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Northern Ireland R&D policy and performance - update

1 Introduction

The following paper updates previous Research and Information paper NIAR 281-11 *R&D policy and performance*. It outlines R&D policy developments as introduced by the Draft Programme for Government and Draft Economic Strategy, and provides an overview of the latest data on Northern Ireland's R&D performance.

2 Draft Programme for Government

The Draft Programme for Government (PFG) introduces three targets which directly impact Northern Ireland's R&D landscape, all of which fall under the broader priority of *Growing a Sustainable Economy and Investing in the Future*. These targets can be divided into those which focus on the businesses sector, and those which focus on higher education. The first is to '*support £300m investment by businesses in R&D, with at least 20% coming from Small and Medium sized Enterprises*'. Should the 20% target for small and medium enterprises be reached this would equate to £60m in R&D investment from companies of this size over the three year life span of the PFG. The £300m investment target is spread out across the three years as follows:

- 2012/13 – support £150m investment in R&D (note: 2012/13 figure includes figures for 2011/12);
- 2013/14 – support £75m investment in R&D; and,
- 2014/15 – support £75m investment in R&D.ⁱ

The equivalent targets in the previous incarnation of the PFG were:

- Increase SME annual growth in BERD (Business expenditure on R&D) by 8%; and,
- Increase larger company growth in BERD by 5%.ⁱⁱ

A second business focussed target is to ‘*support 200 projects through the Creative Industries Innovation Fund*’. This target is to be brought forward by the Department of Culture, Arts and Leisure. There are three sub-targets across the three years covered by the PFG:

- 2012/13 – 100 projects supported overall;
- 2013/14 – 150 projects supported overall; and,
- 2014/15 – 200 projects supported overall.

Whilst not exclusively linked to business R&D, the Creative Industries Innovation Fund (CIIF) has assisted in the development of innovation within business in Northern Ireland. The previous incarnation of the fund, which ran from 2008-2011, supported 134 projects with grant support totalling £2.7m (average per project grant was £20,187, although this varied support according to sector with the largest average grants received by the TV and Radio sector, £39,140 per project on average, and the lowest grants received by fashion sector, £9,008 per project on average). Table 1 outlines grant allocation from the CIIF between 2008 and 2011. The total fund in this period amounted to £4.1m over the three year period, aside from the funding allocated to projects (Table 1) the fund was also used to finance Arts Council (who distributed the fund) administration (£290,551), the Strategic Action Plan (£23,735), Evaluation (£53,135), interim support arrangements for the music industry (£50,000 for 2010/11). A further £971,943 was allocated in grant support to sectoral bodies.ⁱⁱⁱ

A continuation of the CIIF was announced in July 2011, with a budget of £4m over a four year period. The Minister of Culture, Arts and Leisure has stated that Year 1 of the fund (2011/12) is ‘*for businesses leading digital content development projects*’, and that although Years 2–4 ‘*will be open to all creative industries sub-sectors...digital content projects are likely to remain prioritised*’^{iv}

The corresponding target in the previous PFG was to grow *'the creative industries sector by up to 15% by 2011'*.^v

Table 1: Total CIIF grants allocated by sector, 2008–2011

CIIF Sector	No. of Awards	% of Awards	£ Mean	£ Total amount allocated
Advertising	1	0.75%	10,000	10,000
Craft	26	19.40%	10,062	261,618
Design	14	10.45%	13,082	183,148
Fashion	4	2.99%	9,008	36,030
Film	7	5.22%	37,760	264,320
Multimedia	20	14.92%	29,904	598,088
Music	24	17.91%	22,590	542,150
Performing Arts	9	6.72%	19,141	172,267
Software	10	7.46%	14,422	144,220
TV & Radio	6	4.48%	39,140	234,838
Visual Arts	13	9.70%	19,875	258,377
TOTAL	134		20,187	2,705,056

From the perspective of the higher education sector, the PFG sets a target of increasing uptake in economically relevant Science, Technology, Engineering and Mathematics (STEM) places as follows:

- 2012/13 – 180 additional places;
- 2013/14 – 360 additional places; and,
- 2014/15 – 540 additional places.^{vi}

In an announcement on the 7 December 2011, however, the Minister for Employment and Learning stated that the Department would be targeting the creation of *'at least 700 additional places'*, adding that:

All the additional places will be in economically relevant Science, Technology, Engineering and Mathematics (STEM) subjects which will ensure that we are delivering the right skills to support the rebalancing and growth of our local economy.^{vii}

The additional places will be spread across Northern Ireland's higher education institutes as follows:

- The University of Ulster – 322 additional places;
- Queens University – 308 additional places; and,
- Further education institutes – 70 additional places.

