and this links through to the issue of the need for clarity around the use of funding and attributing impacts to funding streams (see Recommendation 12 – KT strategy).

Displacement

Under the discussion regarding Base Case, we consider (from survey results) beneficiaries' responses to the question: *if KT support from the universities had not been available, how would you have gone about undertaking the project that the KT support under HEIF 2 has enabled them to?*. This indicates that there is some deadweight but that this is not high – apart from academics and CPD participants - considering the number of respondents who indicated that they would consider alternative routes to achieving the same result.

- SME – across all of the interventions less than a quarter (23%) of respondents suggested alternatives to achieving their project (responses in Table VI.24 in Appendix VI);
- Academics – the majority (78%) provided responses in terms of achieving the same outcome in another way (illustrated in Table IX.11 in Appendix IX);
- CPD participants – 74% of respondents provided responses (illustrated in Table VII.14 in Appendix VII);
- Voluntary and Community Groups – 15% provided responses in terms of achieving the same result in another way (see Table VIII.14 in Appendix VIII);
- Students – 33% provided responses in terms of achieving the same result in another way (illustrated in Table X.12 in Appendix X).

Whilst potential alternatives to achieving the same result are proposed by some respondents, some of these might take longer to achieve or have less of an impact than the NI HEIF 2 supported activity (as indicated in the proportions attributed to partial additionality above).

Considering displacement, of the respondents who suggested alternatives to NI HEIF 2 funded activity, many of these involve the individual or organisation either resourcing the activity themselves or in some cases (mainly for academics and CPD respondents) seeking alternative providers. Such alternative approaches are ad hoc and would detract from the integrated / joined up approaches to knowledge transfer that have been embedded within the HEIs.

Effectiveness of NI HEIF 2 in advancing the universities' Knowledge Transfer strategies

In Section 5.3.2, we describe the Institutional Plans which each HEI has been required to provide as a condition of its DEL NI HEIF 2 funding. These include the key indicators against which the HEI's performance is tracked; as already noted good progress has been made against most of these. These plans represent an overall view of KT for each institution.

As discussed in Section 5.5 and Section 7.2.3, there is an opportunity to have the universities provide more detail within their proposed Knowledge Transfer Strategies – particularly in terms of how their plans and activities will link to PSA objectives and targets, the exploitation of opportunities described in the MATRIX reports and proactive engagement with other KT stakeholders.

Overall impact (including wider / regional impacts) of NI HEIF 2 funding and identify the costs and benefits of this support

Costs

Overall costs associated with NI HEIF 2 (from DEL and Invest NI) amount to around £3.255m per annum over 3 years. QUB has received £1.530m per annum over 3 years from DEL and £0.451m per annum from Invest NI. The corresponding amounts for UU are: £0.870m per annum over 3 years and £0.404m per annum over 3 years.

Overall Impacts / Benefits

As noted above, good progress has been reported against most of the indicators on which QUB and UU are tracking their progress. These tend to focus on inputs / outputs and provided evidence of the impact of NI HEIF 2 funding in terms of increased university engagement with business and community interests. These cover a range of areas including:

- **Business:** evidence of higher levels of engagement in R&D and innovation supported by the universities through licensing, contract research, consultancy and KTP opportunities, etc. - leading to improved business performance, productivity and ultimately competitiveness;
- **Academics**: enhanced entrepreneurial and commercial culture leading to greater levels of commercialisation and exploitation of the science base;
- **Community**: greater levels of engagement and more effective collaboration between the university and wider community stakeholders, leading to greater capacity within the sector.

Feedback from surveys also provides details of the impacts on those who have been directly involved in NI HEIF 2 funded activities. Amongst SMEs surveyed, respondents noted the following impacts:

- the most common areas in which impacts were noted were sales / turnover, staff, efficiency savings as well as softer impacts such as increase in knowledge / understanding / information sharing; and develop new product / service / ways of working.
    - Areas in which up to about one fifth of respondents felt there were ***significant impacts*** included: technology transfer (22%), research collaboration (20%), increase in profit (6%), increase in employment (6%), increase in sales (9%);
    - Areas in which between one fifth and up to one third of respondents felt there was ***some impact*** included: improvement in existing skills / expertise (mentioned by 34% of respondents); increased investment in product development; (32%); increase in profit (25%), increase in employment (16%), and increase in sales (20%); and
    - A significant minority of respondents (18%) felt that it was too early to comment on impacts and a similar number (20%) reported that there had been no impact (to date).

