Introduction

The updated Scottish Government Economic Strategy sets out the importance of developing a culture of innovation across the Scottish economy in order to deliver on our strategic aims. In particular innovation in its widest sense must be recognised and encouraged across the entire business base, whether large or small, long-term established or starting up, science and technology based or a more traditional or service based business. Developing new processes, products, services and business models to take advantage of global and market opportunities, often through incremental change - is vital to boosting growth.

In light of European Union 2020 policy and the desire to put innovation at the heart of future competitiveness policy, it is timely to consider the changing European landscape and the future direction of state aid frameworks and support mechanisms, such as the Horizon 2020 programme. The changing approach within the European Union will both complement and challenge how we intervene in support of our Innovation System and the economy more widely.

Innovation is one of the most fundamental processes underpinning economic growth and a key component in developing solutions to economic and social challenges such as climate change, ageing society and sustainable energy. These societal challenges are powerful drivers of change and will also provide major new global market opportunities for businesses.

With an ageing population and strong competitive pressures from globalisation, Europe’s future economic growth and jobs will increasingly have to come from innovation in products, services and business models. This is why innovation has been placed at the heart of the Europe 2020 strategy for growth and jobs. The scope of the Innovation Union agenda is extensive and the Horizon 2020 programme a key pillar of the EU agenda for enhancing Europe’s global competitiveness.
We have an opportunity to shape and influence elements of this new policy agenda, to ensure that we maximise the opportunities it can open for Scottish companies and Scotland’s overall competitiveness.

**A new horizon for EU Research and Innovation**

On 30 November 2011 the European Commission published its proposals for future EU policy and funding to support Research and Innovation from 2014-2020. The Horizon 2020 programme, as it is called, is a financial instrument which aims to:

- Strengthen the EU’s position in science (with a dedicated budget of €25bn).
- Strengthen industrial leadership in innovation through investment in key technologies, greater access to capital and support for SMEs (€18bn).
- Address major concerns such as climate change, developing sustainable transport and mobility, making renewable energy more affordable, ensuring food safety and security, or coping with the challenge of an ageing population (€32bn).

For the first time, Horizon 2020 brings together all EU research and innovation funding under a single programme. It focuses more than ever on turning scientific breakthroughs into innovative products and services that provide business opportunities and change people’s lives for the better. At the same time it drastically cuts red tape, with simplification of rules and procedures to attract more top researchers and a broader range of innovative businesses. In order to deliver on these ambitions, the proposal from the Commission includes a budget increase of around 40% on the previous Research programme, to €80bn over 7 years.

Considering the scale of the opportunity presented, Scotland has contributed with a single voice to this process through a “Team Scotland” approach. To this end a Scottish Steering Group involving the Scottish Government, the Scottish Funding Council, Scottish
Enterprise/Scotland Europa and Highlands and Islands Enterprise was set up in August 2010. The aim of such an approach was to increase Scotland’s influence in the policy framing and legislative processes and to strengthen our performance, particularly the participation of our business community. This will help to raise business research and development (R&D) and make a positive long-term impact on Scotland’s sustainable economic growth across key economic sectors, in line with Scottish Government Economic Strategy.

Milestones achieved by the steering group include the production of a Scottish position paper (submitted in November 2010) on Scottish key strengths and views on future EU R&D funding priorities; a series of events and workshops to raise awareness and facilitate the input of stakeholders, including business; the Scottish contribution (submitted in May 2011) to the EU consultation on Research and Innovation funding for the period 2014-2020; a position paper on the simplification of the participation rules and high level meetings between Scottish Government Cabinet Secretaries and Ministers and key EU institutional players.

**Scottish response to EU consultation on Research and Innovation funding 2014-2020**

In May 2011 Scotland contributed to the European Commission’s consultation on the Common Strategic Framework for Research & Innovation for 2014-2020. The response was the product of collaboration between the Scottish Government, Scottish Enterprise and Highlands and Islands Enterprise, Scotland Europa and the Scottish Funding Council and followed an extended consultation with stakeholders across the business (large and SMEs), academic and public sector communities in Scotland.