The PFG also contains a range of measures that, whilst not directly aimed at stimulating R&D, should, if successful, lead to a strengthening of the businesses,

infrastructure and skills base, and could indirectly facilitate an environment more conducive to R&D and innovation. These measures again fall under the broader priority of *Growing a Sustainable Economy and Investing in the Future*, they include (not exhaustive):

- Support the promotion of over 25,000 new jobs;
- Press for the devolution of Corporation Tax and reduce its level;
- Achieve £300 million investment through Foreign Direct Investment;
- Increase the value of manufacturing exports by 15%;
- Aid liquidity of SMEs through a £50 million loan fund;
- Introduce extension of Small Business Rate Relief Scheme to 2015;
- Hold the Regional Rate increases to the rate of inflation;
- Eliminate Air Passenger duty on direct long haul flights;
- Increase the proportion of young people from disadvantaged backgrounds who achieve at least 5 GCSE's at A*- C or equivalent including GCSE's in Maths and English; and,
- Up-skill the working age population by delivering over 200,000 qualifications.^{viii}

3 Draft Economic Strategy

The Department of Enterprise, Trade and Investment's Draft Economic Strategy (the Strategy) seeks to achieve a rebalancing and a rebuilding of the Northern Ireland economy. R&D and innovation are seen as vital tools for achieving this, although their role is viewed to lie in the rebalancing side. The Strategy, referencing the Departments recent work on global best practice, states:

As part of our review of global best practice, we gathered extensive evidence which demonstrates the strong links between innovation and value-added economic growth... we are clear on the need to devote significant resources to develop our capacity, particularly in the key MATRIX market sectors. This prioritisation recognises the need to develop our existing strengths as a comparatively small regional economy. This includes an increased focus on supporting and growing our areas of excellence in advanced manufacturing and engineering over the next decade and beyond.

As part of addressing this priority, we recognise that encouraging companies to embrace ambitious growth plans, including increased emphasis on exports and external sales, is a critical part of stimulating innovation and R&D. This highlights how our priorities interact with each other in order to drive forward sustainable growth and prosperity.^{ix}

The Strategy identifies a number of challenges to stimulating R&D and innovation in Northern Ireland:

- Northern Ireland has historically trailed behind the UK average on overall R&D spend;
- Whilst over half of Northern Ireland firms engaged in innovation in the period 2006-08, this is the lowest figure of the UK regions;
- Whilst Northern Ireland public spending on R&D is in-line with the UK average, much of this spend is in the agriculture sector. The Strategy recognises the need to diversify suggesting that biotechnology, health research, engineering and '*other science based area*' should be the target areas; and,
- A great emphasis should be placed upon supporting high technology manufacturing industries.^x

There is also recognition in the Strategy of the cross-departmental nature of R&D and innovation. A range of strategies are highlighted which exemplify this cross-departmental aspect:

- DARD's Evidence and Innovation Strategy identifies the key strategic research areas for the agri-food and rural businesses sector;
- DCAL's Strategic Action Plan for the creative industries recognised the sector as an important driver of economic and social innovation. A framework for future growth and development of the creative sector will be published early in 2012;
- DEL's Success through Skills – Transforming Futures recognises that skills are the bedrock of an innovation-based knowledge economy, from the schools system, to further and higher education and lifelong learning;
- A Higher Education (HE) Strategy for NI is scheduled for publication early in 2012 and this will highlight the importance of the HE sector to R&D and innovation; and,
- DHSSPS's R&D Strategy Research for Health and Wellbeing identifies the need to support and develop the clinical research capacity and infrastructure.^{xi}

The Strategy also highlights a number of cross-departmental key actions which will be further developed in an action plan in 2011/12. These actions are:

- Support £300m investment in R&D, with at least 20% from SMEs;
- Support 500 businesses to undertake R&D for the first time and secure 120 Collaborative Projects in R&D;
- Expand the Collaborative Network Programme targeting future market opportunities;
- Provide £54m funding for University research and investing in collaborative HE/FE engagement with business in 2011/12;
- Support Universities to establish 8 spin-out companies by 2013;
- Support Universities and FE colleges to undertake 155 knowledge transfer projects on behalf of local businesses by 2014;
- Support businesses and academia to apply for national and EU funding/programmes;