Amongst academics surveyed, at least two thirds of respondents reported high levels of impact (some or significant) in the following areas:

- Greater awareness of benefits of working with business
- Greater awareness of commercialisation process
- Actively seeking opportunities to work with business
- Greater involvement in technology transfer
- Collaborative research with business
- Developing new technology
- Networking / collaboration

Wider / Regional Impacts

At a wider / regional level, the improved infrastructure for KT in both universities allows them to offer a more responsive / appropriate service to business, academics and the wider community. The wider and regional benefits that accrue from the programme include:

- Supporting entrepreneurship – including amongst academics;
- Strengthening university linkages with businesses;
- Strengthening university linkages with community;
- Increased business investment in R&D;
- Job creation – particularly higher skills levels; and
- Increasing levels of innovation.

Value for Money

Our analysis suggests that the NI HEIs fare reasonably well in terms of funding received. There is also some evidence of improving efficiency in how this funding is used and that the HEIs are effective in achieving results with the funding made available to them. However, there is scope to examine management costs in some more detail.

Where information is available, the analysis shows that NI HEIs are in a good position (in terms of increasing levels of funding leveraged) relative to counterparts in other parts of the UK in terms of what they are achieving. The relatively small (in HE terms) investment of £3m pa is leveraging up to circa £55m (in AY 2008/09).

NI HEIF funding underpins outreach activities to business and the community in both HEIs and sits amongst a range of other interventions and supports. Given the complexities of the various funding streams currently received by the universities and the difficulty in isolating the impacts of one particular funding stream (this issue is discussed further in Section 7.4.1), we

cannot completely isolate NI HEIF 2 impacts (a common issue for many initiatives). However, evidence from the PACEC report assists in identifying the impacts attributable to NI HEIF 2 funding.

The PACEC report indicates that, for England, between £2.9 billon and £4.2 billion out of the total £10.3 billion generated through knowledge exchange engagements between 2001 and 2007 can be grossly attributed to HEFCE KE funding (i.e. HEIF) either directly or indirectly. However, this almost certainly underestimates the true impact as many of the outputs cannot be easily monetised. Extrapolating from this research, we could estimate that around 35% of the £55m KT income levered by the HEIs in AY 08/09 is likely to be attributable to NI HEIF 2. This gives a return of around £18m against an investment of just over £3m which represents good value for money. It is also worth highlighting that this is likely to be an underestimate of the impact as:

- many of the outputs cannot easily be monetised; and
- this represents the benefit to the HE sector only and does not take into account income that companies have received arising from KT/research activity.

Change in Performance from NI HEIF 1 to NI HEIF 2

In Section 5.3.4 and Table 5.5 and Table 5.6 we discuss the annual out-turn of the metrics used in the allocation of NI HEIF 2 funding since the initial allocation of NI HEIF 2 funding i.e. for 07/08 and 08/09 and projections for 09/10 where information is available. These reflect the impact of moving from a purely competitive system under NI HEIF 1 to a predominantly metrics based allocation model under NI HEIF 2 (particularly the 08/09 and 09/10 data more so than the 07/08 data where the new system had only been in place one year). Historical data for AY 2005/06 and AY 2006/07 is also presented.

The available data clearly shows that there has generally been an upward trend in the metrics from AY 2005/06 on. There have been some notable increases in income and in particular on the metrics which are part of the HE-BCI survey e.g.: IP income, contract income, consultancy income, equipment income all show significant increases in both QUB and UU. There is also evidence of increasing numbers of interventions with both SMEs and non-commercial organisations in both QUB and UU – these substantial increases have taken place with only relatively small increases in the number of business and community facing staff. This indicates that there has been a change in focus and activity in both QUB and UU with the metrics against which the universities are being measured (and reporting on) clearly influencing the types of activity being undertaken in order to drive up performance in these areas.