It identified areas for improvement in order for the new Programme to facilitate more business participation (particularly SMEs), stimulate innovation and ultimately growth:

Need for a more transparent, simplified and fast process for participation, selection, award of the grant and audit checks, with better balance between control based and trust-based systems.

More challenge-based calls are likely to stifle innovation and creativity

- Support to the entire innovation chain: from blue skies through to applied research towards the proof of concept stage to encourage more innovation

- More financial support to large scale demonstrators to reduce the risk being taken by the industry in testing new technologies

- Public procurement as an instrument with great potential to drive innovation and knowledge transfer

Some of these recommendations are now reflected in the structure of Horizon 2020.
Horizon 2020 – The economic opportunity for Scotland

1. Strengthening Scotland’s Science Capability

Scotland’s priority to deliver a collaborative research base that remains highly competitive internationally; nurtures, attracts and supports world-class international researchers in Scotland; and attracts high levels of project support from a variety of funding sources is entirely consistent with our aims to increase our participation in Horizon 2020.

Scotland has one of the strongest university research bases in the world. It received 1.8% of all world citations and has been the top 2 in the world in terms of impact of its research in recent years. A survey in 2009 of Scotland’s agricultural research institutes rated these first in the world for citations in agricultural science. These are considerable achievements for a nation of only five million people.

Importantly, Scotland’s main research strengths are already closely aligned with European priorities including:

- Low Carbon Energy Technologies and Climate Change (with expertise in Offshore Wind, Marine Energy, Carbon Capture and Storage and Power Systems) and Marine Technologies/Sustained environment
- Biomedicine and Life Sciences (including Regenerative Medicine, Stratified Medicine and other Priority Health Areas)
- Food and drink, including Animal Health
- Security (water, food, energy, information)
- Built environment, including Power Transmission and Transport Infrastructure
- Creative industries/digital media
- Mobile/digital technologies/informatics
- Medical imaging and diagnosis

The concept of "research pooling" has been developed in Scotland to encourage greater collaboration between networks of researchers across universities. Research pooling has helped to create a new and distinctive research landscape within Scotland. By concentrating investment on networks of excellence with our partners, we have created powerful, well resourced communities that are now attracting research talent from across the world. Scotland has funded 11 research pools covering a broad range of research expertise, with an emphasis on enhancing excellence and including life sciences, energy, imaging, informatics and computer science, marine science, engineering and geoscience.

The evidence, so far, is of a significant added value in terms of the enhanced quality of research and competitiveness of Scottish science from harnessing our research and development operations within such structures. Our research pools are underpinned by excellence and are in a strong position to bring this expertise to bear on the Europe’s ‘Grand Challenges’. We would see considerable benefits in terms of global competitiveness in R&D and innovation emerging for Europe from linking research pools from different European member states.
2. Addressing Societal Challenges – An opportunity to support great Scottish ideas reach new markets

Scotland as a great deal of knowledge and expertise which it can contribute to the key themes identified within the Horizon 2020 programme. Horizon 2020 offers a win-win situation by supporting research that will both tackle problems related to health, food security, energy, transport, climate change and a secure society; and at the same time that will create new business opportunities for Scottish companies.

A major objective of the Horizon 2020 programme is to make public money work better by leveraging as much money as possible from other public and private sources.

Public Procurement

Public procurement accounts for some 17% of GDP in the European Union and offers an enormous potential market for innovation in products and services. Within the Construction sector 40% of all procurement at EU level is carried out by public sector and for defence, civil security and emergency operations sectors the figure is almost 100%. There is clearly a major role for public procurement to help develop new markets and to support innovation transfer.

Work is already underway in Scotland to consider how best to take forward procurement innovation to ensuring public procurement is open to new solutions and new suppliers with new ideas to underpin greater innovation.

Horizon 2020 offers an additional opportunity to bring excellent research and innovation results to market, through existing and new partnerships between researchers, businesses, governments and civil society.