- Ensure 100 applications for transnational R&D funding Invest £4m via the Creative Industries Innovation Fund and wider sectoral initiatives to stimulate innovation, R&D and creativity;
- Significantly increase cross-border innovation and trade activity;
- Provide funding for agri-food research and knowledge exchange, including new PhD studentships;
- Invest up to £2.8m in further tranches of the agri-food research challenge fund; and,
- Provide technology support services to the land based and food sectors.^{xii}

The Strategy also contains the medium to longer terms goals of: exploring how the NI Science Park can further evolve into an Open Innovation Centre; progressing the alignment of publically funded research with defined economic priorities to increase the potential for knowledge transfer between business and academia; examining ways to increase the rate of commercialisation of publically funded research and public sector Intellectual Property; fostering innovation through public procurement; identifying areas of collaboration between the health sector and business; and, examining the establishment of an Innovation Council.

DETI published a draft Comprehensive Action Plan which sets timeframes for when the above actions will be achieved. The relevant section of Action Plan is contained in Appendix 1.

5 Northern Ireland's R&D Performance – statistical update

2010 R&D expenditure figures (cash terms) from latest *Northern Ireland Research & Development Statistics* (November 2011) (Table 2) show the following:

- The proportional spread of total R&D expenditure (£521.4m) in 2010 was: business expenditure 66%; higher education expenditure 31%; and, government expenditure 3%;
- Total expenditure increased by 8% between 2009 and 2010, between 2008 and 2009 it increased by 40%. Between 2005 and 2010 total expenditure increased by 66% and between 2001 and 2010 it increased by 97.6%;
- Business expenditure increased by 6% between 2009 and 2010, between 2008 and 2009 it increased by 76%. Between 2005 and 2010 business expenditure increased by 122.9%, between 2001 and 2010 it increased by 121.9%;
- Higher education expenditure increased by 13% between 2009 and 2010, between 2008 and 2009 it fell by 0.8%. Between 2005 and 2010 higher education expenditure increased by 10.7%, between 2001 and 2010 in increased by 63.8%; and,
- Government expenditure fell by 3.1% between 2009 and 2010, between 2008 and 2009 it increased by 1.3%. Between 2005 and 2010 government expenditure increased by 14.7%, between 2001 and 2010 in increased by 56%.^{xiii}

Northern Ireland Statistics and Research Agency statistical press release on the latest R&D statistics notes the following:

- The percentage increase in Northern Ireland (in-house) business R&D expenditure (9.1%) between 2009 and 2010 was the second biggest of the 12 UK regions. Of the 12 UK regions, nine showed an increase in cash terms over the period.
- The ten biggest spending companies accounted for 59% of the total R&D spend in Northern Ireland in 2010, slightly higher than in 2009 (57%).
- Externally owned companies accounted for 68% of Business R&D expenditure compared to 32% by locally owned companies. However, R&D spend by locally owned companies reported an annual increase of 27%.
- Expenditure by businesses with less than 250 employees fell by £10.9m (-8%) from 2009 to 2010, in cash terms. However, since 2005 such expenditure has increased by 78% to £133.4m.^{xiv}

Table 2: Total Expenditure on R&D in Cash Terms 2001-2010 (£million)^{xv}

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Total Expenditure on R&D	263.8	272.5	261.8	277.4	314.1	330.8	351.1	344.0	482.8	521.4
Business Expenditure	155.0	156.6	121.3	129.0	154.3	167.0	185.1	183.9	323.7	344.0
HE Expenditure	98.8	105.8	127.8	136.1	146.2	150.1	151.3	144.2	143.0	161.8
Government	10.0	10.1	12.7	12.3	13.6	13.7	14.7	15.9	16.1	15.6

Appendix 1: DETI Draft Comprehensive Action Plan – Stimulating Innovation, R&D and Creativity