Equality (Section 75) and DDA Requirements

Both universities have policies and strategies in place to ensure compliance with Equality and DDA legislation across the board and HEIF 2 funded activity is no exception to this.

9.3.2 Recommendations

Recommendation 5: Monitoring Impacts of NI HEIF 2 post funding period

The final outcome of several of the targets associated with NI HEIF 2 will not be known until after the funding period has expired. For example – one of the target deliverables under the QUB – Invest NI HEIF 2 funded Environmental Excellence project is: At least 5 SMEs to have Licensing Agreements (enabling them to market innovative products or processes derived from the QUESTOR research programme) in place after 3 years' membership (this will not be known at the end of the funding period (March 2011)). We therefore recommend that DEL and Invest NI should continue to monitor those targets for which the outcome is not known at the end of the NI HEIF 2 funding period to see if these have been achieved.

Recommendation 6: Collaborative Working Amongst Academics Indicator in NI HEIF 3

Results from the academic survey noted generally high levels of impacts across a range of areas including networking / collaboration (amongst academics). We recommend that this (i.e. evidence of increased collaboration by academics supported through HEIF funding) is adopted as a primary indicator in NI HEIF 3 in line with MATRIX priorities and the IICs (and DEL's own policy on MATRIX).

Consistent with MATRIX priorities, this should be focused on market opportunities and drive collaboration across sectors and technologies. In practical terms, this should mean increased collaboration by academics (supported by HEIF) within and between schools / departments in HEIs as well as collaboration with businesses. This enhanced engagement with businesses should improve exploitation of the NI science base and assist in releasing the economic benefits of the work of NI's universities leading to the creation of new IP.

Recommendation 7: Target Setting in NI HEIF 3

The target setting methodology in NI HEIF 2 is largely focused on inputs and outputs; whilst these are appropriate in themselves, the overall view of performance of NI HEIF would be enhanced by additional targets which also consider impacts / outcomes (e.g. job creation / employment opportunities, sales, etc leading to tangible economic impacts). We recommend that NI HEIF 3 includes targets which embrace both inputs, outputs, outcomes and impacts.

Recommendation 8: Equality / DDA

The current NI HEIF funded programmes in both QUB and UU comply with the relevant policies and strategies with regard to statutory duties including equality and disability.

We recommend that any future programmes introduced under NI HEIF continue to ensure compliance with university policy and strategies in terms of Equality and DDA and broader strategies such as Widening Participation to avoid any adverse impacts in respect of anti-poverty, social inclusion, equality of opportunity or good relations.

9.4 Funding Mechanism for NI HEIF 2

9.4.1 Conclusions

The Funding Mechanism for NI HEIF 2 is discussed in Section 5. This demonstrates the focus on metrics based funding allocation has had a strong influence on driving up performance in those areas which feature in the metrics based formula. We have also considered future funding mechanisms for NI HEIF, also taking into account other approaches to funding. (In Section 8, Benchmarking, we consider approaches and levels of funding in England, Scotland and Wales. A range of funding models is used in each of these countries including metrics based, core and competitive. We set out the advantages and disadvantages of each approach in Section 8.)

The current NI HEIF 2 funding mechanism is nominally based on two main elements as agreed and adopted by DEL and Invest NI following the evaluation of NI HEIF 1:

- 80% (£2.4m per annum over 3 years) allocated on the basis of metrics and administered by DEL; and
- 20% (£0.6m per annum over 3 years) allocated on the basis of competitive proposals, the latter including monies for seedcorn funding, and administered by Invest NI.

Note: Invest NI allocated an additional amount of approximately £255k per annum to cover all the projects approved by its Evaluation Panel so the actual ratio of funding turned out to be 75% DEL and 25% Invest NI.

Under current arrangements, the funding streams are administered and managed separately with separate terms and conditions and reporting requirements. As a condition of DEL funding, both HEIs are required to produce 3 year Institutional Plans and, as a condition of both funding streams, each HEI is required to produce a progress report (annually for DEL, quarterly for Invest NI).