In addition active participation in the Horizon 2020 will bring additional benefits in the form of knowledge transfer and innovative thinking to help Scotland tackle the societal challenges we face in the future.

3. Industrial Leadership - Building on Scotland’s strengths

As part of the Innovation Union agenda Europe’s regions are being encouraged to develop a strategic approach based on their unique competitive advantages – in so called “smart specialisation strategies”. This approach concentrates resources on the most promising areas of comparative advantage, e.g. on clusters, existing sectors and cross-sectoral activities, eco-innovation, high value-added markets or specific research areas.

Clearly Scotland has been pursuing a smart specialisation approach, without using the term, in its Key Sector focus. The Scottish Government’s Economic Strategy has already established a pathway for developing Scotland’s key sectors. The current focus is on developing niches within these sectors in which Scotland can demonstrate European (and global) competitive advantage, and strengthening joined-up delivery of industry-led sector strategies across the public sector.
Horizon 2020 will provide an opportunity to leverage additional investment to strengthen our leadership in areas of comparative advantage and identify scope for increased collaboration and partnership with regions with complementary strengths. It will help inform future investment prioritisation in our key sectors in the context of where the greatest opportunities lie in global value chains.

Next steps in Scotland’s approach

The European Parliament is now considering its views on the Commission proposals, due to be adopted by mid-2012. The proposals will also be considered by the EU Member States in Council with the final adoption of the legislation foreseen by the end of 2013, to allow the first calls for projects funded under Horizon 2020 to be launched in 2014. Initial discussions in the European Parliament indicate they are keen to increase the budget for Horizon 2020 still further, up to €100bn.

Next steps for the Steering Group therefore include meetings with Scottish and UK MEPs and high-level Commission officials to make sure the legislative process will include Scottish views from both business and academia. We have also begun a productive process of engagement with the Scottish Parliament External and European Affairs Committee at the EU level to contribute to this influencing agenda. Meetings have been already facilitated between Committee Member Aileen McLeod MSP and the Secretary General of the League of European Research Universities, an extremely influential organisation in the development of Horizon2020.

The success of this strategy will see more coordinated influencing work at the Scottish level, more business engaged in the next framework programme, more funding available in Scotland for research and innovation and greater growth in key economic sectors such as renewable energy, life sciences, food and drink.
Maximising Scottish participation

In terms of the particular focus on business and SME engagement in the future programmes, and following discussions at the round table hosted by the Scottish Parliament External and European Affairs Committee, we have undertaken a new phase of evidence gathering.

Early analysis show that Scotland’s performance in the first years of the FP7 programme is very encouraging, accounting for 9.27% (participation) – 9.3% (for money awarded) of overall UK participation (Wales 2.6% participation 2.16% for money; Northern Ireland 1.5% participation 1.11% money). English participation accounts for the majority (86%) of UK participation whereas the money awarded is equal to 87.4%. These data includes public bodies, universities, research bodies and companies.

Looking at a breakdown of Scottish participation up to 31 October 2011, was can see that Scotland has exceeded the EU target of 15% SME involvement, with an overall 18.44% participation, with about 10% of the total Scottish uptake of €304,255,997. This represents a 17% increase in SME participation from FP6/FP5. In Scotland the Programme remains dominated by the Further Education and Research sectors that together account for nearly 80% of this funding attracted to Scotland.

Innovation and Internationalisation feature strongly as major priority themes in the business plans of SE, HIE and SDI. The current business plans highlight the investment and support, which has been targeted at enhancing the R&D capacity of SMEs and the outcomes achieved. The 2012-15 business plans will continue to place a strong emphasis on these priority themes particularly the importance of supporting companies to increase export activity.

### Building SME R&D Collaborative Capacity in Scotland

Scottish Enterprise is the lead partner in the Enterprise Europe Network Scottish consortium. Our partners are Highlands & Islands Enterprise, Highland Opportunity Ltd and the European Commission. Since the launch in 2008, the Enterprise Europe NetworkScotland team have;

- Answered 5589 European business enquiries
- Published 359 partnering profiles across the Enterprise Europe Network databases on behalf of 321 Scottish companies
- Hosted or accompanied 584 Scottish companies taking part in Enterprise Europe Network brokerage events and company missions, supporting them in 691 transnational meetings.