No.	Objective	Action	Responsible Organisation	Timescale
A1	Increase Levels of Business Expenditure on Research & Development (BERD) by incentivising businesses to increase their capability and capacity to undertake R&D	Maximise returns from the grant for R&D programme by securing £300m investment in R&D (with at least 20% from SMEs).	DETI/Invest NI	March 2015
A2		Support 500 businesses to undertake R&D for the first time.		March 2015
A3		Secure 120 Collaborative Projects in R&D.		March 2015
A4		Secure up to £5.6m additional investment in agri-food R&D (50% from SMEs/industry organisations and 50% from DARD) by implementing further tranches of the agri-food Research Challenge Fund.	DARD	March 2015
A5	Increase innovation in SMEs through joint projects with the Higher and Further Education sectors	Expand the Innovation Voucher Scheme by delivering 800 Innovation Voucher projects to stimulate increased levels of innovation within small enterprises (with less than 50 employees).	DETI/Invest NI	March 2015
A6		Support our universities and FE colleges to undertake 155 Knowledge Transfer Partnerships (KTP) projects on behalf of local businesses by 2014.	DETI/Invest NI/DEL	March 2015
A7		Introduce an enhanced Proof of Concept (PoC) scheme to support 40 PoC projects (University or Health and Social Care (HSC) based).	DETI/Invest NI	March 2015

No.	Objective	Action	Responsible Organisation	Timescale
A8	Support business to develop their capabilities, improve business competitiveness and maximise efficiencies	Support SMEs to increase productivity through improved efficiencies by identifying £60m of resource and waste prevention savings.	DETI/Invest NI	March 2015
A9		Support 600 E-business projects to assist SMEs to increase innovation and productivity.		March 2015
A10		Improve awareness and understanding of Intellectual Property and the commercialisation of products and services and deliver 440 Technical Projects to assist commercialisation.		March 2015
A11		Maximise participation with Invest NI's Design Service to encourage 1,200 companies to utilise design as a key driver and enabler of innovation.		March 2015
A12	Incentivise business-led local and international collaboration in pursuit of more open innovation	Increase the commercialisation of knowledge by establishing 4 Competence Innovation Centres.	DETI/Invest NI	March 2015
A13		Expand the Collaborative Network Programme, targeting the future market opportunities identified by MATRIX, to support establishment of 25 networks.		March 2015
A14	Promote awareness of and support businesses and academia to apply for national and EU funding / programmes	<p>Increase engagement with NI companies and researchers to:</p> <ul style="list-style-type: none"> Encourage NI based companies/researchers to engage with INI Collaborative Support Service leading to 100 applications for transnational R&D funding; and Secure 36 Transnational Technology Transfer Agreements through the Enterprise Europe Network. 	DETI/Invest NI	March 2015
A15	Establish a structured programme to facilitate NI businesses to exploit the market opportunities identified by MATRIX	Develop a mechanism to facilitate NI businesses to exploit the market opportunities identified by MATRIX.	DETI/Invest NI	December 2011

No.	Objective	Action	Responsible Organisation	Timescale
A16	Support research and commercialisation activities in HE/FE institutions to ensure they continue to fulfil their central role in developing and sustaining a world-class research base in NI.	Maintain the core funding of the Universities' knowledge transfer activities through NI Higher Education Innovation Funding (£3m per annum) until 31 July 2013 with targets for the Universities to: <ul style="list-style-type: none"> • Undertake 1,140 business engagements; • Secure £863k income from Intellectual Property; and • Establish 8 spin out businesses. 	DEL	July 2013
A17		Provide £50m funding for University research based on quality-assessed outcomes.		July 2012
A18		Maintain strategic investment (£1m per annum) in collaborative Higher Education / Further Education engagement with business through the Connected programme with a target for the Universities and FE Colleges establish 14 major sectoral projects with local businesses involving at least one University and one regional college.		March 2014
A19	Promote a culture of creativity and innovation and grow the Creative and Cultural Industries sector	Develop a framework to grow the creative industries and a broader culture of creativity and design-thinking.	DCAL	March 2015
A20		Invest £4m via the Creative Industries Innovation Fund and wider sectoral initiatives to stimulate innovation, R&D and creativity.		March 2015
A21		Support 200 innovation projects through the Creative Industries Innovation Fund.		March 2015

No.	Objective	Action	Responsible Organisation	Timescale
A22	To deliver a Knowledge and Technology Transfer (KTT) Programme to the agri-food sector	Develop, demonstrate and encourage adoption of the latest technologies to the agri-food sector with a target of at least 1500 technologies adopted on an annual basis.	DARD	March 2015
A23	Ensure that publicly funded research promoted by DARD is aligned with the policy priorities set out in the DARD Evidence and Innovation Strategy	Provide funding for up to £2.8m worth of new agri-food research per year (within a rolling programme) in line with the DARD Evidence and Innovation Strategy.	DARD	March 2015
A24	Significantly increase cross-border innovation and trade activity	Increase the number of businesses involved in cross-border innovation and trade activity by 10,000, through access to, and exploitation of, IntertradeIreland information, advice services and business support programmes.	DETI/IntertradeIreland	March 2013
A25		Complete a study on the innovation ecosystem that will identify opportunities and remove barriers.		March 2013
A26		Develop a pilot programme to deliver enhanced innovation capability leading to transformational change – the Innovation Challenge Programme.		March 2013
A27		Increase North/South participation in EU Research & Development programmes.		March 2013
A28		Provide support for wider North/South research connections.		March 2013
A29		Facilitate the expansion of the US Ireland R&D Partnership.		March 2013