In Section 5, we describe four alternative funding options for the future of NI HEIF 3 and discuss the advantages of each of these:

- Option 1: "As-Is" - i.e. nominal 80% metrics allocation and 20% competitive allocation.
- Option 2: a 100% metrics allocation.
- Option 3: Knowledge Transfer Strategy Linked Funding Model, 100% competitive funding with funding allocated on the basis of the quality and content of the strategy.
- Option 4: Hybrid funding model which would provide an element of fixed, non-competitive funding as core or foundation funding to be focused on strategic / longer term planning allocated in equal portions to the two universities (similar to the Scottish and Welsh models); the balance would then be based on a formula (i.e. the metrics-based allocation) to be linked primarily to the HE-BCI survey data per the existing model, thereby facilitating a degree of continuity between NI HEIF 2 and NI HEIF 3. The totality of the core /

foundation funding and formula based element would be provided by DEL on the approval of the KT strategy.

Our analysis shows that Option 4 - Hybrid Funding Model offers the best way forward. It balances the need to link to Government strategic priorities for KT with the need to minimise any significant changes to university funding for HEIF, which in turn will allow a greater degree of strategic planning and the retention of key Knowledge Transfer practitioners. This approach would require the universities to:

- be more strategic than they are required to be at present and through the development of a KT Strategy they would set out how they can contribute to KT priorities that derive from DEL/ DETI objectives and targets (e.g. demonstrating how each institution will take forward opportunities identified in MATRIX).
- ensure a continued focus on the new HE-BCI measures.

Based on approaches in Scotland and Wales, we are proposing that initially 20% is allocated by core / foundation funding and 80% allocated by formula (metrics based). This should allay any concerns in the universities around security of funding. Many of their economic initiatives take up to three years to show success and as they have invested the NI HEIF 2 funding in getting many of their supports well established, insecurity about funding could put future plans at risk.

However, we would see that the opportunity exists over time to gradually increase the proportion of funding allocated to core / foundation funding on the basis of an approved KT strategy, therefore emphasising the importance of directing the HEIF resources to where they are most needed and contributing to the Northern Ireland economy, while retaining a key role for metrics allocations which undoubtedly foster improvements in performance.

9.4.2 Recommendations

Recommendation 9: NI HEIF 3 Funding Model

Based on analysis of funding models in other regions and the pros and cons of these, as well as taking into account the needs of the universities (in terms of security of funding), we recommend that NI HEIF 3 is allocated using a hybrid funding model which includes:

- 20% allocated as core or foundation funding (similar to the Scottish and Welsh models);
- 80% allocated on the basis of a formula (i.e. the metrics-based allocation) using the HE-BCI metrics as per the current English model.

The totality of this funding will be dependent upon DEL approval of a KT Strategy prepared by each university.

9.5 Management and Structures

9.5.1 Conclusions

Management and Operating Structures in DEL and Invest NI and Mechanisms and Structures in the universities are considered in Section 6.

The review of management and operating structures within DEL and Invest NI indicates that there are relatively low resource costs involved in delivering the programme in its current format. DEL, in particular, highlights the advantage of awarding NI HEIF 2 funding as part of the block grant as contributing to the lower resource requirement.

This is not, however, the primary reason for / advantage of adopting a formula based allocation. Rather, it is instead driven by the need for permanent and predictable funding streams to allow the universities to plan effectively and retain key staff on permanent contracts consistent with the wider UK Government policy as set out, in particular, within the Science and Innovation Investment Framework (2004 – 2014) following the recommendations of the earlier Lambert Review. This approach is also strongly welcomed by both QUB and UU.

However, clearly having two separately funded programmes requires two management structures. Further efficiencies could be achieved by having NI HEIF managed by one Government body, as is the case in the three other UK administrations. Given that the bulk of the monies are being delivered by DEL and it has responsibility for the core funding of the HE sector in Northern Ireland, it would be most efficient, and indeed appropriate in policy terms, if all the NI HEIF monies were to be managed by DEL. Feedback from the universities indicates that having two separate funders means that there is a degree of duplication for them in managing, monitoring and reporting on their NI HEIF 2 funding allocations. The universities' expressed preference is that DEL manages all the funds, thereby streamlining this aspect of the process and creating further efficiencies for the universities. It would also place them on the same footing as their GB counterparts which receive their core KT funding direct from the GB Funding Councils (the role that DEL fulfils in Northern Ireland as well as that of Government Department).