Scotland Europa has over 10 years experience supporting our Higher Education/Research sector members to engage in the EU Framework programmes. For FP7 these services were refreshed and resources increased, with support from Scottish Enterprise/SDI, to widen this to the Scottish business community.
Building SME R&D Collaborative Capacity in Scotland (cont.)

Scotland Europa now offers a suite of services including:

- Strategy development for influencing calls and priorities
- Strategic intelligence, projects clinics and one-to-one meeting with selected companies
- Capacity building and trouble shooting with Commission services
- Advice and signposting to a range of information resources
- Access to FP7 proposal writing support for strategic projects
- Support for Scottish applicants looking for project partners

Scotland Europa support continues to reach the majority of Scottish Universities/research institutes. To date the new services have been accessed by nearly 300 companies and 41 projects submitted. The success rate from these projects was slightly over 35% (the EU average being 20-25%).

In February 2012 Scottish Enterprise/Scotland Europa surveyed a sample of Scottish companies with a view to capturing their experience of engaging with the EU Framework Programme and understanding the factors that will influence their continued engagement in Horizon 2020. The sample included a mixture of SMEs (over 50%) and larger organisations with various rates of success and levels of participation.

From this work, and that of the steering group, a number of themes appear to be emerging:

1. Deepening SME’s participation in Horizon 2020

It is recognised that FP7/EU Research and Innovation programmes represent a long-term game, which entails considerable investment in terms of time and resources that make the programme considerably different from national grants. Projects are implemented through transnational collaboration involving multiple partners from different countries. Applications must demonstrate state-of the art research at European level and an excellence and quality that is increasingly high. Such competition requires a significant level of research capacity and capability that not all R&D SME’s may have yet achieved.

It is therefore a “step change” for SMEs to embark in the FP7 learning curve for the first time. Key themes emerging from the survey were:

- All respondents to the survey recognised the value of some external support to stimulate initial engagement in EU Programmes, with over 50% having been introduced to the programme via parts of Scottish Enterprise and using their support and services to facilitate engagement.

- All companies were of the same view that organisations need to build and improve their own internal capacity and resource in preparing applications rather than making too heavy a use of external consultants.
• All participating companies praised the services that has been made available so far in Scotland and stressed the need for a continued targeted support that can meet the need of companies, particularly SMEs and “new comers” to embark and stay successfully engaged in Europe.

• They also criticised the length of time it takes, up to 18 months, to move from project concept to project start due to the lengthy evaluation and negotiation phase and the seeming lack of clarity in the selection process.

**Case Study: SME Benefits of FP7 participation**

Most respondents identified the opportunities for networking and for building the company’s profile and reputation at EU and international level amongst the most immediate short-term benefit of participating in Framework Programme projects in. According to one interviewed SME, in the short-term FP7 collaborations generate an increased capacity to offer advanced solutions and service to clients while enhancing the organisation competence and capacity to excel in the specific field. In the long term SMEs can gain capability to create and innovate in an international context, usually “in an area which is highly desirable” for companies but difficult to develop due to the limited in house resources.

EU R&D collaboration can indeed contribute to building SME capacity, as noted above. Scotland’s SME participation levels are already quite high in relation to the total number of SME’s with the necessary R&D needs and capabilities. In deepening SMEs participation in Horizon 2020 we therefore recognise the need to target those companies with high level of R&D “preparedness”, which we define as “the capacity and readiness to participate and benefit from the involvement in the programme”.