No.	Objective	Action	Responsible Organisation	Timescale
A30	Stimulating Innovation, R&D & Creativity	Explore how the NI Science Park can further evolve into an Open Innovation Centre to create the environment where partnerships and collaboration can flourish across sectors.	DETI	Dec 2012
A31		Based upon the views of MATRIX and the Foresight process, progress the alignment of publically funded research with our economic priorities in order to increase the potential for greater knowledge transfer between business and academia to maximise the economic return.	DETI/Invest NI/DEL	Ongoing
A32		Examine ways to increase the rate of commercialisation of publically funded research and public sector Intellectual Property.	DETI	Ongoing
A33		Foster the degree of innovation through increased use of innovative forms of public procurement.	DFP and all Departments	Ongoing
A34		Identify areas where there can be greater collaboration between the health sector and business in order to develop economic development opportunities that support a shared "Health and Prosperity" agenda. These will primarily cover R&D and Connected Health.	DHSSPS/DETI/ Invest NI	30 June 2012
A35		Examine the need for the establishment of an Innovation Council to ensure that, at the highest level, the Executive, Academia and Business work together to further embed innovation across the NI economy.	DETI/Invest NI/DEL	Ongoing
A36		Maximise the returns from Health and Social Care R&D funding and examine and exploit opportunities to increase R&D funding through UK-wide or international funding partnerships or investment.	DHSSPS/Public Health Agency	Annually
A37		Support Health and Social Care innovations to manage the commercialisation of intellectual property arising from HSC Trusts.	DHSSPS/Public Health Agency	Ongoing
A38		Develop and launch a new strategy for Health and Social Care R&D for 2012 - 2017	DHSSPS/Public Health Agency	Spring 2012

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- ⁱ Northern Ireland Executive *Draft Programme for Government 2011-2015* <http://www.northernireland.gov.uk/draft-pfg-2011-2015.pdf>
- ⁱⁱ DETI *Regional Innovation Action Plan 2008-2011* <http://www.detini.gov.uk/eco-dev-pubs-4>
- ⁱⁱⁱ Northern Ireland Assembly Research *The Creative Industries: background, definitions and recent policy development* (September 2011) <http://www.niassembly.gov.uk/Documents/RaISe/Publications/Culture,%20Arts%20and%20Leisure/9311.pdf>
- ^{iv} Minister for Culture, Arts and Leisure. 26.7.11. Letter to the CAL Committee: COR/1088/2011.
- ^v Northern Ireland Executive *Programme For Government 2008-2011* <http://www.northernireland.gov.uk/pfgfinal.pdf>
- ^{vi} Northern Ireland Executive *Draft Programme for Government 2011-2015* <http://www.northernireland.gov.uk/draft-pfg-2011-2015.pdf>
- ^{vii} Northern Ireland Executive *Farry announces significant increase in higher education student places* (7 December 2011) <http://www.northernireland.gov.uk/news-del-071211-farry-announces-significant>
- ^{viii} Northern Ireland Executive *Draft Programme for Government 2011-2015* <http://www.northernireland.gov.uk/draft-pfg-2011-2015.pdf>
- ^{ix} Department of Enterprise, Trade and Investment *Draft Economic Strategy* (November 2011) http://www.detini.gov.uk/economic_strategy_web.pdf
- ^x *Ibid*
- ^{xi} *Ibid*
- ^{xii} *Ibid*
- ^{xiii} Department of Finance and Personnel I *Northern Ireland Research & Development Statistics* (press release) (November 2010) http://www.detini.gov.uk/r_d_2010_december_2011.pdf
- ^{xiv} Department of Finance and Personnel I *Northern Ireland Research & Development Statistics* (statistical bulletin) (November 2010) http://www.detini.gov.uk/r_d_2010_december_2011.pdf
- ^{xv} *Ibid*