The review of structures and resource costs within the universities indicates that both institutions have established mechanisms and structures to manage the NI HEIF 2 funds. This should ensure that the universities are able to help identify the needs of companies / academics etc. and to ensure they are matched to the best possible support within their institution. However, the proportion of management costs in UU are considerably above those costs in QUB.

9.5.2 Recommendations

Recommendation 10: Management Structures - Future Funding

We recommend that, in order to streamline the allocation of funding and reporting back by HEIs (and minimise efforts / resources in managing the funds), all of the NI HEIF 3 funding is

managed by one Government Body - DEL. We believe this to be also appropriate in policy terms given DEL's role as the core funder of university teaching / learning, research and Knowledge Transfer and that it reflects the now established practice in the rest of the UK.

Recommendation 11: University Management Costs of NI HEIF

We recommend that given the apparent disparity between UU and QUB in the costs of managing NI HEIF relative to the total amount of funding allocated, this area is further investigated in order to ensure that:

- both universities are measuring management costs in the same way; and
- management costs provide Value for Money across both universities.

9.6 Fit of NI HEIF 2 with counterpart initiatives

9.6.1 Conclusions

In Section 7, we consider the wider innovation and KT environment: it is apparent that NI HEIF has a cross-cutting role in supporting KT activities and is integral to the KT environment. Section 4 highlights that HEIF plays an enabling and facilitating role, by ensuring that the infrastructure is in place to allow KT to take place. Therefore, it underpins many of the other KT initiatives which tend to have a more specific focus and area of operation.

With the infrastructure established under NI HEIF 1 and NI HEIF 2, the HEIs (and businesses) are well placed to take advantage of the potential of KT going forward. However, a difficulty arises when trying to assess the VFM of NI HEIF separate to the other innovation supports available within the universities. There are linkages and inter-dependencies which make it impossible to isolate the outcomes specific to NI HEIF monies.

As described in Section 7, the complexity of the various schemes and the lack of clarity around attributing outcomes to funding streams (the same outcomes may be claimed by more than 1 source of funding) gives rise to the potential risk of duplication of funding. This issue is compounded by the lack of a single document / source that specifies all the monies in (e.g. from Connected, HEIF, Innovation Vouchers, PoC, etc.), what this is used for and what overall outcomes are achieved.

Therefore, it is essential to have overall plans from both universities demonstrating how **all** the programmes / initiatives link together to deliver the KT outcomes. Through the Regional Office and KEU in QUB and the Office of Innovation (Innovation Services and Business Liaison Office) in UU, there is scope to ensure that the range of KT activities within each university is co-ordinated and inter-dependencies managed. Ideally, all the KT resources could be considered together alongside all the KT programmes and the outputs / outcomes delivered by these resources examined in total.

This analysis is beyond the scope of a review of NI HEIF, however we recommend that the universities are required to prepare KT Strategies. These should set out the needs being serviced (based on robust evidence of the needs of target beneficiaries); the activities being

delivered, the outputs / impacts to be delivered and the range of funding (amounts and sources) being used and how they link together. These KT strategies need to demonstrate that there is no duplication of funding.

Given the Knowledge Transfer Framework described in Section 7.2.1, the development of the KT strategy should embrace any programme / initiative which sits within this Framework. All university KT activities need to:

- explicitly demonstrate the contribution that each programme / initiative makes to the KT high level targets;
- take into account the wider policy framework (including e.g. Programme for Government, Regional Innovation Strategy, MATRIX, New Industry New Jobs and the Technology Strategy Board) in order to define the expected contribution of the KT strategy to this and to take on board strategic direction such as MATRIX messages around business leadership;
- identify where support is needed / and will be focused (based on business needs / industry led / industry driven in keeping with MATRIX recommendations rather than academia determining markets), to ensure there is a balance across the types of interventions / activities required;
- take into account other interventions (e.g. Connected, PoC, CNP, TSB, etc.) and linkages / complementarity with these and define any joint approaches (e.g. this might be the university working proactively in partnership with HSC Innovations, etc.).