2. Improve the engagement of and support to sectors that are key to the Scottish economy

A sectoral approach is believed to provide an effective way to target and “cluster” companies to participate in European projects and ultimately create the necessary critical mass – by sector to effectively influence Europe. Engaging with the specific sectors and Industry Leadership Groups will also allow for a more strategic use of Horizon 2020 opportunities to support projects and sectors that are instrumental to realise the Scottish economy strategy - rather than potential Scottish participants competing with each other they could be supported to work together. We will look at increasing collaboration with all stakeholders including a better coordination with the Industry Leadership Groups to identify the priorities and the capacities in Scotland. Through a coordinated Team Scotland approach we could use Horizon 2020 funds to, for example, demonstrate those technologies that must be brought to market by 2020 to meet the EU’s targets for 2020 as well as targets for 2050 emissions reduction and low carbon economy goals. Developing particularly capacity in areas of strength will also support Scottish bids for other large scale EU funded R&D initiatives such as the Knowledge and Innovation Communities (KIC) under the European Institute of Technology.
3. Use Horizon 2020 to identify/support emerging growth potential sectors in Scotland

The two approaches highlighted above respond to the need of a two-pronged strategy to maximise Scottish uptake of Horizon 2020 money. It is however recognised that a sectoral approach cannot just be focused on those key sectors where Scotland has already demonstrated its strong innovation capacity. It was been noted by one company interviewed for this exercise, that Scotland will likely have successes in energy sector, green technologies, and health care. However, Horizon 2020 could also be used to support those sectors where technological innovation needs to be improved to provide additional funding for the risk of developing new technologies. Survey respondents commented that Scotland is already good at research but less good at innovation; Horizon 2020 could be better used to promote innovation, particularly in those sectors where Scotland has lost high-tech businesses. Horizon 2020 could help develop competence that specific clusters need in order to be competitive EU and worldwide. Equally, Horizon 2020 could support emerging high-growth potential sectors/companies increase their competitiveness.

4. Develop research/SME collaboration tools to support Horizon 2020 participation

In September 2011 Cabinet Secretary, Michael Russell, announced additional support for the research pools to encourage them to engage further in increasing collaboration with their European peers; continue to attract funding from Europe and engage with stakeholders, both at home and in Brussels, on the development of Horizon 2020. The main purpose of the Pools Engagement in European Research (PEER) funding is to encourage pools to submit applications for European funding under the FP7, with engagement with a Scottish business or businesses being expected as part of this. The funding will foster greater collaboration, greater business (particularly SME) engagement and will help to build further critical mass.

Our approach to research pooling could also be considered an example of best practice in the implementation of new and innovative instruments supporting the engagement of business in EU R&D and narrowing the gap between industry and academia.

Scotland wants to build on this expertise by working with research partners to establish new pools where there are benefits and clear links with European priorities, in particular, we will explore how we can bring together our research expertise and develop research pools that are aligned to the Joint Programming Initiatives and ensure improved exploitation of research results across the EU.

Scotland wishes to see greater translation of European research excellence into business opportunities and growth. Stimulating the development and alliances of ‘research pools’ across Europe, would ensure that that excellence in R&D that is distributed within and across member states is harnessed to best effect.

Scotland also has a wealth of expertise, including its experience of implementing successful knowledge transfer and commercialisation initiatives and supporting Scottish business to invest in innovation and R&D. A number of initiatives have already been successfully introduced in Scotland including SEEKIT, Interface, the Innovation Voucher Scheme and Proof of Concept. These programmes form a key part of the Scottish Government's framework for innovation, and aim to enhance collaboration between
business and the science base; improve business innovation and investment in R&D; and therefore result in greater economic growth.

Interface

In terms of developing new instruments for Horizon 2020, Interface is a good practice example. Interface acts as a brokerage service and provides information to companies regarding specialist expertise that is available in Scotland’s 20 Higher Education Institutions and nine Research Institutes. Since 2005, over 1,000 businesses to academic partners have been introduced, and as a result more than 488 academic-industry collaborative projects have been initiated. This is a resource that could be further exploited to facilitate the development of collaborations for EU project development.

Scotland Europa
Scottish Enterprise
Highlands and Islands Enterprise
The Scottish Funding Council
23 February 2012