From our review of the KT environment, we have identified one area in which there is particular scope to improve linkages – i.e. with other KT activities outside the universities e.g. AFBI, Health and Social Care Innovations, etc. Whilst there is some interaction currently, this could be undertaken more effectively in a proactive rather than reactive way. We recommend that universities are required to proactively develop opportunities with AFBI and Health and Social Care Innovations.

9.6.2 Recommendations

Recommendation 12: Development of University Knowledge Transfer Strategy

We recommend that as part of the terms and conditions of the next round of NI HEIF funding, each university is required to produce an institutional KT strategy (against which progress will be measured) that sets out:

- The policy context for KT (and high level government strategies / targets to which KT activity will contribute, for example PfG, RIS and the forthcoming HE Strategy);
- The broader KT environment outside the HEI e.g. KT activity in DHSSPS, AFBI, etc and relevance / complementarity;
- All KT activities within the HEIs and how these are connected internally, also setting out the areas of complementarity between the HEIs;

- Activities to be supported under NI HEIF 3, specifying the link between these and KT / innovation (to ensure that there is a robust link). These are likely to continue some of the current activities supported under NI HEIF 2, but the focus must be on elements that will lead to increased business growth and employment through, for example, the commercialisation of IP, industry and university R&D and KT collaborations and supporting spin-outs.

- Funding – sources and amounts including public (e.g. HEIF, Connected, PoC, etc) and private sources (e.g. potential R&D funding in partnership with the private sector), recognising the role that NI business has to play in taking forward a knowledge intensive economy (this links to: IICs & the MATRIX view on market focused business leadership).

- Actions to address learning from NI HEIF 2 and, in particular, stakeholder feedback with regard to:

    - ensuring that the culture shift in the universities continues and develops (through increased engagement with business and the community and by seeking their views and taking these on board);

    - ensuring that the universities continue to respond to th**e needs of business** – for example survey feedback highlighted that timeliness and communication are areas highlighted for improvement from the surveys. There is a need for the universities to be more proactive and, as noted by external stakeholders, to do more in this area by actively seeking out and understanding business needs.

Recommendation 13: Management Information

In undertaking the evaluation, the complexity of managing the NI HEIF 2 funding stream in the university environment became evident – given the number of staff and initiatives involved and reinforced by the wide range of other KT interventions which may also be interacting with some of the same target groups. In order to assist with customer service and to ensure that the HEIs maintain robust monitoring systems to facilitate reporting (for internal management information as well as to demonstrate progress to funders), we recommend that, in parallel with the KT Strategy (Recommendation 12), an investigation is undertaken into the costs and benefits of the introduction of a single management information system in each university to track interventions with companies and non-commercial organisations. Its purpose would be to ensure that multiple interventions with a single company could be tracked in order to:

- avoid duplication / overlap of effort;

- ensure that all those who are engaging with the company are aware of previous and / or current complementary interventions;

- ensure that reporting of the impact of interventions to funders is accurate in comparing impacts with inputs.

Recommendation 14: Monitoring NI HEIF 3 / Knowledge Transfer Strategy – Business Investments

Given the ethos of NI HEIF in encouraging innovation and engagement between HEIs and business and the wider community, it is important that this is recognised through tangible measures such as business investment secured. Whilst the major key areas of income are tracked using metrics in the HE-BCI survey (and both UU and QUB have performed well on these), a more explicit measure of business investment would ensure that collaboration is at the heart of the strategy. We recommend that seeking business investment is included as a key aim within the universities' Knowledge Transfer Strategies.

Recommendation 15: Links with KT Activities outside the Universities

KT activities are not restricted to the universities: other agencies also have an interest in this area e.g.: AFBI, Health and Social Care Innovations, etc. Whilst there is some interaction currently, this could be undertaken more effectively in a proactive rather than reactive way. We recommend that universities are required to proactively develop opportunities with AFBI and Health and Social Care Innovations and that this is included in the universities' Knowledge Transfer Strategies.

9.7 Benchmarking

9.7.1 Conclusions

In order to consider NI HEIF 2 in a wider context, in Section 8 we consider approaches to KT funding in England, Scotland and Wales and review data on funding levels and performance measures. From this analysis, we can conclude that:

- There are a variety of approaches to allocating funding (including focus on outcomes) – including core / foundation, metrics based and competitive. Within some of these approaches, there are a variety of components and associated weightings used as a basis of determining levels of funding. Each approach has advantages and disadvantages relating to a range of factors including: ability for government to influence how funding is used, focus on outcomes / impacts or activities and outputs, stability of funding / planning in HEIs, driver of improvement / quality, ease of administration, resources spent in securing funding, etc.
- Measuring outcomes and impacts is a common challenge, as is the challenge of attributing outputs to a specific initiative when more than one intervention (outside of e.g. HEIF 2 support) may have been employed. The proposed funding mechanism (Recommendation 9) linked to a Knowledge Transfer Strategy (Recommendation 12) seeks to overcome these challenges by introducing a requirement for universities to produce a KT strategy which would include a greater focus on targets relating to outcomes and impacts and clearer links between achievement of these targets and funding which has enabled this.
- **Levels of funding** – Overall there is a trend towards increasing investment in KT.

  Considering the **average** level of funding per institution per annum, it is evident that NI HEIF 1 and NI HEIF 2 have provided the highest levels across all years and all funding

bodies (within the UK). This is to be expected given that Northern Ireland is unique in the UK context in that 100% of its HE sector (i.e. that which attracts HEIF funding - consisting of only QUB and UU) is both large in scale / capacity and research intensive in nature / character. The next highest levels are in Scotland (08/09 and 09/10) and under HEIF 4 in England (the average includes the recently announced 11.9% uplift for 2010/11); the lowest average levels are in Wales (where a much smaller proportion of HEIs are both large scale and research intensive).

- Recent research considering funding from another perspective (relative to academic staff), showed that NI fared less well than elsewhere in the UK. The NESTA Report - Measuring and Mapping Absorptive Capacity in UK Nations and Regions (2008) – notes that NI has low absorptive capacity (this refers to a firm's ability to identify, assimilate and exploit knowledge from external sources) and that it has a low ranking on a range of measures associated with absorptive capacity. One of the sub-measures shows that NI has the lowest funding (taking into account the total value of business-university collaborative research, research contracts and consultancy contracts) relative to the number of academic staff of all the UK regions.
- **Comparison of similarly ranked universities –** A comparison of similarly ranked HEIs (using the Times Higher Education Table of Excellence) is inconclusive – it shows that there is a wide range of variation in the levels of core KT funding amongst this group of 18 similarly ranked HEIs:
    - QUB receives the fourth highest levels of funding amongst this group of 18 HEIs;
    - UU receives a relatively low level of funding amongst this group of 18 HEIs.
    - there is a wide range of variation in the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding);
    - there does not appear to be a clear correlation between the Times Higher Education ranking and either the level of KT funding or the ratio of Income Generation to Funding (calculated as a proxy for effectiveness for the funding).

9.7.2 Recommendations

Recommendation 16: Level of NI HEIF Funding

Going forward, and in order to maintain its current position and also to ensure consistency with the rest of the UK on an institutional basis, DEL should seek to ensure that the future level of funding for NI HEIF 3 should be at least at the levels of NI HEIF 2.

The case for future funding for KT is also supported by:

- recent research (see Section 3.3) which highlights the wider economic imperative in terms of the importance of business / university collaboration particularly in the current economic climate and the need to increase business – university linkages and to exploit the knowledge within universities.
- the need to improve NI performance in terms of absorptive capacity (businesses' ability to identify, assimilate and exploit knowledge from external sources).

- the 2009 PACEC and the Centre for Business Research, University of Cambridge report (see Section 8.2.4 Recorded Outcomes) also supports the case for funding going forward. In particular it highlights the role that funding such as HEIF has to play in changing attitudes and culture within HEIs and helping them develop the necessary capacity and capability to engage with external organisations and the rewards that this brings in terms of income generation.
- Evidence of increasing investment in KT funding in Scotland and England in particular.
- The relatively low levels of funding in NI relative to the number of academic staff.

We recommend that the NI HEIF funding stream is maintained at current levels (at least) in order to maintain its current position and performance relative to UK comparators, thus ensuring Northern Ireland does not fall behind in terms of global competitiveness.